Original Research :

Clinical and demographic profile of infants with mothers having lactation failure

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Abstract:

Background: Breastfeeding gives children the best start in life. It is estimated that over one million children die each year from diarrhoea, respiratory and other infections because they are not adequately breastfed.Lactation is influenced by a complex hormonal milieu, including reproductive hormones and metabolic hormones. Lactation failure can have dire consequences on nutritional status of young infants. The present study was carried out to find the demographic and clinical profile of infants whose mothers had lactation failure.

Methods: This was a descriptive study conducted in a tertiary hospital in a metropolitan city.After the clearance from Institutional Review Board, all infants whose mothers had lactation failure were enrolled in this study. All infants underwent clinical examination to evaluate for organic illnesses if any. Detailed anthropometry i.e. weight, length and head circumference of the infants were recorded. Demographic, socioeconomic, antenatal, perinatal and postnatal history was obtained from the mother. Mother's milk output and feeding habits of baby were also taken into account.Mother's nutritional status in the form of present weight was recorded on a digital balance.Data was analysed using student unpaired t test and chi square test.

Results: The mean age of presentation was 1.78 months.Majority (58.3%) of the infants were first by birth order. There were 61.7% pre-terms and 35% were SGA at birth.Fifty five percent infants had a history of NICU stay.Majority (76.7%) of mothers were in the age group of 20-30 years. 56.6% of the mothers had a weight less than 55 kg. There were 43.3% babies born of cesarean section. There was a history of breast feeding having been initiated after 24 hrs in 56.7% infants. At enrollment, 65% babies were already receiving supplementary feeds while only 35% were being exclusively breastfed.

Keywords: Breastfeeding, Lactation Failure

Introduction

Breastfeeding gives children the best start in life. It is estimated that over one million children die each year from diarrhoea, respiratory and other infections because they are not adequately breastfed. Many more children suffer from unnecessary illnesses that they would not have if they were breastfed. The World Health Organization and UNICEF recommend exclusive breastfeeding from birth for the first 6 months of life. However, majority of mothers in most countries start giving their babies artificial feeds or drinks before 4 months.1One of the most frequently cited concerns voiced by new breastfeeding mothers is the question of whether she is providing sufficient milk for her infant.2

Lactation is influenced by a complex hormonal milieu including reproductive hormones

and metabolic hormones.3 In addition to these, breastfeeding is a process that also involves psychological and emotional responses in the mother.4A variety of conditions have been implicated; primiparity, psychosocial stress, maternal obesity, diabetes, hypertension, delayed initiation of breast feeding, prelacteal feeds, stressful labour, low perinatal breastfeeding as the causes very frequency in lactation failure.5

Lactation failure can have dire consequences on nutritional status of young infants. During no other period in life does development, maturation, and growth occur with such rapid velocity and intensity as in the first 6 months.6The period 0 to 6 months is a part of a larger critical 'Window of opportunity' within which the impact of undernutrition has both immediate and long term adverse consequences. Despite the wide range of possible problems and pathologies underlying malnutrition, the cornerstone of treatment will almost always be feeding support.

Health workers can help the mothers and children to breastfeed successfully.7 Positive social support, maternal confidence and attitude,8 intent to breastfeed,9 and knowledgeable health care providers10 are associated with higher breastfeeding initiation and duration.

Materials And Methods

This was a descriptive study conducted in a tertiary hospital in a metropolitan city from October 2014 to September 2015. After the clearance from Institutional Review Board, all the infants with mothers having lactation failure were enrolled in this study. Lactation failure was diagnosed if any two of the below three criteria were present:

a) Maternal perception of low milk output

b) Baby weight for age < -2 SD

c) Presence of breast/ nipple problem or presence of faulty feeding habits

A total of 60 underweight infants were enrolled in this study. Infants with organic cause for malnutrition and infants born to HIV positive mothers were excluded from the study. All infants underwent clinical examination to evaluate for organic illnesses. Detailed anthropometry i.e. weight, length and head circumference of the infants were recorded. Weight was recorded on an electronic weighing scale with accuracy up to 10 grams. Length was recorded in a standard format on an infantometer with accuracy up to 1 centimeter. Detailed demographic, socioeconomic, antenatal, perinatal and postnatal history was obtained from the mother. Mother's milk output and feeding habits of the baby were also taken into account. Mother's nutritional status in the form of present weight was recorded on a digital balance. Data was given as Mean and SD for quantitative variables and Number (Percentage %) for qualitative variables. Student unpaired t test and chi square test were applied for the above two respectively

Results

Data from total 60 infants were analyzed. The results of this study were categorized as follows:

a) Demographic and clinical parameters of infant: The mean age in months in our study was found to be 1.78. Female preponderance was observed with Male : Female ratio of 0.6:1. Majority (85%) were belonging to upper lower socio economic strata while 11.7% were belonging to lower socioeconomic strata. First by birth order was seen in 58.3% .There were 61.7% preterms while 35% were small for gestational age at birth. Neonatal Intensive Care Unit support was needed in55% infants.

b) Demographic and clinical parameters of mother: Maximum (76.7%) mothers were in the age group of 20-30 years and 8.3% mothers had weight <45 kg at enrollment. Multiple gestation was observed in 25% mothers. More than half (56.7%) babies were born by cesarean section.

c) Feeding habits of the baby: Breast feeding was initiated after 24 hours in 56.7% infants. At the time of enrolment, 65% babies were already receiving

complementary feeds while 35% were being exclusively breastfed.

d) Anthropometry: The mean weight in Kilograms of infants was 2.03 ± 0.68. The mean length in centimeters was 45.52 ± 4.87.

Discussion

In this study we focused on the demographic and clinical profile of infants with mothers having lactation failure.

Table 1 depicts demographic and clinical details of infants. Mean age in months in our study was found to be 1.78.The mean weight in kilograms of infants at enrolment was 2.03 ± 0.68. The mean length in centimeters was 45.52 ± 4.87. Majority of the babies were of low birth weight probably because the mothers were referred to us from the high risk outdoor. In a study by Lefebvre, the incidence rates of lactation at delivery were 73% for the control group and 58% for the low-birth-weight group; 11% of the infants of low birth weight fed breast milk were never put to the breast.11

Females (61.7%) outnumbered males (38.3%) with M: F ratio of 0.6:1.Studies done by J.Siza in Tanzania12 and C. Nobile et al in Italy13 on low birth weight infants, showed that the prevalence of low birth weight was higher in females than in males

Out of 60 infants in our study group, 51 (85%) were belonging to upper lower socio economic strata while 7 (11.7%) were belonging to lower socioeconomic strata. This highlights the high prevalence of low birth weight among women from lower socioeconomic strata. Similar observations were made by Pathak et al, C. Li and F. Sung, Laura P. et al in their respective studies. 14,15,16

Thirty five (58.3%) infants were first by birth order in our study population.A study done by Silva et al demonstrated association between LBW and primiparity.17

There were 37(61.7%) preterm and 23 (38.3%) term infants in our study.In a study by F. Jafari, out of 305 low birth weight newborns,159 were preterms and 146 were terms.18Similar observations were made in studies done by C.Nobile et al 13 and J.Siza.12

Thirty three (55%) infants had history of NICU stay. Nobile et al in their study on LBW babies found that LBW newborns were more likely to be in need of intensive care as against normal weight newborns (16% vs. 0.8%).13 NICU stay is known to have a negative impact on lactation resulting in delayed onset lactation and subsequently poor weight gain in the newborn.

Table 2 depicts demographic and clinical details of mothers. In our study 46 (76.7%) mothers were in the age group of 20-30 years.In a study by Kumar et al it was found that majority of the mothers with low birth weight babies were belonging to 20-29 years age group.19

Majority of the mothers had weight less than 55 kg (56.6%). None of the mothers were found to have weight greater than 60 kg.A study done by J. Siza on risk factors associated with low birth weight showed that the highest prevalence (17.14%) of low birth weight infants was observed in mothers who were malnourished (BMI<18). 12The fact that our study too has most mothers in the lower weight bands highlights the importance of maternal nutritional status and its bearing on the infant's overall health and well-being. In a study done by Kathryn G. Dawey et al on risk factors for delayed onset lactation and weight loss in infants it was found that suboptimal infant breastfeeding behavior (SIBB) and delayed onset of lactation was significantly associated with maternal overweight.20 However such a correlation could not be established in our study.

Out of our total study population, 15(25%) mothers had multiple gestation, 9(15%) had a history of PIH, 8(13.33%) had history of oligohydramnios while 2(3.3%) were anemic.

There were 26 (43.3%) babies who were delivered by caesarean section. Nobile et al 13 , Lee et al21, Silva et al 17 in their respective studies demonstrated association between LBW and caesarean delivery. Chan Set al in their study found that caesarean delivery was a risk factor for not initiating breast?feeding, for breast?feeding less than 1 month, and remained a significant hazard against breast?feeding duration.22 In studies done by Carlander et al 23and Zanardo et al24 respectively it was stated that cesarean section was a significant barrier to the implementation of exclusive breastfeeding. In a study done by Dawey et al on risk factors for delayed onset lactation and weight loss in infants it was found that suboptimal infant breastfeeding behaviour (SIBB) and delayed onset of lactation was significantly associated with cesarean delivery.20On the contrary, a study by R. Patel et al 25 and by E. Prior et al.26stated the negative associations between cesarean delivery and early breastfeeding and consequent implications for infants well-being.Three (5%) mothers had retracted nipples in our study.

Table 3 depicts feeding details of the baby. Only 5(8.3%) infants had a history of having been initiated on breastfeeding within the first hour of life. Thirty four (56.7%) babies received breast feeding after first 24 hours owing to their poor initial sucking reflex.

A study by Lefebvre showed that the mean age at first suckling was 277.3 hours in the low-birth-weight group, compared with 3.3 hours in the control group.11 A study done by G. Mathur et al in Kanpur on lactation failure found that initiation of breast feeding was delayed for 2-5 days either for traditional reasons or because the mothers felt that the milk output was inadequate.27 S. Chan et al also found association between delayed initiation of breastfeeding and lactation failure.28 Hence, early initiation of breastfeeding is not only protective for the baby in terms of preventing malnutrition in the long run, but is also beneficial for the mother in preventing lactation failure, which in turn benefits the baby.

None of the babies enrolled in our study received prelacteal feeds.

Out of 60 babies, 21(35.0%) were on exclusive breast feeding. Twelve (20.0%) were receiving cow's milk along with breast milk. Formula feeds were started in addition to breast milk in 27 (45.0%) babies

Conclusions

The mean age of presentation was 1.78 months. Mean weight at enrolment was 2.03 kgs. Female preponderance was observed with Male: Female ratio of 0.6:1.Majority (58.3%) of the infants were first by birth order. There were 61.7% pre-terms and 35% were SGA at birth.Fifty five percent infants had a history of NICU stay. Majority (56.6%) of the mothers had a weight less than 55 kg and were in 20-30 yrs age group. Prevalence of anemia was found only in 3% mothers. Twenty five percent mothers had multiple gestation. 43.3% babies were born of cesarean section. There was a history of breast feeding having been initiated after 24 hrs in 56.7% infants. At enrollment, 65% babies were already receiving supplementary feeds while only 35% were being exclusively breastfed.

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Declarations

Contributions: RM: Conducted the study and drafted the manuscript; **AJ:** Conceptualized and designed the study, guided through the study and finalized the manuscript with important intellectual inputs; **PK:** Helped in analysing the data. The final manuscript was approved by all authors.

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TABLES

Table 1. Demographic and Clinical Parameters of Infants

Gender	**Total n (%)**
Male	23(38.3)
Female	37(61.7)
Socioeconomic strata	
Lower	7(11.7)
Upper lower	51(85)
Lower middle	2(3.3)
Birth order	
First	35(58.3)
2-4	24(40)
>4	1(1.7)
Gestation	
Preterm	37(61.7)
Term	23(38.3)
Post-term	0(0)
SGA/AGA/LGA	
SGA	21(35)
AGA	39(65)
LGA	0(0)
Past history	
NICU stay	33(55)
Post neonatal hospitalization	1(1.7)
Non contributory	26(43.3)

Table 2. Demographic and Clinical Parameters of Mothers

Mother's age	**Total n(%)**
<20	0(0)
20-30	46(76.7)
30-35	12(20)
>35	2(3.3)
Mother's weight	
<45	5(8.3)
45-55	29(48.3)
55 - 60	26(43.3)
>60	0(0)
Antenatal history	
PIH	7(11.7)
Oligohydramnios	8(13.3)
Leaking PV/Bleeding PV	1(1.7)
Anemia	2(3.3)
Multiple gestation	15(25.0)
None	27(45.0)
Mode of delivery	
Vaginal	34(56.7)
Caesarean	26(43.3)
Breast and Nipple problem	
Flat / retracted nipples	3(5)
Cracked nipple	0(0.0)
Mastitis	0(0.0)
Breast Abscess	0(0.0)
Others	0(0.0)

Table 3. Feeding Details of the Baby

Initiation of BF	**Total** n(%)
Less than 1 hr of birth	5(8.3)
1 to <4 hrs	12(20.0)
4 to <24 hrs	9((15.0)
>1 day	34(56.7)
Prelacteal feeds	
Yes	0(0.0)
No	60(100.0)
Present feeding pattern	
BF only	21(35.0)
BF+ Cow's milk	12(20.0)
BF+ Formula feeds	27(45.0)
Only cow's milk	0(0.0)
Only formula feeds	0(0.0)
Average no. of feeds given per day	7.78