

Research Article

# Effectiveness of Hoffman's Exercise on Breastfeeding Among Postnatal Mothers with Flat or Inverted Nipple in Tertiary Care Hospital, Puducherry

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DOI: <https://doi.org/10.24321/2278.2044.202410>

## I N F O

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### How to cite this article:

Preethi B, Annal M A, Lavanya S, Poongodi V, Umamaheswari R. Effectiveness of Hoffman's Exercise on Breastfeeding Among Postnatal Mothers with Flat or Inverted Nipple in Tertiary Care Hospital, Puducherry. Chettinad Health City Med J. 2024;13(1):56-60.

Date of Submission: 2023-07-06

Date of Acceptance: 2023-11-21

## A B S T R A C T

**Background:** The ideal balanced diet for infants up to six months of age is breast milk. Breastfeeding depends upon the baby's attachment with correct positioning to the mother's breast, whereas the most common abnormalities of the nipple such as a flat and inverted nipple might be a barrier to breastfeeding. Hoffman's exercise is a method for handling these issues.

**Aim:** The aim of the study was to evaluate the effectiveness of Hoffman's exercise on breastfeeding among postnatal mothers with flat or inverted nipples.

**Materials and Methods:** Pre-experimental one-group pre-test post-test design was adopted for this study. Fifty-six postnatal mothers with flat or inverted nipples admitted to a postnatal ward were selected by purposive sampling technique. Informed consent was obtained from the mothers. The socio-demographic data was collected by interview method and the Bristol breastfeeding assessment tool was used to assess the level of breastfeeding. Hoffman's exercise was performed on the mothers from 0–3 postnatal days. The data analysis was done by using descriptive and inferential statistics.

**Result:** The results showed that the pre-test and post-test mean and standard deviation values were  $1.73 \pm 1.104$  and  $6.39 \pm 1.534$  respectively. The obtained paired "t" test value was -35.02 and  $p < 0.001$ , which was highly statistically significant at  $p$  value  $< 0.001$ . It was inferred that Hoffman's exercise was effective for breastfeeding among postnatal mothers with flat or inverted nipples.

**Conclusion:** The study concluded that Hoffman's exercise could be provided to postnatal mothers with flat or inverted nipples for effective breastfeeding of their newborns.

**Keywords:** Breastfeeding, Flat and Inverted Nipple, Hoffman's Exercise, Postnatal Ward, Postnatal Mothers

## Introduction

The ideal balanced diet for infants up to six months of age is breast milk.<sup>1,2</sup> Breastfeeding depends on the baby's attachment with correct positioning to the mother's breast thereby improving the breastfeeding.<sup>3,4</sup> Anatomical breast variations and nipple abnormalities such as long nipple, short nipple, flat and inverted nipple and cracked nipple can serve as barriers to effective breastfeeding.<sup>5,6</sup> Hoffman's exercise is a method for handling these issues. This manual approach could help to break up adhesions that keep the base of the nipple inverted. It was introduced by Hoffman in the year 1953.<sup>7</sup> Globally, Primi mothers had an incidence of 9.8% of inverted and flat nipples.<sup>8</sup> About 25 to 38% of the primi mothers have nipples that don't protrude well of which 9–10% are considered as inverted nipples.<sup>9</sup> An observational study was conducted in the Antenatal Outpatient Department of Sri Ramachandra Hospital, Chennai, to assess the prevalence of breast problems among 96 nulliparous mothers during the antenatal period. It was found that 46% of the subjects had breast problems of which 17.7% had flat nipples.<sup>10</sup>

## Objectives

- To assess the level of breastfeeding among postnatal mothers with flat or inverted nipple
- To evaluate the effectiveness of Hoffman's exercise on breastfeeding among postnatal mothers
- To find out the association between the selected socio-demographic variables and the level of breastfeeding among postnatal mothers

## Materials and Methods

Pre-experimental one-group pre-test post-test design was adopted for this study. Fifty-six postnatal mothers with flat or inverted nipples were selected by purposive sampling technique admitted in the postnatal ward. The study was conducted during March-May 2022 at Mahatma Gandhi Medical College and Research Institute, Pillaiyarkuppam, Puducherry. A pre-test was done using the interview method to assess the demographic data and the level of breastfeeding was assessed by the Bristol breastfeeding assessment tool. The tool contained 2 parts. Part I consisted of demographic variables such as age, educational status, religion, area of residence, type of family, occupational status of mother, family income per month, type of diet, and type of delivery. Part II consisted of the Bristol breastfeeding

assessment tool. The institutional human ethical clearance was obtained. Informed consent was obtained from the subjects and caregivers. After the introduction, a pre-test was done to assess the level of breastfeeding. Hoffman's exercise was performed on the postnatal mothers for a period of 0–3 postnatal days. It is repeated up to five times for 3–5 mins a day and for four days. The post-test was conducted on the 4th postnatal day using the Bristol breastfeeding assessment tool.

## Hoffman's Exercise

Hoffman's exercise is the stretching exercise that helps to pull the flat and inverted nipples out. It is done by placing the thumb of both hands opposite to each other at the base of the nipple and gently but firmly pulling the thumbs away from each other. Then the thumbs are rolled at the base of the nipple. This exercise was performed on the postnatal mothers for a period of 0–3 postnatal days. It is repeated up to five times for 3–5 mins a day and for four days. The post-test was conducted on the 4th postnatal day using the Bristol breastfeeding assessment tool. Since the post-test was conducted within a period of 4 days, the researchers were not able to measure the weight gain because weight loss occurs for a newborn during the first week of life.

We taught the mothers about the exercise they should practice for up to 6 months to enhance breastfeeding. Before the intervention, latching techniques were taught to the mothers. According to the institutional policies, within half an hour to one hour, breastfeeding was initiated with the correct latching technique.

## Statistical Analysis

The data analysis was done using SPSS software. The investigator used descriptive statistics such as frequency, percentage, mean and standard deviation. Inferential statistics like paired t test were used to compare the effectiveness of pre-test and post-test levels of breastfeeding. The chi-square test was used to find out the association between the level of breastfeeding and selected demographic variables.

## Result

The following results were obtained from the study regarding the frequency and percentage distribution of demographic variables of postnatal mothers with flat or inverted nipples.

**Table I. Frequency and Distribution of Socio-Demographic Variables of Mothers**

(N = 56)

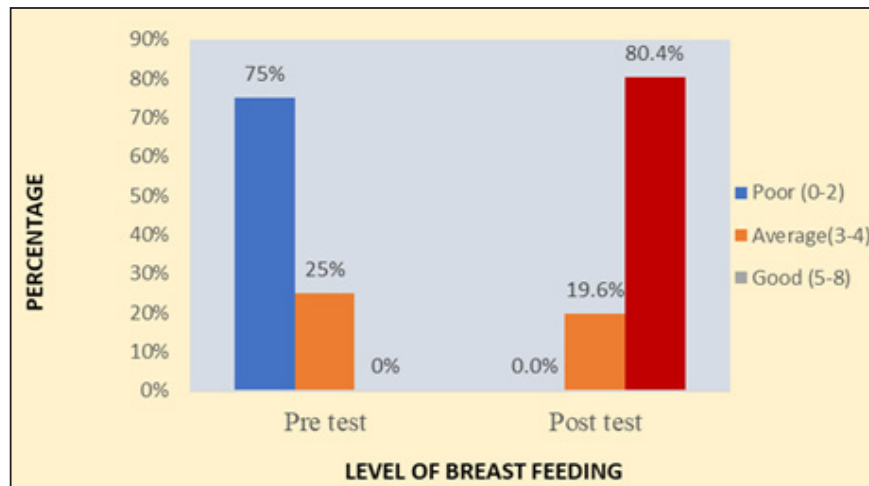
S.No	Demographic Variables	No. of Mothers (n)	Percentage (%)
1.	Age in years	21–25	37.5
		26–30	46.4
		≥ 31	16.1

2.	Educational status	Primary education	1	1.8
		Higher secondary education	19	33.9
		Graduate	36	64.3
3.	Occupational status of mother	Homemaker	43	76.8
		Daily labour	5	8.9
		Self-employed	4	7.1
		Private employee	4	7.1
4.	Monthly income in Rupees	< 5000	1	1.8
		5001 to 10,000	10	17.9
		10,000 to 15000	32	57.1
		> 15000	13	23.2
5.	Religion	Hindu	49	87.5
		Christian	2	3.6
		Muslim	5	8.9
6.	Residence	Urban	19	33.9
		Rural	23	41.1
		Semi-urban	14	25.0
7.	Type of family	Nuclear	44	78.6
		Joint	12	21.4
8.	Type of diet	Vegetarian	4	7.1
		Mixed	52	92.9
9.	Type of delivery	Vaginal	27	48.2
		Caesarean	29	51.8

The assessment of demographic variables showed that with regards to age, out of 56 samples, the majority of samples 26 (46.4%) belonged to the age group of 26–30 years, 21 (37.5%) samples belonged to the age group of 21–25 years and 9 (16.1%) were to more than 31 years of age. In education, most of the samples (36, 64.3%) were graduates, 19 (33.9%) had completed higher secondary education, and 1 (1%) had completed primary education. Regarding occupational status, most of the samples (43, 76.8%) were homemakers, 5 (8.9%) were daily labourers, 4 (7.1%) were self-employed, and 4 (7.4%) had private jobs. In regards to family income, the majority of samples 32 (57.1%) belonged to the income group of Rs 10000–15000, 13 (23.2%) belonged to > Rs 15000, 10 (17.9%) belonged to Rs 5000–10000, and 1 (1.8%) belonged to < Rs 5000. Regarding religion, the majority of samples (49, 87.5%) belonged to the Hindu religion, 5 (8.9%) were Muslims, and 2 (3.6%) were Christians. In regards to residence, most of the samples (23, 41.1%) had rural residences, 19

(33.9%) belonged to urban areas, and 14 (25%) belonged to semi-urban areas. In family type, the majority of samples 44 (78.6%) had nuclear families, and 12 (21.4%) had joint families. Regarding diet, the majority of samples 52 (92.9%) had a mixed diet, and 4 (7.1%) had a vegetarian diet. In regards to the type of delivery, the majority of samples (29, 51.8%) had had caesarean sections, and 27 (48.2%) had had vaginal deliveries (Table 1).

Figure 1 depicts the distribution of the level of breastfeeding among postnatal mothers during the pre-test and post-test. In the pre-test, out of 56 samples, 42 (75%) rated a poor level of breastfeeding, 14 (25%) rated an average level of breastfeeding, and no one had a good level. After the application of Hoffman's exercise, during the post-test, out of 56 samples, 45 (80.4%) mothers rated a good level of breastfeeding, 11 (19.6%) mothers rated an average level of breastfeeding, and no one had a poor level of breastfeeding. This shows that intervention was effective for postnatal mothers with flat or inverted nipples.



**Figure 1.** Frequency and Percentage Distribution of Breastfeeding among Postnatal Mothers with Flat or Inverted Nipple During Pre-Test and Post-Test

**Table 2.** Comparison of Pre-Test and Post-Test Mean and Standard Deviation of Effectiveness of Hoffman's Exercise on Breastfeeding Among Postnatal Mothers

Effectiveness of Hoffman's Exercise on Breast feeding	Test	Mean	Standard Deviation	t Value	p Value
	Pre-test	1.73	1.104	-35.02	0.000**
	Post-test	6.39	1.534		

\*\* : Highly statistically significant at  $p < 0.001$  level

Table 2 depicts the mean score of the effectiveness of Hoffman's exercise on breastfeeding among postnatal mothers with flat or inverted nipples in the pre-test was  $1.73 \pm 1.104$  and the mean score in the post-test was  $6.39 \pm 1.534$ . The calculated paired test value of  $t = -35.02$  shows highly statistically significant at  $p < 0.001$  level. There is a significant difference between the pre- and post-test levels of breastfeeding. The result shows that Hoffman's exercise was effective on the level of breastfeeding among postnatal mothers with flat or inverted nipples.

The result showed the association between the level of breastfeeding and selected demographic variables. Demographic variables like age, educational status, occupational status, monthly income, residence, type of family, type of diet, and type of delivery were not associated with demographic variables.

## Discussion

In the pre-test, out of 56 samples, 42 had a poor level of breastfeeding, 14 had an average level of breastfeeding and no one had a good level. In the post-test, out of 56 samples, 45 mothers rated a good level of breastfeeding, 11 mothers rated an average level of breastfeeding, and no one rated a poor level of breastfeeding. This showed that by performing Hoffman's exercise, breastfeeding became effective for postnatal mothers with flat or inverted nipples.

A similar study was conducted among mothers on the effectiveness of a structured teaching programme on the level of knowledge on breastfeeding among mothers in Kalpana nursing home at Udaipur, Rajasthan. 32 mothers were selected for this study. Pre-test and post-test assessments were done to assess the effectiveness of the structured teaching programme among the mothers. The comparison of pre-test and post-test assessment scores was done using the student 't' test. Based on the calculation, the value of 't' was 16.97 and there was a statistically significant difference between the pre-test and post-test scores at  $p \leq 0.05$  level ( $t = 1.697$ ). Hence, the researcher concluded that the structured teaching programme was effective in improving the knowledge of mothers regarding breastfeeding. The samples experienced a significant gain in knowledge after the structured teaching programme.<sup>11</sup>

A similar study was conducted on the effectiveness of Hoffman's exercise on successful breastfeeding among primipara mothers with flat and retracted nipples. The results showed that 80% of primipara mothers in the control group were at medium risk for breastfeeding, while only 20% of the mothers were at low risk. In contrast, 73% of primipara mothers in the experimental group were at low risk for breastfeeding, while 27% were at medium risk. With a 't' value of 6.82 and a significance level of  $p$  at 0.05, the overall mean percentage in the experimental group was

78% as opposed to 56% in the control group. The study concluded that Hoffman's exercise improved breastfeeding among primipara mothers.<sup>12</sup>

A quantitative study was conducted on the effectiveness of Hoffman's exercise on improving breastfeeding among postnatal mothers with grade I inverted nipples. Postnatal mothers were assessed using a pinch test and Bristol breastfeeding assessment tool. Postnatal mothers with Grade 1 inverted nipples were allocated into two groups (experimental and control groups). The study result shows that in experimental group 28 (50.9%) and the control group 27 (49.1%). The Hoffman's exercise was provided to the mothers and assessed by using BBAT. The post-test value was higher when compared to the pre-test value. The demographic variables such as age, gravida, nipple problems, and delivery type were not found to have any significant effect on either pre-test or post-test levels of breastfeeding. Hence the researcher found that Hoffman's exercise was one of the effective methods to improve breastfeeding in Grade 1 nipple-inverted postnatal mothers.<sup>13</sup>

The study recommends that a larger sample should be for better generalisation. A thorough qualitative study could be conducted to investigate the issue. Nurse researchers can do studies related to other types of alternative therapies and non-pharmacological methods to promote breast milk secretion.

## Conclusion

Hence, the researcher concluded that Hoffman's exercise could be provided to postnatal mothers with flat or inverted nipples for effective breastfeeding of their newborn.

## Acknowledgement

The authors are thankful to Mrs Annie Annal M, Professor, Department of Obstetric and Gynecological Nursing, Kasturba Gandhi Nursing College for her continuous support and guidance in completing the manuscript and approving it.

**Source of Funding:** None

**Conflict of Interest:** None

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