Gavage-Feeding Assist Device to Improve Nursing Efficiency in a Resource-Limited Setup

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Enteral feeding of preterm neonates is one of the most common and frequent health care activities in neonatal units. With adoption of early initiation and rapid increment in enteral feeding, a large proportion of preterm neonates, even if on respiratory support, are on partial or full enteral feeds [1, 2]. Despite the increasing importance of enteral nutrition in neonatal intensive care, a large number of practice questions still remain unanswered. Examples include whether to give feeds at two- or three-hourly intervals, what should be the maximum feeding volume, when and what fortifier to use, and when to shift from gavage to paladai feeding. Due to these unanswered questions, variations in practices across different units and within the same unit are common.

Adverse nurse:baby ratio, especially in step-down areas and special newborn care units (SNCU) is another important reason of the variations in practice. Each nurse may need to administer gavage feeding to 6–10 (or even more) neonates. If administering feed to one neonate takes 10 min, it would take 60–100 min to feed 6–10 neonates. This leaves little time for other care activities including vitals monitoring and administration of intravenous fluids and injections before the next round of feeding starts again. Naturally, nurses have to find a way to improve efficiency by innovating. One way of saving time while administering gavage feeds is to push feed from syringe using a plunger. However, this practice needs to be discouraged, as it may cause regurgitation of feed and aspiration. As nurse:baby ratio is unlikely to improve in short- or medium-term, safer and practical innovations are needed to save time of nurses. Thandaveshwara et al. present such an innovative solution in this issue of the Journal [3]. The authors report design and testing of a bedside device which can hold the feeding syringe and change its height to alter the force of gravity that causes milk to dribble into

stomach of the baby. The device also has a safety mechanism to raise an alarm if the feeding tube is displaced. Using this device, the authors were able to show two important effects: reduction in the time needed to feed each baby and reduced intra- and interpersonal variation in the time spent on the gavage feeding. These results are encouraging and warrant further investigation before implementing in neonatal units.

Despite initial success of the feeding assist device, it should be emphasized that feeding of a baby, even if by gavage, is not a 'mechanical' activity. While feeding, eye-to-eye contact with the baby and holding and touching the baby is not only a developmentally supportive activity, but is also associated with improved physiological stability [4]. In addition, mother's involvement in gavage feeding is also helpful in initiation and maintenance of lactation. Therefore, family-centered care provides another more humane and effective method to reduce the care burden on nurses and has many other potential benefits [5]. Standardizing feeding protocols has been associated with improved physical growth and more successful transition to breast-feeding among preterm neonates [6]. Standardizing care and improving efficiencies of neonatal care must involve the mothers who are the most important stakeholders.

Declarations

Conflict of Interest None.

References

1. Modi M, Ramji S, Jain A, Kumar P, Gupta N. Early aggressive enteral feeding in neonates weighing 750–1250 grams: a randomized controlled trial. *Indian Pediatr.* 2019;56:294–8.
2. Nangia S, Bishnoi A, Goel A, Mandal P, Tiwari S, Saili A. Early total enteral feeding in stable very low birth weight infants: a before and after study. *J Trop Pediatr.* 2018;64:24–30.
3. Thandaveshwara D, Krishnegowda S, Batra A, Doreswamy SM. Comparison of time taken for feeding stable preterm babies

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- between regular nurse feeding and feeding with feed rail- a randomized, controlled study. *Indian J Pediatr.* 2021. <https://doi.org/10.1007/s12098-021-03770-0>.
4. Dipietro JA, Cusson RM, Caughy MO, Fox NA. Behavioral and physiologic effects of nonnutritive sucking during gavage feeding in preterm infants. *Pediatr Res.* 1994;36:207–14.
 5. Sivanandan S, Bethou A, Ramanujam SS, et al. Implementing family-centered care in the neonatal intensive care unit - a quality improvement initiative. *Indian J Pediatr.* 2021;88:872–8.
 6. McCallie KR, Lee HC, Mayer O, Cohen RS, Hintz SR, Rhine WD. Improved outcomes with a standardized feeding protocol for very low birth weight infants. *J Perinatol.* 2011;31:S61–7.

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