



## Hoffman's Exercise for Improving Breastfeeding Success in Primiparous Postnatal Mothers with Non-Protractile Nipples: A Quasi-Experimental Study

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**Abstract: Background:** Breastfeeding may be difficult in mothers with flat, inverted, or retracted nipples because reduced nipple protrusion can interfere with infant latch. Hoffman's exercise is a simple manual technique intended to stretch peri-nipple adhesions and improve nipple protractility. **Methods:** This single-center quasi-experimental study included 50 primiparous postnatal mothers screened after 24 hours of delivery using the nipple pinch test. Mothers with non-protractile nipples were taught Hoffman's exercise and supervised five times daily for four consecutive days. Breastfeeding success was assessed using the LATCH score on Day 1 and Day 5. **Results:** The mean LATCH score improved from  $3.24 \pm 0.85$  on Day 1 to  $8.56 \pm 0.86$  on Day 5, with a mean difference of 5.32 points (paired  $t = -32.199$ ,  $p < 0.05$ ). Most mothers were aged 23-26 years (54%), 64% had cesarean delivery, and flat nipples were the most common nipple type (72%). **Conclusion:** Within the limits of this small single-center study, Hoffman's exercise was associated with improved short-term breastfeeding success. The technique may be used as an adjunct to routine lactation support, but longer follow-up and comparative studies are needed.

**Key Words:** Hoffman's Exercise, Breastfeeding Success, LATCH Score, Flat Nipple, Inverted Nipple, Primiparous Mothers

### INTRODUCTION

Breastfeeding is a key determinant of neonatal nutrition and maternal-infant bonding, yet non-protractile nipples can interfere with infant latch, milk transfer, and maternal confidence [1,2]. Flat, inverted, and retracted nipples are encountered frequently in postnatal settings, particularly among primiparous mothers, and are often managed with positioning support, counselling, nipple shields, syringe techniques, or manual exercises [3-6]. Hoffman's exercise was described as a simple method to stretch adhesions at the base of the nipple and potentially improve protrusion [7-9]. In this study setting, the practical value of such a low-cost intervention is high because it can be taught by nurses in routine postnatal care [10]. The present study therefore evaluated short-term change in breastfeeding success, measured by the LATCH score, after a four-day Hoffman's exercise protocol among primiparous mothers with non-protractile nipples.

### Objective

To evaluate the effect of Hoffman's exercise on breastfeeding success by comparing LATCH scores on

Day 1 and Day 5 among primiparous postnatal mothers with flat, inverted, or retracted nipples.

### METHODS

This study used a quasi-experimental pretest-posttest design at a tertiary care center in Belagavi, North Karnataka. Fifty primiparous postnatal mothers were included after institutional ethics approval, administrative permission, and written informed consent. Nipple assessment was performed after 24 hours of delivery using the nipple pinch test. Mothers whose nipples did not protrude adequately were considered eligible. Demographic data were collected using a structured proforma. Mothers were individually taught Hoffman's exercise, which involved placing both thumbs opposite each other at the base of the nipple and applying gentle outward traction in vertical and horizontal directions. The exercise was supervised by trained female nursing staff five times daily for four days. Basic breastfeeding counselling was provided as part of routine postnatal care. LATCH scoring was performed at baseline (Day 1) and again on Day 5. Descriptive statistics included frequency,

percentage, mean, and standard deviation. The paired t-test was used to compare Day 1 and Day 5 scores, with statistical significance set at  $p < 0.05$ . Because the study was single-arm and short term, the findings should be interpreted as preliminary.

## RESULTS

LATCH scores improved substantially between baseline and Day 5, suggesting better latch, swallowing, nipple grasp, maternal comfort, and positioning after the intervention. Flat nipples were the most common nipple type. Because the manuscript did not provide subgroup outcome data by nipple type or delivery mode, those comparisons could not be added in the present revision.

## DISCUSSION

The present findings suggest that Hoffman's exercise may improve short-term breastfeeding performance among primiparous mothers with non-protractile nipples. The observed increase in LATCH score is consistent with prior studies that reported improvement in nipple protractility and breastfeeding outcomes following nipple exercises or related manual techniques [7-10]. The intervention is attractive in routine nursing practice because it is non-invasive, inexpensive, and can be taught without equipment. At the same time, the present results should be interpreted cautiously. The study was small, single-center, and lacked a concurrent comparison group in the results presented. Improvement may have been influenced not only by the exercise itself but also by repeated supervision, maternal learning over the first postpartum days, routine breastfeeding counselling, and adaptation after cesarean delivery. The high cesarean rate in this sample is clinically relevant because postoperative pain and positioning difficulties may affect early breastfeeding, underscoring the need for structured lactation support in line with Baby-Friendly guidance [11].

Table 1: Baseline Characteristics of Participants

Variable	n (%)
Age 19-22 years	6 (12)
Age 23-26 years	27 (54)
Age 27-30 years	14 (28)
Age 31+ years	3 (6)
Secondary education	20 (40)
Homemaker	22 (44)
Hindu religion	25 (50)
Semi-urban residence	24 (48)
Monthly income ₹10,000-15,000	35 (70)
Joint family	30 (60)
Cesarean delivery	32 (64)
Male newborn	25 (50)
Flat nipple	36 (72)
Inverted nipple	13 (26)
Everted nipple	1 (2)

Table 2: Change in LATCH score after Hoffman's exercise

Assessment day	Mean±SD	Mean difference	t value	p value
Day 1	3.24±0.85	-5.32	-32.199	<0.05
Day 5	8.56±0.86			

No adverse effects, pain, nipple trauma, or longer-term breastfeeding outcomes were reported. Therefore, the study supports Hoffman's exercise as a useful adjunct rather than definitive standalone proof of efficacy (Table 1-2).

## Strengths and Limitations

This study used a practical ward-based intervention and a recognized breastfeeding assessment tool. However, important limitations remain: small sample size, single-center setting, short follow-up only to Day 5, limited detail on assessor blinding and scoring consistency, lack of subgroup analysis by nipple type, and absence of longer-term outcomes such as exclusive breastfeeding continuation. The design is best described as quasi-experimental because the presented results do not include a separate control comparison despite mention of lottery allocation in the source manuscript.

## Implications for Practice

Early nipple assessment in postnatal wards may help identify mothers who need targeted breastfeeding support. Nurses can teach Hoffman's exercise step-by-step, reassess latch using the LATCH score, and refer mothers for further lactation support if difficulty persists. Mothers after cesarean section may require additional assistance with positioning and pain control. Future studies should compare Hoffman's exercise with other methods such as nipple shields or syringe techniques and should include follow-up beyond discharge; surgical correction remains a separate option for selected persistent cases outside routine early postnatal care [5,6,12].

## CONCLUSION

Based on this small single-center quasi-experimental study, Hoffman's exercise was associated with a marked short-term improvement in LATCH score among primiparous postnatal mothers with non-protractile nipples. The exercise may be considered as part of structured postnatal lactation support, but larger studies with clearer allocation methods, control groups, subgroup analysis, and longer follow-up are needed before broad routine recommendations are made.

## Acknowledgement

We are grateful to KLE Academy of Higher Education and Research, Belagavi for research support and to all participating mothers.

## Author Disclosures

The authors report no conflicts of interest.

## Funding

This study was funded by KLE Academy of Higher Education and Research, Belagavi.

## Ethical Considerations

Ethical approval, institutional permission, and written informed consent were obtained. Privacy and respectful female-staff-assisted handling were maintained during

nipple assessment and breastfeeding evaluation. Mothers were free to stop the exercise if discomfort occurred and were offered routine lactation support when needed.

### Data availability

Data are available from the corresponding author on reasonable request.

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