"A STUDY ON LATCH SCORE AS AN ASSESSMENT AND EDUCATIONAL TOOL TO PROMOTE AND PREDICT EXCLUSIVE BREASTFEEDING AT 6WEEKS POSTPARTUM AT KLE HOSPITAL & MEDICAL RESEARCH CENTRE- ONE YEAR LONGITUDINAL STUDY"

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LIST OF ABBREVIATIONS USED

WHO	-	World Health Organisation
IMR	-	Infant Mortality Rate
MDG	-	Millennium Development Goals
NCD	-	Non Communicable disease
NFHS	-	National Family Health Survey
POSHAN	-	Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India
HCP	-	Health Care Professional
ROC	-	Receiver Operating Characteristics
AUC	-	Area Under Curve
EBF	-	Exclusive breastfeeding
NON EBF	-	Non Exclusive Breastfeeding
LSCS	-	Lower segment caesarean section
NVD	-	Normal vaginal Delivery
LATCH	-	Latch, Audible sounds, Type of nipple, Comfort, Hold
MC	-	Monte-Carlo's simulation
MW	-	Mann Whitney test
LR+	-	Positive likelihood ratio
LR-	-	Negative likelihood ratio
CI	-	Confidence Interval
KW	-	Kruskal-Wallis test
IBFAT	-	Infant Breast feeding Assessment Tool
MBA	-	Mother Baby Assessment Tool
BSES	-	Breast Feeding Self Efficacy Score

ABSTRACT:

A STUDY ON LATCH SCORE AS AN ASSESSMENT AND EDUCATIONAL TOOL TO PROMOTE AND PREDICT EXCLUSIVE BREASTFEEDING AT 6WEEKS POSTPARTUM AT KLE HOSPITAL & MEDICAL RESEARCH CENTRE-ONE YEAR LONGITUDINAL STUDY

Introduction: Breastfeeding is the best nutrition for a newborn infant. It is the right of every infant to be breastfed exclusively for first 6 months. Worldwide, only 38 % of infants less than 6 months are breastfed exclusively. Latest analysis indicate that non-exclusive breastfeeding and other suboptimal infant feeding practices, contribute to 11.6 % of mortality in children less than age of 5. Hence it is important to prioritize and monitor breastfeeding practices in the early postpartum period so as to increase the period of exclusive breast feeding.

Objectives: Primary objective was to study the use of LATCH score as assessment tool to predict exclusive breastfeeding at 6 weeks of postnatal age and the secondary objective was To study if LATCH score can be used as an educational tool to train the mothers for effective breastfeeding before discharge.

Study Design: A one year hospital based longitudinal study conducted from January 2019 to December 2019 in the corporate sector of KLE'S Dr PrabhakarKore Hospital and Medical research centre, Belagavi.

Methods: The study was conducted at labour room and postnatal wards of corporate sector of KLE's Dr PrabhakarKore hospital & MRC, Belagavi.

Mother and baby dyad were selected by convenient sampling and LATCH Score was assessed by the health care professional within 24hrs, at 48hrs and at discharge. After

1st LATCH scoring, mothers were educated and counselled about correct techniques of breast feeding using the LATCH scoring tool. Mother was educated to evaluate herself using the LATCH score at discharge and at 6 weeks. Follow up was done at 6 weeks either by person at the time of immunisation or through telephone to know the status of exclusive breastfeeding.

Results: Out of 251 participants, 76% were exclusively breastfeeding at 6 weeks. Majority of the mothers were between 25-35yrs of age (n=150, 60%) and were degree holders including graduation and post-graduation. (n=195, 78%). 67% mothers underwent LSCS and 33% delivered normally. Mean Time of first feed among those delivered NVD/AVD was 37.48 ± 24.67 minutes and LSCS was 84.35 ± 33.04 minutes. 25 infants(10%) had hypoglycemic episodes requiring either NICU admission or treatment on mothers side. 18% infants were found to have hyperbilirubinemia. 7 infants (2.79%) newborns required readmission to hospital due to various reasons like hyperbilirubinemia, diarrhoea and dehydration. Among the Various reasons for non-exclusive breastfeeding, less secretions was 33.3% followed by hypoglycaemia (21.67%) and flat or inverted nipples (16.66%). Percentage of EBF at 6 weeks was high among mother who delivered vaginally, had higher education, higher socioeconomic status, and primi mothers. Odds of baby not exclusively breastfed at 6th week was 5.9667 (CI: 2.513953, 14.161405) times more for the newborns who suffered from hypoglycemia compared to healthy newborns.

The median LATCH Score at 24hrs, 48hrs was 6 (2, 10), 7 (3, 10). Median LATCH Score assessed by mother and the health professional was equal, 9 (4, 10) and at 6 weeks was 10 (6, 10) (p=<0.00001). Median LATCH Score at 48hrs and at discharge was higher among those delivered by NVD compared to LSCS. As the mother

confidence increased gradually over 24-48hrs, there was increase in LATCH score which was statistically significant. Median LATCH Score was significantly higher among the mothers who were successful in EBF at 6 weeks at all time points in the study. By ROC analysis, LATCH Score of >5 at 24hrs had 73.3% sensitivity and 71.73% specificity in predicting EBF at 6wks with AUC of 0.79(0.73.0.85). At 48hrs, a LATCH Score of >6 had sensitivity and 69% specificity in predicting EBF at 6wks with AUC of 0.81(0.74, 0.87)

Conclusion: LATCH score is a time-tested tool recommended for identification of mother at risk of opting non-exclusive breastfeeding. Our study has shown that LATCH Score can be used as an important tool to predict exclusive breastfeeding at 6 weeks. We also found that educating and empowering the mothers about components of LATCH Score can help them identify the problems in technique of breastfeeding and improve their awareness towards importance of exclusive breastfeeding. Therefore postgraduates, residents and nursing stuff should be well versed at using LATCH Score during the postnatal rounds to identify the high risk mothers.

Key words: LATCH Score, exclusive breastfeeding,

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CHAPTER 1- INTRODUCTION

Breastfeeding is the best nutrition for a newborn infant. It is the right of every infant to be breastfed exclusively for first 6 months. The benefits of breastfeeding exclusively for 6 months is well documented over the period of years. Based on the evidence, the World Health Organization (WHO) endorse the custom of breastfeeding the infants exclusively upto 6 months after birth [(1)]. Worldwide, only 38 % of infants less than 6 months are breastfed exclusively. Latest analysis indicate that non-exclusive breastfeeding and other suboptimal infant feeding practices, contribute to 11.6 % of mortality in children less than age of 5. [(2)]

Under Millenium Development Goals (MDG), Under five mortality and Infant mortality had to reduce by 2/3rd by 2015. Under five mortality had to reach 42, but has reduced from 126(1990) to 48 in 2015 which is still higher compared to our neighbouring countries. Infant and Neonatal Mortality Rates have decreased to 38 and 28 respectively from 88 and 57. One of the many Efforts put by the government includes promotion of Infant and Young Child Feeding which supports breastfeeding exclusively for 6 months [(3).]

Studies show that infants aged 0-3 month who are exclusively breastfed are less prone to diarrhoea or an acute respiratory infection [(4).]

A report from Lancet to India reveals exclusive breast feeding for 6 months could reduce 156,000 infant deaths, which can rapidly bring down IMR. It can cut down 3,900,000 episodes of diarrhoea and 3,436,560 episodes of pneumonia. Considering approximate expenditure per episode to be minimal of Rs.1000, it could save 730 crore yearly. Both these ailments affect the nutrition status of our children.

Coming to non- communicable diseases (NCDs) in India, breastfeeding could prevent 4915 deaths every year due to breast cancer and also decreases obesity by 26%. It is proved to reduce incidence of type 2 diabetes by 35%.[5] Breastfeeding has shown to have protective effect on obesity, type 2 diabetes, dyslipidemia, hypertension that develop during the adulthood. Hence breastfeeding has both short term and long term benefits. [6]

Early Initiation of breastfeeding is extremely important to establish adequate lactation. Child should be put to breast as soon as possible or atleast within 30min of delivery. This not only helps is providing colostrum to the baby, but also the newborn is very active during this period and learns to suck at the breast. This early sucking increases the milk secretion and also prevent mother from having PPH. It also ensures skin to skin contact and improves emotional bonding between the mother and baby and also helps maintain baby's temperature. It contributes to reduce neonatal infections and effects infant mortality by 1.79 times.

Late initiation of breastfeeding will deprive the child from colostrum and hence the immunity. It also causes problems like breast engorgement and hampers with establishment of lactation which will lead to introduction of other modes of feeding.

From NFHS-3 to NFHS-4, rate of early initiation of breastfeeding increased from 23.4 to 41.6%, (1.7% increase per year). State wise analysis reveals that there has been improvement from NFHS-3 levels except in Uttarakhand, Himachal Pradesh, and Tamilnadu. The NFHS-4 also shows that pre-lacteal feeds have been offered to 21% newborns.

Although 79% mothers undergo institutional delivery, only 41% of all institutional deliveries succeed in initiating breastfeeding within one hour. [5]

A recent report by POSHAN (Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India) on analysis of EBF trends showed that over a decade, the prevalence of infants who were breastfed exclusively upto 6 months increased from 46.4% to 54.9% but this national average masks variability across the states. Prevalence of exclusive breastfeeding varies from 77.2 % in Chattisgarh to 35.8 % in Meghalaya. Though few states show an increasing trend, 6 states including Karnataka showed a decline in prevalence of EBF.[2]

Hence it is important to prioritize and monitor breastfeeding practices in the early postpartum period so as to increase the period of exclusive breast feeding. Effective breastfeeding technique involves the correct positioning of the infant at the breast to stimulate the oral searching reflex of the baby. For successful breastfeeding, "the baby is encouraged to open the mouth wide and thrust the tongue forward to take the breast and then, with the tongue under the areola, to express milk from the breast by slow, deep sucks"[7][8]. Effective early initiation of Breast feeding also boosts mother confidence to continue exclusive breast feeding to the infant. Training of the health care personnel also is equally important to help mother initiate breast feeding immediately after birth. To ensure effective breastfeeding during the stay at hospital.

HISTORY OF LATCH SCORE

LATCH score has been used as an assessment tool by the health professionals to improve the technique of breast feeding and thus ensure exclusive breast feeding for longer duration during infancy. [9] Some studies have reported that improving maternal confidence has led to better outcome of exclusive breastfeeding. However

there is no definite tool available to aid clinicians and nurses in the hospital setting to educate and empower mothers regarding technique of breast feeding and thus to boost her confidence to continue exclusive breast feeding. This study aims at understanding if LATCH score can be utilized as an educational tool to promote exclusive breastfeeding.

NEED FOR THE STUDY

Our hospital has been practicing Baby Friendly Hospital Initiaitve for last few decades. The mothers and family are encouraged to initiate and continue exclusive breast feeding by all the health professional involved in the care of the mother and baby. Despite of these genuine efforts, it is noted that significant number of mothers resort to mixed feeding for their healthy term infants when they follow up for immunization. It was noted that many mothers had difficulty in establishing successful lactation due to poor understanding of the technique of breast feeding which led to decrease in their confidence to continue exclusive breast feeding after discharge from hospital.

Improving the rate of exclusive breastfeeding to prevent acute illnesses such as respiratory tract infections and diarrheal episodes in infants which decreases the infant mortality rate and under five mortality rate. Exclusive breastfeeding not only prevents acute illnesses but has shown decline in prevalence of developing adulthood illnesses like Hypertension, Obesity, type 2 Diabetes.

We therefore conducted this study to assess if LATCH score can be used as a tool to predict Exclusive breast feeding by 6 weeks and simultaneously used as an educational tool among educated mothers to improve their knowledge and confidence in promoting exclusive breast feeding.

CHAPTER 2- OBJECTIVES

OBJECTIVES:

Primary Objective: To study the use of LATCH score as assessment tool to predict exclusive breastfeeding at 6 weeks of postnatal age

Secondary Objective: To study if LATCH score can be used as an educational tool to train the mothers for effective breastfeeding before discharge.

CHAPTER 3 - REVIEW OF LITERATURE

COURSE OF HISTORY

"O, thou with a beautiful face, may the child reared on your milk, attain a long life, like the Gods made immortal with drinks of nectar" said Sushrutha. The importance of human breast milk has been known to the world since thousands of years and has been stressed upon even in the ancient scriptures. In the ancient era, breast milk was considered cardinal for the survival of the infant, and in any case where the mother was not able to feed the child, wet nurses were hired to breast feed the child. (10) In the first scriptures of Indian origin, The Vedas, stated that "milk and breast are symbols of longetivity and has the sweetness of nectarines". The ancient ayurvedic scriptures like Charaka Samhita, Shrushruta samhita and Kashyapa Samhita explained the importance of breastfeeding, and described the value of breast milk as having vivifying power. The breastfeeding duration was also commented on as until the infant develops teeth, i.e atleast 6 months. Shurushuta Samhita stated clearly that early weaning had to be started after 6 month or would result in swollen belly. (11)

During 16^{th} -18^{th} century, wet nursing had started receiving opposing reviews as there was rise in infant mortality. Importance of colostrum was enlightened during this period. At the end of 18^{th} century, mother versus wet nurse was replaced by bottle versus breast.

In the 19^{th} century, it was the era of industrial revolution during which women started to stay out of home for work and slowly artificial feeding and bottle feeding found its way. Milk banks were also founded during this period. Infant mortality was

either static or slightly raised due to gastroenteritis as a result of unhygienic practices of feeding and overfeeding. It also led to increase incidence of scurvy and rickets. [12]

In the beginning of 20th century, prevalence of breast feeding saw an increasing trend owing to establishment of welfare clinics. But soon advertising of formula feeds increased and formula feeds were upgraded with the essential vitamins and minerals in low socioeconomic states, infant mortality increased due to dubious hygiene and increase in Necrotising Enterocolitis was noticed.

Over the last few years, after 1970, importance of breastfeeding was reinforced to decrease the infant mortality and efforts were put in by the government to promote exclusive breastfeeding and to decrease milk substitutes.

IMPORTANCE OF BREAST FEEDING

Breastfeeding not only provides benefit for the infant in ensuring adequate growth and development but also to the mother and family, economically and socially.

Exclusive breastfeeding is defined as "a practice whereby the newborn receives only mother's breast milk without mixing it with water or other liquids, tea, herbal preparations or food in the first six months of life, except for vitamins, mineral supplements or medicines". A newborn is considered to be Partial exclusive breastfeeding when it "receives breast milk along with some artificial feeds, either milk, formula feed or water or cereal".

Predominant breastfeeding is if the newborn receives predominantly breastmilk from mother or wet nurse or expressed breast milk along with water or water based drinks. [13]

Human Breast milk is species specific and one of its kind. It is unique in its physical structure and type and concentrations of protein, fat, carbohydrate, vitamins and minerals, hormones, growth factors, enzymes, inducers and modulators of the immune system, host resistance factors and anti-inflammatory agents. Carbohydrates and proteins in human breast milk are different from other milk and is the best suit for newborn. (14)

Breast milk is secreted in 3 phases. First is the colostrum, secreted in the initial 5 days. It is the infant's first milk, yellowish in colour owing to high amount of beta carotene which is responsible for retinal development and protection against infections. It is considered as the first immunization for the infant. It contains more amount of immunoglobulin compared to the mature milk. It provides lactose and prevents hypoglycemia and aids passage of meconium, indirectly increasing bilirubin excretion and decreases chances of physiological hyperbilirubinemia. (15) Transitional milk is secreted from 7-21days postpartum. It contains elevated levels of fat, lactose, water-soluble vitamins, and also contains more calories than colostrum but lesser amount of immunoglobulin. Mature milk is secreted after 21days. It is more watery than colostrum. It is composed 90% of water, to maintain hydration of the baby and 10% carbohydrates, proteins and fats for its nutrition. Mature milk is of two types, fore milk and hind milk. Foremilk is the watery milk available at the beginning and is secreted in large quantity, thus, offers hydration to the baby. Therefore, no other drinks such as water or juice are required before 4-6 months, even during summer. Foremilk is rich in lactose, proteins, and other essential nutrients and contains less fat. Hind- milk is the rich milk, found after the initial release of milk, containing higher amount of fat and is more opaque and creamy white in colour. It induces satiety as well as makes the infant sleep. (16)

Therefore, baby requires both foremilk and hind-milk to receive optimum nutrition for growth and development.

ADVANTAGES OF BREASTMILK

Benefits of breastfeeding is numerous and the list can never be completed. It is beyond explanation and human understanding.

1. Physical advantage is optimal fluidity and warmth.
2. Very economical when compared to artificial feeds.
3. Very convenient to handle. No need to sterilize utensils and can be made available anytime and anywhere.

ADVANTAGES OF BREASTFEEDING FOR THE MOTHER.

1. Breastfeeding increase release of oxytocin which causes contraction of uterine muscles and decreases incidence of postpartum bleeding and blood loss in mother.
2. It also causes milk ejection and enhances maternal behaviour toward her infant and promotes bonding.
3. Breastfeeding causes lactational amenorrhea and decrease menstrual blood loss.
4. It also helps in maintaining birth spacing.
5. It causes decrease in risk of breast cancer in mother who has breastfed her infant as compared with mother who has not breastfed.[17]
6. Among the diabetic mothers, breastfed mothers need lesser dose of insulin than compared to non-breastfed mothers.[18]

7. Breast feeding decreases the risk of developing type 2 diabetes, ovarian cancer and endometrial carcinoma. Longer the duration of breastfeeding, smaller the risk of developing endometrial cancer. [19]
8. Breastfeeding decreases incidence of osteoporosis in later age.
9. Mothers who breastfeed are likely to lose the prenatally gained weight sooner than the non-breastfed mothers.
10. Breastfeeding also decreases the incidence of postpartum depression.

Breast milk is the sweetest milk available with high lactose content. The protein present in breastmilk is easily digestible for the infant. The lipids are rich in essential fatty acids, phospholipids, long chain polyunsaturated fats (LCP) and prostaglandin precursors. It supplies enzymes like lipoprotein lipase, bile salt stimulated lipases (BSSL), amylase, oxidases, leucocyte myeloperoxidase lacto peroxidases etc.

These enzymes increase digestibility and also give immunity against microbes. It also contains growth regulating factors, growth modulators and growth promoting factors.

Biochemically it is rich in whey protein.

ADVANTAGES OF BREASTMILK TO THE BABY

1. Decrease in infant mortality rate. It has been proved that breastfeeding ultimately reduces the IMR by decreasing the risk of diarrhoea and respiratory diseases which are the most important cause of infant mortality.
2. Decrease in morbidities caused due to respiratory and diarrheal infections. Breast milk contains high level of immunoglobulin (IgA), lactoferrin which

protect the infant against lower respiratory tract infections and gastrointestinal infections.

3. Decreases risk of sudden infant death syndrome.
4. Decreases incidence of acute otitis media as breast milk contains immunoglobulin which act against common bacteria such as H. influenzae and S. pneumonia.
5. LCPs promote brain growth and hyperactivity and reduce dyslexia.

PROBLEMS FACED WITH BREASTFEEDING

Among all the breastfeeding mammals, humans are the only species who have to learn breastfeeding and weaning. The process of breastfeeding is not easy as spoken and the mother can face many problems. But these problems are preventable and last for short period. If the problems are confronted at the right time, breastfeeding can be established very soon and exclusive breastfeeding can be expected.

Mothers face many obstacles and challenges to breastfeeding, which comprise varied social, cultural, economic, political, educational and commercial factors. According to Giugliani, as joint and extended Families are being switched into nuclear families, most mothers are encountering breastfeeding problems as their traditional foundation of learning is lost. This provides less chances for the women to learn about breastfeeding. Therefore, to help the mother initiate and continue lactation process, prevention and proper management is suggested. [20]

Few common problems faced by the mother include

1. **FLAT OR INVERTED NIPPLES:**

Inverted/ flat nipples are usually present from birth, and caused by failure of the mammary pit to elevate during fetal development. This condition may hamper the infant's ability to latch on to areola to suckle effectually. If the areola is soft, baby can breastfeed effectively but mothers might need a little more support and help. In many of the cases, suckling by the baby corrects the inverted nipple, but few may need inverted syringe technique to pull out the nipples. Ideally these problems have to be identified before the delivery and mother should be counselled and reassured to avoid anxiety and apprehension. In a study done by Sitara Suresh et al in North India, breastfeeding problem were seen 88.5% mothers after discharge and 15% mothers were having retracted or inverted nipples. [(21)]

2. **BREASTFULLNESS AND ENGORGEMENT:**

Fullness of breast develop after day 3 of delivery when there is increase in secretion of milk and it causes vascular congestion and edema. If the milk is not expressed, breasts will get engorged. It can happen when the mother or baby skips a feed. Intravenous fluids given during labor can lead to postpartum engorgement and edema of areola. The common causes of engorged breasts are: delayed initiation of breastfeeds, pre lacteal feeds, early removal of the baby from the breast, bottle-feeding and any constraint on breastfeeding. The breasts appear tender, red and hot to touch. Apart from the discomfort, if not treated correctly, it might lead to lactation failure. Treatment is regular feeding and frequent emptying of the by expression of milk. Applying heat compression to the breast 3 to 5 minutes prior a feed, followed by

gentle massage and stroking the breast towards the nipple can help reduce the engorgement. Analgesics may be required to reduce the pain. In a study conducted in North India, 13% of breastfeeding problems were attributed to breast engorgement.[21]

3. SORE NIPPLES:

Painful nipples is a most important reason for early termination of breastfeeding. Transient Pain caused by Nipple tenderness and sensitivity usually subsides in a few days if positioning and latching are corrected. Persistent pain is usually associated with physical trauma caused by improper latching by baby or infection. Physical trauma causes include

- Improper positioning and latching
- Engorgement leading to ineffectively latching
- Non breaking of suction when removing the infant away from the breast.
- Ankyloglossia ("tongue-tie" or short frenulum)
- Torticollis or Mandibular asymmetry due to intra-uterine positioning
- Delivery related issues which may cause change in the baby's oral motor behavior: prolonged pushing, traumatic delivery forceps or vacuum delivery/ intrapartum drugs.
- In the same above study, 17.8% mothers were found to have sore nipples which affected the exclusive breastfeeding practices. [21]
- In another study Novitria Dwinanda et al, cracked nipple or breast engorgement caused a decrease in breastfeeding success of 9% in the first month. In the 2nd month, mothers without cracked nipples or breast engorgement were more successful in exclusive breastfeeding (56%). The

percentage of exclusive breastfeeding success was higher in mothers who did not feel ill or tired, with 66% in the 1st month and 55% in the 2nd month. [22]

4. OBSTRUCTED LACTIFEROUS DUCT:

Lactiferous ducts are clogged when the produced milk in a certain part of breast area does not drain completely for various reasons. This frequently occurs when the breast is not completely emptied, which may occur when the mother breastfeeds infrequently or when the infant suckles poorly. It can also happen if there is local pressure on certain area of breast due to a very tight undergarments, or as a result of the applying creams or ointments over the nipples**.**

Plugged ducts typically present as sensitive and painful breast lumps with no other breast related disease. There may be tenderness, warmness and erythema in the affected area, but not associated with fever. Plugged ducts can be prevented by any measure that causes complete emptying of breasts. Thus, a proper breastfeeding technique and frequent breastfeeding minimizes this problem, and wearing a bra that doesn't interfere with drainage of milk and evading the use of needless creams and ointments over the nipples.

5. MASTITIS:

Mastitis is an inflammatory process of one or more breast segments commonly the upper left quadrant that may or may not progress into bacterial infection. It usually occurs in the second and third weeks after delivery, and very rarely, after the twelfth week. The stocked up milk, the inflammatory response, and the subsequent tissue damage facilitate the establishment of the infection, usually by Staphylococcus (aureus and albus) and infrequently by Escherichia coli and Streptococcus (alpha-,

beta- and non-haemolytic). Usually the nipple injury are the portal of entry for the bacteria. In mastitis, the involved portion of the breast is painful, oedematous, hyperemic and warm. If infection is present, systemic manifestations occur, such as high-grade fever with chills and malaise. Sodium and Chloride levels are raised in the milk whereas lactose levels may be low, which makes the milk saltier to taste and may be rejected by the infant. Mastitis is generally unilateral, but may be seen bilateral. [20]

6. NOT ENOUGH MILK

Lactation failure is defined as "the need to start top feeds for the baby within 3 months of delivery because of inadequate breast milk supply". Total lactation failure is defined as "either a total lack of milk flow or secretion of just a few drops of breast milk succeeding suckling for at least 7 days." [23] Partial lactation failure is defined as "either insufficient milk output or the need for supplemental feedings to maintain growth." The most universal cause of lactation failure is insufficient milk or no milk seen in 80% of the cases. The awareness of not having sufficient milk often leads to irregular suckling, resulting in definite decline in breast milk production.

In a study done to evaluate problems in breast-feeding in rural Karnataka, it was reported that insufficient milk secretion was the cause for starting top feeds in 53.6% cases. [24]

The complaint of "insufficient milk" is usually the wrong perception by the mother, cherished by the mother's doubt about her capacity to breastfeed her infant, poor knowledge about the normal behavior of the newborn, and discouraging opinions from the important persons. The reasons for perception of decreased milk output are

because the infant cries often, demands frequent feeds, wakes up repeatedly, or is irritable. The mother should be counselled that an adequately fed baby with a weight gain of half to one kilogram per month and urinating at least 6–8 times per day is certainly getting sufficient milk. [25]

In a North Indian study done by Sitara Suresh et al on Breastfeeding Problems in The First Week of delivery and its effect on Exclusive Breastfeeding at Six Months, showed Breastfeeding issues were seen in 88.5% of mother newborn dyads prior to discharge. Poor positioning and attachment was seen in 88.5% and breast and nipple problems in 30.3% cases. Breastfeeding issues were documented in 72.5% of the cases during follow-up at 60hrs ±12hrs of discharge. Most frequently noticed problems were poor positioning and latching in 70.3% mothers, sore or cracked nipple in 17.8% mothers and retracted or flat nipple 15% cases and breast engorgement 13% cases. [26]

In a recent study done in Rural Belagavi to identify facilitators and challenges in exclusive breastfeeding reported that facilitators of EBF mainly included mothers' education, knowledge, family support and health care providers. Specific challenges included giving top feeds like honey, gripe water, cow's milk, gutti, sugar water, discarding colostrum. It was also noticed that mother has psychosocial issues like such as depression over having a girl baby, substance, alcohol, and tobacco use. The other most common problem faced by mothers was physical pain from LSCS and breast abscesses who were not able to successfully breastfeed. [27]

1. LATCH SCORE

In the past, breastfeeding assessment was done in terms well/fair/poor by the nursing faculty. It was difficult to identify and address the problems that the mother faced in initiating breastfeeding. [9] According to policy statement formulated by AAP, prior to discharge "the infant has completed at least 2 successful feedings, with documentation that the infant is able to coordinate sucking, swallowing, and breathing while feeding."[28]

An objective method of assessment that constitutes checklist of important areas of breastfeeding was required to overcome the problems, LATCH score was developed. LATCH score was constructed to identify five parameters of breastfeeding techniques for clinical assessment. The Scoring System was designed in 1994 by Jensen, Wallace, and Kelsay to help the health care professional in assessing the breastfeeding techniques of mother and infant dyads.[9] The score is modelled analogous to APGAR score.

The letters of the acronym LATCH designate five separate assessment parameters:

L: how well the baby latch to breast.

A: frequency of audible swallowing heard as baby suck at the breast

T: types of nipple

C: comfort level of the mother

H: assistance or support required during feeding.

The above tool is designed to be completed by the nurses and the mother's self-report in response to standard questions for every parameter. The score would indicate the extent of support required from nursing staff for mother and infant during breastfeeding sessions, so that health care professionals (HCP) can allocate higher priority for offering assistance. This evaluation technique is a systematic, organized documentation and standardized communication tool among HCP's, and such a tool can assist in evaluating breastfeeding technique. The LATCH is useful for HCP'S to determine priorities in offering adequate maternal care and teaching.

Score value	0	1	2
L – Latch	Too sleepy or reluctant and No latch obtained	Repeated attempts, Must hold nipple in mouth and Must stimulate to suck	Grasps breast, Tongue down and forward, Lips flanged, Rhythmic suckling
A- Audible Swallowing	None	A few with stimulation	Spontaneous, intermittent (less than 24 hours old), Spontaneous, frequent (greater than 24 hours old)
T Type of Nipple	Inverted	Flat	Everted (after stimulation)
C Comfort Level (Breast/Nipple)	Engorged, Cracked, bleeding, large blisters or bruises, Severe discomfort	Filling, Small blisters or bruises, Mother complains of pinching Mild/moderate discomfort	Soft, Tender, Intact nipples (no damage)
H Hold Positioning	Full assist (staff holds infant at breast)	Minimal assist (i.e. elevate head of bed, place pillows), Teach one side, mother does other. Staff helps, mother takes over feeding.	No assist from staff. Mother able to position/hold infant.

LATCH Breastfeeding Assessment Tool [9].

In a study done by Nilgun Altuntas et al in 2014, to evaluate the validity and reliability of various breastfeeding assessment tools, found positive and significant correlation coefficients between 0.81 to 0.88 for the MBA score, 0.90 to 0.95 for the IBFAT score, and 0.85 to 0.91 for LATCH score. The maximum value was noted for the correlation between LATCH and MBA scores and minimum correlation coefficient value was noted between LATCH and IBFAT scores. This study showed that the IBFAT, MBA and LATCH were compatible for the assessment of the efficiency of breastfeeding. [29]

In a study done by Sowjanya et al in Chennai in 2016, 100 pairs of mother infants were included and found 62% were exclusively breastfeeding at 6 weeks. At birth, Mean LATCH score was significantly more in mother's breastfeeding at 6 weeks than in those who had weaned (7.17 ± 1.13 vs. 4.26 ±1.7). Likewise, at 48 hours/discharge, the mean LATCH score was significantly greater in women who exclusively breastfed at 6 weeks than in those who weaned (9.22 ± 1.01 vs. 5.78 ± 1.29). LATCH score ≥6 at birth showed sensitivity of 93.5% and specificity of 65.78%. These women were 5.92 times more likely to be exclusively breastfeeding at 6 weeks. At 48 hours/discharge, LATCH score ≥8 had a sensitivity of 93.55% and specificity of 92.1%. These mothers were 9.28 times more prone to be exclusively breastfeeding at 6 weeks post-delivery. Receiver operating characteristic curve (ROC) had Area under the curve (AUC) of 0.915 for LATCH score at birth and exclusive breastfeeding (EBF) at 6 weeks. At 48hrs/discharge, the AUC was 0.979. [30]

A study done by Savitri P. Kumar et al in 2003 in Detroit, to determine if LATCH score assessed by medical professionals in hospital predicted exclusive breastfeeding at 6 weeks postpartum. The study compared the LATCH scores assessed at 8-hour intervals on first day and at 24-hour intervals on 2nd and 3rd day with feeding practice at 6 weeks. The mean LATCH scores were significantly greater for the breastfeeding group at all time intervals except 48 - 72 hours. Statistically significant differences were found upto 48 hour period time points, but not at 48 - 72 hours. It was observed that a 16 - 24hour LATCH score of >9 was the most distinguished of all the time intervals assessed. Mother with LATCH score of >9 at 16 - 24 hr interval was 1.7 times more likely to be breastfeeding exclusively at 6 weeks postpartum, compared to others. The AUC for LATCH score at 16-24-hour time period was 0.72. The sensitivity of LATCH score >6 at 0 – 8 hour period was 92.8%, and specificity was 30.2%. The RR for >6 score at the 0 - 8 time period was 2.3. The best cut off for the 8- 16 hour time period was a LATCH score of ≥7. The sensitivity for >7 score was 89.0% and specificity was 34.4% and The RR was 1.8. The study concluded that the LATCH score is a simple, useful tool, efficient in predicting duration of exclusive breastfeeding as early as in first 24 hrs of life. Low LATCH scores indicated the need for active intervention, support, and post discharge follow-up. (31)

In a study done by Tornese et al, in 2010 in Italy, 299 mother infant dyads were included in the study to know if LATCH Score assessed within 24hrs of delivery, predicted non-exclusive breastfeeding (non EBF) at discharge from hospital. The study showed mean LATCH score of 7.3 and prevalence of non-EBF at hospital discharge was 37.5%. Non-EBF was more prevalent among primigravida mothers (47% vs. 28% in multiparous) and mothers who underwent caesarean section. (67%

for CS vs. 29% for vaginal). Neonates born less than 37 weeks gestation (56%) showed higher rate of non-exclusive breastfeeding. Higher rate of non-exclusive breastfeeding was seen among Infants who were given phototherapy for neonatal hyperbilirubinemia (52% vs. 35%, p = 0.02), and had longer hospital stay (69% for length of stay > 4 days vs. 20% for < 4 days). [32]

In a study done in Bhagdad in 2012 by Iqbal Majeed Abbas et al, to test the validity of the LATCH breastfeeding assessment tool, Study population was 120 mother infant dyads. LATCH scores, index feed evaluated by the mother's and intended duration of breastfeeding were assessed and followed up at 6 weeks. Total LATCH scores was categorized into poor (1-3), moderate (4-7) and high (8-10). 53.3% mothers came into moderate group. The study found high statistical significance with age and LATCH scores. The present study revealed that the majority of mothers (71.69%) initiated breastfeeding during 24 hours, (52.83%) were used breastfeeding and (46.22%) were continued breastfeeding 12 months and less. The study concluded that LATCH tool is useful to identify mothers at risk for early weaning because of sore nipples. [33]

A Study was done by Jan Riordan et al in Midwestern US community in 1995 to predict breastfeeding duration using LATCH score. LATCH Score was higher among Women who were breastfeeding exclusively at 6 weeks (9.3 ± 0.9) than those who had weaned (8.7 ± 1.0). All components of LATCH score were higher in mothers who were breastfeeding at 6 weeks. The differences were not significant, except for breast/nipple comfort. Mothers who weaned before 6wks stated lesser breast/nipple comfort (1.5 ± 0.5) than those mothers who were still exclusively breastfeeding at 6wks (1.7 ± 0.5). Total LATCH score, age of the mother, plan of breastfeeding

duration, and mode of delivery were all statistically significantly ($R2 = .25$, $P = .006$). Mothers' scores correlated significantly with the assessor's scores. Adding up to that, mothers' score (n = 127; $r = .22$, $P = .012$) and the total LATCH score positively correlated with breastfeeding duration (n = 128; $r = .26$, $P = .003$) [(34)].

EXCLUSIVE BREASTFEEDING AT 6 WEEKS

In a study done by Dr Patil Sapna S et al in on prevalence of exclusive breastfeeding in urban slum in Western India showed prevalence rate of 61.5% for exclusive breastfeeding and 38.5% for partial exclusive breastfeeding. 75.5% of mothers had fed colostrum to their newborn. The most common reason for not feeding colostrum was due to the opinions given by the grandmothers. 34.5% mothers gave Pre-lacteal feeds (n=69) and the common feeds were honey, ghutti (a powdered mixture containing herbs), gripe water, jaggery and cow's milk. Early initiation of breastfeeding within one hour of birth was followed by 47.5% (n=95) of the participants. Statistically significant difference was found between education status of the mother, the parity of the mother and the time of initiation of breast feeding and practicing breastfeeding exclusively. The odds of mothers who receive infant feeding advice and breast feed exclusively were 2.59 compared to those who did not get advice on breast feeding. Likewise the odds of mothers who fed colostrum to their infants to breast feed was 4.43 compared to those who did not give colostrum. [(35)]

In a study done by Obgo F A etal to know The regional prevalence and breastfeeding practices around India, prevalence of EBF in infants aged < 5months was highest (79.2%) in the South and lowest (68.0%) in the North-Eastern region. The prevalence decreased in the South as the infant grew older (75.8% at 1 month to 63.6% at 3 months and 43.7% at 5 months). In the North-East region, the prevalence,

as child grew older was 70.0% at 1 month , 64.2% at 3 months and 54.0% at 5 months).[36]

In a study done by Novitria Dwinanda et al, to study the Factors affecting exclusive breastfeeding in term infants, conducted in Indonesia, reported that Exclusive breastfeeding prevalence were 64.8% during the first month, 53.7% in the second month, 43% during the third month, 30.7% in fourth month, 23.5% in fifth month, and 22.3% at six months.

Multivariate analysis showed that the mother's confidence about breast milk production and support by husband and family affected the success of exclusive breastfeeding for each month. In this study, early initiation of breastfeeding affected the success of exclusive breastfeeding in the first two months of life. Failure to initiate early breastfeeding lowered the percentage of exclusive breastfeeding in the population 11-39% every month up to the 6th month, based on PAR calculations. Mothers who firmly believed that their breast milk production was sufficient had a 19-66 times higher probability of successful exclusive breastfeeding monthly compared to mothers who lacked that confidence. In the population, the lack of belief in sufficient breast milk production reduced the success of exclusive breastfeeding by 93-98% per month. [37]

In a recent study done at Pondicherry by Karthika S. et al from 2017-2019, to study role of LATCH score in duration of exclusive breastfeeding, found that LATCH score at 8 hours was >8 in 50% of infants delivered via NVD and 9.6% infants delivered via LSCS. At 48 hours LATCH score improved in both groups: 60.8% in infants delivered via NVD, 38.3% in infants delivered via LSCS. Compared to Primi-mothers, infants born to multigravida mothers had higher scores at 48 hours: 62.2% as

against 31.1%. Statistically 165 out of 196 (84%) were exclusively breastfeeding at 6 weeks, 99 out of 196 (51%) were exclusively breastfeeding at 6 months. When mothers with LATCH score <8 at 48 hours were intervened, rate of exclusive breastfeeding at 6 weeks improved. Most common reason for early weaning at 6 weeks was maternal problems(6.6%) and at 6 months was due to influence of relatives(27%). [38]

In a study done by Dorothy Li Bai et al in 2011-2012 in Hong Kong to know effect of previous experience in breastfeeding on duration of exclusive breastfeeding showed that nearly 87 % had only borne one child previously, and 88 percent had prior breastfeeding experience. Less than 40% had exclusively breastfed the first child for > 3 months, and only 25% had breastfed exclusively for > 2 months. When compared with mothers who had earlier breastfed for > 3 months, those with a shorter duration of breastfeeding and those with no prior experience had a significantly greater risk of weaning ($p < 0.001$). Accordingly, on comparing those who breastfed exclusively for >2months, risk of weaning was significant among participants who did not previously breastfeed exclusively and those with a previous short duration of exclusive breastfeeding. Among Mothers who had priorly breastfed for < 3months, 79.4% maintained this duration or fed for a longer duration with the present child. Conversely, mothers who had earlier breastfed for >3 months, had negative mind change and 42.3% showed median decrease of 16.4wks with the current child. Similarly, 84.4% mothers who had earlier breastfed for <2 months, maintained or increased the duration of exclusive breastfeeding with current child whereas 44.8% mothers who exclusively breastfed for >2 months failed to achieve the same duration with the present infant. The median decrease for this group was 13.1 weeks. [39]

EXCLUSIVE BREASTFEEDING AT 6 MONTHS

In a study done in Ghana by Joyce Veronica Preko et al on breastfeeding practices and factors affecting exclusive breastfeeding showed that, there was 100% awareness of about EBF, and about 93% pointed out that EBF involves feeding an infant with only human breast milk. 86.5% mothers were knew that EBF should be continued for 6 months, and specified that breastfeeding must be initiated within one hour of delivery (71%). 63.4% mothers started feeding within one hour of delivery, and 81% of mothers had offered colostrum to their infants. EBF rate upto 6 months was 66.0%. Mothers aged >20yrs were more likely to breastfeed exclusively than the teen age mothers. Mothers with a no education were more like to practice EBF than the educated mothers. [40]

In another study done in Tanzania by Tiras Eshton Nkala et al on prevalence and prognosticators of EBF, 86% of the mothers had sufficient information on the importance of EBF. There was no association between EBF knowledge and age, education, income, parity, marital status, or employment. But 75% mothers who had inadequate knowledge on EBF, suffered from problems in the first 6 months usually related to breasts, like engorgement, cracked nipples or mastitis. 91% mothers reported to have initiated breastfeed within one hour of delivery. 88 women (22%) had given Pre-lacteal feeds. 58% participants were exclusively breastfeeding at 6 months. Mothers who were employed, had delivery at a health facility and had ample knowledge about EBF and had partners with secondary or higher education had greater odds of practicing EBF. 86% Women who faced problems in the first 6 months were less likely to practice EBF than mothers who did not face such problems. [41]

In a North Indian study done by Sitara Suresh et al on Predictors of Breastfeeding Problems in The First Postnatal Week and Its Effect on Exclusive Breastfeeding Rate at Six Months, showed 88.5% of mother had Breastfeeding problems prior to discharge. 88.5% were due to poor positioning and latchment and 30.3% due to breast and nipple troubles. 72.5% mothers had Breastfeeding issues during follow-up at 60 ± 12hrs of discharge. Caesarean delivery (LSCS) was the only independent risk factor for exclusive breastfeeding. EBF rate was 69.5% at 6 months. 28.6% mothers discontinued breastfeeding due to concern of poor weight gain in baby, 27.7% due to advice from elders and 25% due to perception of insufficient breast milk. Other common reasons for non EBF were breastfeeding problems (8%), baby refused to suck (7.1%) and baby is hungry even after feeding (3.6%). Non-exclusive Breastfeeding at 6 months was independent of age of the mother, socioeconomic status, education status of the mother, maternal illness, parity, prior experience in breastfeeding, gender, birth weight of the baby, period of gestation and breastfeeding problems[(26)].

In a study to evaluate reasons for non-exclusive breastfeeding upto 6 month by Monika A Z et al in Poland, only 57% (n=255) breast-fed exclusively their infants during study and 43% did not. The highest risk of non-exclusively breast-feeding was associated with mothers age under 20 years and inadequate breast-feeding knowledge however the least risk was related with perinatal intention about breast-feeding, very good knowledge about breast-feeding and maternal age from 26 to 30 years. Among the Non-EBF group, 10% infants were never received breast-feeding. 37% cases, breastfeeding was ceased in 37%. 39% were mixed-fed, and 14% received breast milk and complementary foods. In Non-EBF group mean duration of exclusive breast-feeding was 1.9 ± 1.8 months and for any breast-feeding 3.1 ± 2.1 months. [(42)]

In another Indian study done at Patiala city to determine practices of breastfeeding among the lactating mothers by Avneet Randhawa et al showed out of 300 lactating mothers, Exclusive breastfeeding till 6 months was given by only 137 (45.67%). Most common reason for the non-exclusive breastfeeding was inadequate milk output in 56.44% mothers followed by maternal illness (22.08%). [(43)]

In a study done in Rajkot in 2007 by Rajesh K Chudasama et al, to know of Prevalence of EBF and its associated factors in first 6 months, showed that breastfeeding initiation rate in the study was 100%. Prevalence of exclusive breastfeeding decreased as the infant grew older. At 3 months it was 97% which reduced to 62% at the end of 6 months. [(44)]

In a study done by Dipen Patel et al in Gujarat in 2014 to evaluate the breastfeeding practices and demographic variable associated with it, showed 57.5% mothers started breastfeeding within one hour of child's birth. Rate of exclusive breastfeeding for 6 months was 55.9%. 84.4% mothers did not face any problem during breastfeeding in the first six months and did not bottle-feed the baby (81.6%). Mothers who initiated breastfeed within 1 hour of birth were more likely to be successful in continuing exclusive breastfeeding for 6 months and breastfeed for a longer duration. Mother's education level was not associated with breastfeeding initiation. Severe malnutrition, delayed initiation of breastfeed, and stopping breastfeeding before 2 years were associated with increased diarrhoea episodes. [(45)]

In a study done in rural community of Gujarat, by Dinesh J. Bhanderi et al to evaluate barriers of exclusive breastfeeding showed prevalence of EBF as 49.7%. Early marriage of parents, uneducated parents, boy child, Christian religion, working mother, less number of antenatal visits, LSCS as mode of delivery, late initiation of

breastfeeding, not feeding colostrum, lack of knowledge about EBF, and poor counselling of mother regarding EBF were identified as barriers to Exclusive breastfeeding[49]

MATERNAL CONFIDENCE AND BREASTFEEDING PRACTICES

Infant feeding plans and maternal confidence effect the duration of exclusive breastfeeding to a large extent. Breastfeeding confidence depicts the mother's belief and expectation to successfully establish breastfeeding and continue to nourish her child exclusively for next few months. The expectations and belief depends on the information gained from prior breastfeeding experience, family support, observation of other women breastfeeding, antenatal counselling and the physiological reaction to the prospect or act of breastfeeding. Mothers are who are confident in the ability to breastfeed are successful in exclusive breastfeeding. As the confidence is enhanced by knowledge, observation and education, strategic intervention to boost mother's confidence would help promote exclusive breastfeeding. In an institutional delivery, HCPs may alter mother's confidence in breastfeeding through modifying sources of self-efficacy information.

A study was done by JoCarol Chezem et al to evaluate Breastfeeding Knowledge, Breastfeeding Confidence, and Infant Feeding Plans and its Effects on Actual Feeding Practices which found prenatally, 77% of the women planned to breastfeed exclusively, whereas 23% planned to feed their infants a combination of breast milk and Human milk substitute. Breastfeeding knowledge was strongly associated with breastfeeding confidence ($r = .262$; $p = .025$) and actual duration of lactation($r = .455$; $p = .0001$). Those who planned to give combination of feeds reported shorter actual duration ($p = .004$), and were less likely to meet their

breastfeeding goal when compared to mothers who planned to exclusively breastfeed.[47]

In another study done in Australia by Rosemary Blyth et al on Effect of Maternal Confidence on Breastfeeding Duration, found that most mothers (62%) intended to breastfeed for more than 6months and 23% planned to breastfeed for less than 6 months. At 1 week of delivery, 91.7% mothers were breastfeeding; 3 mothers had chosen not to breastfeed, and 10 women breastfed for <3 days. Statistically Significant differences were found among mothers who were breastfeeding or bottle feeding at 1 week postpartum in antenatal breastfeeding self-efficacy. Reasons for the change in infant feeding method included insufficient milk supply, sore/cracked nipples, lethargy, and mastitis; infant factors like poor latch, poor weight gain, and feeding rate. Higher antenatal breastfeeding self-efficacy were found in women who exclusively breastfed than women who were partially breastfeeding or bottle-feeding. Statistically significant difference was found in mean scores for mothers who were breastfeeding exclusively and mothers who chose bottle-feeding. At four months postpartum, 60% mothers were still breastfeeding, but 40% were bottle-feeding. At 4 months 50 % mothers were exclusively or almost exclusively breastfeeding. Usual reasons quoted for change in infant feeding method were not enough milk and initiation of solid foods. [51]

CHAPTER 4 – METHODOLOGY

The present study was conducted among mothers delivered at KLE's Dr Prabhakar Kore hospital & MRC, Belagavi from January 2019- December 2019.

Study design

The study design was a hospital based longitudinal study.

Study duration and period

The study was carried out for the period of one year from January 2019 to December 2019.

Study Place

The study was conducted in the Department of Pediatrics, KLES Prabhakar Kore Hospital and Medical Research Centre, Belagavi a tertiary care teaching hospital attached to Jawaharlal Nehru Medical College, Belagavi.

Source of data

This study was conducted among the mother infant dyad, delivered in the corporate sector of KLES Prabhakar Kore Hospital and Medical Research Centre, Belagavi.

Sample size

Sample size of the study was calculated to be 250.

Sample Size Calculation

From the previous studies done earlier on comparison of LATCH score with 6 week follow up, [30],[31]

Mean LATCH scores at baseline=6.99

Mean LATCH score at 6 weeks = 8.02

SD of LATCH Score at baseline =5.01

SD of LATCH Score at 6 weeks=3.95

$n= 2+(s/d)^2(z\alpha+z\beta)^2=250$

$z\alpha= 1.96$ at 5% α error

$z\beta= 1.682$ at 5% β error

Inclusion Criteria

Following were the criteria for including the newborns

1. Healthy Term newborn infants (>37weeks period of gestation)
2. Delivered by Normal vaginal delivery or LSCS or assisted delivery
3. Singleton gestation
4. Admitted to postnatal ward with mother after delivery

Exclusion Criteria:

Following were the criteria for excluding the newborns

1. Preterm infants (<37weeks period of gestation)
2. Multiple gestation
3. Newborns requiring NICU admission at birth/ with congenital anomalies
4. Newborn requiring resuscitation at birth.
5. Mothers who are sick and unable to breastfeed

Ethical clearance:

Prior to the commencement, study was approved by the institutional ethical committee, Jawaharlal Nehru Medical College, Belagavi.

Informed Consent:

Informed consent was taken from the mother who was eligible for the study and was willing to participate in the study

Methodology:

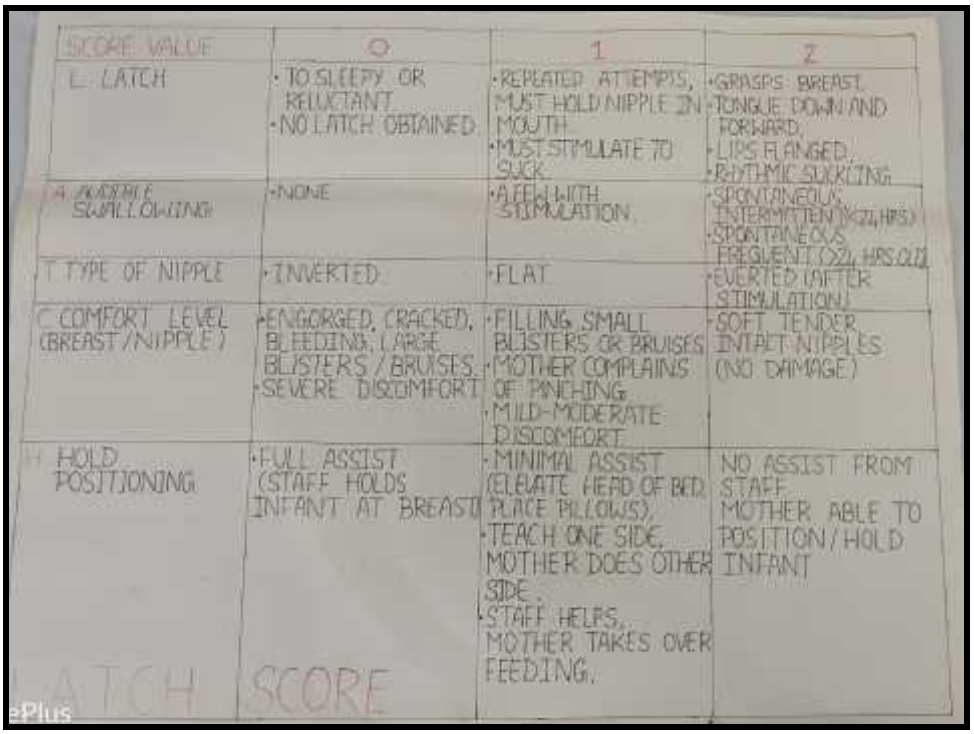
The study was conducted at labour room and postnatal wards of corporate sector of KLE's Dr Prabhakar Kore hospital & MRC, Belagavi.

The nursing staff in the labour room and post natal wards were trained about how to use the LATCH Score. Duration of the training was 3 months. Training was held for 30-45min every week for 3 weeks and nurses were divided into group of 4-5 to obtain maximum involvement. They were taught the components of LATCH Score, how to assess breastfeeding in the mother infant dyad using LATCH Score. They

received training regarding counselling the mother to improve her confidence in breastfeeding. They were also trained regarding the interventions required to improve the initial LATCH Score. Various Audio Visual Aid in the form of charts, videos, PowerPoint presentation and pictures were used to train the nursing staff. Nursing staff who underwent training were evaluated every week to assess if they could use the LATCH scoring system to assess breastfeeding appropriately. They were also assessed based on their counselling techniques and only those nursing staff were selected who were capable and met all the criteria.

Photos 1: Training of the nursing staff from NICU and labour room

Photo 2: Training of the nursing staff from post natal wards and labour room



SCORE VALUE	0	1	2
L LATCH	• TO SLEEPY OR RELUCTANT • NO LATCH OBTAINED	• REPEATED ATTEMPTS, MUST HOLD NIPPLE IN MOUTH • MUST STIMULATE TO SUCK	• GRASPS BREAST • TONGUE DOWN AND FORWARD • LIPS FLANGED • RHYTHMIC SUCKLING
A AUDIBLE SWALLOWING	• NONE	• A FEW WITH STIMULATION	• SPONTANEOUS, INTERMITTENT (<24 HRS) • SPONTANEOUS, FREQUENT (>24 HRS OLD)
T TYPE OF NIPPLE	• INVERTED	• FLAT	• EVERTED (AFTER STIMULATION)
C COMFORT LEVEL (BREAST/NIPPLE)	• ENGORGED, CRACKED, BLEEDING, LARGE BLISTERS / BRUISES • SEVERE DISCOMFORT	• FILLING, SMALL BLISTERS OR BRUISES • MOTHER COMPLAINS OF PINCHING • MILD-MODERATE DISCOMFORT	• SOFT, TENDER, INTACT NIPPLES (NO DAMAGE)
H HOLD POSITIONING	• FULL ASSIST (STAFF HOLDS INFANT AT BREAST	• MINIMAL ASSIST (ELEVATE HEAD OF BED, PLACE PILLOWS) • TEACH ONE SIDE, MOTHER DOES OTHER SIDE • STAFF HELPS, MOTHER TAKES OVER FEEDING.	NO ASSIST FROM STAFF. MOTHER ABLE TO POSITION / HOLD INFANT

LATCH SCORE

Photo 3:Charts to teach nursing staff and the mother about LATCH Score

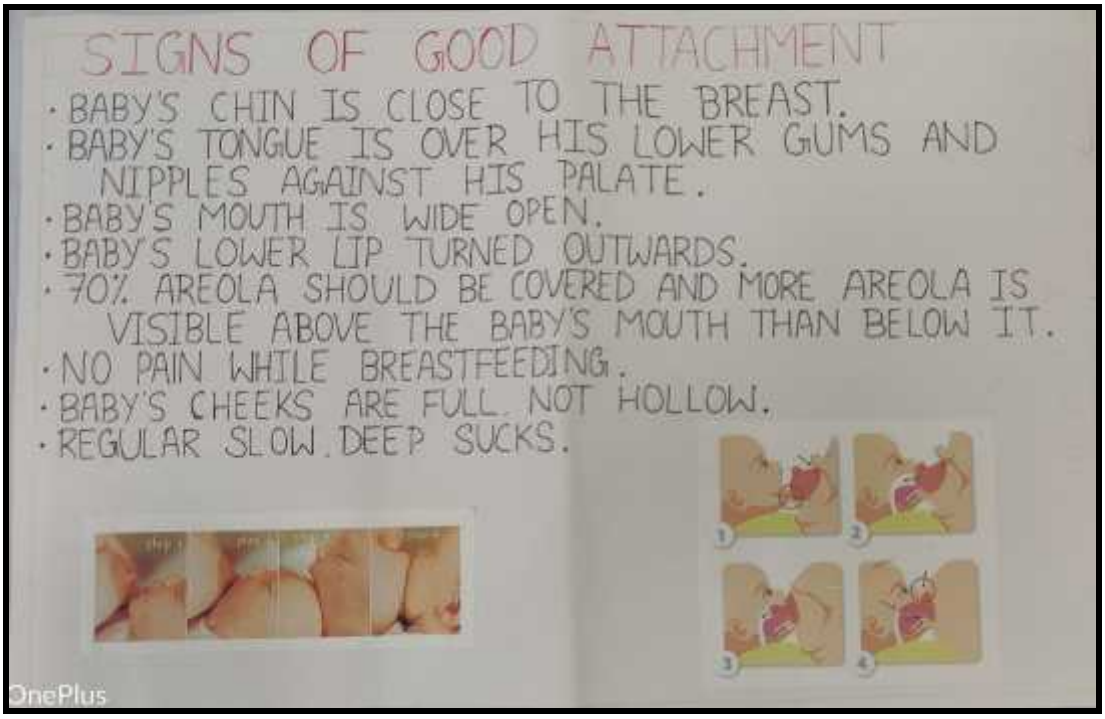


Photo 4: Chart to teach nursing staff and mother about good latchment

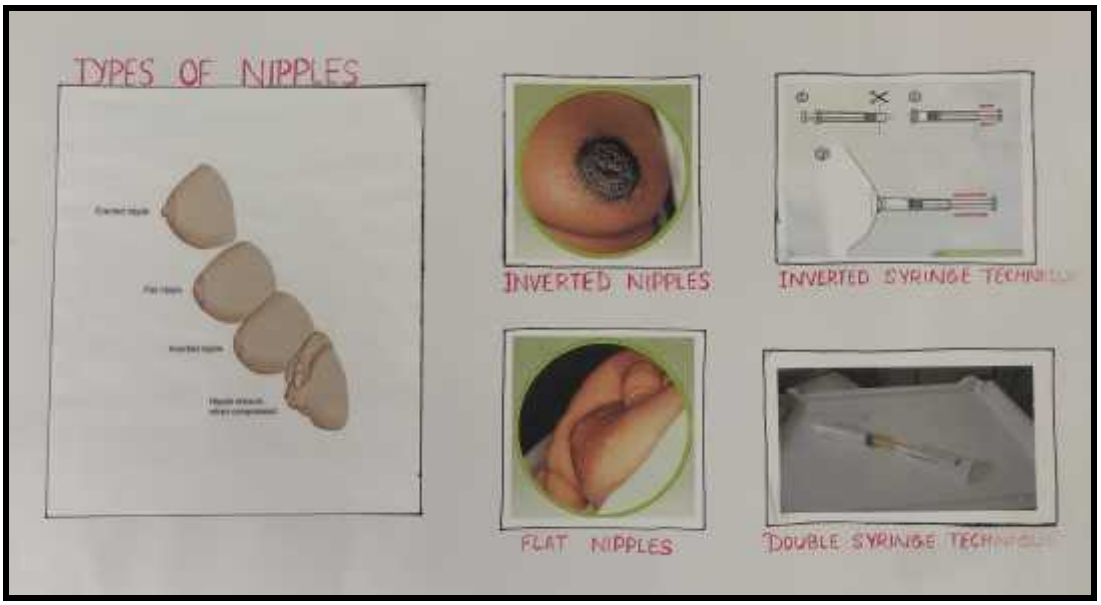


Photo 5: Chart to teach mother about problems related to breast/ nipples

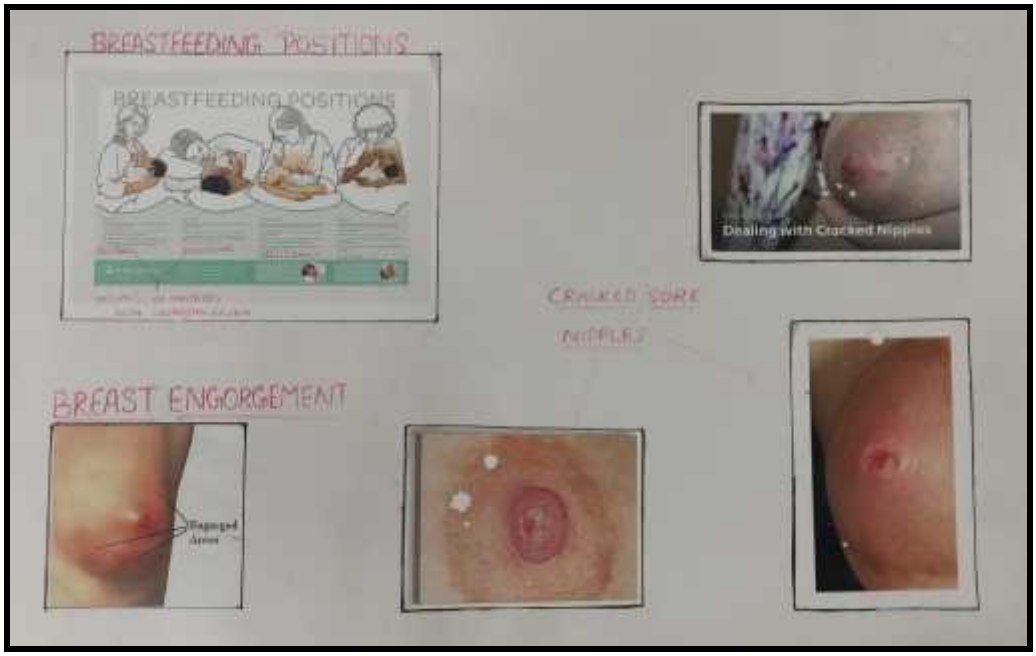


Photo 6: Chart to teach the mother about different positions of breastfeeding and problems encountered.

Mother and baby dyad were selected by convenient sampling. LATCH Score was assessed by the investigator or the trained nursing staff at birth or within 24hrs, at 48hrs and at discharge. Minimum time spent for the neonate to latch on before scoring was 10min. Initial assessment was done by the doctor. i.e at birth or within 24hrs of delivery. After 1st LATCH scoring, mothers were educated and counselled about correct techniques of breast feeding using the LATCH scoring tool. Mother was educated to evaluate herself using the LATCH score at discharge and at 6 weeks. Data was collected for the variables like mothers age, parity, education level, socioeconomic status, type of delivery, period of gestational age, Baby gender, birth weight, Time at first feed, any hypoglycaemic episodes hyperbilirubinemia in infant, day of discharge.

Follow Up

Follow up was done at 6 weeks either by person at the time of immunisation or through telephone to know the status of exclusive breastfeeding.

Baby was considered to be Exclusive Breastfeeding when no other liquid or solid including water has been fed to the baby other than breast milk. Reasons for non-exclusive breastfeeding was collected and general condition of the baby including weight gain, any hospital admissions were noted. LATCH score assessed by medical personnel and the mother were compared to exclusive breastfeeding, maternal education, parity, age etc.

Outcome Variable

1. Trend in improvement of LATCH Score from the time of delivery to discharge.
2. Any hypoglycaemia or hyperbilirubinemia in the infant.
3. Exclusive breastfeeding at 6 weeks.
4. Partial exclusive breastfeeding at 6 weeks
5. Weight gain in baby at 6 weeks.
6. Any hospital admission for infant after discharge from hospital.

STATISTICAL ANALYSIS:

Descriptive statistics was used to depict profile of study population. Initial LATCH score were compared with the LATCH score at 48hrs, at discharge and at 6 weeks by mother herself to know if it is an effective educational tool. Logistic regression were run to check predictive value and utility of LATCH score. The categorical data were expressed in terms of rates, ratios and percentages. The association between the outcome, clinical and demographic characteristics was tested using Chi-square test, Fisher's exact test Kruskal Wallis test, Mann Whiteney test and Monte Carlo stimulation test.

CHAPTER 5- RESULTS

We enrolled total 251 mothers and their neonates in the study. There were no dropouts in the study. The data was entered in excel spreadsheet and then analyzed using R software version 4.0.2 and Microsoft Excel 2016. Categorical variables were given in the form of frequency table. Continuous variables were given in mean ± SD form. To compare mean t-test was used. To compare the distributions Mann-Whitney test was used. To check the dependency between categorical variables Chi-square test was used. P-value less than or equal to 0.05 indicates statistical significance.

Table 1 gives Demographic details of the mothers and neonates enrolled in the study. Majority of the mothers were between 25-35yrs of age (n=150, 60%) and were degree holders including graduation and post-graduation. (n=195, 78%). Because this study was carried out in the corporate sector of the teaching hospital, most belonged to upper middle socio economic class.(n=120,48%). 67% mothers underwent LSCS and 33% delivered normally, while 8.76% % needed assistance during Vaginal delvery.110 mothers were entering motherhood (primi) for the first time (44%). Sex ratio among the infants was equal (female- 48.2%. and male- 51.7%).

Table 1: Summary of demographic variables.

Variable		Number of mothers (%)
Age (in years)	< 20	2 (0.8%)
	20-25	71 (28.29%)
	25-30	117 (46.61%)
	30-35	49 (19.52%)
	≥ 35	12 (4.78%)
Education level	Up to SSLC	13 (5.18%)
	PUC	42 (16.73%)
	Diploma	1 (0.4%)
	Graduate	176 (70.12%)
	Post-Graduate	19 (7.57%)
Socio-economic status	Lower middle	16 (6.37%)
	Middle	48 (19.12%)
	Upper middle	120 (47.81%)
	Upper	67 (26.69%)
Type of delivery	AVD	22 (8.76%)
	Elective LSCS	67 (26.69%)
	Emergency LSCS	99 (39.44%)
	NVD	61 (24.3%)
Parity	Primiparous	110 (43.82%)
	Multiparous	141 (56.18%)

Mean Time of first feed among those delivered NVD/AVD was 37.48 ± 24.67 minutes and LSCS was 84.35 ± 33.04 minutes.

Table 2: Comparison of time of first feed with type of delivery.

	Type of delivery		p-value
	LSCS	**Vaginal**	
Time for first feed (in minutes)	75 (25, 285) 78.23±26.24	32 (16, 225) 37.48±24.67	<0.00001*

By Mann-Whitney test, there is significant difference in the distribution of time for first feed over type of delivery.

Out of 251 infants, 25 infants(10%) had hypoglycemic episodes requiring either NICU admission or treatment in ward. 18% infants were found to have hyperbilirubinemia. 7 infants (2.79%) required readmission to hospital due to various reasons like hyperbilirubinemia, diarrhoea and dehydration. Prevalence of exclusive breastfeeding was found to be 76% at the end of 6 weeks.

Table: 3 Demographic details of the infants

Gestational age at delivery (in weeks)	< 40	208 (82.87%)
	40-45	43 (17.13%)
Sex of Child	Female	121 (48.21%)
	Male	130 (51.79%)
Hypoglycemic in child	No	226 (90.04%)
	Yes	25 (9.96%)
Hyperbilirubinemia in child	No	205 (81.67%)
	Yes	46 (18.33%)
Hospitalization in last 6 weeks	No	244 (97.21%)
	Yes	7 (2.79%)
Exclusive Breastfed at 6 weeks	No	60 (23.9%)
	Yes	191 (76.1%)

Figure 1: Distribution Of Maternal Age In The Study Group

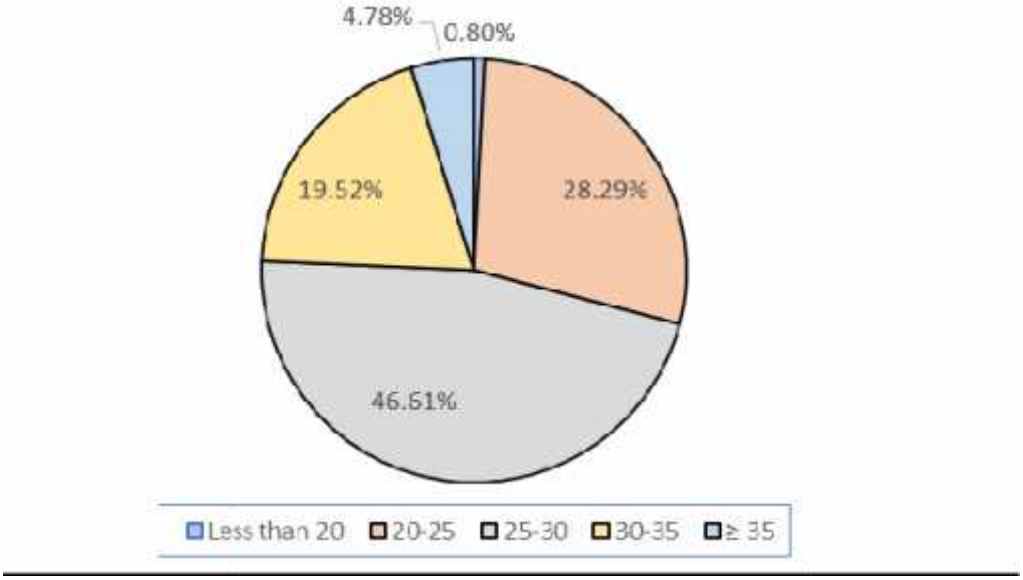


Figure 2: Distribution of mothers by education level.

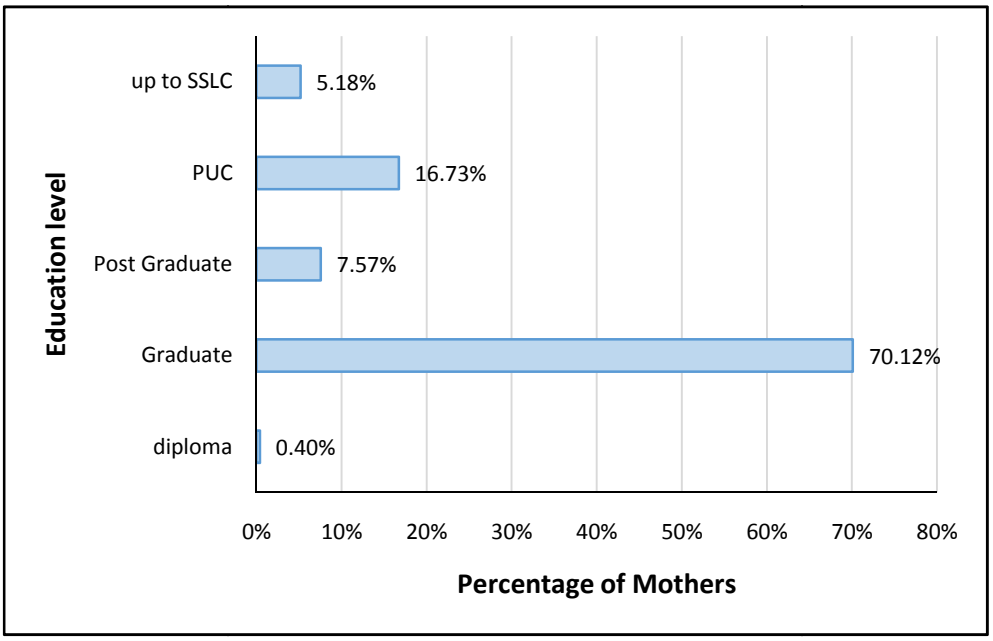


Figure 3: Distribution of Mothers by socio-economic status.

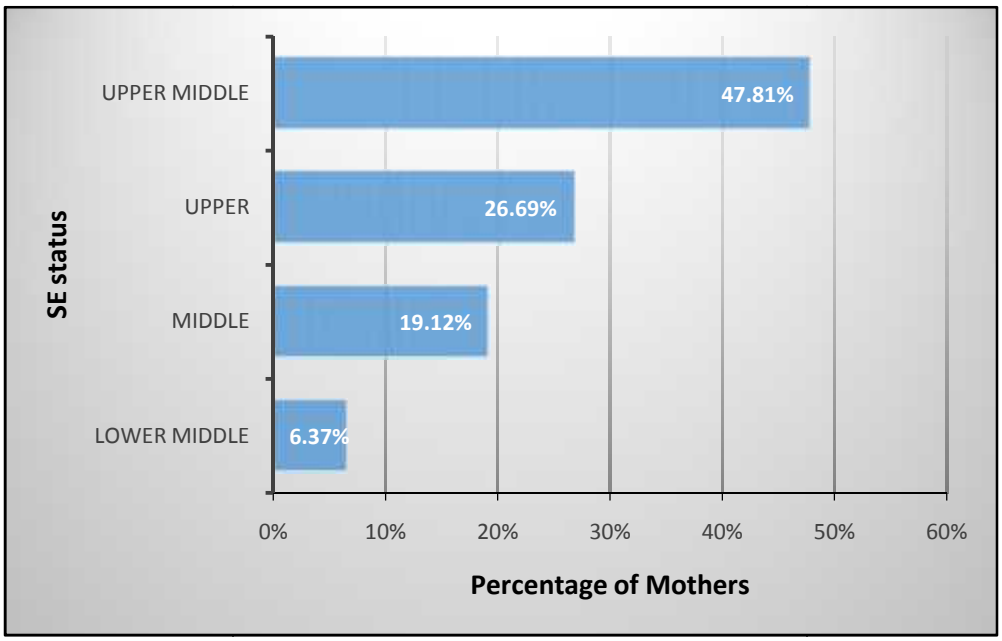


Figure 4: Distribution of Mothers by type of delivery.

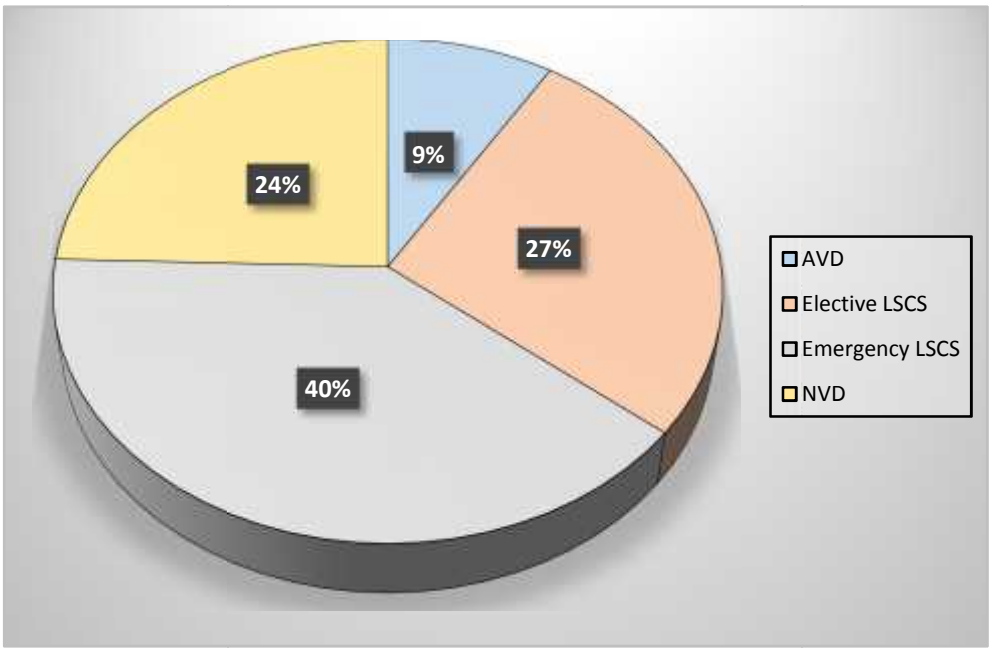


Figure 5: Distribution of Mothers by parity.

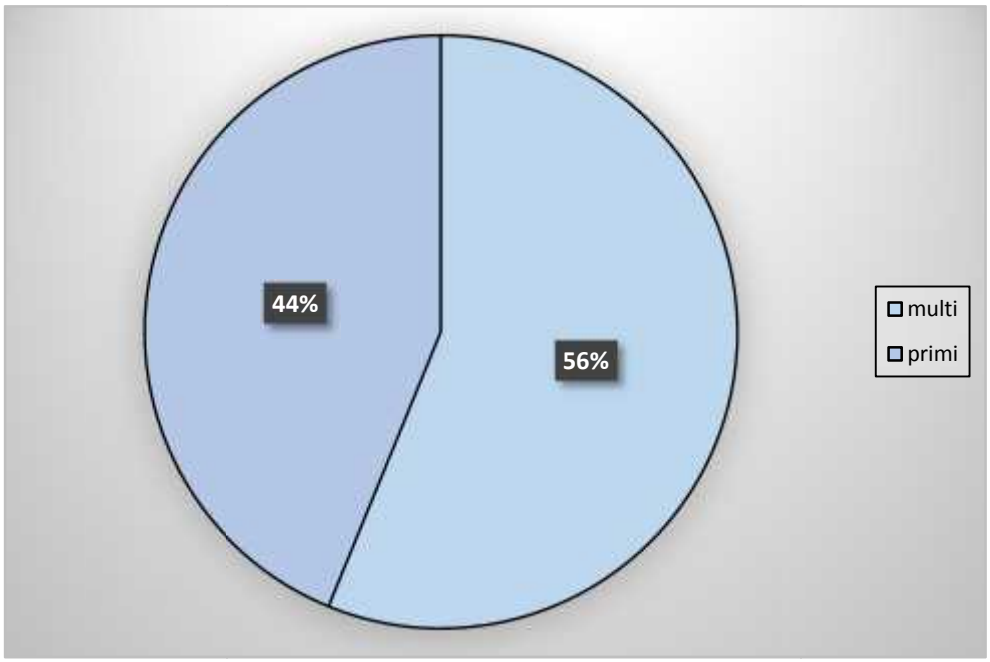


Figure 6: Distribution of neonates by sex.

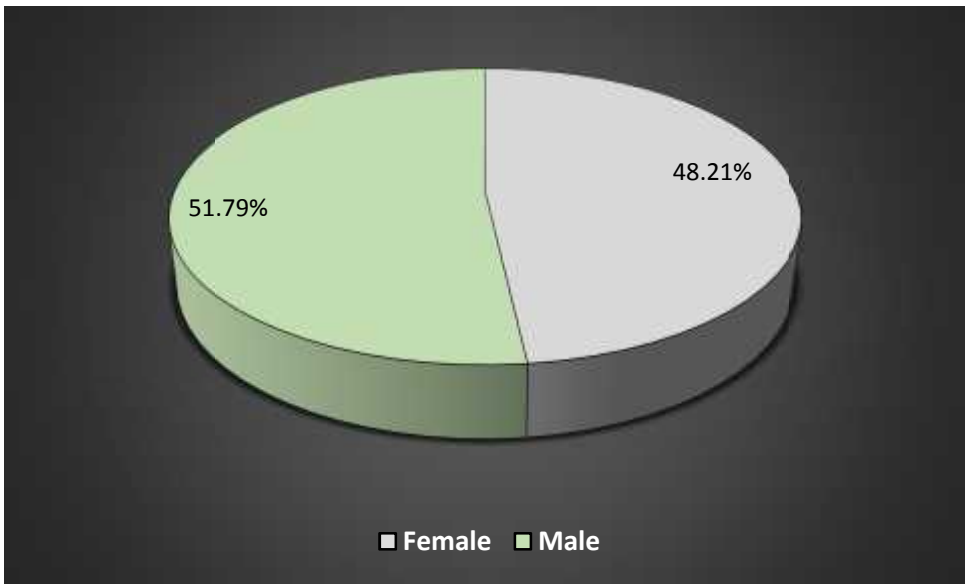
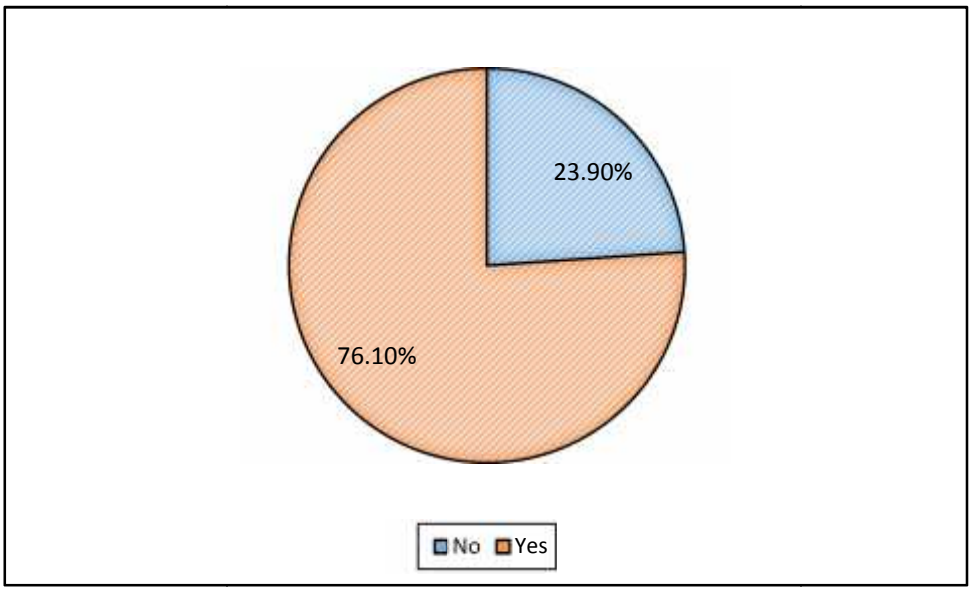


Figure 7: Distribution of Infants by breastfed at 6th week.



Among the Various reasons for non-exclusive breastfeeding, less secretions was 33.3% followed by hypoglycemia (21.67%) and flat or inverted nipples (16.66%).

Table 4: Reason for not-exclusively breastfeeding.

Reason of not exclusively breastfeeding	Number of Infants (%)
Mother not well	7 (11.67%)
Less secretions	20 (33.33%)
Hypoglycemia	13 (21.67%)
Not sucking well	6 (10%)
Travelling	2 (3.33%)
Flat Nipples	10 (16.66%)
Hyperbilirubinemia	2 (3.33%)

In our study we found that median LATCH Score at 24hrs was 6 (2, 10) as compared to 48hrs was 7 (3, 10). At discharge LATCH Score was assessed by health professional as well as mother. Median LATCH Score assessed by mother and the health professional was equal 9 (4, 10). Median LATCH Score at 6 weeks was found to be 10 (6, 10).

By Friedman's test, there was significant difference in the distribution of LATCH Score over different time points. For post-hoc analysis, pairwise Wilcoxon's test was used, by pairwise Wilcoxon's test with "Holm's" method used for p-value adjustment, There was significant difference between the Latch score at every pair of time point (p-value <0.05).

Table 5: Median LATCH Score at different time points

Latch score	Median (Range)	p-value
At 24 hours	6 (2, 10)	< 0.00001*
At 48 hours	7 (3, 10)	
At discharge	9 (4, 10)	
At mother's discharge	9 (4, 10)	
At 6th week	10 (6, 10)	

Table 6: Comparison of Latch score over type of delivery.

		Type of delivery		p-value
		LSCS	Vaginal	
Latch score	At 24 hours	6 (2, 9)	6 (3, 10)	< 0.0001*
	At 48 hours	6.5 (3, 9)	7 (4, 10)	< 0.0001*
	At discharge	8 (4, 10)	9 (5, 10)	0.0005752*
	At mother's discharge	8 (4, 10)	9 (5, 10)	0.001043*

It was found that median LATCH Score at 24hrs among mothers who underwent LSCS and NVD was same. At 48hrs, It was 6(3, 9) among LSCS mothers and 7(4, 10) among those had NVD. At discharge median LATCH Score by HCP and mother was 8 (4, 10) among LCSC mothers and 9(5, 10) among NVD.

By Mann-Whitney test, there is significant difference in the distribution of LATCH score over type of delivery at every time point.

We studied the mothers behaviour with LATCH Score assessed at 24hrs, and found that those mothers who said they needed help at 24hrs (n=228) had median LATCH Score of 6(2,9) and those who said will try and can breastfeed had median LATCH Score of 7(5,10) at 24hrs. It was found statistically significant by Mann Whitney test with p value of < 0.00001.

Table 7: Comparison of mother's behaviour at 24 hours and Latch score

	Mothers behavior at 24 hours		**p-value**
	Needs Help (n=228)	Will try+Can breastfeed (n=23)	
Latch score at 24 hours	6 (2, 9)	7 (5, 10)	< 0.00001*^{MW}

Abbreviations: MW: Mann-Whitney test.

Table 8: Comparison of mother's behaviour at 48 hours and Latch score.

	Mother's behavior at 48 hours			**p-value**
	Needs Help (n=30)	Will try(n=197)	Can breastfeed (n=24)	
Latch score at 48 hours	6 (3, 7)	7 (4, 10)	8 (5, 10)	< 0.00001*^{KW}

Abbreviations: KW: Kruskal-Wallis test.

On comparison of mothers behaviour at 48hrs and LATCH Score, it was found that in mothers who needed help at 48hrs (n=30), the median LATCH score was 6(3, 7) at 48hrs and those who said will try at 48hrs(n=197) had median LATCH score of 7(4,10). Those mothers who were confident about breastfeeding (n=24) had median LATCH score of 8(5, 10). It was found statistically significant by Kruskal-Wallis test.

For post-hoc analysis Dunn's test is used. By Dunn's test, there is significant difference in the LATCH score between every pair of behaviour (p-value: < 0.0001).

In our study we compared various demographic information with exclusive breastfeeding at 6 weeks. It was found that mother's educational status, socioeconomic class and type of delivery had strong correlation with exclusive breastfeeding at 6 weeks. 80% of the graduate mothers had breastfed their infant at 6 weeks. Among the non-graduates, only 62% mothers had breastfed their child at 6 weeks. Odds of baby being exclusively breastfed at 6th week was 2.4 (CI 1.259404, 4.573593) times more for the infants whose mother education level is graduate or more compared to mother with under graduate education level.

Table 9: Comparison of mother's education level with exclusive breastfeeding at 6weeks

Variable		Breast Feeding at 6th week		p-value
		No (n=60)	Yes (n=191)	
Mother education level	Up-to Graduation	21 (37.5%)	35 (62.5%)	0.006801*
	Graduate and more	39 (20%)	156 (80%)	

In our study, we found that among the upper middle and upper socioeconomic status, 80% had continued to exclusively breastfeed. Among the lower middle and middle socioeconomic class, only 64% had exclusively breastfed their infant.

Odds of baby being extensively breastfed at 6th week was 2.274225 (CI 1.217771, 4.247188) times more for the infants whose mother socio-economic status is upper middle or upper class compared to the mothers with socio economic status lower middle or middle class.

Table 10: Comparison of Socioeconomic status with exclusively breastfeeding at 6 weeks

Variable		Breast Feeding at 6th week		p-value
		No (n=60)	Yes (n=191)	
Socioeconomic status	Lower middle+ Middle	23 (35.94%)	41 (64.06%)	0.008924*
	Upper middle+ Upper	37 (19.79%)	150 (80.21%)	

Table 11: Comparison of Type of delivery with exclusively breastfeeding at 6 weeks

Variable		Breast Feeding at 6th week		p-value
		No (n=60)	Yes (n=191)	
Type of Delivery**	Emergency LSCS+ Elective LSCS	48 (28.92%)	118 (71.08%)	0.006143*
	NVD+AVD	11 (13.25%)	72 (86.75%)	

We also found that those who delivered vaginally had higher rate of exclusive breastfeeding compared to those who delivered by LSCS. (71% for NVD vs. 87% LSCS). Odds of newborns being exclusively breastfed at 6th week is 2.662558 (CI 1.298928, 5.457743) times more for the newborns who born by vaginal delivery compared to the newborns who born by LSC.

In our study, it was also found 80% of primi mothers were successful in breastfeeding at 6 weeks and 73% of multiparous mothers were successful in exclusive breastfeeding at 6 weeks postpartum.

Table 12: Comparison of Parity with exclusively breastfeeding at 6 weeks

Variable		Breast Feeding at 6th week		p-value
		No (n=60)	Yes (n=191)	
Parity	Multiparous	38 (26.95%)	103 (73.05%)	0.2002
	Primiparous	22 (20%)	88 (80%)	

The study found that among a total of 25 infants who had hypoglycemia, 10 of them continued to be exclusively breastfeed and 15 infants ended up being non-exclusively breastfed. It was found that there is significant association between hypoglycemia in child over breastfed at 6th week by Chi-square test.

Table 13: Comparison of hypoglycemia with exclusively breastfeeding at 6 weeks

Variable		Breast Feeding at 6th week		p-value
		No (n=60)	Yes (n=191)	
Hypoglycemic in child**	No	45 (20.09%)	179 (79.91%)	< 0.0001*
	Yes	15 (60%)	10 (40%)	

Odds of baby not exclusively breastfed at 6th week was 5.9667 (CI: 2.513953, 14.161405) times more for the newborns who suffered from hypoglycemia compared to healthy newborns.

By chi-square test, there was no significant dependency between parity, sex of a child, hyperbilirubinemia in child, hospitalization in last 6 weeks over breastfeed at 6th week.

We found in our study that median LATCH Score at 24hrs was 5(2, 7) among the non-exclusive breastfed infants and 6(3, 10) among the exclusive breastfed infants. Similarly at 48hrs, the median was 6(3, 8) among non-exclusive breastfed and 7(4, 10) among the exclusive breastfed.

At discharge, the median LATCH Score by mother and the health professional was 7 (4, 10) among the non-exclusive breastfed and 9(6, 10) among the exclusive

breastfed dyads. At 6 weeks, the median LATCH Score as assessed by mother who non-exclusively breastfed was 9(6, 10) and 10(8, 10) among those who exclusively breastfed. By Mann-Whitney test, there is significant difference in the distribution of LATCH score at every time point over breastfed category at 6th week.

Table 14: Comparison of LATCH Score at different point of time with exclusive breastfeeding at 6 weeks

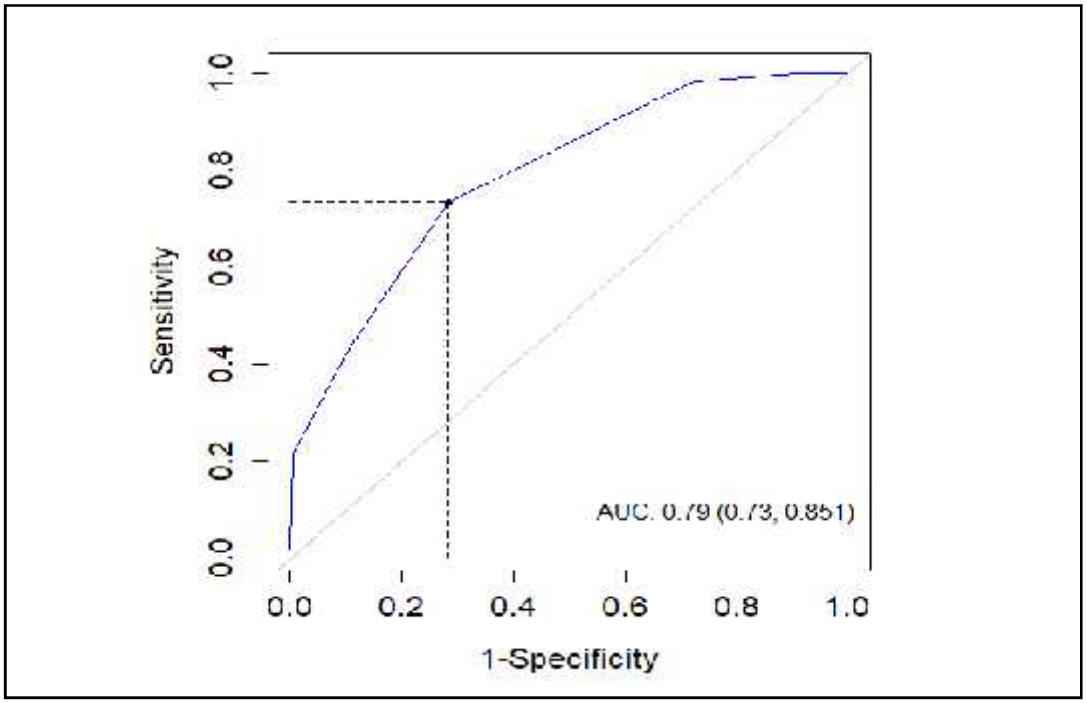
Variable		Breast Feeding at 6th week		p-value
		No (n=60)	Yes (n=191)	
Latch Score	At First feed	5 (2, 7)	6 (3, 10)	< 0.0001*MW
	At 48 hours	6 (3, 8)	7 (4, 10)	< 0.0001*MW
	At discharge	7 (4, 10)	9 (6, 10)	< 0.0001*MW
	At by mother discharge	7 (4, 10)	9 (6, 10)	< 0.0001*MW
	At 6th week	9 (6, 10)	10 (8, 10)	< 0.0001*MW

ROC CURVES

Area Under The Curve(AUC) and **Receiver Operating Characteristics**(ROC) - curve is a performance measurement for classification problem at various thresholds settings. ROC is a probability curve and AUC represents degree or measure of separability. It tells how much model is capable of distinguishing between classes. Higher the AUC, better the model is at distinguishing between patients with disease and no disease. ROC analysis is used to estimate the sensitivity and specificity of all possible LATCH score thresholds for predicting breastfeeding at 6 weeks. Sensitivity is the ability of the LATCH score to predict if the mother will be exclusively

breastfeeding at 6 wks. Specificity is the ability of a low LATCH score to predict that a mother will not be exclusively breastfeeding at 6 weeks.

Figure 8: ROC plot for LATCH score at birth in predicting breastfed at 6th weeks.



In our study we found that LATCH Score of more than 5 at 24hrs had 73.3% sensitivity and 71.73% specificity in predicting EBF at 6wks with AUC of 0.79(0.73.0.85). At 48hrs, a LATCH Score of >6 had sensitivity and 69% specificity in predicting EBF at 6wks with AUC of 0.81(0.74,0.87).

Figure 9: ROC plot for LATCH score at 48 hours in predicting breastfed at 6th weeks.

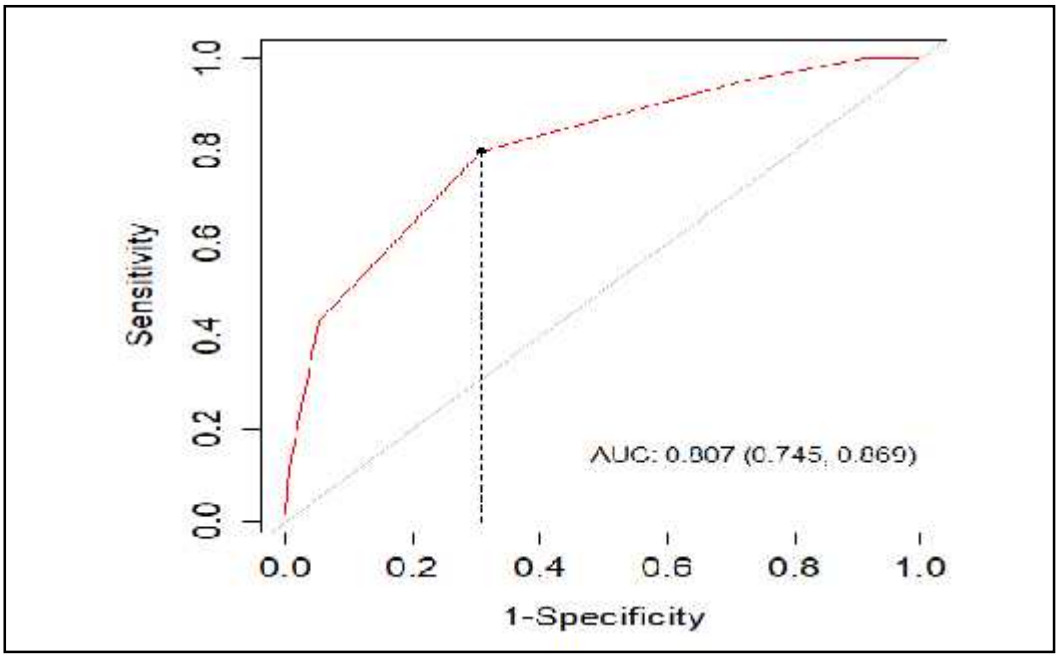


Figure 10: ROC plot for LATCH score at discharge in predicting breastfed at 6th weeks.

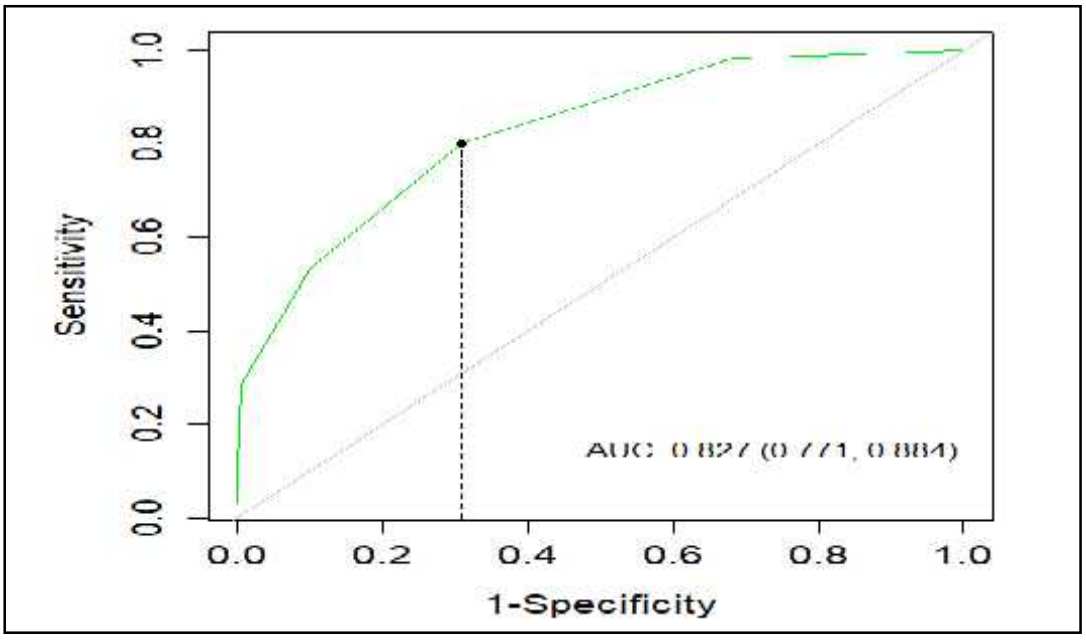
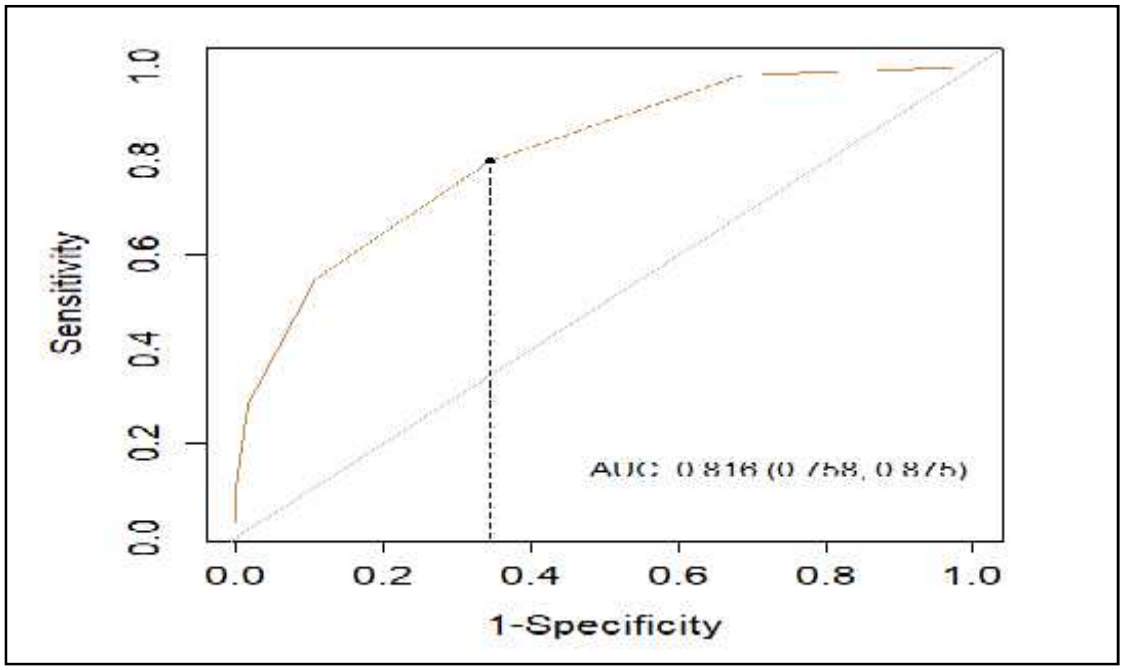


Figure 11: ROC plot for LATCH score at discharge of mother in predicting breastfed at 6th weeks.



We also found that LATCH score of >8 assessed by mother at discharge had sensitivity of 80% and specificity of 65% with AUC 0.82(0.75, 0.87) and when assessed by health professional was found to be almost similar except that specificity was higher, 69% with AUC of 0.83(0.77,0.88).

Table 15: Cut-off for LATCH score.

Time point	Latch score	Sensitivity	Specificity	LR^+	LR^-	AUC (CI)
At birth	**> 5***	**73.3%**	**71.73%**	**2.5938**	**0.3717**	**0.79 (0.73, 0.85)**
	> 6	28%	98%	16.65	0.73	0.64 (0.60, 0.67)
	> 7	9%	100%	Infinity	0.91	0.63 (0.60, 0.66)
At 48 hours	> 5	95%	43%	1.67	0.12	0.78 (0.70, 0.86)
	> 6*	**80%**	**69%**	**2.589**	**0.289**	**0.81 (0.74, 0.87)**
	> 7	28%	95%	5.65	0.76	0.62 (0.58, 0.66)
At discharge	> 7	95%	53%	1.93	0.19	0.74 (0.67, 0.81)
	> 8*	**80%**	**69%**	**2.589**	**0.289**	**0.83 (0.77, 0.88)**
	> 9	32%	98%	19.16	0.69	0.65 (0.61, 0.68)
At by mother discharge	> 7	89%	55%	1.98	0.20	0.74 (0.67, 0.81)
	> 8*	**80%**	**65%**	**2.315**	**0.305**	**0.82 (0.75, 0.87)**
	> 9	31%	98%	18.15	0.70	0.65 (0.61, 0.68)
At 6^{th} week	> 7	100%	17%	1.20	0	0.89 (0.87, 0.92)
	> 8	98%	38%	1.59	0.05	0.84 (0.77, 0.91)
	> 9*	**72%**	**82%**	**4.02**	**0.34**	**0.79 (0.73, 0.86)**

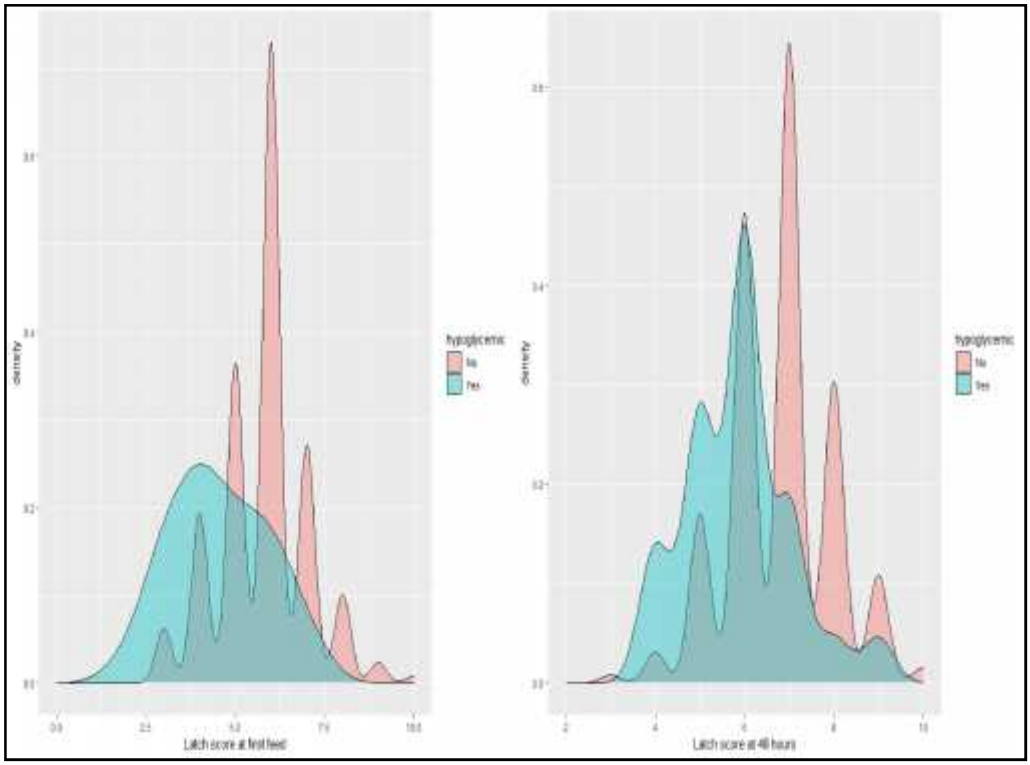
*Abbreviations: LR+: Positive likelihood ratio, LR-: Negative likelihood ratio, CI: Confidence Interval, AUC: Area under curve, * indicates best cut-off*

We compared the LATCH Score at different periods with incidence of hypoglycemia and found that median LATCH Score of 4 (2,7) had higher incidence of hypoglycemia. Similarly at 48hrs, Median Score of 6(4, 9) had higher incidence of hypoglycemia.

Table 16: Median LATCH Score of Infants with hypoglycemia

Latch score	Hypoglycemia		p-value
	No (n=226)	Yes (n=25)	
At birth	6 (3, 10)	4 (2, 7)	< 0.0001*[MW]
At 48 hours	7 (3, 10)	6 (4, 9)	0.000243*[MW]

Figure 12: Comparison of latch score over hypoglycemia infants.



We found in our study that there is no significant difference in the distribution of LATCH Score at every time point over infants who developed hyperbilirubinemia.

Table 17: Median LATCH Score of infants with hyperbilirubinemia

Latch score	Hyperbilirubinemia		p-value
	No (n=205)	Yes (n=46)	
At birth	6 (2, 10)	6 (3, 8)	0.5949[MW]
At 48 hours	7 (3, 10)	7 (5, 9)	0.6139[MW]

Abbreviations: MW: Mann-Whitney test

In our study there was significant weight loss (weight loss more than 10%) observed at discharge for 30 (11.95%) neonates.

We compared these infants with their LATCH Scores of these mother infant dyads at 24hrs and 48hrs. There was no significant difference in the distribution of LATCH Score at any time point.

Table 18: Comparison of LATCH Score with significant weight loss

Latch score	Significant weight loss		p-value
	No (n=221)	Yes (n=30)	
At birth	6 (2, 10)	6 (3, 8)	0.5949[MW]
At 48 hours	7 (3, 10)	7 (5, 9)	0.6139[MW]
At discharge	9 (4, 10)	9 (6, 10)	0.5949[MW]
At by mother discharge	9 (4, 10)	8.5 (6, 10)	0.2878[MW]

We also compared LATCH Score of those infants mother dyads who had gained good weight (>1kg) at 6 weeks. It was noticed that median LATCH score of 6(3, 10) at 24hrs and 7 (4, 10) at 48hrs had significant correlation by Mann Whitney test. Median LATCH Score of 9 at discharge had significant difference with p value < 0.0001.

Table 19: Comparison of LATCH Score with weight gain

Latch score	Weight gain		p-value
	< 1 Kg (n=105)	**≥ 1 Kg (n=146)**	
At birth	5 (2, 9)	6 (3, 10)	0.001009*[MW]
At 48 hours	6 (3, 9)	7 (4, 10)	0.002717*[MW]
At discharge	8 (4, 10)	9 (5, 10)	<0.00001*[MW]

In our study we found that there were few newborns who were initially given donor human milk or formula feeds due to hypoglycemia but later started on exclusive breastfeeding and continued to exclusive breastfeed till 6 weeks. These infants were categorized into partial breastfed infants. The total number of partial breastfed infants were 12. All had median LATCH Score as 9 at discharge which was found statistically significant with p value of 0.007046 by Mann Whitney test.

Table 20: Comparison of LATCH Score with Partial breastfeeding

Latch score	Partial EBF		p-value
	No (n=239)	Yes (n=12)	
At discharge	8 (4, 10)	9 (5, 10)	0.007046*[MW]
At by mother discharge	8 (4, 10)	9 (5, 10)	0.004869*[MW]

In our study we assessed the change in mothers confidence level as we educated her regarding breastfeeding using LATCH Score. By McNemars's test, statistical significance was seen in change in mothers' confidence level compared from 24hrs to 48hrs. 29 mother who needed help at 24hrs, did not have any improvement in confidence level and needed help at 48hrs. 189 mothers who needed help at 24hrs said they will try at 48hrs. There was some change in confidence level. 10 mothers who needed help at 24hrs, said they could breastfeed confidently at 48hrs.

1 mother who said will try at 24hrs, needed help at 48hrs. 8 mothers who said will try still had no change in her confidence level. 13 mother who said needed help at 24hrs, could confidently breastfeed at 48hrs.

Table 21: Comparison of mother's behaviour over 24 hours and 48 hours.

Mothers behavior		**48 hours**			**p-value**
		Needs Help	Will try	Can breastfeed	
24 hours	Needs Help	29 (12.72%)	189 (82.89%)	10 (4.39%)	< 0.00001*
	Will try	1 (4.55%)	8 (36.36%)	13 (59.09%)	
	Can breastfeed	0 (0%)	0 (0%)	1 (100%)	

Similarly 65.79% mothers who needed help at 24hrs were confidently breastfeeding at discharge. 33.77% mothers who needed help at 24hrs were willing to try harder at discharge. 95.45% mother who said will try at 24hrs were confidently breastfeeding at discharge.

Table 22: Comparison of mother's behaviour over 24 hours and at discharge

Mothers behavior		At discharge			p-value
		Needs Help	Will try	Can breastfeed	
24 hours	Needs Help	1 (0.44%)	77 (33.77%)	150 (65.79%)	< 0.00001*
	Will try	0 (0%)	1 (4.55%)	21 (95.45%)	
	Can breastfeed	0 (0%)	0 (0%)	1 (100%)	

The median LATCH Score at 24hrs was noted to be 6 (2,9) among mothers who needed help at that point of time and median LATCH Score was 7(5,10) among mothers whose said they would try and can breastfeed at 24hrs.

Table 23: Relationship between Mother's behaviour at 24hrs and breastfed at 6th week

Mother's Behavior		Breastfed at 6th week		p-value
		No (n=60)	**Yes (n=191)**	
At 24 hours	Needs Help	58 (25.44%)	170 (74.56%)	0.2844^{MC}
	Will try	2 (9.09%)	20 (90.91%)	
	Can breastfeed	0 (0%)	1 (100%)	

Abbreviations: MC: Monte-Carlo's simulation.

We found in our study that those 74.56% mothers who needed help at 24hrs were able to breastfeed successfully at 6 weeks. 90.91% mothers who said will try were able to successful at exclusive breastfeeding at 6 weeks.

There is no significant association between mother's behaviour at 24 hours and breastfeeding at 6th week.

We also found that at 48hrs, only 43.33 % mothers who needed help were successful at exclusive breastfeeding at 6 weeks. 79% mother who said will try were successful at breastfeeding upto 6 weeks. 91.67% mother who were confident that they could breastfeed at 48hrs continued to do so till 6 weeks postpartum.

Table 24: Relationship between Mother's behaviour at 48hrs and breastfed at 6th week.

Mother's Behavior		**Breastfed at 6th week**		**p-value**
		No (n=60)	**Yes (n=191)**	
At 48 hours	Needs Help	17 (56.67%)	13 (43.33%)	0.0004998*^{MC}
	Will try	41 (20.81%)	156 (79.19%)	
	Can breastfeed	2 (8.33%)	22 (91.67%)	

Abbreviations: MC: Monte-Carlo's simulation.

At discharge, only 1 mother who still needed help at discharge, did not exclusively breastfeed at 6 weeks. 57.69% mother who said will try at discharge ended with non-exclusive breastfeeding at 6 weeks. 8.14% mothers who were confident at breastfeed, were not successful at exclusive breastfeeding at 6 weeks.

Table 25: Relationship between Mother's behaviour at discharge and breastfeed at 6th week

Mother's Behavior		Breastfed at 6th week		p-value
		No (n=60)	Yes (n=191)	
At Discharge	Needs Help	1 (100%)	0 (0%)	0.0004998*MC
	Will try	45 (57.69%)	33 (42.31%)	
	Can breastfeed	14 (8.14%)	158 (91.86%)	

Abbreviations: MC: Monte-Carlo's simulation.

There was significant association between mother's behaviour at 48 hours, at discharge with breastfed at 6th week by Chi-square test.

CHAPTER 6- DISCUSSION

This study was done in the Tertiary care Teaching hospital which is one of the main referral centres in North Karnataka. The study was particularly carried out in the corporate sector of the hospital because it was noted that though mothers coming from higher socioeconomic status were very much motivated for exclusive breast feeding, a significant number would still end up with mixed feeding for their healthy term infant at the time of follow up for immunization. Difficulty in understanding and practicing correct technique of breast feeding was generally reported to be the one of the main reasons preventing mothers from continuing exclusive breast feeding during follow up.

We therefore decided to conduct this study to assess the use of LATCH score as an educational tool among these mothers to support exclusive breast feeding. The majority of mothers who were included in the study had completed graduation from college (78%)

The labor room on corporate sector of the hospital has an incidence of 1000 deliveries per year. Approximately 700 term deliveries is witnessed. 150 are Normal vaginal deliveries and 540 are LSCS.

In our study we included 251 mother infant dyads who delivered at term gestation, infants weighing 2.5kg and not requiring NICU Admission at birth. All the mother infant dyads were assessed for breastfeeding before 24hrs using LATCH Score. After the first assessment, mother was taught about the correct techniques of breastfeeding using the LATCH Score and reassessed the breastfeeding at 48hrs and at discharge. Mother was also made to assess and score herself at discharge and at 6

weeks. Final outcome was assessed at 6 weeks if the mother was successful in exclusively breastfed at 6 weeks.

In our study we found that mothers age distribution was between 25-35yrs (n=166, 65%). Mean age of mothers in the study was 27± 3.97yrs. Majority of mothers were graduates and postgraduates (n=195, 78%) and most Mothers belonged to upper middle socio economic class (n=120, 48%). 110 mothers were primi (44%) and 141 mothers (56.18%)were multiparous. Maximum mothers underwent LSCS (67%) and (33% were delivered by NVD.

In study done by Tornese et al, which aimed to analyze if the LATCH Score assessed at 24hrs post-delivery could predict non EBF at discharge from hospital, no of mothers who had more than 8 years of education were 72.6%. They also assessed cut off LATCH Score to identify those mothers who are at high risk of non EBF who can be given additional support before discharge. [32]

In a study done by Sowjanya et al, LATCH Score was used to predict exclusive breastfeeding at 6 week postpartum, 67% mothers belonged to the upper middle socio economic class. [30]

In our study we found majority mothers delivered through LSCS. This being tertiary care hospital lot of mothers with precious pregnancy and pregnancy related complications are referred for LSCS. In our study 44% mothers were primi. In India according to NFHS 2015-16, 17% live births 5 years prior to the survey were delivered by LSCS. It was more common among primi mothers (24%) that multigravidas (2%-16%). 41% deliveries in private health facilities comprised of LSCS (28% increase from previous survey). LSCS rates are higher among urban

population than the rural. It was found to be more common among mothers with atleast 12 or more years of education (34%) compared to women with lesser education. [59] It is significantly higher among the higher socioeconomic class. The probable reasons for being patient's preferences, maternal age, maternal complications, social norms.

In our study 44% mothers were primigravidas. This was similar to the study done by Karthika S. et al where primi and multiparous mother comprised of 39.3% and 60.7% respectively. [38]

Sex ratio among the infants who participated in the study was equal. Mean gestational age was 38.58 ± 1.25weeks and Mean weight of the newborns in the study was 3 ± 0.35

Mean Time of first feed among those delivered NVD/AVD was 37.48 ± 24.67 minutes and LSCS was 84.35 ± 33.04 minutes. WHO recommends initiation of breastfeeding within 1 hour of delivery. This ensures that the baby receives the colostrum and skin to skin contact between the mother and baby is established at the earliest. This decreases the chances of hypothermia and increases the bond between the mother and infant. The infant is active when it is born and initiating feeding at this time helps the infant to learn to suckle. Early initiation of breastfeeding has shown to decrease neonatal sepsis and morbidity and mortality in the developing countries.

In a study done in Mumbai by Mubashir et al in 2018, to study the validity of LATCH scoring system in predicting EBF and weight velocity at 6wks in healthy term infants, mothers who initiated 1st feeding within 2 hours of delivery were found to to significantly higher LATCH Score. [50]

In a study done in Turkey by Senay et al, 73% mothers started breastfeeding within thirty minutes of delivery. 61% LSCS mothers were successful in initiating breastfeed within 30 minutes as compared to 95.4% in NVD Mothers. (51)

In a study done in Turkey by Emine et al in evaluating relationship between BSES and LATCH Scores found that mothers who initiated breastfeeding between 1-4hrs of delivery were 9 times more likely to show decrease in LATCH Score when compared to those mothers who breastfed within first 30minutes. Similarly those mothers who initiated breastfeeding after 5 hours of delivery were 24.7 times more like to show a decrease in LATCH Score when compared to mother who started within 30min. (52)

In a study done by Bereket Molla Abie et al in Ethiopia, among 297 participants, early initiation of feeding was practiced by 76.8% of mothers. 14.8% initiated breastfeeding 1 to 3 h after delivery and one mother initiated breastfeeding after 24 h. The probable causes mentioned in the study were Fatigue, LSCS, Baby was separated, I thought I would not have sufficient milk secretions, Due to medical reason, No/poor secretions. (53).

Probable reasons for delay in our study was majority mothers in the study had undergone LSCS, mother unaware of the benefits of early breastfeeding, fatigue, maternal complications after the delivery.

In our study, Out of 251 infants, 25 infants (10%) had hypoglycemic episodes requiring either NICU admission or treatment on mothers side. We follow the protocol of monitoring Blood sugar levels are monitored in our postnatal ward when baby is < 37weeks or less than 2.5kgs, infants born to diabetic mothers and when

baby is lethargic or not feeding well. Blood sugars are monitored using blood glucometer. Values less than 45mg/dl were considered as hypoglycemia and the mother was asked to feed immediately whenever such episodes occurred. Feeding is monitored and blood sugars are rechecked after 30min of feeding. If the mother has inadequate secretions, parents will be counselled about giving donor human milk and after written consent, donor human milk is administered. If the baby had repeated episodes of hypoglycemia, even after feeding by mother, such infants were shifted to NICU for further treatment.

In our study 18% infants were found to have hyperbilirubinemia. The infants who appeared clinically icteric were tested for hyperbilirubinemia by doing total serum bilirubin levels. Those infants who had TSB values in phototherapy range according to Bhutanis nomograms were shifted to NICU for phototherapy. According to literature Bhutani nomograms were constructed based on The nomogram was constructed based on study of 2,840 healthy infants with hour-specific TSB measurements prospectively measured before and after discharge. [(54)]

It was almost same as seen in a study done by G Tornese et al where 16.8% newborns required phototherapy for hyperbilirubinemia. [(32)]

In another study done by Umit Sarici et al to know the incidence , course and prediction of hyperbilirubinemia in near term infants, found that 10.5% term newborns had significant hyperbilirubinemia and required phototherapy. [(55)]

Another literature mentions that 60% of term newborns develop jaundice and only 2 % of them reach TSB level greater than 340µmol/L. [(56)]

7 infants (2.79%) newborns required readmission to hospital due to various reasons like hyperbilirubinemia, diarrhea and dehydration. Among these 7, 4 newborns (57%) were exclusively breastfed and 3 (43%) were not. No mortalities was reported among the study participants.

Prevalence of exclusive breastfeeding was found to be 76% at the end of 6 weeks. The prevalence is more when compared to study done by Sowjanya et al, where it was found to be 62% at 6 weeks. [30] In another study by Karthika S et al in Pondicherry, prevalence of exclusive breastfeeding at 6 weeks was 84%. [38]

In our study we found the most common reason for not exclusively breastfeeding was less secretions (33.3%), hypoglycemia (21.67%) and flat/ inverted nipples (16.66%). Other reasons were mother being unwell, travelling, baby not sucking well and hyperbilirubinemia. In the study done by Karthika S et al maternal problems comprised of 42% followed by influence by health professional and less secretions perceived by mother and relatives.[38]

We assessed Latch score within 24 hours of birth. This was done by a trained health care professionals or the investigator trained in assessment. We found that median LATCH Score at 24hrs was 6 (2, 10) as compared to 48hrs was 7 (3, 10). At discharge LATCH Score was assessed by health professional as well as mother. Median LATCH Score assessed by mother and the health professional was equal 9 (4, 10). Median LATCH Score at 6 weeks was found to be 10 (6, 10).

LATCH Score comprises of 5 components. First component is the Latching technique. Scoring is based on if the baby readily grasps the breast with tongue down and forward with lips flanged and has rhythmic sucking or baby makes repeated

attempts to grasps the breast or hold the nipple in mouth and needs stimulation to suck or if baby is too sleepy to latch. Second component is audible swallowing. Scoring is done based on if the sounds heard spontaneously and frequently or infrequent or none heard. This component was found to be subjective as it was observed that, some mothers wrongly perceived the suckling sound to be the audible swallowing. The third component is the type of nipple. Score was based on if the nipples were everted (on stimulation) or flat or inverted. Even if one of the nipples were flat or inverted, the score would be based on that. Fourth component of LATCH Score was Comfort of the mother. Scoring is based on the mother's perception of how she feels about the breast, i.e. if it is soft, non-tender or feeling of fullness in breast with mild to moderate discomfort and small blisters or bruises on the breast or engorged with cracked and bleeding nipples with severe discomfort. This score also is very subjective as it depends on mother's perception. The last component is hold/ assistance. It is score based on if mother needs no assistance at all to hold the baby while feeding, or needs minimal assistance or full assistance. Minimal assistance means when mother is helped to feed on one side, she can carry on to feed the other side or needs assistance with elevation of bed or pillow. Full assistance is when the nursing staff needs to hold the baby at the breast. In our study we observed that the last component was always scored low among the LCSC Mothers due to physical pain and anesthesia. We noticed tha as the first time of initiation of feed delayed, the scoring of the latching component also decreased. But on training the mother about the right techniques, the score gradually improved at 48hrs and at discharge. In the 3rd component, type of nipple, score could not be improved significantly.

On comparing the median LATCH Score with exclusive breastfeeding at 6 weeks, it was found that median LATCH Score at < 24hrs among exclusively breastfed was 6 (3, 10) and among non EBF participants, it was 5 (2, 7). At 48hrs, the median was 7 (4, 10) among exclusive breastfed and 6 (3, 8) among the nonexclusive breastfed.

At discharge, the median LATCH Score by mother and the health professional was 9 (6, 10) among the exclusive breastfed and 7 (4, 10) among the nonexclusive breastfed dyads. Based on our observation, the scores in LATCH component and comfort improved as the mother learnt the correct techniques of breastfeeding. At 6 weeks, the median LATCH Score as assessed by mother who non exclusively breastfed was 9 (6, 10) and 10 (8, 10) among those who exclusively breastfed. By Mann-Whitney test, there was significant difference in the distribution of LATCH score at every time point over exclusive breastfeed at 6^{th} week.

On the other hand, in a study done by Savithri et al, done to determine if LATCH scores assessed in hospital were predictive of EBF at 6 wks. 248 mother infant dyads were included in the study and LATCH scores were assessed every 8hrs from day 1 till discharge. Participants were contacted on telephone on day 4 and at 6 weeks postpartum to know the outcome. Median LATCH Score at all time periods upto 72hrs among exclusively breastfed was 9 and among non-exclusive breastfed was 8 upto 48hrs. Between 48-72hrs, median LATCH Score was 9. But from 48-72hrs the p value was not significant as the sample size was less due to early discharge from hospital. [(31)] Table 26 summarizes the mean LATCH scores reported in similar studies as ours.

In our study we found that median LATCH Score at 24hrs among mothers who underwent LSCS and NVD was same, i.e. 6(3, 10) for NVD and 6(2, 9) for LSCS. At 48hrs, It was 6(3, 9) among LSCS mothers and 7(4, 10) among those who had NVD. At discharge median LATCH Score by health professional and mother was 8 (4, 10) among LCSC mothers and 9(5, 10) among NVD. There was no study done which compares median LATCH Scores among NVD and LSCS, Nevertheless in a study done by Senay et al, which was done to analyze maternal characteristics during breastfeeding in early infancy by prolactin levels and LATCH scoring system, the mean LATCH Score among mothers who had LSCS was 5.56 ± 3.30 while those delivered NVD was 7.18 ± 3.40.[(42)] In another study done by Karthika S et al in Pondichery to study role of LATCH scoring in predicting duration of exclusive breastfeeding , LATCH score was assessed at 8hrs and 48hrs of life. At 48hours, score >8 indicated there is a high chance for EBF for next 6 months and score <8 indicated, mother was having problems in feeding and were intervened. They reported LATCH score at 8 hrs >8 in 50% of mother delivered vaginally and in 9.6% mothers delivered by LSCS. At 48 hours LATCH score improved to 60.8% in mothers delivered via NVD and 38.3% in mothers delivered via LSCS. [(38)]

In another study done by B Supree et all in Thailand, to compare LATCH Scores on day 2 postpartum between LSCS and NVD mothers and exclusive breastfeeding at 6 weeks. It was found that mean LATCH score on day 2 was 7.9 ± 1.7 in LSCS group and 8.1 ± 1.3 in NVD group. [(57)]

In our study We studied the mothers behavior at 24hrs with LATCH Score assessed at 24hrs, and found that those mothers who said they needed help at 24hrs (n=228) had median LATCH Score of 6 (2, 9) and those who said will try and can

breastfeed had median LATCH Score of 7(5,10) at 24hrs. It was found statistically significant by Mann Whitney test with p value of < 0.00001.

On comparison of mothers behavior at 48hrs and LATCH Score, it was found that mothers who needed help at 48hrs(n=30) , the median LATCH score was 6(3,7) at 48hrs and those who said will try at 48hrs(n=197) had median LATCH score of 7(4,10). Those mothers who were confident about breastfeeding (n=24) had median LATCH score of 8(5, 10). It was found statistically significant by Kruskal-Wallis test.

For post-hoc analysis Dunn's test is used. By Dunn's test, there is significant difference in the LATCH score between every pair of behaviour (p-value: < 0.0001)

This suggests that by teaching the mother about LATCH Scoring system, the confidence level of mother and her behavior towards feeding improved significantly. Number of mothers who needed help at 48hrs had decreased.

In our study we compared various demographic information with exclusive breastfeeding at 6 weeks. It was found that mother's educational status, socioeconomic class and type of delivery had strong correlation with exclusive breastfeeding at 6 weeks.

80% of the graduate mothers had breastfed their infant at 6 weeks. Among the non-graduates, only 62% mothers had breastfed their child at 6 weeks. Odds of baby being exclusively breastfed at 6th week is 2.4 (CI 1.259404, 4.573593) times more for the infants whose mother education level is graduate or more compared to mother with under graduate education level. According to a study done in Baghdad, by Iqbal et al it was reported that mothers with education for >12yrs were 5.2 times more prone to be EBF than the mothers with <9yrs of education. [33]

On the contrary, in a study done in Jordan, it was found that women with higher education level were more unlikely to practice EBF when compared to women with lesser education [58]

In our study, we found that among the upper middle and upper socioeconomic status, 80% had continued to exclusively breastfeed. Among the lower middle and middle socioeconomic class, only 64% had exclusively breastfed their infant.

Odds of baby being extensively breastfed at 6th week was 2.274225 (CI 1.217771, 4.247188) times more for the infants whose mother socio-economic status is upper middle or upper class compared to the mothers with socio economic status lower middle or middle class.

On comparing our results with study done by Amir L et al in Australia, women from lower income families/ low socioeconomic status were less likely to breastfeed due to various reasons which include lesser family support, less opportunity to get help regarding problems of breastfeeding, less flexible working arrangements. [59]

In a study done by Felix et al, it was found that in Central India, infants born to rich families were less likely to be EBF compared to low income families. [36]

In the study similar to us done by Sowjanya et al reported that mothers belonging to upper middle socioeconomic status had higher rates of exclusive breastfeeding at 6 weeks. (61%) compared to other classes. [30]

We found in our study that those who delivered vaginally had higher prevalence of exclusive breastfeeding compared to those who delivered by LSCS (71% for NVD vs 87% LSCS). Odds of infants being exclusively breastfed at 6th

week was 2.662558 (CI 1.298928, 5.457743) times more for the infants who born by vaginal delivery compared those who were born by LSCS. We observed that LATCH component and the hold component were significantly affected in the mothers with LSCS. At 48hrs, these were the 2 components which improved and increased the LATCH scores significantly. So it is necessary to intervene sooner in LSCS mothers to improve these components to empower the mother's confidence and establish successful lactation and exclusive breastfeeding.

In a study done by B Supree et al found that out of 658 cases each of LSCS and NVD, only 56.1% mothers in LSCS group exclusively breastfed their infants and 59% mothers in NVD group exclusively breastfed at 6 weeks. [(57)]

In our study, it was also found 80% of primi mothers were successful in breastfeeding at 6 weeks and 73% of multiparous mothers were successful in exclusive breastfeeding at 6 weeks postpartum. Contrary to our results the study done by Sowjanya et al reported primi mothers were more likely not to exclusively breastfeed at 6 weeks (81%).[(30)]

Our study found that among a total of 25 infants who had hypoglycemia , 10 of them continued to be exclusively breastfeed and 15 infants ended up being non exclusively breastfed. It was found that there is significant association between hypoglycemia in child over breastfed at 6th week by Chi-square test.

Odds of baby not exclusively breastfed at 6th week was 5.9667 (CI: 2.513953, 14.161405) times more for the neonates who suffered from hypoglycemia compared to healthy neonates.

By chi-square test, there was no significant dependency between parity, sex of a child, hyperbilirubinemia in child, hospitalization in last 6 weeks over breastfeed at 6th week.

We found in our study that median LATCH Score at 24hrs was 5 (2, 7) out of 10 among the non-exclusive breastfed infants and 6 (3, 10) among the exclusive breastfed infants. Similarly at 48hrs, the median was 6(3, 8) among non-exclusive breastfed and 7 (4, 10) among the exclusive breastfed.

At discharge, the median LATCH Score by mother and the health professional was 7 (4, 10) among the non-exclusive breastfed and 9 (6, 10) among the exclusive breastfed dyads. At 6 weeks, the median LATCH Score as assessed by mother who non-exclusively breastfed was 9 (6, 10) and 10 (8, 10) among those who exclusively breastfed. By Mann-Whitney test, there is significant difference in the distribution of LATCH score at every time point over breastfed category at 6^{th} week.

In the study done by Savitri P et al, to determine if LATCH scores assessed before discharge could predict exclusive breastfeeding at 6 weeks, found median LATCH Score as 9 among the breast fed infants and 8 among non-exclusively breastfed infants when assessed between 0-8hrs, 8-16hrs, 16-24hrs and 24-48hrs.

At 48-72hrs, among the exclusively and nonexclusively breastfed, median LATCH Score was 9. For 48 to 72 hours, the sample size (N = 23) was less due to early hospital discharge (< 48 hours). Therefore, the power to detect differences even if they truly existed was considerably lower than it was for the earlier time periods. Statistically significant differences were found at the 0 - 48-hour period time points, but not at the 48- 72-hour time points, probably due to this smaller sample size. [(31)]

ROC Analysis

In our study we found that LATCH Score of more than 5 at 24hrs had 73.3% sensitivity and 71.73% specificity in predicting exclusive breastfeeding at 6 weeks with AUC of 0.79(0.73.0.85). The positive Likelihood Ratio (LR) was 2.59. Which means mothers with LATCH Score >5 were 2.5 times more likely to continue exclusive breastfeeding at 6 weeks. Negative likelihood ratio was 0.37. At 48hrs, a LATCH Score of >6 had 80% sensitivity and 69% specificity in predicting exclusive breastfeeding at 6 weeks with AUC of 0.81(0.74, 0.87). Positive LR was 2.58 and Negative LR was 0.29. It means at 48hrs, those mothers who had LATCH score >6 were 2.58 times more likely to exclusively breastfeed their infants at 6 weeks.

We also found that LATCH score of >8 assessed by mother at discharge had sensitivity of 80% and specificity of 65% with AUC 0.82(0.75, 0.87) and when assessed by health professional was found to be almost similar except that specificity was higher, 69% with AUC of 0.83(0.77, 0.88). The positive LR at discharge, as assessed by health professional was 2.58 and as assessed by mother was 2.31.

In the study done by Sowjanya et al, at birth, cut off score >6 had highest sensitivity of 93.5% and specificity of 65.78% with relative risk of 5.92 (2.37- 14.81). This means that women with a LATCH score of 6 or more at birth were 5.92 times more likely to be breastfeeding at 6 weeks postpartum compared with women with lower scores. Similarly at 48hrs, LATCH Score of > 8 had sensitivity of 93.55% and 92.1% specificity, with relative risk of 9.28(3.6- 23.4) . ROC Analysis showed, AUC of 0.915 at birth with cut off >5.5 showing sensitivity of 93.5% with false positive rate of 34.2%. AUC at 48hrs or discharge showed 0.979 with cut off of >7.5 with sensitivity of 93.5% with false positive rate of 7.9%. [30]

In the study done by Tornese et al, ROC Analysis showed a LATCH Score <6 had sensitivity of 20% and specificity of 92% in predicting non-exclusive breastfeeding at 6 weeks. Since the single cut off was not sensitivity enough on bivariate analysis, multivariate logistic regression model was used. Cut off was selected based on highest rate of correctly classified (73.2%), which had a sensitivity of 66% and specificity of 58.9%. the positive and negative predictive value was 58.9% and 81.7% respectively. With this it was found that mothers who underwent LSCS, the LATCH cut off was 10, i.e these mothers always needed help regardless of the LATCH Score. If a primi mother underwent a NVD and baby needed phototherapy, cut off LATCH score was 9. This means these mothers needed extra support if LATCH scores were <9. In multiparous mother who delivered vaginally and infant needed phototherapy, the LATCH cut off was 6 and in primi mothers who delivered vaginally and their infants not needing phototherapy had cut off LATCH Score as 4. In multiparous mothers who had NVD and their infants were not requiring phototherapy, the cut off LATCH Score was 1, indicating that thses mothers did not need any additional support, besides the routine care and counselling. [32]

In another study by Savitri et al, the ROC analysis showed 16-24hrs LATCH score had the highest AUC. The cut off score was 9 which had sensitivity of 75% and specificity of 63.2% with relative risk of 1.7(1.1-2.7) p=0.004. At 0-8hrs time period, best cut off LATCH Score was >6 and had sensitivity of 92.8% and specificity of 3.02% with RR of 2.3(1.2-4.5) p=0.001. Similarly the cut off for 8-16hrs was LATCH Score >7. The sensitivity and specificity was 89% and 34.4% respectively with RR of 1.8(1.0-3.1), p=0.006. [31]

Prevalence of hypoglycaemia was 9.96% in this study.

The median LATCH Score among those who had hypoglycemia within 24hrs of birth was 4 (2, 7) and 6(3, 10) among non-hypoglycemia infants. If LATCH Score at 24hrs was <4 or at 48hrs was 6, there were high chances of hypoglycemia.

From Mann-Whitney test, it was observed that, distribution of Latch score is significantly different at each time point over hypoglycemic infants and normal infants.

We found in our study that there is no significant difference in the distribution of LATCH Score at every time point over neonates who developed hyperbilirubinemia. It means low LATCH Score at birth or 48hrs were not at risk of hyperbilirubinemia.

In our study there was significant weight loss (weight loss more than 10%) observed at discharge for 30 (11.95%) infants.

We compared these infants with their LATCH Scores at 24hrs and 48hrs. There was no significant difference in the distribution of LATCH Score at any time point. Therefore low LATCH score did not affect the early weight loss in these infants.

We also compared LATCH Score of those infants mother dyads who had gained good weight (>1kg) at 6 weeks. It was noticed that median LATCH score of 6 at 24hrs and 7 at 48hrs had significant correlation by Mann Whitney test. Median LATCH Score of 9 at discharge had significant difference with p value < 0.0001.

Therefore initial LATCH score affects the weight gain at 6 weeks, hence it is important to train the mother to establish breastfeeding as soon as possible so that she is successful in exclusive breastfeeding which in turn will lead to weight gain of the baby.

In our study we found that there were few newborns who were initially given donor human milk or formula feeds due to hypoglycemia or hyperbilirubinemia but later started on exclusive breastfeeding and continued to exclusive breastfeed till 6 weeks. These infants were categorized into partial breastfed infants. The total number of partial breastfed infants were 12. All had median LATCH Score as 9 at discharge which was found statistically significant with p value of 0.007046 by Mann Whitney test.

Mother's confidence levels were assessed based on her perception about feeding. It was categorized into need help, will try and can breastfeed. It was assessed at 24hrs, 48hrs and at discharge. Mother was taught about LATCH Score at 24hrs, 48hrs and the change in confidence level was assessed each time.

In our study we found that By McNemars's test, statistical significance was seen in change in mother's confidence level compared from 24hrs to 48hrs. 29 mothers who needed help at 24hr, did not have increase in confidence and still needed help at the end of 48hrs. 189 mothers who needed help at 24hrs said they will try at 48hrs. There was some change in confidence level. 10 mothers who needed help at 24hrs, said they could breastfeed confidently at 48hrs.

1 mother who said will try at 24hrs, needed help at 48hrs. 8 mothers who said will try still had no change in their confidence level. 13 mother who said needed help at 24hrs, could confidently breastfeed at 48hrs.

Similarly 65.79% mothers who needed help at 24hrs were confidently breastfeeding at discharge.33.77% mothers who needed help at 24hrs were willing to try harder at discharge. 95.45% mother who said will try at 24hrs were confidently breastfeeding at discharge.

We found in our study that those 74.56% mothers who needed help at 24hrs were able to breastfeed successfully at 6 weeks. 90.91% mothers who said will try were able to successful at exclusive breastfeeding at 6 weeks.

We also found that at 48hrs, only 43.33 % mothers who needed help were successful at exclusive breastfeeding at 6 weeks. 79% mother who said will try were successful at breastfeeding up to 6 weeks. 91.67% mother who were confident that they could breastfeed at 48hrs continued to do so till 6 weeks postpartum.

At discharge, only 1 mother who still needed help at discharge, did not exclusively breastfeed at 6 weeks. 57.69% mother who said will try at discharge ended with non-exclusive breastfeeding at 6 weeks. 8.14% mothers who were confident at breastfeed, were not successful at exclusive breastfeeding at 6 weeks.

There was significant association between mother's behaviour at 48 hours, at discharge with breastfed at 6^{th} week by Chi-square test.

In a prospective study done Rosemary Blyth et al to assess the effect of maternal confidence on breastfeeding duration by applying breastfeeding self-efficacy theory, 300 mothers were enrolled and by using breastfeeding efficacy scale in their

last trimester and were made to fill questionnaires about infant feeding intentions, later they were telephonically interviewed at 1 week and 4 months postpartum to know the infant feeding methods and maternal confidence level. 91.7% women were breastfeeding their infants at 1 week postpartum and 10 mothers breastfed for less 3 days. The rationale behind not feeding included insufficient milk supply, maternal factors like nipples problems, mastitis, fatigue, infant factors like poor latch, slow weight gain and feeding frequency. Mothers who were exclusively breastfeeding reported higher antenatal breastfeeding efficacy than mothers who were partially breastfeeding. At the 4 months follow up, 60% mother were still breastfeeding. 54.1% mothers were exclusively breastfeeding. Reason for change in infant feeding practices were insufficient milk supply and introduction of solids. It was observed that self-efficacy scores improved consistently over the time. High antenatal breastfeeding efficacy score was associated with breast feeding initiation and exclusivity whereas low scores were related to bottle feeding at 1 week postpartum. It was also found that new mothers with high efficacy score at 1 week postpartum were more likely to continue exclusive breastfeeding at 4 months when compared to those with low scores. This was consistent with the breastfeeding self-efficacy theory. The study implicated that breastfeeding self-efficacy scale not only identifies high risk mothers with low confidence but also helps plan the additional support the mothers would need. [48]

Therefore it can be concluded that by increasing the mother's confidence level before and after the delivery can help establish breastfeeding and increase the chances of exclusive breastfeeding for a longer duration.

In a study done in Turkey by Emine et al in 2011, to evaluate the relationship between breastfeeding self-efficacy score and LATCH Scores and affecting factors, BSES-SF tool and LATCH Scoring tool were applied on the mothers infant dyad within 2 hours of delivery and the correlation between the two scores was assessed. A weak positive correlation was found between the 2 scoring systems in the early postnatal period. The study concluded that high BSES-SF scores effectively promotes maternal breastfeeding capacity and LATCH scores can be used to predict the same.[52]

In our study we used LATCH scoring system to train the mother about the correct techniques of breastfeeding and scored her confidence levels with improving LATCH score .We found that Latch score can be used effectively to aid exclusive breast feeding among educated mothers who delivered healthy term babies.

Table:28 Comparison with other studies.

STUDY	Our Study	Riordan et al[34]	Sowjanya et al[30]	Kumar et al [31]	Tornese et al[32]	Karthika et al[38]
SAMPLE	251	127	100	248	299	196
PLACE	India	USA	India	USA	Italy	India
TIME POINT OF ASSESSMENT	• <24hrs • 48hrs Discharge by HCP Discharge by mother 6 weeks by mother	24-72hrs	• Birth 48hrs/discharge	• 0-8hrs • 8-16hrs 16-24hrs 24-48hrs 48-72hrs	<24hrs	8hrs 48hrs
LATCH SCORE IN EBF	6(3,10)* 7(4,10)* 9(6,10)* 9(6,10)* 10(8,10)*	9.3(0.9)**	7.17(1.13)**	8.1(2.1)** 8.2(1.9)** 9.0(1.1)** 8.4(1.8)** 8.9(1.3)**	7.6(1.6)**	8HRS NVD >8-50% <8- 50% LSCS >8-9.6% <8-90.4% 48HRS NVD: >8-60.8% <8-39.2% LSCS >8-38.3% <8 61.7%
LATCH SCORE IN NON EBF	5(2,7)* 6(3,8)* 7(4,10)* 7(4,10)* 9(6,10)*	8.7(1.0)**	4.26(1.17)**	6.8(2.9)** 6.8(2.9)** 7.3(2.6)** 7.4(2.5)** 7.9(2.4)**	6.9(1.7)**	
P	<0.0001	<0.05	<0.0001 <0.0001	0.012 0.006 0.005 0.026 0.25	0.001	
FOLLOW UP	6weeks	8weeks	6weeks	6weeks	Discharge	6weeks 6months
EBF RATES at 6 weeks	76.1%	71%	62%	50%	62.5%	84%

* Median ** mean (Standard Deviation)

CHAPTER 7- LIMITATIONS

The limitations of the study were

1. As the study was conducted on the corporate sector of the tertiary care hospital, majority of mothers were well educated. Similar studt needs to be conducted among the mothers who have low educational level to confirm if LATCH score can be used as educational tool

2. Most of the mothers belonged to upper socioeconomic status which might have affected the study results.

3. Ours was an observational study. A randomized control trial would be a better study to strengthen the evidence.

CHAPTER 8- CONCLUSION

Most of the tertiary care teaching hospital have adapted Baby Friendly Hospital Initiative. The health care professionals are being trained and motivated to support exclusive breastfeeding in the first 6 months of life.

LATCH score is a time tested tool recommended for identification of mother at risk of opting non-exclusive breastfeeding. Our study has shown that LATCH Score can be used as an important tool to predict exclusive breastfeeding at 6 weeks.

ROC analysis showed that cut off LATCH Score < 6 at 48hrs had 80% sensitivity and 69% specificity with AUC of 0.81 (0.74, 0.87). Our study showed that cut off of < 6 at 48hrs can be used as Red flag sign to identify at risk mothers. Specific intervention can be directed to improve the components & LATCH Score prior to discharge in these mothers to improve scores and ensure exclusive breast feeding for a longer duration.

Therefore postgraduates, residents and nursing stuff should be well versed at using LATCH Score and should be used during the postnatal rounds to identify the high risk mothers.

We also found that educating and empowering the mothers about components of LATCH Score can help them identify the problems in technique of breastfeeding and improve their awareness towards importance of exclusive breastfeeding.

Our study shows that mother who delivered by LSCS are at higher risk of non-exclusive breastfeeding at 6 weeks. Therefore effort should be directed towards these mothers to improve their scores and confidence.

Interestingly significant weight loss >10% at discharge was not associated with low LATCH score but weight gain at 6 weeks was significantly higher with mothers with better LATCH Score.

Hence ensuring good LATCH score at discharge may also ensure adequate weight gain of the infant at 6 weeks.

Though hyperbilirubinemia was not associated with low LATCH Score, 10% neonates of who had hypoglycemia was associated with low LATCH Scores & one of the significant factor for nonexclusive breastfeeding by logistic regression. More efforts should be directed at ensuring good LATCH Score in neonates who have shown hypoglycemia during the Post natal stay in the hospital.

Based on our study, we also recommend that LATCH Score can be used as a component of postnatal counselling of mother during breastfeeding by the healthcare professionals.

CHAPTER 9- SUMMARY

The importance of exclusive breastfeeding has been known very well in detail and yet we are not able to successfully follow in our community due to inability of the healthcare system to identify high risk mothers, lack of prenatal and postnatal counselling and emotional support to the mother.

Our study aimed at using LATCH score to identify the high risk mothers to intervene early, to train the mother about correct techniques of breastfeeding and to boost her confidence level to increase the duration of exclusive breastfeeding.

The study was conducted in the corporate sector of a tertiary care referral centre. 251 mother infant dyads were enrolled after taking informed and written consent. LATCH scores were assessed <24hrs, at 48hrs and discharge and at 6 weeks to predict exclusive breastfeeding at 6 weeks. Demographic details of mother and infant were collected including socioeconomic status, education level, and time of first feed. Mother was educated regarding LATCH scoring system and taught to assess herself at discharge and at 6 weeks. Mothers were telephonically interviewed at 6 weeks to know the status of exclusive breastfeeding and other details about baby's weight gain and any prior hospital admissions.

The study results are summarized as follows

- Majority of the mothers were between 25-35yrs of age (n=150, 60%).
- Most of them had education level upto graduation and post-graduation. (n=195, 78%).
- 48% mothers belonged to upper middle socio economic class. (n=120).

- 67% mothers underwent LSCS and 33% delivered normally, while 8.76% % needed assistance during vaginal delivery.
- 110 mothers were primi (44%).
- Sex ratio among the infants was equal (female- 48.2% and male- 51.7%)
- Mean Time of first feed among those delivered NVD/AVD was 37.48 ± 24.67 minutes and LSCS was 84.35 ± 33.04 minutes (p=0.00001).
- 10% babies suffered from hypoglycemia requiring either NICU admission or treatment on mothers' side.
- 18% infants were found to have hyperbilirubinemia.
- 7 infants (2.79%) newborns required readmission to hospital due to various reasons like hyperbilirubinemia, diarrhea and dehydration.
- Prevalence of exclusive breastfeeding was found to be 76% at the end of 6 weeks.
- Among the Various reasons for non-exclusive breastfeeding, less secretions was 33.3% followed by hypoglycemia (21.67%) and flat or inverted nipples (13.33%), mother not well(11.67%) and not sucking well(10%) ,travelling (3.33%) and hyperbilirubinemia(3.33%) were the other rationale behind not exclusively breastfeeding.
- Median LATCH Score at 24hrs was 6 (2, 10) and at 48hrs was 7 (3, 10). At discharge LATCH Score was assessed by health professional as well as mother. Median LATCH Score assessed by mother and the health professional was equal 9 (4, 10). Median LATCH Score at 6 weeks was found to be 10 (6, 10).

There was significant difference between the Latch score at every pair of time point (p-value <0.05).

- We found that median LATCH Score at 24hrs among mothers who underwent LSCS and NVD was same. At 48hrs, It was 6(3, 9) among LSCS mothers and 7(4, 10) among those had NVD. At discharge median LATCH Score by health professional and mother was 8 (4, 10) among LCSC mothers and 9(5, 10) among NVD.

- We studied the mothers behaviour at 24hrs with LATCH Score assessed at 24hrs, and found that those mothers who said they needed help at 24hrs (n=228) had median LATCH Score of 6(2,9) and those who said will try and can breastfeed had median LATCH Score of 7(5,10) at 24hrs. It was found statistically significant by Mann Whitney test with p value of < 0.00001.

- On comparison of mothers behaviour at 48hrs and LATCH Score, it was found that mothers who needed help at 48hrs(n=30) , the median LATCH score was 6(3,7) at 48hrs and those who said will try at 48hrs(n=197) had median LATCH score of 7(4,10). Those mothers who were confident about breastfeeding (n=24) had median LATCH score of 8(5, 10). It was found statistically significant by Kruskal-Wallis test (p=<0.00001).

- Among the non-graduates, only 62% mothers had breastfed their child at 6 weeks. Odds of baby being exclusively breastfed at 6th week was 2.4 (CI 1.259404, 4.573593) times more for the babies whose mother education level was graduate or more compared to mother with under graduate education level.

- In our study, we found that among the upper middle and upper socioeconomic status, 80% had continued to exclusively breastfeed.

- Among the lower middle and middle socioeconomic class, only 64% had exclusively breastfed their infant. Odds of baby being exclusively breastfed at 6th week was 2.274225 (CI 1.217771, 4.247188) times more for the babies whose mother belonged to upper middle or upper class compared to the mothers with socio economic status lower middle or middle class.

- We also found that those who delivered vaginally had higher rate of exclusive breastfeeding compared to those who delivered by LSCS. (71% for NVD vs. 87% LSCS). Odds of babies being exclusively breastfed at 6th week was 2.662558 (CI 1.298928, 5.457743) times more for the babies who born by vaginal delivery compared to the babies who born by LSCS.

- 80% of primi mothers were successful in breastfeeding at 6 weeks and 73% of multiparous mothers were successful in exclusive breastfeeding at 6 weeks postpartum.

- The study found that among a total of 25 babies who had hypoglycemia , 10 babies continued to be exclusively breastfeed and 15 babies ended up being non exclusively breastfed. It was found that there is significant association between hypoglycemia in child over breastfed at 6th week by Chi-square test ($p=<0.0001$).

- Odds of baby not exclusively breastfed at 6th week was 5.9667 (CI: 2.513953, 14.161405) times more for the babies who suffered from hypoglycemia compared to healthy babies.

- There was no significant dependency between parity, sex of a child, hyperbilirubinemia in child, hospitalization in last 6 weeks over breastfeed at 6th week.

- Median LATCH Score at 24hrs was 5(2, 7) among the non-exclusive breastfed infants and 6(3, 10) among the exclusive breastfed infants. Similarly at 48hrs, the median was 6(3, 8) among non-exclusive breastfed and 7(4, 10) among the exclusive breastfed.

- At discharge, the median LATCH Score by mother and the health professional was 7 (4, 10) among the non-exclusive breastfed and 9(6, 10) among the exclusive breastfed dyads. At 6 weeks, the median LATCH Score as assessed by mother who non-exclusively breastfed was 9(6, 10) and 10(8, 10) among those who exclusively breastfed. By Mann-Whitney test, there is significant difference in the distribution of LATCH score at every time point over breastfed category at 6^{th} week.

- LATCH Score of more than 5 at 24hrs had 73.3% sensitivity and 71.73% specificity in predicting exclusive breastfeeding at 6 weeks with AUC of 0.79(0.73.0.85). At 48hrs, a LATCH Score of >6 had sensitivity and 69% specificity in predicting exclusive breastfeeding at 6 weeks with AUC of 0.81(0.74, 0.87).

- LATCH score of >8 assessed by mother at discharge had sensitivity of 80% and specificity of 65% with AUC 0.82(0.75, 0.87) and when assessed by health professional was found to be almost similar except that specificity was higher, 69% with AUC of 0.83(0.77,0.88).

- On comparing the LATCH Score at different periods with incidence of hypoglycemia and found that median LATCH Score of 4 (2, 7) had higher incidence of hypoglycemia. Similarly at 48hrs, Median Score of 6(4, 9) had higher incidence of hypoglycemia.

- There is no significant difference in the distribution of LATCH Score at every time point over babies who developed hyperbilirubinemia.

- In the study there was significant weight loss (weight loss more than 10%) observed at discharge for 30 (11.95%) babies.

- We compared these babies with their LATCH Scores of these mother infant dyads at 24hrs and 48hrs. There was no significant difference in the distribution of LATCH Score at any time point.

- We also compared LATCH Score of those infants mother dyads who had gained good weight (>1kg) at 6 weeks. It was noticed that median LATCH score of 6 at 24hrs and 7 at 48hrs had significant correlation by Mann Whitney test. Median LATCH Score of 9 at discharge had significant difference with p value < 0.0001.

- There were few babies who were initially given donor human milk or formula feeds due to hypoglycemia but later started on exclusive breastfeeding and continued to exclusive breastfeed till 6 weeks. These babies were categorized into partial breastfed babies. The total number of partial breastfed infants were 12. All had median LATCH Score as 9 at discharge which was found statistically significant with p value of 0.007046 by Mann Whitney test.

- In our study we assessed the change in mothers confidence level as we educated her regarding breastfeeding using LATCH Score. By McNemars's test, statistical significance was seen in change in mothers' confidence level compared from 24hrs to 48hrs. 29 mother who needed help at 24hrs, did not have any improvement in confidence level and needed help at 48hrs. 189 mothers who needed help at 24hrs said they will try at 48hrs. There was some change in confidence level. 10 mothers who needed help at 24hrs, said they could breastfeed confidently at 48hrs.

- 1 mother who said will try at 24hrs, needed help at 48hrs. 8 mothers who said will try still had no change in her confidence level. 13 mother who said needed help at 24hrs, could confidently breastfeed at 48hrs.

- Similarly 65.79% mothers who needed help at 24hrs were confidently breastfeeding at discharge.33.77% mothers who needed help at 24hrs were willing to try harder at discharge. 95.45% mother who said will try at 24hrs were confidently breastfeeding at discharge.

- 74.56% mothers who needed help at 24hrs were able to breastfeed successfully at 6 weeks. 90.91% mothers who said will try were able to successful at exclusive breastfeeding at 6 weeks.

- There is no significant association between mother's behaviour at 24 hours and breastfeeding at 6th week.

- We also found that at 48hrs, only 43.33 % mothers who needed help were successful at exclusive breastfeeding at 6 weeks. 79% mother who said will try were successful at breastfeeding upto 6 weeks. 91.67% mother who were

confident that they could breastfeed at 48hrs continued to do so till 6 weeks postpartum.

- At discharge, only 1 mother who still needed help at discharge, did not exclusively breastfeed at 6 weeks. 57.69% mother who said will try at discharge ended with non-exclusive breastfeeding at 6 weeks. 8.14% mothers who were confident at breastfeed, were not successful at exclusive breastfeeding at 6 weeks.

- There was significant association between mother's behaviour at 48 hours, at discharge with breastfed at 6^{th} week by Chi-square test.

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ANNEXURE I – CONSENT FORM

"A STUDY ON LATCH SCORE AS AN ASSESSMENT AND EDUCATIONAL TOOL TO PROMOTE AND PREDICT EXCLUSIVE BREASTFEEDING AT 6 WEEKS POSTPARTUM AT KLE HOSPITAL & MEDICAL RESEARCH CENTRE-ONE YEAR LONGITUDINAL STUDY"

Objective and purpose of the study

This research is intended to study the use of Latch score as educational and assessment tool to promote and predict exclusive breastfeeding at 6 weeks of postnatal age.

Procedure

If you agree to be part of the research study, you and your infant will be assessed for effective breastfeeding using LATCH score on day 1, at 48hrs and at discharge by our trained staff nurses. All mothers will be councelled and taught correct methods of breastfeeding and also how to use LATCH score for self assessment of effective breastfeeding. Basic antenatal details of the mother and birth details of the baby will be collected. Mother will be taught to evaluate herself using LATCH scoring tool at discharge and at 6 weeks. Follow up will be at 6weeks when the child will be brought for immunisation or by telephonic interview.

Riskand Benefits : No risks associated with the study. Benefits will that child will continue to be exclusive breastfeed for a longer time as the old studies have shown.

Alternatives

Taking part in this study is voluntary. You may choose not to take part in this study, or if you decide to take part you can later change your mind and withdraw from the study. Your decision will not change the present or future health care or other services that you or your child will receive. The study doctor or sponsor may stop his/her participation in this study any time. If you choose not to take part in the study he/she will receive the standard treatment

Privacy and Confidentiality

All information collected about you and your child during the course of this study will be kept confidential to the extent permitted by law. The code numbers will identify me in this research record. Information from this study may be published but my identity will be confidential in any publication.

Financial incentives for participation

You or Your child will not be paid / offered any gifts /incentives for participating in the study.

Authorization to publish the results

The results of the study would be forwarded to the KLE University, Belgaum as part of requirement towards the completion of MD degree, review and publishing.

If you have any questions about your child's rights as a participants parent/ guardian you may call, Dr.Roopa M Bellad, professor Department of Pediatrics, J.N.M.C Ethical Committee for Human Research phone number 0831-247135.,

Consent Statement

I voluntarily agree to take part in this study by signing below. I may withdraw at any time. I am not giving up any of my legal rights by signing this form. My signature below indicates that I have read, or it has been read to me, this entire consent form, and have had all my questions answered.

Name of the Participant or legally authorized representative:_____

Signature / Thumb print _____

In case of the queries during study or in future you may contact following person.

Principal investigator :

Co investigator :

Name of the Witness _____

Signature _____

Investigator Name and Signature _____

Date: Place:

ANNEXURE-II

PROFORMA

A STUDY ON LATCH SCORE AS AN ASSESSMENT AND EDUCATIONAL TOOL TO PROMOTE AND PREDICT EXCLUSIVE BREASTFEEDING AT 6WEEKS POSTPARTUM AT KLE HOSPITAL & MEDICAL RESEARCH CENTRE-ONE YEAR LONGITUDINAL STUDY

Mothers details:

1. **Name:**
2. **Age:**
3. **Education:**
4. **SE Status:**
5. **Date of Delivery:**
6. **Type of delivery: NVD/ AVD/ ELECTIVE LSCS/ EMERG LSCS**
7. **Indication for LSCS:**
8. **LMP:** **9. EDD:**

Baby Details:

1. Weight:

2. Time of first feed:

3. LATCH SCORE

	Score	Assessed by	Sign
LATCH score assessed by doctor/ nurse at first feed			
LATCH score assessed by doctor/ nurse at 48hrs			
LATCH score assessed by doctor/ nurse at discharge			
LATCH score assessed by mother at discharge			
LATCH score by mother at 6 weeks			

4. Hyperbilirubinemia needing phototherapy: yes / no

5. Day of discharge:

6. Weight at discharge:

<u>FOLLOW UP at 14 weeks:</u>

1. **Is the baby exclusively breastfed :**
2. **Weight:**
3. **Any hospitalizations in last 14 weeks:**
4. **Reason for non exclusive breast feeding:**

OBJECTIVE ASSESSMENT	SCORE	FEEDING TIME					
LATCH: Mouth open wide, grasps breast, tongue over lower jaw, lips flanged, no clicking or smacking, rhythmic sucking, no indrawing or dimpling of cheeks	2						
Repeated attempts to hold nipple in mouth, stimulate to suck	1						
Too sleepy or reluctant, no latch achieved	0						
AUDIBLE SWALLOWING or SUCK-PAUSE PATTERN SEEN: Spontaneous intermittent <24 hours of age; spontaneous and frequent >24 hours of age	2						
A few with stimulation	1						
None / no attempt to open mouth	0						
TYPE OF NIPPLE: Everted (after stimulation)	2						
Flat	1						
Inverted	0						
COMFORT (BREAST/NIPPLE): Soft, tender	2						
Filling, reddened, small blister, mild-moderate discomfort	1						
Engorged, cracked, bleeding, large blisters, severe discomfort	0						
HOLD: No assist from staff, infant's head and body supported at level of breast, infant on side with nose, chin, chest, abdomen and knees touch mother, mouth across from nipple	2						
Minimal assistance (i.e. elevate head of bed; place pillow for comfort); teach one side, mother does other; staff holds, then mother takes over	1						
Mother requires full assistance to position infant at breast	0						
Total Score							
Observed (O) or Reported (R)							
Initials							

Score value	0	1	2	SCORE AT BIRTH/ <24HRS	SCORE AT 48HRS	SCORE AT DISCHARGE
L Latch	• Too sleepy or reluctant • No latch obtained	• Repeated attempts, Must hold nipple in mouth • Must stimulate to suck	• Grasps breast, • Tongue down and forward, • Lips flanged, • Rhythmic suckling			
A Audible Swallowing	• None	• A few with stimulation	• Spontaneous, intermittent (less than 24 hours old), • Spontaneous, frequent (greater than 24 hours old)			
T Type of Nipple	• Inverted	• Flat	• Everted (after stimulation)			
C Comfort Level (Breast/Nipple)	• Engorged, Cracked, bleeding, large blisters or bruises, Severe discomfort	• Filling, Small blisters or bruises, Mother complains of pinching Mild/moderate discomfort	• Soft, Tender, Intact nipples (no damage)			
H Hold Positioning	Full assist (staff holds infant at breast)	Minimal assist (i.e. elevate head of bed, place pillows), Teach one side, mother does other. Staff helps, mother takes over feeding.	No assist from staff. Mother able to position/hold infant.			

STAGES OF CHANGE IN MOTHER

	24HRS	**48HRS**	**DISCHARGE**	**FOLLOW UP**	**SCORE**
NEED HELP					
WIL TRY					
CAN BREASTFEED					

ANNEXURE-III-ETHICAL CLEARANCE LETTER

K.L.E. ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University)
Accredited 'A' Grade by NAAC (2nd Cycle) Placed in Category 'A' by MHRD (GoI)
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Ref: MDC/DOME/ 64 **Date: 24/11/2018**

To,

REG NO. BM0118003

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"A STUDY ON LATCH SCORE AS AN ASSESSMENT AND EDUCATIONAL TOOL TO PROMOTE AND PREDICT EXCLUSIVE BREASTFEEDING AT 6 WEEKS POSTPARTUM AT KLE HOSPITAL & MEDICAL RESEARCH CENTRE-ONE YEAR LONGITUDINAL STUDY"**, is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee on Human Subjects Research.

(Dr. Arathi Darshan)
Member Secretary
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

(Dr. Roopa M Bellad)
Chairman,
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

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ANNEXURES IV - MASTER CHART

		Mother details							Baby Details						Latch score assessed					Followup at 6 weeks					Stages of chnage in mother				
SL.NO	Name	Age	Education		Period of gestation	Type of delivery	Indication of LSCS	Parity	Sex of baby	Weight (in kgs)	Any hypoglycemic episodes	Treatment?	Hyperbilirubinemia needing phototherapy	Time of first feed (in min)	Weight at discharge(kgs)	At first feed	At 48 hrs	At discharge	By mother at discharge	By mother at 6 weeks	Is the baby exclusively breastfed	partial EBF	Weight (in kgs	Any hospitalizations in last 6 weeks	Reason for nonexclusive breast feeding	24 hrs	48 hrs	Discharge	Follow up	Day of life at discharge
1	Rithika	27	Graduate	1	37+6	1		1	2	2.5	2		1	30min	2.3	6	6	8	8	10	1		3.8	2		0	1	2	2	5
2	Madhuri kotagi	29	Graduate	2	37	2	Prev lscs	2	2	2.7	2		2	90min	2.58	6	7	8	7	10	1		3.6	2		0	1	2	2	6
3	Anupama	24	Graduate	2	38+5	1		2	2	3.58	2		2	45min	3.4	6	7	8	8	8	1		4.6	2		0	1	2	2	4
4	Pavitra katti	25	Graduate	1	38	3	Failed induction and fetal distress	2	1	3.6	2		2	75min	3.26	6	8	7	6	9	1		4.5	2		0	1	1	2	5
5	Rekha rahul	30	Graduate	2	37	3	Persistent Fetal tachycardia	1	1	3.5	2		2	105min	3.4	8	9	9	9	10	1		4.5	2		0	1	2	2	6
6	Reshma shivaji	26	Graduate	2	39	1		2	2	3.1	2		2	45min	2.82	5	6	9	9	9	1		3.8	2		0	1	1	2	5
7	Marthamma	30	up to SSLC	4	39	1		2	2	3	2		2	35min	2.82	9	8	10	10	10	1		3.7	2		0	1	2	2	4
8	Revati	29	Graduate	3	38	2	Hbsag positive	1	1	2.7	2		2	80min	2.46	9	7	10	10	10	1		3.9	2		1	2	2	2	5
9	Suman	24	Graduate	2	38	3	non progression of labour	2	1	2.5	2		2	70min	2.32	3	5	7	7	8	1		3.6	2		0	0	1	2	5
10	Meenaxi	25	Graduate	3	37	3	GHTN	1	1	2.98	2		2	90min	2.65	6	7	10	9	10	1		4.2	2		0	1	2	2	6
11	Savitri nagaraj	28	Graduate	2	39	1		2	1	3.4	2		2	35min	3.26	8	9	10	10	10	1		4.4	2		1	2	2	2	3
12	Bharati praveen	22	Graduate	4	38	1		1	1	3.1	2		2	30min	2.9	8	8	10	10	10	1		4.2	2		1	2	2	2	3
13	Ashwini Subhash	24	Graduate	2	37	3	Prev lscs	2	2	3.19	2		2	100min	2.94	4	6	9	8	10	1		4	2		0	1	2	2	5
14	Vidya naik	35	Graduate	4	38	3	Prev 2 lscs	2	1	2.7	2		2	65min	2.52	5	6	8	8	10	1		3.6	2		0	1	2	2	7
15	Manjushree	21	Graduate	2	39	3	Non progression of labour	1	2	3.25	2		2	105min	2.9	5	6	9	8	10	1		3.9	2		0	0	2	2	4
16	Shruthi	30	PUC	1	39	2	Fetal macrosomia	2	1	4.1	2		2	120min	3.92	8	9	10	10	10	1		4.64	1		1	2	2	2	4
17	Deepa	30	Graduate	1	39+3	1		2	1	3.13	2		1	20min	2.86	6	7	7	8	10	1		3.64	2		1	1	2	2	8
18	Kajal	23	Graduate	2	38	3	Oligohydramnios	1	2	2.6	2		2	50min	2.45	7	6	7	7	10	1		3.5	2		0	0	1	2	5
19	laxmi	22	PUC	3	39+2	1		1	1	2.5	2		1	39min	2.48	6	6	9	9	10	1		3.2	2		1	1	2	2	6
20	Soujanya	20	PUC	2	37+3	1		1	2	2.6	2		2	22min	2.42	6	6	9	8	10	1		3.68	2		0	1	2	2	4
21	kamala	27	Graduate	3	37+6	3	non progression of labour	1	2	2.8	2		2	89min	2.64	6	6	7	8	10	1		3.84	2		0	1	2	2	4
22	Triveni	27	Graduate	1	37+5	3	Prev lscs	2	1	3.45	2		2	130min	2.9	4	6	9	8	10	1		4.2	2		0	2	2	2	5
23	Deepa	25	PUC	2	38+5	2	prev lscs	2	1	3.8	2		2	60min	3.6	4	9	9	9	10	1		4.4	2		0	2	2	2	3
24	Soujanya	26	Graduate	2	38+5	1		2	2	2.9	2		2	22min	2.76	10	10	9	9	10	1		4.2	2		1	2	2	2	3
25	pallavi	32	Post Graduate	1	39	1		2	2	2.6	2		2	39min	2.42	8	8	10	10	10	1		3.12	2		2	2	2	2	4
26	Neeta Navalagi	23	PUC	2	40	1		2	2	3	2		2	75min	3.08	7	7	9	9	9	1		3.9	2		0	1	2	2	4
27	Rasika	31	Graduate	1	37+5	3	Prev lscs	2	1	3.45	2		2	130min	2.9	4	6	9	8	10	1		3.8	2		0	1	2	2	5
28	Sridevi	26	Graduate	3	38	1		1	1	3.7	2		1	225min	3.45	6	8	9	9	9	1		4.6	2		1	1	2	2	6
29	Jyothi siddu	21	Graduate	2	39+5	1		1	2	2.52	2		2	35min	2.4	6	6	10	10	10	1		3.6	2		0	1	2	2	4
30	Kalavathi	24	Graduate	2	38	1		1	1	2.5	2		1	45min	2.3	7	8	9	9	10	1		3.4	2		1	2	2	2	7
31	Suvarna	29	Graduate	1	40	1		1	2	3.15	2		2	25min	2.9	7	8	9	8	9	1		3.6	2		0	1	2	2	3
32	Stella	30	Graduate	2	37	1		2	1	3.2	2		2	60min	2.9	5	6	7	7	9	1		3.6	1		0	1	2	2	4

33	Janet	28	Post graduate	1	37	3	Fetal distress	1	2	3.06	2		2	135min	2.86	7	7	9	9	9	1		4.4	2		0	1	2	2	4
34	Deepali	26	Graduate	1	38	4		1	1	3.2	1		2	70min	2.84	7	8	10	10	10	1		4.4	2		1	1	2	2	4
35	Vidya iragouda	32	Post graduate	1	38+5	2	Precious pregnancy	2	1	2.9	2		2	80min	2.66	6	7	8	8	10	1		3.9	2		0	0	1	2	6
36	Mohini	27	PUC	2	38	3	CPD	2	2	3.6	2		2	150min	3.2	5	9	9	9	10	1		4.22	2		1	2	2	2	5
37	Rajeshwari	33	Graduate	2	38+2	3	Prev lscs	2	1	2.65	2		2	60min	2.31	7	8	8	9	9	1		4.2	2		0	2	2	2	4
38	Ashwini iranna	26	PUC	1	38	2	Precious pregnancy	1	1	2.57	2		1	150min	2.3	5	7	7	7	8	1		3.6	2		1	1	2	2	6
39	Jyothi	28	Graduate	1	40+2	3	Thick MSL	1	2	3.3	2		2	285min	2.9	6	7	9	10	10	1		4.2	2		0	1	1	2	5
40	Laxmi vijaykumar	29	PUC	4	38	3	Oligohydramnios	1	1	2.9	2		1	105min	2.6	5	6	7	7	9	1	1	3.9	2	Nicu- phototherapy, mother did not hav enough secretions	0	0	1	2	7
41	Vanishree	25	Graduate	2	39	3	Dengue fever	1	1	2.9	2		2	96min	2.72	6	7	7	7	9	2		4.2	2	Fever in mother	0	1	1	2	6
42	Akshatha sunil	27	PUC	4	37	3	placenta previa	2	1	2.8	2		1	70min	2.58	6	8	9	9	10	2		3.8	2	Not enough milk	0	1	1	2	7
43	Shrusti ravindra	27	Graduate	2	40+1	3	Bad obstetric history	2	2	3.9	2		2	96min	3.62	5	6	8	8	10	2		4.8	2	Not enough secretions	0	2	2	2	5
44	Netravati koogi	22	Graduate	4	38	3	RHD with MR with GDM	1	1	3.78	1	2	2	66min	3.46	5	6	8	7	9	2		4.8	2	Borderline Hypoglycemia not requiring nicu adm	0	1	2	2	6
45	Sana aiman	28	PUC	2	49+5	1		2	2	3.2	2		1	45min	2.72	5	6	6	6	6	2		3.84	2	Not sucking well, not enough milk	1	0	1	1	6
46	Pallavi Raju	23	PUC	2	39	3	Severe oligohydramnios with HELLP	2	2	2.6	1		2	70min	2.32	3	5	7	7	9	2		3.4	2	Not enough secretions	0	0	1	2	5
47	Parvati	28	Graduate	2	37+2	1		2	1	2.83	1	1	1	68min	2.46	5	6	6	6	9	1	1	3.8	2	Hypoglycemia	0	0	1	2	7
48	Meenakshi Namadev	24	Graduate	2	38 with GDM	3	Non progression of labour	1	1	2.88	1	2	2	70min	2.46	6	6	7	7	10	1	1	3.7	2	Borderline Hypoglycemia not requiring NICU	0	1	1	2	6
49	Mukta	27	Graduate	3	38+4	2	GDM	1	1	3.1	2		2	83min	2.86	6	6	8	8	9	2		3.42	2	Not enough milk	0	1	2	2	5
50	Shobha patil	29	PUC	3	37+2	2	APLA positive with fetal VSD	2	1	3.2	2		2	69min	2.94	4	5	5	5	8	2		4.1	2	Baby not sucking well, not enough secretions	0	0	1	1	6
51	Chaitra Patil	25	up to SSLC	3	37+6	4		2	2	3.3	2		2	60min	2.86	7	8	9	9	9	2		4.2	2	Mother had fever	0	1	1	2	5
52	Shruthi Shivanand	22	PUC	2	40	3	Gest. Hypertension	1	2	3.3	2		2	50min	2.98	6	7	9	9	9	1		3.8	2	Mother not well	0	1	2	2	5
53	Archana Shashidhar	31	Graduate	2	37	2	GDM with prev lscs	2	1	2.5	1	2	1	75min	2.26	7	9	9	9	10	1	1	3.7	2	Not enough secretions	1	1	2	2	6
54	Ameena	36	up to SSLC	2	39	1		2	1	3.06	2		2	35min	2.86	7	9	9	9	10	1		4.3	2	Mother not well	0	1	2	2	3
55	Ashwini	33	Graduate	1	39+4	2	Maternal request	1	2	3.35	2		2	75min	2.9	4	6	7	7	9	1	1	4.3	2	Not enough secretion on day 1/2	0	1	1	2	5
56	Laxmi	26	Graduate	3	39+6	2	Prev lscs	2	1	2.9	2		2	75min	2.71	4	6	7	6	9	2		3.56	2	Travelling	0	1	1	2	4
57	Sweta	28	Graduate	2	39+5	2	Prev lscs	2	1	3.6	2		2	84min	3.42	4	6	5	5	8	2		4.1	2	Flat nipples, baby not sucking well	0	0	1	1	4
58	Bharti borannavar	28	Graduate	3	38+6	3	Abruption	2	2	2.5	2		2	108min	2.24	6	7	8	8	8	2		2.9	2	Not sucking at breast	0	0	1	1	5
59	Poonam patil	28	Post graduate	1	40	1		1	1	3.2	2		1	80min	2.94	5	6	8	7	10	1	1	3.84	2	Nicu- not enough secretions	0	0	1	2	5
60	Ashwini	22	PUC	2	40	4		1	2	2.8	2		1	40min	2.54	6	7	7	6	9	1	1	3.9	2	Nicu- hyperbilirubinemia	0	1	1	1	8
61	Shruthi	29	Graduate	2	40	2	MSL	1	1	2.6	2		1	42min	2.45	5	5	6	7	8	2		3.26	2	Flat nipples	0	1	1	1	5
62	Ashitha	28	up to SSLC	2	39+4	3	Pathological nst trace	1	1	2.5	2		1	90min	1.96	6	7	7	7	8	2		3.1	2	Hyperbilirubinemia	0	0	1	2	6
63	Chaitali	28	Graduate	1	37+5	2	Prev lscs with fetal macrosomia	2	1	3.1	2		2	113min	2.92	6	8	8	7	9	2		4.4	2	Less secretions	0	1	1	2	4
64	Priya sutar	26	Graduate	2	38+2	2	Prev lscs	2	1	2.5	1	2	2	69min	2.24	5	6	8	8	10	1	1	3.2	2	Lethargy, not sucking well, hypoglycemia	0	1	2	2	5
65	Akkavva	28	Graduate	2	39+5	3	Oligohydramnios	1	2	3.5	2		2	79min	3.28	4	6	8	8	10	2		4.2	2	Not enough milk	0	1	2	1	6
66	Shruthi	28	Graduate	2	40	3	Non progression of labour	1	2	3.3	2		1	90min	2.86	4	7	9	7	9	1		3.4	2		0	1	2	2	6
67	Shilpa ajit devamare	30	Post graduate	2	39+2	3	PROM With asthma	1	2	3.03	2		2	105min	2.8	6	8	8	8	10	1		4.2	2		1	2	2	2	5
68	Shubhangi Yogesh	40	PUC	2	38	2	Prev lscs	2	2	3.7	2		1	105min	3.5	5	6	8	7	9	1		4.6	2		0	1	2	2	6
69	Sindhu Sandeep	28	Graduate	1	37	2	Breech presentation	2	1	2.8	2		1	79min	2.6	4	6	8	8	9	1		4.1	2		0	1	2	2	7
70	Poornima Shrishail	24	Graduate	1	37	3	Fetal distres with low lying placenta	2	2	3.07	2		2	64min	2.68	6	7	8	9	10	1		3.9	2		0	1	2	2	6
71	Pooja Meti	23	Graduate	2	38	1		2	1	2.5	2		2	30min	2.36	5	8	9	9	10	1		3.6	2		0	1	2	2	4
72	Yogita	27	Graduate	2	39	1		2	2	3.2	2		1	50min	2.94	8	9	10	10	10	1		4.2	2		0	1	2	2	6
73	Pooja vinod	26	Graduate	2	39+3	2	Severe oligohydramnios	1	2	2.6	2		2	90min	2.36	6	7	8	8	10	1		3.56	2		0	1	2	2	6
74	Vidya ravi	27	Graduate	2	38	3	PROM	1	1	2.7	2		2	61min	2.52	6	8	9	9	10	1		3.64	2		1	2	2	2	5
75	Pratibha	28	PUC	2	38+5	1		1	2	3	2		2	32min	2.64	7	9	9	9	9	1	1	3.86	2	Mother underwent tubectomy	0	1	2	2	4
76	Priyanka	26	Graduate	1	39+1	1		1	2	2.7	2		1	28min	2.4	3	5	7	6	7	2		3.2	2	Flat nipples and less secretions	0	1	1	1	6

77	Smita satish tarale	30	Graduate	2	39	4		1	1	2.8	2		2	43min	2.65	5	6	6	7	8	2		3.52	2	Not sucking well	0	0	1	1	4
78	Gowri	29	Graduate	2	37	3	Bad obstetric history	2	2	3.4	2		2	75min	3.08	5	7	7	7	9	1		4.1	2		0	1	2	2	6
79	Roopa chandrappa naikar	26	Graduate	1	38	3	Prev lscs	2	2	2.88	2		2	110min	2.62	7	7	9	9	10	1		3.94	2		0	1	2	2	4
80	Shruthi khadesh	27	Post graduate	1	38+4	3	Fetal Distress	1	2	2.5	2		1	62min	2.34	6	7	7	7	9	1		3.6	2		0	1	1	2	6
81	Pallavi	28	Graduate	1	37+1	1		2	1	2.9	2		2	35min	2.76	7	8	9	8	10	1		4.14	2		0	1	2	2	4
82	Sujata	33	Graduate	2	38	1		1	1	2.7	2		2	30min	2.52	8	8	8	8	10	1		3.8	2		0	2	2	2	4
83	Neeta patil	32	Graduate	3	39	1		2	1	3.77	2		2	45min	3.5	8	8	9	9	10	1		4.68	2		0	1	2	2	4
84	Shruthi Mahantesh	24	Graduate	2	39	3	Fetal distress	2	2	2.77	2		2	89min	2.42	6	7	8	8	10	1		3.6	2		0	1	2	2	7
85	Hameeda Banu	30	Graduate	3	38	2	Maternal request	2	2	3.2	2		2	65min	2.86	5	6	8	8	10	1		4.1	2		0	1	2	2	6
86	Nisha Kashinath	24	Graduate	2	40	1		2	1	2.9	2		2	53min	2.66	7	8	8	8	10	1		3.96	2		1	2	2	2	4
87	Shilpa	28	Graduate	2	38	3	Non progression of labour	2	1	3.2	2		2	80min	2.74	6	7	9	9	10	1		4.1	2		0	1	2	2	6
88	Priyanka	32	Graduate	3	38	2	Prev lscs	2	1	3.4	2		1	90min	3	6	7	9	9	10	1		4.1	1		0	1	2	2	6
89	Umashree	24	Graduate	2	37	4		1	2	3.26	2		1	71min	3.1	8	9	10	10	10	1		3.9	2		0	1	2	2	7
90	Bhagyalaxmi	26	PUC	1	37	2	Prev lscs	2	2	2.8	2		2	105min	2.62	6	5	8	8	9	1		3.7	2		0	1	1	2	5
91	Ningavva	30	up to SSLC	4	40	3	Abruption	1	2	2.7	2		2	65min	2.5	6	8	10	10	10	1		3.6	2		0	1	2	2	7
92	Poonam patil	24	Graduate	2	37	3	Fetsl tachycardia	2	2	2.6	2		2	78min	2.46	4	5	8	8	10	1		3.8	2		0	0	1	2	6
93	Neha	21	PUC	3	38	1		1	1	2.5	2		2	30min	2.38	7	8	10	10	10	1		3.4	2		0	2	2	2	3
94	Roshani Vinayak	30	Graduate	2	39	2	Previous LSCS	2	2	3.4	2		2	138min	3.2	6	7	8	8	10	1		4.4	2		0	1	2	2	7
95	Shriya	30	Post graduate	2	40	2	Prev LSCS	2	2	3.5	2		2	78min	3.24	5	7	10	10	10	1		4.6	2		0	1	2	2	7
96	Hanamavva	21	up to SSLC	4	37	2	Previous LSCS	2	2	2.6	2		2	79min	2.36	3	5	7	8	9	2		3.4	2	Flat nipples, not sucking well	0	0	1	2	7
97	Farzana Begum	33	PUC	3	40	2	Previous LSCS	2	1	3.1	2		2	63min	2.94	6	6	7	7	10	2		4	2	Less milk secretion	0	1	1	2	6
98	Akshata Praveen	24	Graduate	3	38	4		1	2	2.6	2		2	32min	2.5	6	7	10	10	10	1		3.5	2		0	1	2	2	5
99	Vijaylaxmi alur	26	Graduate	1	38+6	3	Breech with polyhydramnios	2	2	3.2	2		2	58min	3	6	7	9	9	9	1		4.2	2		0	1	1	2	6
100	Arati Laxman	28	Graduate	2	39+5	2	Previous LSCS	2	2	3.2	2		2	80min	2.96	5	7	9	9	10	1		4.1	2		0	1	2	2	5
101	Renuka Basappa	31	Graduate	2	39+5	3	Fetal distress	2	2	3.06	2		1	80min	2.82	5	6	9	9	10	2		3.9	2	Mother not well	0	1	1	2	7
102	Pooja Vijaykumar	22	Graduate	3	39	1		2	2	2.66	2		2	32min	2.58	6	7	9	9	9	1		3.8	2		0	1	2	2	4
103	Pragati Patil	21	Graduate	2	40+1	4		1	2	2.9	2		2	44min	2.7	7	8	10	10	10	1		4.3	2		0	1	2	2	5
104	Rajeshwari	20	PUC	3	38	3	Previous lscs with PROM	2	1	2.8	2		1	73min	2.68	3	5	6	6	7	2		3.8	2	Flat nipples, phototherapy	0	1	1	1	7
105	Savita Mallappa	23	Graduate	3	37+5	1		2	1	2.98	2		2	33min	2.84	8	8	10	10	10	1		4.3	2		1	2	2	2	4
106	Bhargavi	29	Graduate	4	38	2	Fetal macrosomia	1	1	3.4	2		2	25min	3.16	6	9	8	8	10	1		4.2	2		0	1	1	2	6
107	Prabhavati	31	PUC	4	39+5	2	Previous LSCS	2	1	3	2		2	49min	2.9	6	7	10	10	10	1		3.9	2		0	2	2	2	10
108	Shruthi Swaroop	30	Graduate	1		3	Placenta previa	1	2	3.2	2		2	88min	2.95	7	7	9	9	10	1		3.8	2		1	1	2	2	5
109	Ningamma	27	Graduate	4	38+2	2	Breech with GDM	1	1	3.2	1		1	110min	2.86	5	6	8	8	9	2		3.8	2	Flat nipples, child cries excessively	0	0	1	1	6
110	Sheela Mahesh	27	Graduate	2	39	1		1	2	2.71	2		2	46min	2.6	6	8	10	9	10	1		3.9	2		0	1	2	2	4
111	Shaista Banu	29	up to SSLC	3	39	2	Prev lscs	2	2	3.5	2		2	68min	3.32	6	8	8	8	10	1		4.4	2		0	1	2	2	6
112	Rachana	33	Post graduate	1	38	1		2	1	3.4	2		2	45min	3.2	6	8	10	10	10	1		4.6	2		1	2	2	2	4
113	Jyotsna Ajit	25	Graduate	4	40+2	3	Non progression of labour	1	2	2.89	2		2	100min	2.64	3	3	6	6	7	2		3.46	2	Not sucking well, decreased secretions	0	0	1	1	6
114	Rashmi Chandrashekar	33	Graduate	2	39	3	Oligohydramnios	2	1	3.1	2		1	55min	2.9	6	9	10	10	10	1		3.8	2		0	1	2	2	7
115	Pooja Chandrashekhar	25	Graduate	3	40+2	3	Postdatism	1	1	3.4	2		2	45min	3.26	4	4	5	5	7	2		4.1	2	Not sucking well, difficulty achieving latch	0	0	1	1	5
116	Vijaylaxmi Prasad	28	Graduate	2	38	3	Oligohydramnios	1	1	2.96	2		2	67min	2.78	7	7	9	9	10	1		4.1	2		0	1	1	2	5
117	Sushma	28	Graduate	1	38	2	Prev LSCS	2	1	2.5	2		2	40min	2.32	5	6	10	10	10	1		3.8	2		0	1	2	2	5
118	Suman Pradeep	24	Graduate	3	37	1		1	2	2.9	2		1	35min	2.8	6	8	9	9	10	1		4	2		0	1	2	2	8
119	Nagaveena Patil	28	Graduate	2	40	1		1	1	3	2		2	26min	2.8	6	7	10	10	10	1		4.1	2		0	2	2	2	4
120	Vidya Shivanand	29	Graduate	2	38	2	Previous LSCS	2	1	2.6	2		2	74min	2.42	6	6	10	10	10	1		3.8	2		0	1	2	2	6
121	Heena kausar	30	Graduate	3	39	3	PROM With Fetal distress	2	2	2.9	2		2	54min	2.7	7	8	10	10	10	1		3.8	2		0	1	2	2	5
122	Rajeshwari	23	Graduate	4	37	3	Gestational HTN	2	1	2.5	2		2	69min	2.36	6	7	9	9	10	1		3.4	2		0	1	2	2	5
123	Shruthi vittal	23	Graduate	2	39+4	4		1	1	3	2		2	30min	2.84	5	5	8	8	8	1		4.1	2		0	1	2	2	6
124	Preeti Sachin Kamble	23	Graduate	3	40+1	4		2	2	2.9	2		2	31min	2.8	6	7	10	10	10	1		4.1	2		0	1	2	2	4
125	Jyothi kumar	21	PUC	3	40	1		2	2	2.8	2		2	22min	2.64	3	4	5	5	6	2		4	2	Baby doesnt latch well, less secretions	0	1	1	1	4
126	Nikita Satyjit	23	Graduate	1	39	1		2	2	2.5	2		1	34min	2.38	8	10	10	10	10	1		3.8	2		0	1	2	2	6

127	Manjula basavraj	32	Graduate	2	38	2	Prev lscs	2	1	3.1	2		1	82min	2.86	6	7	10	10	10	2		3.9	2	Wound sepsis in mother, had fever, underwent 2 suturing	0	1	2	2	5
128	Suvarna kiran Patil	24	PUC	3	40	3	Msl	1	2	3.2	2		1	58min	2.88	5	6	8	8	9	2		3.9	2	Not enough secretions	0	1	2	2	7
129	Sarika Santhosh	25	Graduate	1	39+6	3	PROM	2	1	3.2	2		2	68min	3.1	6	7	10	10	10	1		4.4	2		0	1	2	2	6
130	Arati Sadashiv	28	Graduate	2	37	2	GDM	2	1	2.9	1	2	2	83min	2.76	4	7	8	8	10	1		4.1	2		0	1	1	2	6
131	Shobha Uday Kumar	28	Graduate	2	37	2	Prev lscs	2	1	2.7	2		2	84min	2.46	5	7	8	8	9	1		3.4	2		0	1	2	2	7
132	Uzmaanjum Multani	26	PUC	3	39	1		1	2	2.9	2		2	26min	2.75	7	8	10	10	10	1		4.2	2		0	1	2	2	5
133	Rajeshwari	32	Graduate	1	39	3	Fetal distress	1	1	3.6	2		2	72min	3.4	6	7	8	8	10	1		4.8	2		0	1	2	2	6
134	Soumya Praful Maste	34	Post graduate	1	37	2	prev LSCS	2	1	2.8	2		2	53min	2.66	5	6	9	9	10	2		3.5	2	less secretions	0	1	2	2	6
135	Arshiya	25	PUC	3	39	1		1	2	2.5	2		2	20min	2.4	6	7	10	10	10	1		3.8	2		0	1	2	2	4
136	Raees Begum	29	Post graduate	1	38	3	hbsAg positive with macrosomia	2	1	3.7	1	2	2	76min	3.52	3	4	6	6	10	2		4.8	2	hypoglycemia, not enough secretions	0	0	1	1	7
137	Shridevi Basavraj	24	Graduate	2	40+3	1		1	1	2.8	2		2	27min	2.7	6	6	9	9	10	1		3.9	2		0	1	2	2	4
138	Priya Udapi	31	Graduate	1	38		CDMR	2	1	2.7	2		2	71min	2.48	5	6	10	10	10	1		3.9	2		0	0	1	2	6
139	Deepa Sunil Kumbar	22	Graduate	2	40	1		2	2	3.2	2		1	54min	3	6	7	9	9	9	2		4.4	2	mother had fever	0	1	2	2	6
140	Punam Nandan	26	Graduate	1	37+6	3	breech with fetal VSD	1	2	2.6	2		2	77min	2.4	6	7	9	9	10	1		3.8	2		0	1	2	2	6
141	Renuka Krishnappa	24	PUC	4	37	3	RHD with severe MS	2	1	2.6	2		2	81min	2.5	7	7	9	9	10	1		3.7	2		0	1	2	2	5
142	Pooja Shrinath	26	Graduate	2	37+3	2	macrosomia	2	2	3.52	2		2	65min	3.32	6	5	8	8	10	1		4.6	2		0	1	2	2	6
143	Netravathi Vijaykumar	29	Graduate	2	37	3	type 2 DM with circumvallet placenta	2	2	3.18	1	1	1	65min	2.9	6	7	9	9	9	2		4.2	2	hypoglycemia	0	1	2	2	7
144	Shearly Anil Gavade	36	Graduate	1	37+5	2	GDM	2	1	2.6	1	2	2	51min	2.46	4	6	9	9	9	2		3.8	2	hypoglycemia	0	1	1	2	7
145	Asiya	26	up to SSLC	3	38+4	3	prev lscs	2	2	2.8	2		2	55min	2.54	6	7	10	10	10	1		4	2		0	1	2	2	6
146	Jagruti Vipul	28	Graduate	2	37	3	prev lscs	2	2	3.1	2		2	78min	2.8	6	7	10	10	10	1		4.2	2		0	1	2	2	7
147	Sujatha Harichandra	24	Graduate	2	37+2	3	Gest HTN	1	1	3.4	2		2	68min	3.2	6	8	9	9	9	1		4.5	2		0	1	2	2	6
148	Sharmila	29	Graduate	3	39	2	prev lscs	2	1	3.1	2		1	72min	2.86	5	5	9	8	9	1		3.6	2		0	1	1	2	7
149	Megha Praveen	27	Graduate	4	38	2	severe PE	1	2	3.35	1	1	2	66min	2.9	4	6	8	8	10	1	1	3.7	2	hypoglycemia	0	0	1	2	6
150	Deepa Ramesh	25	Graduate	2	38+3	3	fetal distress	1	1	2.7	2		2	85min	2.56	5	6	9	9	10	1		3.6	1		0	1	1	2	7
151	Prameela	31	Post graduate	1	37+6	3	MSL	1	1	2.95	2		2	43min	2.8	6	7	8	8	10	2		4.4	2	less secretions	0	1	2	2	7
152	Maxi Neigal	25	Graduate	2	37	3	placenta previa	2	1	2.9	2		2	46min	2.8	6	7	9	9	10	1		4.2	2		0	1	2	2	6
153	Shruti Naveen Kumar	28	PUC	2	40+3	2	Failed induction	2	2	2.9	1	2	2	76min	2.7	3	5	6	6	9	2		4	2	Hypoglycemia	0	1	1	2	7
154	Pooja Shrishail	29	Graduate	1	38	3	Fetal tachycardia	1	1	3.6	2		2	73min	3.46	6	6	8	8	10	1		4.8	2		0	1	2	2	6
155	Jyothi Dhareppa Chougale	38	Graduate	1	37	3	MSL	2	2	2.7	2		2	65min	2.54	5	6	10	10	10	1		4.1	2		0	1	2	2	8
156	Ranjita Basavraj	24	Graduate	2	39	2	Prev lscs	2	1	3	2		2	77min	2.85	6	6	10	10	10	1		4.2	2		0	1	2	2	7
157	Sabiya	27	Graduate	2	38+6	3	PROM	1	2	2.87	2		2	73min	2.68	4	7	10	10	10	1		4.1	2		0	0	2	2	7
158	Sheema Vittal	27	Graduate	1	39	4		1	1	2.7	2		1	29min	2.4	6	6	9	9	10	1		3.6	2		0	1	2	2	6
159	Shwetha Sidappa	36	Graduate	2	38	3	Fetal distress	2	1	2.95	2		2	90min	2.7	4	5	8	8	7	2		4.1	2	Not sucking well and excessive crying	0	1	1	1	6
160	Shamal Ritesh	27	Graduate	1	39	1		1	1	2.7	2		2	35min	2.64	7	9	10	10	10	1		3.8	2		0	1	2	2	5
161	Natasha	31	Graduate	1	37	2	Prev lscs	2	2	3.1	2		2	81min	2.96	6	7	10	10	10	1		4.2	2		0	1	2		6
162	Sneha Anand Konnur	27	Graduate	2	39	1		2	2	2.7	2		2	21min	2.56	5	5	8	8	8	2		3.4	1	Less secretions	0	0	1	2	4
163	Shwetha thimma	32	Graduate	2	37	3	MSL	2	2	2.9	2		2	70min	2.82	5	6	8	8	10	2		3.8	2	Not enough secretions	0	1	1	2	5
164	Shivleela	30	Graduate	1	38+3	2	Prev lscs	2	1	3.2	2		2	64min	3.1	6	8	10	10	10	1		4.4	2		0	1	2	2	6
165	Vidyashree	25	Graduate	3	38	3	PIH	1	2	3.2	2		2	102min	3	7	7	10	10	10	1		4.1	2		0	1	2	2	7
166	Bharati Kempanna	32	Graduate	2	39+2	2	Prev lscs	2	2	2.56	1	2	2	90min	2.4	6	6	7	7	10	2		3.6	2	Hypoglycemia	0	1	1	2	6
167	Sucheta	27	Graduate	1	39	4		1	1	2.7	2		2	33min	2.6	6	7	9	9	9	1		4	2		0	1	2	2	4
168	Pooja Sangamesh	25	Graduate	2	38	4		1	2	2.8	2		2	29min	2.64	7	7	10	10	10	1		3.9	2		0	1	2	2	4
169	Girevva Durdundappa	20	PUC	3	39	2	Cord around the neck	1	1	3.4	2		1	78min	3.24	6	7	10	10	10	1		4.5	2		0	1	1	2	8
170	Laxmi Fakirappa	24	up to SSLC	3	39	1		1	2	2.6	1	2	1	27min	2.42	6	5	9	9	10	1	1	3.4	2	Hypoglycemia	0	0	1	2	7
171	Sangeeta Gopal	29	Post graduate	1	39	1		2	1	3.24	2		1	27min	3.2	5	5	8	8	10	2		4.3	2		0	1	1	2	11
172	Savita Shailendra	26	Graduate	3	38	2	Circumvalet placenta	2	2	2.9	2		1	126min	2.76	5	6	8	8	10	1		4.3	2		0	1	2	2	7
173	Koushalya Veerabhadra	26	PUC	2	40	3	Fetal distress	1	2	2.76	2		2	65min	2.5	6	6	10	10	10	1		3.9	2		0	1	2	2	6

174	Yojana Chakravarti	25	Graduate	1	38	4		1	2	3	2		1	41min	3.1	6	7	10	10	10	1		4.3	2		0	1	2	2	12
175	Renuka Jyothi	24	PUC	3	39+6	1		2	1	3.42	2		2	25min	3.36	7	7	9	9	10	1		4.1	2		0	1	2	2	3
176	Swati Mahesh	29	Graduate	2	38	3	Failed induction	1	2	2.57	2		1	75min	2.36	5	5	8	8	9	2		3.5	2	Flat nipples, not latching well	0	1	1	2	7
177	Anjum Gopinath	26	up to SSLC	2	37	1		2	2	2.63	2		2	24min	2.5	7	7	10	10	10	1		3.8	2		0	1	2	2	4
178	Sneha Prakash	28	Graduate	1	39+6	3	Fetal distress	2	1	2.9	2		2	104min	2.8	5	6	9	9	10	1		4.3	2		0	1	1	2	5
179	Sana Shoib	26	PUC	3	40	3	Severe PE	2	2	2.5	2		2	76min	2.3	6	6	7	7	9	2		3.4	2	Not enough secretions	0	0	1	2	6
180	Veena Vittal	27	Graduate	2	40	3	Prev LSCS	2	1	2.9	2		2	76min	2.8	5	7	8	8	10	1		4.2	2		0	1	2	2	5
181	Sheela Veeranna	25	Graduate	2	38	3	Prev LSCS	2	2	2.9	2		2	85min	2.74	5	6	10	10	10	1		4.1	2		0	1	2	2	6
182	Poonam Pundalik	23	Graduate	1	39+4	4		1	1	2.6	2		1	33min	2.42	5	6	8	8	10	1		3.8	2		0	1	2	2	6
183	Girija	29	Graduate	2	37+4	1		1	1	2.8	2		2	32min	2.7	8	9	10	10	10	1		4.1	2		0	1	2	2	4
184	Bhagyashree Kiran	24	PUC	3	38+6	3	Prev LSCS	2	1	3	2		2	101min	2.82	4	4	7	7	9	1	1	4.4	2	Not enough milk on day1 and 2	0	0	1	2	6
185	Shakuntala	26	Post graduate	1	39	4		1	2	2.86	2		1	27min	2.62	6	7	10	10	10	1		4.2	2		0	1	2	2	7
186	Ashwini	19	PUC	4	37	2	Macrosomia	1	1	3.6	1	1	2	75min	3.4	4	5	7	7	8	2		3.36	2	Hypoglycemia	0	1	1	2	6
187	Chandrika	27	Graduate	2	39	3	Prev lscs	2	2	2.9	2		2	83min	2.82	4	7	9	9	10	1		4.1	2		0	1	2	2	5
188	Masira Zaheen	23	Graduate	2	40	1		1	2	3.28	2		2	33min	3.28	8	8	10	10	10	1		4.4	2		0	1	2	2	4
189	Sharanamma Doddamani	35	Graduate	2	37	2	Prev lscs	2	2	2.9	2		2	46min	2.82	6	7	10	10	10	1		4.3	2		0	1	2	2	6
190	Muttavva Laxman	24	PUC	3	40	1		2	1	2.5	2		2	25min	2.4	5	5	7	7	8	2		3.2	2	Not latching well	0	1	1	2	4
191	Priya Krishnakumar	26	Graduate	2	38	2	Prom	1	1	2.6	2		2	93min	2.48	6	7	10	10	10	1		3.8	2		0	1	2	2	6
192	Misbha	19	up to SSLC	3	39	1		1	1	2.8	2		1	24min	2.6	7	7	10	10	10	1		3.9	2		0	1	2	2	7
193	Tehseen Khalid	28	Graduate	1	39	3	MSL	1	2	2.7	1	1	2	75min	2.54	5	5	7	7	8	2		3.5	2	Hypoglycemia	0	1	1	2	5
194	Fathima Hidayat	31	PUC	3	39	4		2	2	2.7	2		2	28min	2.58	7	8	10	10	10	1		3.9	2		0	1	2	2	4
195	Sharon Deendayal	24	Graduate	2	40	3	Fetal tachycardia	1	1	3.1	2		2	77min	2.84	6	6	10	10	10	1		3.9	2		0	1	2	2	7
196	Laxmi Anil	31	Graduate	2	38	2	Prev lscs	2	1	3.5	2		2	86min	3.3	4	4	4	4	6	2		4	2	Inverted nipple	0	0	0	1	6
197	Heena Grasin	32	Graduate	2	39	3	Failed induction	1	1	3.3	2		2	71min	3	4	7	9	9	10	1		4.4	2		0	1	1	2	7
198	Vandana	30	Post graduate	1	40	3	Fetal distress	2	2	3.7	2		2	85min	3.5	5	6	7	7	10	1		4.8	2		0	1	1	2	6
199	Sushmita Anand	23	Graduate	2	38+3	4		1	1	3.18	2		2	45mim	3	6	7	9	9	10	2		4.1	2	Travelling	0	1	2	2	4
200	Savita Vishwanath	29	Graduate	1	40	1		2	1	3.4	2		2	27min	3.32	7	9	9	9	10	1		4.6	2		0	2	2	2	4
201	Pavitra Jagadish	32	Post graduate	1	38	2	Prev LSCS	2	1	3.2	2		2	64min	3.1	4	6	9	9	10	1		4.3	2		0	1	2	2	6
202	Meenaxi Hanumesh	22	Graduate	2	38	2	Prev lscs	2	2	2.88	2		2	80min	2.68	6	8	9	9	10	1		4	2		0	1	2	2	8
203	Savita Patil	26	Graduate	2	38	2	Circumvallet placenta	2	2	2.9	2		2	66min	2.8	5	6	10	10	10	1		4.1	2		0	1	2	2	6
204	Rutuja Satish	26	PUC	3	38+1	3	Oligohydramnios with fetal distress	1	2	2.7	2		2	54min	2.52	4	5	6	6	7	2		3.5	2	Not latching well, baby cries always	0	2	1	1	6
205	Pooja Sangamesh	25	Graduate	2	38	4		1	2	2.8	2		2	24min	2.7	7	8	9	9	10	1		3.9	2		0	1	2	2	4
206	Deepa Sanju Pujar	24	Graduate	1	39	3	MSL	1	2	3.3	2		2	62min	3.1	6	7	9	9	10	1		4.4	2		0	1	2	2	6
207	Neeta Santosh	24	Graduate	2	39	3	CDMR	1	1	3.05	2		2	66min	2.8	5	6	8	8	10	1		4.1	2		0	1	2	2	5
208	Deepa Sangamesh	25	Graduate	1	37	3	Fetal distress	1	1	2.9	2		2	67min	2.8	6	7	9	9	10	1		4	2		0	1	2	2	4
209	Seema Amit	25	Graduate	2	38	2	Prev lscs	2	1	2.52	2		2	70min	2.4	3	5	7	7	9	2		3.6	2	Not feeding well	0	1	1	2	6
210	Priyanka	26	Graduate	1	39+1	1		1	2	2.88			2	20min	2.76	7	8	9	9	10	1		4	2		0	1	2	2	3
211	Roopa Sankannavar	23	PUC	3	39+3	2	Prev Lscs	2	1	3.1	2		2	77min	2.9	5	6	6	6	10	2		4.2	1	Dehydration, hyperbilirubinemia	0	1	1	2	4
212	Vidya Suresh	30	Graduate	1	38+5	1		2	1	3.3			2	27min	3.3	7	7	7	7	10	1		4.5	2		0	1	1	2	2
213	Akshata Sachin	24	Graduate	2	40	4		2	2	3	2		2	23min	2.92	7	7	9	9	10	1		4.2	2		0	1	2	2	3
214	Laxmi Basavraj	21	PUC	3	40+2	3	Failed induction	1	1	2.66	1	2	2	64min	2.52	2	4	4	4	7	2		3.5	2	Hypoglycemia	0	1	1	1	4
215	Akshata Sangamesh	22	diploma	2	37+4	1		1	1	2.75	2		2	16min	2.74	7	8	8	8	10	1		4	2		0	1	2	2	2
216	Renuka Basappa	31	Graduate	2	39+5	3	Prev lscs	2	2	3.06	2		2	65min	2.8	6	7	9	9	10	1		3.9	2		0	1	2	2	6
217	Geetanjali	37	post graduate	1	38+4	2	Prev lscs	2	1	3.1	2		2	90min	2.9	6	7	8	8	10	1		4.4	2		0	1	2	2	5
218	Pooja Chandrashekhar	25	Graduate	2	40+2	3	Fetal tachycardia	1	1	3.4	2		2	74min	3.22	4	6	9	9	10	1		4.4	2		0	1	2	2	6
219	Ashwini	28	Graduate	1	37	3	Prev lscs	2	1	2.8	2		2	51min	2.72	6	7	9	9	10	1		4.1	2		0	1	2	2	5
220	Hanumavva	21	up to SSLC	3	37		Prev lscs	2	2	2.6	2		2	79min	2.4	5	6	8	8	10	2		3.5	1	Not enough milk	0	1	2	2	6
221	Farzana	33	Post graduate	1	40	2	Prev lscs	2	1	3.1	2		2	73min	2.8	6	7	9	9	10	1		4.2	2		0	1	2	2	5
222	Vidya Shivanand	29	Graduate	2	38	2	Prev lscs	2	1	2.6	2		2	74min	2.5	5	6	9	9	10	1		3.7	2		0	1	2	2	4
223	Nagveni Patil	28	Graduate	1	40	1		1	1	3.1	2		2	26min	2.93	6	7	9	9	10	1		4.2	2		0	1	2	2	4

224	Vanita Mugabasa	22	Graduate	2	40	3	Msl	1	1	3.8	2		2	54min	3.64	6	7	9	9	10	2		4.8	2				2	2	5
225	Saraswathi Vijay Vantamuri	39	Post graduate	1	38	2	GDM	2	2	3.38	2		2	48min	3.1	6	6	8	8	10	1		4.4	2		0	1	1	2	5
226	Akshata Somaning	20	PUC	2	38	3	Prev lscs	2	2	3.5	1	2	2	95min	3.4	3	6	6	6	8	2		4.2	2	Hypoglycemia, not latching well	0	1	1	1	7
227	Yojana	25	Graduate	2	38+2	4		1	2	3	2		2	26min	2.88	6	8	9	9	10	1		3.9	2		0	1	2	2	4
228	Triveni Dadamode	28	Graduate	2	38	2	GDM, precious pregnancy	2	2	3.5	2		2	78min	3.36	6	7	10	10	10	1		4.8	2		0	1	2	2	7
229	Swetha Suresh	20	up to SSLC	3	41	4		1	2	2.5	2		2	33min	2.4	4	5	6	6	8	2		3.4	2	Water was fed as baby was crying excessively	0	0	1	1	4
230	Mayuri Kapil	32	Graduate	1	39	3	Precious pregnancy	1	2	2.6	2		2	65min	2.4	6	7	8	8	10	1		3.6	2		0	1	2	2	7
231	Sharada Suresh	35	Graduate	2	37	2	Prev lscs	2	1	3.5	1	2	2	64min	3.36	4	7	9	9	10	1		4.7	2		0	1	2	2	6
232	Sapana Praveen	30	Graduate	1	37	2	Prev lscs	2	1	3	2		2	59min	2.84	4	5	7	7	9	1		4.2	2		0	1	2	2	6
233	Tadannur	29	Graduate	3	37	2	Prev lscs	2	1	2.7	2		1	47min	2.52	6	7	9	9	10	1		4	2		0	1	2	2	7
234	Deepa Sanju	24	Graduate	2	39	3	Fetal distress	1	2	3.3	2		2	47min	3.1	6	7	10	10	10	1		4.5	2		0	1	2	2	5
235	Akshata S	20	PUC	3	38	3	Hbs ag positive	2	2	3.55	2		2	80min	3.36	5	6	9	9	10	1		4.6	2		0	1	2	2	6
236	Saraswati V	39	Post graduate	1	38	2	GDM	2	2	3.38	1	2	2	78min	3.1	4	4	7	7	9	2		4.3	2	Hypoglycemia, not enough secretions	0	0	1	2	7
237	Vanitha	22	Graduate	2	40	3	Fetal distress	1	1	3.8	2		2	69min	3.68	5	6	10	10	10	1		4.6	2		0	1	2	2	6
238	Nausheen Pathan	30	Graduate	2	37	2	Prev lscs	2	1	2.92	1	2	2	49min	2.8	4	6	8	8	9	2		4.1	2	Hypoglycemia	0	1	1	2	4
239	Pooja Kiran	20	PUC	2	38	1		1	2	2.91	2		2	29min	2.86	7	6	7	7	10	1		4.1	2		0	1	1	2	2
240	Akshata	22	Graduate	3	37	1		1	1	2.5	2		2	26min	2.42	7	7	9	9	10	1		3.6	2		0	1	2	2	3
241	Ujwala mangatkar	22	Graduate	2	39	1		2	2	2.6	2		2	28min	2.46	7	8	10	10	10	1		3.6	2		1	2	2	2	3
242	Malashree Naroti	26	Graduate	2	38	3	Fetal tachycardia	1	2	2.5	1	2	2	74min	2.3	6	7	10	10	10	1		3.6	2		0	1	2	2	5
243	Vidya Kittur	27	Graduate	1	37+5	2	GDM	1	1	2.9	1	2	2	93min	2.64	3	5	7	7	8	2		3.8	2	Hypoglycemia, not latching well	0	1	1	2	6
244	Supriya Bagewadi	26	Graduate	1	40	4		1	2	3	2		2	30min	2.9	6	7	9	9	10	1		4.3	2		0	1	2	2	3
245	Seema Kallur	23	Graduate	2	39+4	3	Gest HTN	1	1	3.6	2		2	70min	3.42	6	6	8	8	9	1		4.8	2		0	1	2	2	4
246	Asha Girish	23	Graduate	2	38+1	3	Severe PE	2	1	2.85	2		2	65min	2.68	6	7	10	10	10	1		4.1	2		0	1	2	2	4
247	Rashmi Shivangouda	35	Graduate	1	38	3	Precious pregnancy, PROM	2	2	3.3	2		1	53min	3	5	6	9	9	9	2		4.2	2	Less secretions	0	1	1	2	6
248	Sharada Laxman	24	Graduate	2	37	3	Previous LSCS	2	1	2.65	2		2	80min	2.5	3	5	9	9	10	2		3.8	2	Mother had fever	0	1	2	2	5
249	Sharada Gante	21	PUC	2	40	1		2	2	3.1	2		2	29min	3	9	8	9	9	10	1		4.3	2		0	1	2	2	2
250	Laxmibai Basavraj	33	Graduate	2	37+4	3	Prev LSCS with PROM	2	2	3	2		2	69min	2.86	4	5	8	8	9	1		4.2	2		0	1	1	2	4
251	Supriya	30	Graduate	2	40	3	MSL	1	1	3.09	2		2	77min	2.94	6	7	8	8	10	1		4.2	2		0	1	2	2	4

ANNEXURE-V

KEY TO MASTER CHART

Sex:

1- Male

2- Female

Parity

1- Primi

2- Multi

SE (socio-economic) class

1- Upper class

2- Upper middle class

3- Middle class

4- Lower Middle

5- Lower class

Mode of delivery:

1- Normal delivery

2- Elective LSCS

3- Emergency LSCS

4- AVD

Hypoglycemic episode

1- Yes

2- No

Treatment of hypoglycaemia

1- NICU

2- Ward

Hyperbilirubinemia

1- Yes

2- No

Exclusive breastfeeding at 6 weeks

1- Yes

2- No

Partial feeding

1- Yes

Any hospitalisation in 6 weeks

1- Yes

2- No

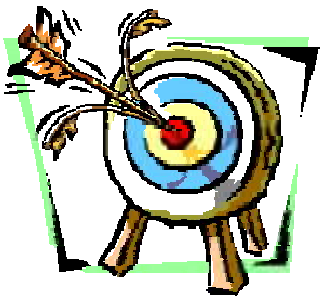
Stages of change in mother

0- Need Help

1- Will Try

2- Can Breastfeed

Introduction



Objectives

Review of Literature

Methodology

Results

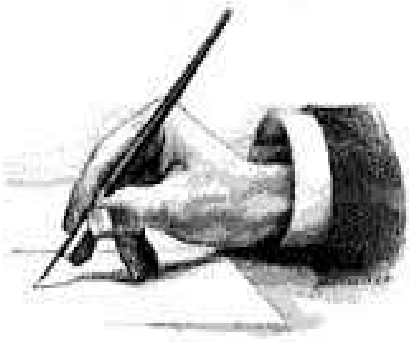
Discussion

Limitation

Conclusion

Summary

Bibliography



Annexure-I

Annexure-II

Annexure-III

Annexure-IV

Annexure-V