International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 14, No. 5, May 2025 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_14.5.2025.83

ORIGINAL RESEARCH

Factors Influencing Early Neonatal Weight Loss In Exclusively Breastfed Term Newborns: A Prospective Observational Study

[1]Dr. Gaurav Saxena, [2]Dr. Monica Agarwal, [3]Dr. Zainab Zabi, [4]Dr. Aditi Gupta

[1&3]Junior Resident, Department of Pediatrics, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India
[2]Head of department & professor, Department of Pediatrics, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India
[4]Assistant Professor, Department of Pediatrics, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India

Corresponding author:
Dr. Gaurav Saxena
Junior Resident, Department of Pediatrics, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India
Email: 05gaurav.saxena@gmail.com

Received: 08 March, 2025 Accepted: 28April, 2025 Published; 12 May, 2025

ABSTRACT

Background: Physiological weight loss in newborns is a common occurrence in the first few days after birth, particularly among exclusively breastfed infants. Understanding the factors influencing this weight loss is crucial for ensuring effective breastfeeding practices and neonatal health.

Aim & Objective: Objective of this study was to assess the pattern of weight loss in exclusively breastfed term babies in initial 72 hours of life and to study association of weight loss in exclusively breastfed term babies with selected clinical variables namely – Parity, Initial birth weight of neonate, Adequacy of breast feeding.

Methods: The Department of Pediatrics at RMRI carried out a prospective observational study between May 2023 and November 2024. A total of 170 healthy, term newborns who were fed only breast milk were included in the study. Information on neonatal parameters (birth weight, sex), breastfeeding adequacy, and maternal variables were gathered. For the first 72 hours, weight loss was assessed every 12 hours**.**

Results: The study found that 78.8% of neonates experienced weight loss between 5-10% of their birth weight, with a mean percentage loss of 7.89% (SD ±2.18). Inadequate breastfeeding was significantly associated with greater weight loss (p=0.001), while primigravida mothers had infants with higher weight loss compared to multigravida mothers (p=0.004).

Conclusion: The findings highlight the critical role of breastfeeding adequacy and maternal parity in influencing neonatal weight loss patterns. Early identification and intervention for at-risk infants are essential to optimize breastfeeding outcomes and improve neonatal health.

Key words: Newborn weight loss; Primipara; Multipara; Breast feeding.

Introduction:

During the first few days of life, newborns are expected to lose weight, and one primary reason is the presence of an enlarged extracellular fluid (ECF) compartment at birth, which results from a combination of placental, fetal, and maternal factors (1). The contraction of this ECF compartment is the main contributor to early postnatal weight loss. Numerous studies have examined the magnitude of newborn weight loss and the contributing factors. Prominent organizations like the Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), and American Academy of Pediatrics (AAP) emphasize exclusive breastfeeding during initial hospitalization and discourage formula or water supplementation unless medically indicated (2). Such supplementation can negatively impact both the initiation and continuation of breastfeeding, which is crucial for the newborn's health (3). Monitoring weight loss in this period is essential, as it serves as an indicator of effective feeding and the infant's overall well-being (4). For breastfed infants, a physiological weight loss of 5–7% of birth weight is considered normal. However, weight loss exceeding 10% may indicate potential breastfeeding issues and warrants further evaluation (5).

Several factors contribute to excessive weight loss in exclusively breastfed newborns within the first 72 hours. It has been reported that infants born to primigravida mothers lost more weight than those born to multigravida mothers (5). From a physiological standpoint, weight loss occurs primarily

DOI: 10.69605/ijlbpr_14.5.2025.83

due to the reduction of ECF compartment. Additionally, infant size and gestational age also play a role—small for gestational age (SGA) and large for gestational age (LGA) infants are both at increased risk of significant weight loss. A frequent cause of excessive weight loss is a delay in the onset of lactogenesis-II, leading to insufficient milk supply. This is often related to challenges such as maternal breast pain, poor latch, ineffective suckling, or early separation from the neonate. Other factors linked with higher weight loss include female sex, jaundice, cesarean delivery, advanced maternal age, and lower maternal education (6, 7). Therefore, understanding the complex interplay of these factors is crucial for healthcare providers to monitor, intervene early, and promote effective breastfeeding. Early recognition of newborns at higher risk for excessive weight loss allows for timely support and intervention, reducing the likelihood of breastfeeding failure and enhancing long-term health outcomes (8).

MATERIALS & METHOD: This present study is a prospective observational study conducted at the Department of Pediatrics, RMRI, from May 2023 to November 2024. It investigates the factors influencing weight loss in exclusively breastfed term neonates during their first 72 hours of life. The prospective observational study enrolled 170 healthy term neonates with the primary aim to assess the patterns of weight loss and identify associated maternal and neonatal factors.

Term healthy babies (37-42 weeks), less than 72 hours of life which are on exclusive breast feeding were included and whose parents gave consent to be participant for this study. At the same time babies who received I.V Fluids , or got discharge before 72 hours, received top feeds, required resuscitation at birth or ICU admission, born with significant congenital anomalies or were pre-term and post term babies were excluded from this study.

Data pertaining to various factors was recorded in a predesigned proforma likeafter the admission of mother any significant history regarding her age, parity. Estimated Date of Delivery, Last Menstrual Period, weight, height, antenatal history and any other conditions like Gestational Diabetes Mellitus, Pregnancy Induced Hypertension, hypothyroidism. Following birth, neonatal data, including the baby's sex, date and time of birth, APGAR at 1 and 5 minutes, and whether the baby is SGA, AGA, or LGA, were recorded from the neonatal case sheet. The baby's first weight was measured within 3 hours of birth using a digital scale called Crown, which was sanitized before each weigh-in. Since the baby's birth weight was the first weight we measured on the hospital's scale, a similar standardized weight was used in the study to ensure consistency. All babies were weighed in grams, without clothing, every 12 hours for 72 hours.

Crown weighing machine for assessment of weight of neonate with its demonstration

RESULT

Table1: Distribution Of Study Population According To Gender

Gender	n	%
Male	**88**	**51.8**
Female	**82**	**48.2**
Total	**170**	**100**

DOI: 10.69605/ijlbpr_14.5.2025.83

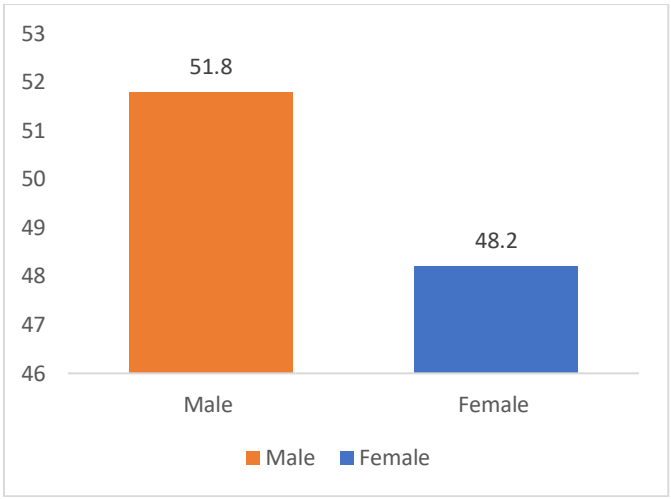


Table2: Distribution Of Study Population According To Maternal Parity

Maternal Parity	n	%
Primigravida	93	54.7%
Multigravida	77	45.3%
Total	**170**	**100**

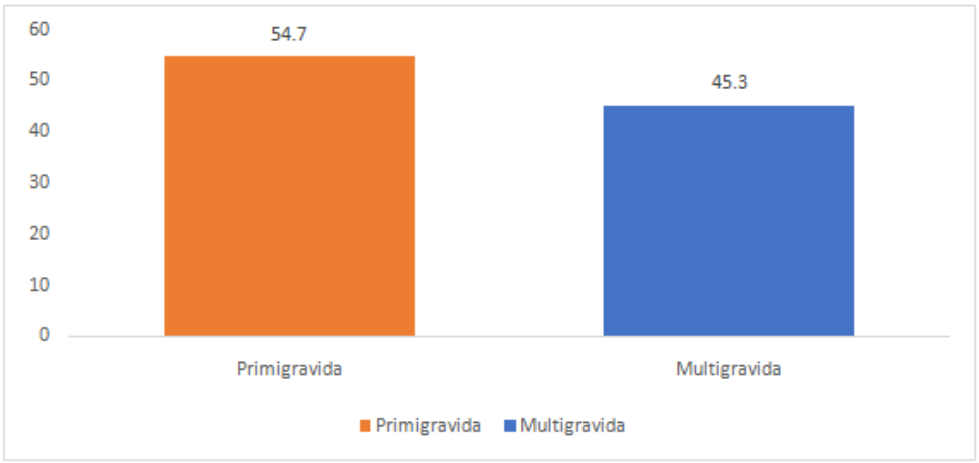


Table 3: Birth Weight Distribution (In Kilograms) (N=170)

< 2.5	11	6.4%
2.5 - 3.5	150	88%
3.5 - 4.5	9	5.60%
Total	170	100%

DOI: 10.69605/ijlbpr_14.5.2025.83

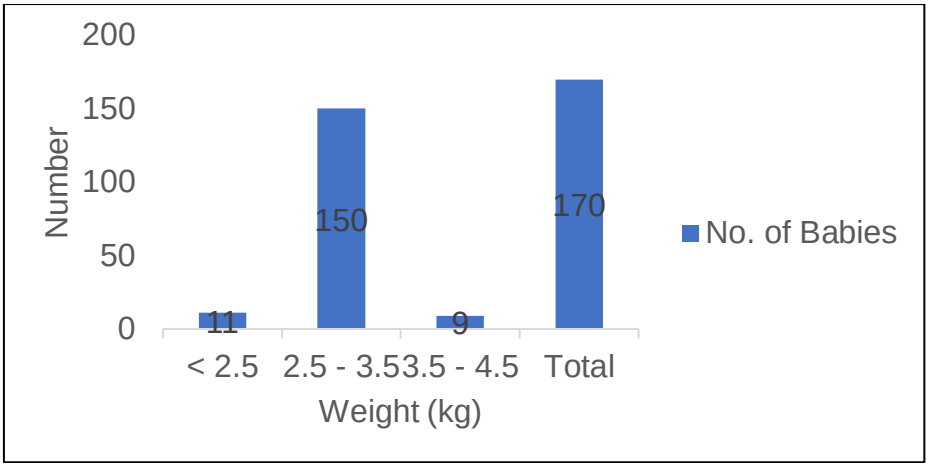


TABLE 4: WEIGHT LOSS DISTRIBUTION

Weight Loss Category	N	%	Mean weight loss (%)	SD
Up to 5%	14	8.2	4.5	0.50
Between 5-10%	134	78.8	7.89	2.18
More than 10%	22	13	11.20	1.30

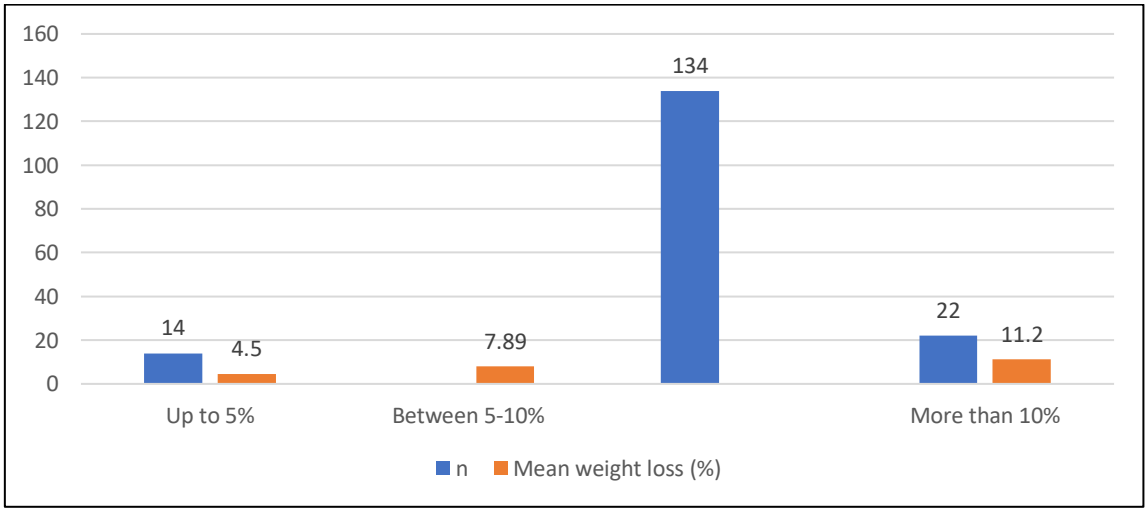


Table 5: The Influence Of Maternal Parity On Neonatal Weight Loss(N=170)

Maternal Parity	Mean Weight Loss (%)	n	p-value
Primigravida	8.35 ±1.82	93	0.004
Multigravida	7.42 ±2.38	77	

DOI: 10.69605/ijlbpr_14.5.2025.83

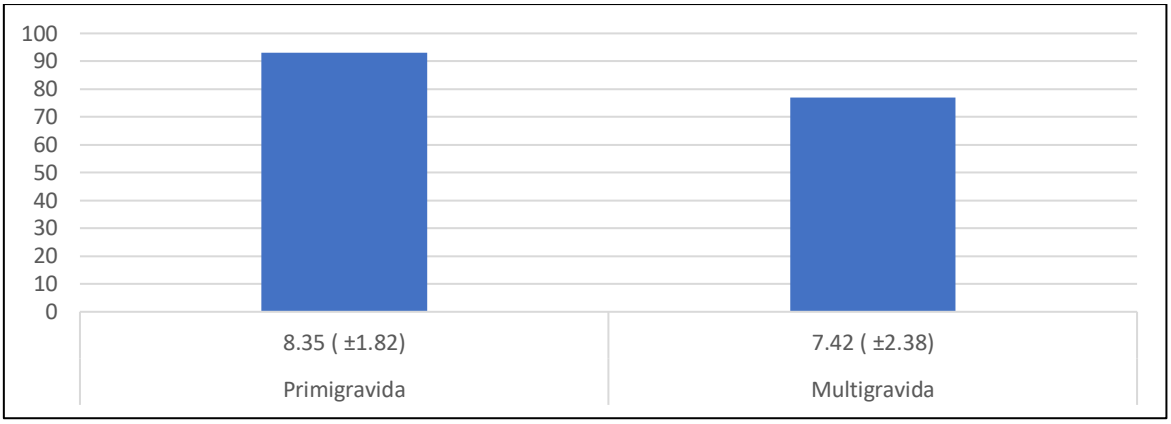
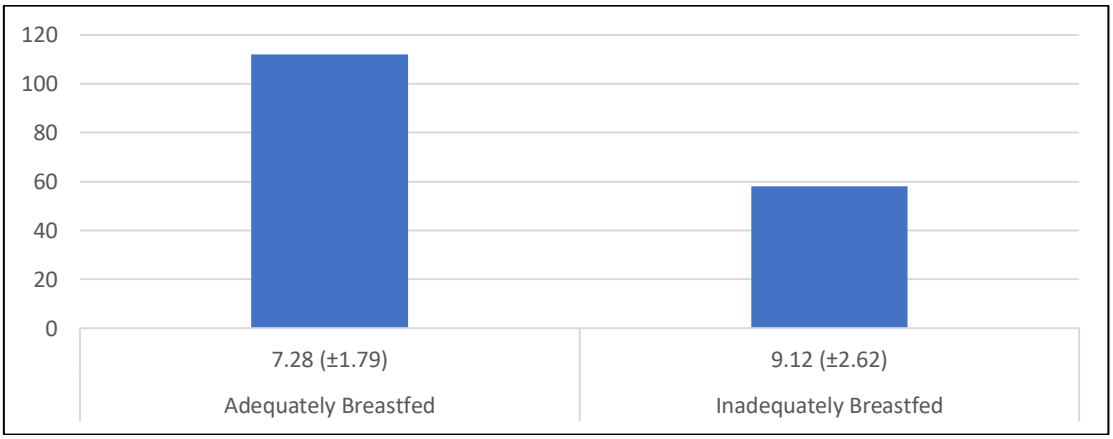


Table 6: The Relationship Between Breastfeeding Adequacy And Weight Loss (N=170)

Breastfeeding Adequacy	Mean Weight Loss (%)	n	Percentage %	P value
Adequately Breastfed	7.28 (±1.79)	112	65.88%	0.001
Inadequately Breastfed	9.12 (±2.62)	58	34.11%	



DISCUSSION

This prospective observational study examined factors influencing weight loss in exclusively breastfed newborns during the first 72 hours of life, focusing on breastfeeding practices and maternal characteristics. It found that neonates born to primigravida mothers experienced significantly higher weight loss (mean 8.35%) compared to those born to multigravida mothers (mean 7.42%, P = 0.004), aligning with studies by Haseli et al.and Jurgelėnė et al., which suggested that first-time mothers face greater breastfeeding challenges, leading to more significant weight loss in their infants (9, 10).

Regarding weight loss patterns, 78.8% of neonates experienced weight loss within the normal 5-10% range (mean 7.89%), while 13% lost more than 10%. These findings align with those of Mtove et al. who reported that weight loss in exclusively breastfed neonates typically falls within this range (11). Wright et al.also observed similar weight loss patterns, with most neonates not exceeding 10% weight loss (12). However, the 13% of neonates in this study who lost more than 10% highlight the importance of closely monitoring infants at risk of dehydration or delayed lactogenesis.

Breastfeeding adequacy was a key factor in reducing weight loss. Infants with adequate breastfeeding had significantly lower weight loss (mean 7.28%) compared to those with inadequate breastfeeding (mean 9.12%, P = 0.001), which supports the findings of Hamilcikan et al.and Tejaswani et al. These studies emphasized that early, frequent breastfeeding minimizes neonatal weight loss (13, 14). Furthermore, Farhana et al. found that prompt initiation of breastfeeding significantly reduced weight loss, reinforcing the importance of early breastfeeding in our study (15).

The study's clinical implications stress the importance of early and sustained breastfeeding support, particularly for primigravida mothers, cesarean-born infants, and those with inadequate breastfeeding. Interventions such as lactation consultations and supplemental feeding strategies should be considered for at-risk infants. Education for first-time mothers on proper breastfeeding techniques and early initiation is also vital (9, 10).

Lastly, institutions should adopt early postpartum care protocols, such as skin-to-skin contact and frequent breastfeeding sessions, especially for cesarean-born infants. Continuous monitoring of weight loss in the

DOI: 10.69605/ijlbpr_14.5.2025.83

first 72 hours is essential to prevent complications. The study underscores the multifactorial nature of neonatal weight loss and the need for targeted interventions to optimize breastfeeding and minimize excessive weight loss.

CONCLUSION

This research contributes valuable insights into the factors affecting neonatal weight loss in exclusively breastfed infants and underscores the critical role of breastfeeding practices in promoting optimal health outcomes. Healthcare providers should ensure early breastfeeding initiation, ongoing lactation support, and routine weight monitoring. Additionally, educating new mothers about effective breastfeeding techniques and infant feeding cues can help reduce early postnatal weight complications.

REFERENCES

1. Gleason C, Devaskar S, Avery M. Avery's Diseases of the Newborn. 9th ed. Philadelphia, PA: Elsevier, Saunders; 2012.
2. Gandra A, Channawar KS, Harsha KS. Determining the neonatal weight trend and the factors affecting it in healthy late preterm and term neonates in a tertiary center. Eur J Mol Clin Med. 2024;11(5)
3. Flaherman VJ, et al. Early Weight Loss Nomograms for Exclusively Breastfed Newborns. Pediatrics. 2015;135(1):e16.
4. Miyoshi Y, Suenaga H, Aoki M, Tanaka S. Determinants of excessive weight loss in breastfed full-term newborns at a baby-friendly hospital: a retrospective cohort study. International breastfeeding journal. 2020 ;15(1):1-8.
5. Thulier D. Challenging expected patterns of weight loss in full-term breastfeeding neonates born by Cesarean. Journal of Obstetric, Gynecologic & Neonatal Nursing. 2017 1;46(1):18-28.
6. Sarmiento-Aguilar A, Horta-Carpinteyro D, Prian-Gaudiano A. Percentage of birth weight loss as a reference for the well-being of the exclusively breastfed newborn. Boletin medico del Hospital Infantil de Mexico. 2022 Dec;79(6):341-9.
7. Thulier DJ. Maternal hydration and infant weight: a case-control study in breastfeeding infants delivered by cesarean section. University of Rhode Island; 2013
8. Mezzacappa MA, Ferreira BG. Excessive weight loss in exclusively breastfed full-term newborns in a Baby-Friendly Hospital. Revista Paulista de Pediatria. 2016;34(3):281-6.
9. Haseli A, Eghdampour F, Mozafari M, Hasani M, Ghiasi A, Masomi F. Associated factors with neonatal weight loss after birth. Journal of Comprehensive Pediatrics. 2017;8(4).
10. Jurgelėnė V, Kuzmickienė V, Stonienė D. The Role of Skin-to-Skin Contact and Breastfeeding in the First Hour Post Delivery in Reducing Excessive Weight Loss. Children. 2024 Feb 10;11(2):232.
11. Mtove G, Abdul O, Kullberg F, Gesase S, Scheike T, Andersen FM, Madanitsa M, Ter Kuile FO, Alifrangis M, Lusingu JP, Minja DT. Weight change during the first week of life and a new method for retrospective prediction of birthweight among exclusively breastfed newborns. Acta Obstetricia et Gynecologica Scandinavica. 2022 Mar;101(3):293-302.
12. Wright CM, Parkinson KN. Postnatal weight loss in term infants: what is "normal" and do growth charts allow for it?. Archives of Disease in Childhood-Fetal and Neonatal Edition. 2004 May 1;89(3):F254-7
13. Hamilcikan S, Gok V, Bent S, Can E. Early weight loss in exclusively breastfed term neonates. Iranian Journal of Pediatrics. 2017 Apr 1;27(2).
14. Tejaswani KK, Vivek VM, Shalini KR, Joy Liston Pratap D Souza. Factors affecting significant weight loss in exclusively breastfed term babies in an urban setup. Journal of Cardiovascular Disease Research. 2024; VOL15, (01):1759-1766
15. Farhana Karim FK, Billah SM, Chowdhury MA, Zaka N, Manu A, El-Arifeen S, Khan AN. Initiation of breastfeeding within one hour of birth and its determinants among normal vaginal deliveries at primary and secondary health facilities in Bangladesh: a case-observation study.