

DETERMINING THE NEONATAL WEIGHT TREND AND THE FACTORS AFFECTING IT IN HEALTHY LATE PRETERM AND TERM NEONATES IN A TERTIARY CENTER.

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ABSTRACT

BACKGROUND: Weight changes in the early weeks of life are important indicators of newborn wellness. Research aim: This study aimed to determine the weight trend in healthy late preterm and term neonates and also the factors affecting weight trend in healthy late preterm and term neonates in first 14 days of life.

METHODS: Eligible newborns daily weights was assessed on electronic digital weighing scales. Weights were recorded daily during the hospital stay and later on daily till 14 days of life. Daily weight loss in grams, maximum weight loss in percentage, time to reach birth weight were noted.

RESULTS: Among the among 320 healthy Term and Late preterm neonates, showed Mean weight loss was $6.35 \pm 2.2\%$. Majority of neonates lost between 5-10% of their birth weight. 41.2% of them lost maximum weight from their birthweight by day 5 and 20.9% lost maximum weight from their birthweight by day 4. Average per day weight loss in grams was 28.7 ± 3.4 . majority of neonates attained their birth weight within 8-14 days.

CONCLUSION: Out of 320 new-borns has weight loss with maximum in between Day 4 to Day 5 followed by a weight gain with majority of neonates reaching their birth weight by end of 14 days of life. Maximum weight loss mean of study population was $6.35 \pm 2.2\%$. Factors affecting excess weight loss of 7% were weight for gestational age, Time of initiation of breast feeding, Anatomical problems in breast feeding and Type of feeding.

KEY WORDS: Breast feeding, weight gain, weight loss, preterm, term.

INTRODUCTION

The first week of postnatal life is characterized typically by weight loss in neonates. This occurs mostly due to loss of Extracellular fluid [1]. Full term neonates may lose 5-10% of body weight by 4-6days. When there is increased production of copious mature milk, the neonates begin to gain weight. Babies who are breast fed will regain their birth weight on an average, by 8.3 days. A systematic review reported that the mean rate of Neonatal weight loss was 3.79% to 8.6% [2]. Losing weight by more than 5% to 7% is considered as a warning sign of excessive weight loss (EWL) (3;4).

International association of breastfeeding (5) and American academy of breastfeeding (6) recommend that if infants lose weight more than 7%, they should be examined and receive a medical intervention. Hypernatremic dehydration is potential complication which occur in infants who lose weight excessively and may lead to serious medical complications and even mortality(7). Thus, identification of factors associated with weight loss could help in prevention of excessive weight loss.

The excessive weight loss by AAP was defined as >7% in the breast-fed infants [8] But it is commonly observed that many neonates lose weight more than 7% [9]. In the UK, the National Institute for Health and Care Excellence guidelines recommend 10% as the maximum acceptable weight loss in healthy term infants. [10] In several studies, researchers identified new-borns who lost excess weight, which was defined differently by different authors. In two studies, greater than 7% weight loss was used as this marker [11,12]. More than half of all breastfed neonates in these studies (56% and 58%, respectively) lost greater than 7% of birth weight after birth. When maximal weight loss was examined at approximately 2.5 days, Mezzacappa, M. A et al found that 26% of the neonates in study lost greater than 8% of birth weight [13]. Similarly, Verd et al. found that 21% of neonates in study lost greater than or equal to 8% at hospital discharge [14]. At 72 hours, Flaherman et al. [15] reported that 25% of newborns born by caesarean had lost greater than or equal to 10% of their birth weight but only in 5% neonates delivered vaginally. It was also shown that when classifying the significant weight loss as excess of >10%, is associated with hypernatremia and neonatal hyperbilirubinemia [16]. A recent review quoted that up to 12% weight loss may not be associated with any complications [17].

Several factors are associated with either the degree or the timing of maximal weight loss of newborns: intrauterine growth status, type of infant feeds, with breastfed infants showing greater weight loss in the early days. Epidural use has been associated with delayed and diminished neonatal suckling [18]. There is some evidence that infants born to mothers who received iv fluids during parturition experience greater weight loss, and excess neonatal diuresis could be the reason [18]. Thus, identification of factors associated with weight loss could help in prevention of excessive weight loss and thereby potential complications.

The most common cause of excessive weight loss and hypernatremia is inadequate breast milk intake. Lactogenesis stage II, the onset of sufficient milk production, occurs during the first 4 days after delivery (19). It is possible for a suckling infant to get a volume of <100 mL/day on the first day of life while milk production rapidly increases to an average of 500 mL/day by the 4th day (20). Therefore, the recovery of weight loss is expected to occur by the end of the first week. As stated by MacDonald et al. (7), the median time of maximum weight loss and recovery has been determined to be 2.7 and 8.3 days, respectively. It has been widely accepted that breastfeeding is the best way of feeding infants, and paediatricians greatly emphasize the expansion of breast milk use. Health professionals, who are involved with these issues, have reached a consensus on the success of breastfeeding. In addition, it is very important to identify potential problems and barriers to successful breastfeeding, and denial of such problems leads to growth impairment. Since providing support and advice to nursing mothers may be insufficient, regular and indirect monitoring of weight will be helpful in evaluating feeding as either adequate, requiring infant formula supplement, or expressed breast milk. American Academy of Pediatrics (2012) recommended the policy of "Breastfeeding and the Use of Human Milk" for infants, who are breast fed and lose more than 7% of their weight. The definition of normative newborn weight loss in the early post birth period and the factors that influence newborn weight loss are essential pieces of information for the health care provider.

METHODS

Aim of the study

- a) To determine the weight trend in healthy late preterm and term neonates in first 14 days of life.
- b) To determine the factors affecting weight trend in healthy late preterm and term neonates in first 14 days of life .

Objectives of the study

- a) To determine the average per day weight loss in grams.
- b) To determine the average maximum weight loss percentage.
- c) To determine the time taken to reach birth weight.
- d) To determine the antenatal, natal and postnatal factors affecting neonatal weight trend.

Source of data:

All healthy late preterm and term neonates admitted in Postnatal ward of Kamineni general hospital attached to Kamineni academy of medical sciences and research centre .

Sample size:

The sample size for the present study was calculated based on the prevalence of weight loss of > 10% within the first 72 hours of birth (where the weight loss peaks)

$$n = Z^2 \times P \times Q / d^2$$

where, **n** = Sample size required, **Z** = Critical value for a corresponding level of confidence= 1.96 for 95% confidence level, **P** = Prevalence of > 10% weight loss within the first 72 hours of newborns from the reference study = 25%, **Q**= 100- P = 100- 25 = 75%, **d** = Acceptable margin of error = 5%

The above values were substituted in the formula as follows

$$n = 1.96 \times 1.96 \times 25 \times 75 / 5 \times 5 = 288$$

Thus, expecting the possible attrition of 10%, sample size was calculated to 320 for the study.

Inclusion criteria

- a) Healthy late preterm and term neonates (more than or equal to 34 weeks of gestational age)
- b) Children whose parents gave consent for participating in the study .

Exclusion criteria

- a) Babies admitted in NICU at birth.
- b) Babies with congenital malformations or syndromic nature .
- c) Infants born to mothers with psychological illness.

Type of study:

Prospective Observational Study.

Study period:

From November 2020- November 2022.

Statistical analysis:

Data was entered into Microsoft Excel (Windows 10; Version 2020) and analyses were done using the Statistical Package for Social Sciences (SPSS) for Windows software (version 22.0; SPSS Inc, Chicago). All the data which is recorded was entered into the Microsoft excel sheet.

Categorical variables were compared by Chi square test or Fisher's Exact test. Mean \pm SD of normally distributed numeric variables were compared by unpaired-t test. To identify the predictors or factors influencing excessive weight loss, multivariate logistic regression analysis was done, and p values were calculated.

RESULTS AND OBSERVATIONS.

In the Table 1, Correlation taken between categorical variables which influenced the outcome of surfactant installation and Fisher exact Test, P Value calculated.

It became evident that higher the gestational age better the outcome(discharge rate) with surfactant therapy showing significant correlation (<0.001).Small for gestational age babies who got surfactant

therapy had adverse outcome(100% death) whereas the appropriate for gestational age group had better outcome showing significant correlation (0.013). When compared to twins, single gestation babies who were given surfactant had good outcome with good discharge rate(80%) and statistically significant (0.050). There is no strong association between surfactant doses and outcome in this study. Giving CPAP ventilation after surfactant therapy had a better outcome (79.6%) than mechanical ventilation and its statistically significant(<0.001).

In the Table 2, Correlation taken between categorical variables which influenced the outcome of surfactant installation and Unpaired t Test, P Value calculated.

We observed that higher the birthweight better the outcome showing good association(<0.001) between birthweight and outcome with surfactant therapy. When SAS score is taken into consideration, less severe the SAS more discharge rate is observed showing strong association between outcome and severity of respiratory distress. Taking length of hospital stay into consideration, babies who stayed longer than 1 week had good outcome showing strong correlation between length of hospital stay and surfactant therapy (<0.001).

When time of presentation and installation of surfactant taken into consideration and correlated with the outcome, results are tabulated in table 3. They presented in the range of 1 to 192 hours of life and are given surfactant based on the hour of presentation. There is no significant correlation between hour of installation of surfactant with respect to hour of presentation in our study

In table 4 overall outcome Of the 150 study subjects who were given surfactant is tabulated, among them 68(45.3%) were died and 82(54.7%) have been discharged.

In the table 5, Out of the 150 babies who were enrolled in the study 2 babies (1.3%) had air leak as complication, 22(14.7%) had apnea, 1 baby (0.7%) had BPD/CLD, 16(10.7%) had hypotension, 1 baby (0.7%) had IVH, 25 babies (16.7%) had pulmonary hemorrhage as complication, and the remaining 83(55.3%) had no complications.

DISCUSSION

In this study, Out of 320 neonates, 51%(164) were males and 49%(156) were females compared to a study by Carla et al [21] 53.1% (117) neonates were males and 46.9%(103) neonates were females. 49.0%(157) were born to para 1 mother, 44.0%(141) were born to para 2 mother, 6.9%(22) were born to para 3 mother compared to a study by Ghaisi et al[22], which showed 31.8% of mothers to be primiparous and 68.2% were multi parous. 269 out of 320 neonates of this study were initiated on breast feeding within one and half hour compared to study done by Caglar et al[23], in which out of 90 neonates the mean time for breast feeding initiation in hours was 3.89 ± 2.37 hours vs 2.14 ± 1.31 hours for neonates with greater than 10% weight loss and those with less than 10% weight loss respectively. 43 neonates of this study had mothers with anatomical problems in breast feeding compared to study by Caglar et al [23], which showed out of 90 neonates, mothers of 21 neonates faced with breast conditions associated with breast feeding difficulties. In the present study, 143 neonates were on exclusive breast feeding whereas 177 neonates were given mixed type of feeding compared to study by Crossland et al[24], in which out of 253 babies, 111 were on exclusive breast feeding and 142 neonates were on formula feeding.

In this study, Average Maximum weight loss percentage of all neonates in 14 days was 6.35 ± 2.2 , the range of weight loss was 0.4%-16.9% and Out of the total 320 neonates, 19.6%(63) neonates lost less than 3.5% of their birth weight, majority 47.8%(153) neonates lost between 3.5-7% of their birth weight, 32.5%(104) neonates lost more than 7% of their birth weight was comparable to other studies including a study done by Carla et al[21], in which Mean Physiological weight loss of neonates was 6.4% (SD \pm 2.44%). Increased Physiological weight loss (> 7%) was observed among 89 neonates and extreme Physiological weight loss (> 10%) was observed among 13 neonates. Demarzo et al [25] report that 8.7% of infants lost more than 7% of their birth weight. Noel-Weiss J et al. [2], in their systematic review of five electronic databases reported that mean weight loss ranged from 5.7% to 6.6%. In Crossland et al[24] study, Average maximum weight loss in breast fed neonates was 6.4%(95% C.I.:5.5-7.3%) and Artificial fed neonates was 3.7%(95% C.I.:2.7-4.7%). In Martens et al

[26] study, Mean weight loss was $5.09 \pm 2.89\%$ whereas In Ghaisi et al [22] study Mean weight loss was $4.04 \pm 3.19\%$.

In this study ,Among the neonates majority 41.2%(132) of them lost maximum weight from their birthweight by day 5 and 20.9%(67) lost maximum weight from their birthweight by day 4 compared to Crossland et al [24] study, in which most of neonates stopped losing weight by day 3 ,but in 5% of the breastfed and 5% of artificially fed babies, the lowest weight was recorded on the sixth day of life. In Carla et al [21] study , Day of maximum Weight loss was day 3 and day .

In this study , 13.1%(42) out of 320 neonates attained their birth weight within 1-7 days and majority 52.5%(168) of them attained their birth weight within 8-14 days compared to Carla et al[27] study , in which majority of neonates regained their birth weight by day 10. In Crossland et al [23]study ,half of the breast fed babies regained their birth weight by day 9 and half of the artificially fed babies regained their birth weight by day 7 .85% of babies regained their birth weight by day 14. In a study by Hossain et al.[27] it was 91.57% ,whereas, in this study out of 320 neonates ,34.3% (110) of them did not attain their birth weight within 2 weeks, the delay in regaining birthweight might be due to excessive weight loss in the first week of life. In study population ,32.5% had lost more than 7% weight loss, in whom 59.6%(62) neonates did not reach birth weight with 14 days suggesting neonates with more weight loss may be taking longer time to regain birthweight.

In the present study, Out of 320 neonates majority 65.6% regained their birth weight within 14 days of life compared to Crossland et al[24] study ,in which 85% of babies regained their birth weight by day 14.In a study by Van Dommen et al[28], one third of neonates did not regain birthweight by day 11 and of them majority did not regain birth weight by day 14.Although , 34.6% babies did not regain their birth weight by day 14 in the present study ,these neonates may have regained their birth weight by day 21 . These differences are probably due to variables such as mother and infant's characteristics, breastfeeding management, nutritional protocols in hospitals .Macdonald et al[7] suggested a revised intervention criterion to offer additional breast feeding support to those losing 10% of their birth weight but still consider this as normal and only consider weight loss above 12.5% or failure to regain birth weight by 21 days as being abnormal and requiring medical assessment.

In the study population ,to understand the factors affecting weight trend ,individual variables affecting more than 7% weight loss was considered and Multiple binary logistic regression analysis was done. The analysis showed Initiation of breast feeding after one and half hour, Anatomical problems in feeding ,breast feeding and neonate being born as large for gestational age or Small for gestational age as significant factors that cause more than 7% weight loss and affect weight trend in first 14 days of life compared to , Carla et al[21] study, in which factors as gestational age, birth weight (low birth weight, high birth weight), delivery type, jaundice and infections showed no significant influence on Physiological weight loss.

In a study conducted by Jane et al[29] in 2010, female gender was one of the predictors of Neonatal weight loss in the first 24 hours after birth. In the present study ,no significant difference in maximum weight loss was noted between male and female neonates.

In this study, infants weighing more or less for gestational age ,either LGA or SGA babies lost more weight than those babies born appropriate for gestational age which was comparable to study done by Wright et al.[30] , which showed birth weight was a strong predictor of Weight loss. In their opinion, large-for-gestational age and breastfed infants lose more weight .

In the present study , no significant relationship was found between Weight loss and parity. In other studies, the effect of the number of pregnancies as a predictor of Neonatal weight loss has been mentioned as a contradictory result. Some studies have reported a positive relationship between Weight loss and nulliparity[31] , while Martens et al.[26] , observed no relationship between the number of pregnancies and Neonatal weight loss .The difference in results in different studies may indicate that mother's breastfeed experience seems to be more effective than the number of pregnancies in determining neonatal weight loss during the first days after birth, and may be mothers,

who do not manage to successfully breastfeed their infants in their previous pregnancy, will be at risk in their next pregnancy. Thus showing the need for further studies in this regard.

In this study, maximum weight loss and time to reach birth weight are similar in neonates born by caesarean section and vaginal delivery. In contrast, a study from Brazil by Mezzacappa and Ferreira et al [13], in 2016 found out that in exclusively breastfed neonates, Caesarean delivery might be a risk factor for excessive weight loss (> 8%). Saki A et al. [32], studied the effect of type of delivery on exclusively breast fed neonates who were exclusively breast fed in Shiraz, Iran. They also reported that neonates born by Caesarean section showed greater weight loss at birth and first few days of life (p-value <0.01). Bertini G et al. [33], reported a mean weight loss of 5.95% in a study of full term vaginally delivered babies. Nevertheless, a study from Taiwan showed that C-section is not a risk factor for increased weight loss by Chen et al., 2011 [34]. These differences might be explained by several factors, such as irregular neonatal weighing intervals and inadequate breast feeding education as stated by Davanzo, 2013 [35]. In the present patient sample, neonates delivered by Caesarean delivery may have had non-significantly fed more on mixed feeding. Since mixed feeding group had less weight loss, this could possibly be an explanation why no association between weight loss and delivery type was observed in this study.

Previous reports have demonstrated the importance of early initiation of breast-feeding post-delivery (within 1 hour of life) for successful lactation [36-38]. In this present study, neonates who were initiated breast feeding at least within one and half hour showed significantly less weight loss than those in whom breastfeeding was initiated after one and half hours. Mothers should be helped and supported to breastfeed their infants as soon as possible after delivery. Unnecessary system delays, particularly after caesarean section, should be minimized. Although, time to reach birth weight between two groups did not show a significant trend, it may be due to influence of multiple factors on weight loss.

In this study, neonates with mothers who had anatomical problems in feeding experienced more weight loss. Primary insufficient lactation is a rare condition. As the levels of gestational hormones rise, both structural and functional changes occur in the breasts during gestation, which can be observed by an increase in breast size. With motivation and counselling, mothers with primary insufficient lactation can overcome this problem. Secondary reasons for lactation failure include breast engorgement; inverted, huge or flat nipples. The mothers with flat or inverted or big nipples and engorged breasts could not overcome the problem by themselves. Consequently, they may have failed to feed their babies properly, although their breasts were capable of producing sufficient milk. These mothers were assigned to the "Anatomical problems in breast feeding" group. These breast conditions were more likely to be found in the mothers of neonates with excess weight loss. Therefore, antenatally (for the nipple conditions) and postnatally (for the breast engorgement) these mothers could have been identified and additional support for breast-feeding should be provided. Other maternal breast conditions that have been reported to cause breast-feeding difficulties include previous breast surgery, cracked or painful nipples, systemic maternal illnesses, perinatal complications, and maternal age over 37 years [39].

Macdonald et al. [7], found that in the first 2-3 weeks of life, median weight loss in breast fed infants was substantially greater than for formula fed infants (median: 6.6% v 3.5%, p, 0.0001). Breast fed babies took longer to regain their birth weight than formula fed infants (median: 8.3 v 6.5 days, p, 0.0001). In this study out of 320 neonates, mean maximum weight loss in breast fed neonates is higher than those on mixed feeding and majority of took longer time to reach birth weight compared to formula fed neonates. However, Breast-feeding is the best and safest way to feed infants. In a study by Stettler et al [40], found that there was a 28% increased odds of obesity in adults for every 100 g of weight gain in their first week post birth in formula-fed infants. Therefore, Prompt initiation of breast-feeding after delivery and prompt intervention if problems with breast-feeding occur, in particular poor breast attachment, breast engorgement, delayed breast milk "coming in" and nipple problems, will promote successful breast-feeding. Careful follow-up of breast-feeding dyads after discharge

from hospital, particularly regarding neonatal weight, is an important tool to help detect inadequate breast-feeding

In the present study ,Among the 320 study neonates ,26 neonates were readmitted after discharge from birth hospitalisation. All the readmissions done were for phototherapy .Among 26 neonates admitted for phototherapy ,15.3% (4) neonates had maximum weight loss in range of 0-3.5% , 26.9%(7) neonates had maximum weight loss in range of 3.5-7% , 57.6%(15) neonates had maximum weight loss of more than 7%. In comparison to a study done by Salas et al [41] which suggested A weak correlation between TSB levels and percent of weight loss was identified ($r = 0.20$; $p < 0.05$). This maybe explained as Weight loss of greater than 7% from birth weight indicates possible feeding problems. Inadequate oral intake causes weight loss and increases the bilirubin enterohepatic circulation.

CONCLUSION

From the study, it can be concluded that the weight pattern in the neonates Follow a weight loss with maximum weight loss in between Day 4 to Day 5 followed by a weight gain with majority of neonates reaching their birth weight by end of 14 days of life. Maximum weight loss mean of study population was $6.35 \pm 2.2\%$. Neonates who were readmitted after birth hospitalization ,majority had weight loss in excess of 7%. Factors affecting excess weight loss of 7% were weight for gestational age, Time of initiation of breast feeding ,Anatomical problems in breast feeding and Type of feeding.

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Table 1: Distribution of study subjects according to the percentage of maximum weight loss loss in 14 days (N=320).

Percentage of maximum weight loss	Number of neonates (n)	Percentage
0 - 3.5 % of weight loss	63	19.68
3.5-7 % of weight loss	153	47.82
>7 % of weight loss	104	32.5
Total	320	100
Mean Maximum weight loss percentage of all neonates in 14 days : 6.35 ± 2.2 The range of weight loss was 0.4% - 16.9%		

Table 3: Average per day weight loss in study population according to the various factors (N=320).

FACTORS	VARIABLE	AVERAGE PER DAY WEIGHT LOSS IN GRAMS
Gender Of Neonate	Male (164)	28.3±3.9
	Female(156)	27.7±3.4
Weight Per Gestational Age	AGA (271)	28.1±3.0
	SGA (36)	29.3±2.5
	LGA (13)	35.1±3.4

Parity Of Mother	Para 1 (primiparous) (157)	30.2±3.1
	Para 2 (multiparous) (141)	28.8±2.7
	Para 3 (multiparous) (22)	27.7±2.5
Maternal Co-Morbidities	Present (165)	27.9±3.9
	Absent (155)	28.0±3.6
Mode Of Delivery	Normal (163)	28±3.4
	LSCS (157)	28.1±3.9
Time Of Breast Feeding Initiation	Within one and half hour (269)	28.2±0.36
	After one and half hour (51)	27±3.7
Anatomical Problems In Feeding	Absent (277)	27.1±3.7
	Present(43)	28.2±3.6
Type Of Feeding	Exclusive breast feeding (143)	28.3±3.0
	Mixed feeding (177)	27.8±4.1

Table 3: Factors affecting maximum weight loss in study population (N=320).

FACTORS	VARIABLE	MEAN MAXIMUM WEIGHT LOSS
Gender Of Neonate	Male (164)	6.18±2.23
	Female(156)	6.44±2.31
Weight Per Gestational Age	AGA (271)	6.25±2.3
	SGA (36)	6.7±2.15
	LGA (13)	7.21±2.30
PARITY OF MOTHER	Para 1 (primiparous) (157)	6.55±1.9
	Para 2 (multiparous) (141)	6.23±2.3
	Para 3 (multiparous) (22)	6.3±2.8
Maternal Co-Morbidities	Present (165)	6.66±2.69
	Absent (155)	6.28±1.89
Mode Of Delivery	Normal (163)	6.4±2.4
	LSCS (157)	6.3±2.1
Time Of Breast Feeding Initiation	Within one and half hour (269)	6.22±2.06
	After one and half hour (51)	6.98±3.14
Anatomical Problems In Feeding	Absent (277)	6.24±2.06
	Present(43)	6.8±2.31
Type Of Feeding	Exclusive breast feeding (143)	6.75±2.33
	Mixed feeding (177)	6.34±2.23

Table 4 Factors affecting time to reach birth weight in study population (N=320).

FACTOR	VARIABLE	Number of neonates reaching birth weight		
		In 1-7 days	In 8-14days	In >14 days
Gender Of Neonate	Male (164)	22(13.4%)	85(51.8%)	57(34.7%)
	Female(156)	20(12.8%)	83((53.2%)	53(33.9%)
Weight Per Gestational Age	AGA (271)	36(13.2%)	148(54.6%)	87(32.1%)
	SGA (36)	4(11.1%)	16(44.4%)	16(44.4%)
	LGA (13)	2(15.3%)	4(30.7%)	7(53.8%)
Parity Of Mother	Para 1 (primiparous) (157)	18(11.4%)	81(51.5%)	58(36.9%)
	Para 2 (multiparous) (141)	15(10.6%)	80(56.7%)	46(32.6%)
	Para 3 (multiparous) (22)	9(40.9%)	7(31.8%)	6(27.2%)
Maternal Co-Morbidities	Present (165)	19(11.5%)	80(48.5%)	66(40%)
	Absent (155)	23(14.8%)	88(56.7%)	44(28.3%)
Mode Of Delivery	Normal (163)	26(15.9%)	85(52.1%)	52(31.9%)
	LSCS (157)	16(10.1%)	83(52.8%)	58(36.9%)
Time Of Breast Feeding Initiation	Within one and half hour (269)	31(11.5%)	152(56.5%)	86(31.9%)
	After one and half hour (51)	11(21.5%)	16(31.3%)	24(47%)
Anatomical Problems In Feeding	Absent (277)	35(12.6%)	153(55.2%)	89(32.1%)
	Present(43)	7(16.2%)	15(34.8%)	21(48.8%)
Type Of Feeding	Exclusive breast feeding (143)	18(12.5%)	63(44.0%)	62(43.3%)
	Mixed feeding (177)	24(13.5%)	105(59.3%)	48(27.1%)

Table 5 Multivariate logistic regression analysis showing factors affecting weight loss (N=320).

Variable	Score	Degree of freedom	P value (significance <0.05)
Gender	0.845	1	.358
Weight per gestational age	5.305	1	.021 *
Parity	2.413	1	.120
Mode of delivery	2.064	1	.151
Maternal comorbidities	2.699	1	.100
Breastfeeding initiation	18.698	1	.000 *
Anatomical problems	19.541	1	.000 *
Type of feed	14.037	1	.000 *