

The Effectiveness of Hoffman's Exercises on Breastfeeding Among Primipara Mothers With Flat and Retracted Nipples

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ABSTRACT

Breastfeeding is essential for the healthy growth and development of infants and also provides numerous health benefits to mothers. Successful breastfeeding depends on proper nipple formation and attachment of the baby to the breast. Flat and retracted nipples are common problems among primipara mothers and may lead to difficulty in latching, inadequate milk transfer, nipple pain, and early discontinuation of breastfeeding. Hoffman's exercises are simple non-invasive exercises that help in improving nipple protrusion and promoting effective breastfeeding. Early identification and management of flat and retracted nipples during the antenatal and postnatal period can improve breastfeeding outcomes and maternal confidence.

OBJECTIVES OF THE STUDY

1. To assess the breast-feeding scores among prime para mother with flat and retracted nipples in experimental and control group before the Hoffman exercise.
2. To assess the breast-feeding scores among prime para mother with flat and retracted nipple in experimental and control group after the Hoffmans exercise.
3. To compare the pre-post intervention breast feeding scores with in experimental and control group.
4. To compare the post intervention breast feeding scores between experimental and control group.
5. To find out the association between demographic variables with pre – breast feeding scores.

Materials and methods

A quantitative research approach with a quasi-experimental pre-test/post-test control group design was adopted for the study. The study was conducted among 80 primipara mothers with flat and retracted nipples (40 experimental and 40 control) selected through purposive sampling technique from selected maternity hospitals. Data were collected using a demographic questionnaire and steps of Hoffman s exercises with scoring /LATCH score. The experimental group received Hoffman's exercises demonstration and supervised practice, whereas the control group received routine care. Post-test assessment was conducted after the intervention to evaluate the effectiveness of Hoffman's exercises on breastfeeding.

Results

After Hoffman's exercises, the experimental group showed marked improvement, with a mean score of 7.63 ± 1.00 . The paired t-test showed a statistically significant improvement in breastfeeding scores in the experimental group ($t = 16.50$, $p < 0.05$). The control group also showed slight improvement ($t = 9.30$, $p < 0.05$). Comparison between groups using unpaired t-test revealed a statistically significant difference in post-test scores between experimental and control groups ($t = 5.45$, $p < 0.05$), indicating the effectiveness of Hoffman's exercises. Chi-square analysis showed significant association between pre-test breastfeeding scores and selected demographic variables.

Conclusion

The study concluded that Hoffman's exercises are an effective, safe, and non-invasive method for improving breastfeeding among primipara mothers with flat and retracted nipples. Regular practice of Hoffman's exercises can enhance nipple protrusion, improve infant latching, and promote successful breastfeeding.

Keywords Effectiveness, Hoffman's Exercises, Breastfeeding, Primipara Mothers, Flat Nipples, Retracted Nipples.

Introduction

Background of study

Pregnancy is a special, thrilling, and frequently happy period in a woman's life because it shows off her incredible nurturing and creative abilities while serving as a bridge to the future. One of the most natural ways to nourish a baby is through breastfeeding. Breast milk has been shown to transmit several health benefits from mother to child. It is the perfect nourishment for a baby. The most perfectly balanced nutritional supply is breast milk, which offers a unique combination of nutrients and immune components. Additionally, it lowers the chance of breast and ovarian cancer, chronic diseases like obesity and diabetes mellitus, and maternal haemorrhage.

The baby's attachment to the mother's breast and the mother's proper placement are essential for successful breastfeeding. This improves suckling, which in turn increases milk production and lengthens the breastfeeding period. Breastfeeding moms may experience a variety of breast deformities, including long, short, flat, inverted, and cracked nipples, which can make feeding challenging. Breast shells, rubber bands, and inverted syringes have all been used to treat inverted, flat, or short nipples. Compared to pharmaceutical tactics, nonpharmacological strategies are more popular these days. Hoffman's exercise is the most successful non-pharmacological strategy.¹

Flat or retracted nipples are one of the major issues that hinder successful breastfeeding. These anatomical differences make it difficult for the baby to properly latch onto the breast, which leads to poor milk transfer, ineffective sucking, and a higher risk of breastfeeding failure. Primipara mothers, who lack experience and are sometimes ill-equipped to handle such difficulties, are more affected by this issue. They might thus feel anxious, frustrated, and less confident, all of which might lead to early breastfeeding cessation.²

It has been reported that Ten to twenty percent of women have flat or inverted nipples, which significantly affects breastfeeding outcomes. Additionally, studies indicate that nipple abnormalities are present in about 16.3% of nulliparous women attending antenatal clinics, with nearly 9.6% having flat or non-protractile nipples. These conditions are directly associated with poor latching, nipple pain, trauma, and reduced breastfeeding success rates. Evidence also suggests that mothers with such conditions are more likely to encounter breastfeeding difficulties during the first week postpartum, a critical period for establishing lactation.³

Breastfeeding is widely recognized as the most effective and essential practice for ensuring the health and survival of newborns. It provides complete nutrition, strengthens The baby's immune system, encourages normal growth and development, and strengthens the emotional connection between a mother and her child. Exclusive breastfeeding for the first six months of life can avert about 13% of under-five mortality worldwide, according to UNICEF and the World Health Organization (WHO). Many mothers still find it difficult to successfully breastfeed, especially in the early postpartum phase, despite these compelling advice and advantages.⁴

Inadequate management of these problems can have broader implications on infant health, including poor weight gain, increased risk of infections, and malnutrition. From the maternal perspective, unsuccessful breastfeeding may lead to emotional distress and decreased maternal-infant bonding. Therefore, early identification and appropriate intervention are essential to overcome these challenges and promote successful breastfeeding practices.⁵

Among the available interventions, Hoffman's exercises have been identified as a simple, cost-effective, and non-invasive method to correct flat or retracted nipples. These exercises involve gentle manual stretching of the nipple tissue to promote protrusion, thereby facilitating better latching by the infant. Studies have shown that approximately 75% of flat or inverted nipples can be corrected antenatally using Hoffman's exercises, leading to improved breastfeeding outcomes. Additionally, intervention studies reveal that mothers who perform these exercises demonstrate higher rates of successful breastfeeding, improved infant satisfaction, and reduced maternal discomfort.⁶

Need of the study

The most economical strategy for lowering infant morbidity and mortality globally is breastfeeding. One of the things that makes exclusive breastfeeding impossible is having flat or inverted nipples. A manual exercise called Hoffman's exercise may help dissolve the adhesions at the base of the nipple that prevent it from being inverted. One of the best, healthiest, and most natural ways to nourish newborns is through breastfeeding, which also improves the health of the mother. Some moms struggle with nipple inversion, which limits their ability to feed their infants and utilize its benefits.⁷

A newborn can be fed in a totally natural way by breastfeeding. Breast milk has been shown to transfer several health benefits from mother to child. It's the perfect nourishment for a baby. Breastfeeding moms may experience a variety of breast deformities, including long, short, flat, inverted, and cracked nipples, which can make feeding challenging. Compared to pharmaceutical tactics, non-pharmacological strategies are more popular these days. Hoffman's exercise is the most successful non-pharmacological method for treating nipple issues.⁸

When a mother is nursing for the first time, she is in a vulnerable position and needs knowledgeable help, support, and encouragement. Breastfeeding women may experience a variety of breast abnormalities.⁵ Recognizing these problems is crucial to maintaining a positive breastfeeding relationship with the kid. Obstetricians must make sure that expectant mothers are physically ready to nurse their babies in addition to encouraging them to do so. The identification and treatment of nipple anatomical anomalies is a frequently overlooked topic. To find any anatomical anomalies, the nipple and areola must be examined.⁹

Breastfeeding is hampered by a flat or inverted nipple, which causes frequent irritation and inflammation. Moreover, psychological discomfort could result from its unusual appearance. Several methods have been developed to correct this aberration, taking into account its severity and underlying pathophysiologic components. Most of these procedures require a large skin incision around the nipple, which could endanger the nipple's blood and nerve supply or result in a lot of unsightly scar tissue.

It offers all the nutrition and vital immunological defence needed for the best possible growth and development in the first few months of life. A considerable percentage of infant illness and mortality can be avoided by exclusively breastfeeding during the first six months of life. Despite the benefits of breastfeeding being well-established, many moms encounter obstacles that prevent them from doing so successfully¹⁰

One of the common anatomical problems affecting breastfeeding is the presence of flat or inverted nipples. This condition can create difficulty in proper latching, leading to inadequate milk transfer, frustration for both mother and infant, and early discontinuation of breastfeeding. Studies have indicated that nipple abnormalities are among the major contributors to breastfeeding failure, particularly among primipara mothers who lack experience and confidence.¹¹

Flat and inverted nipples not only interfere with effective feeding but may also lead to complications such as nipple trauma, breast engorgement, mastitis, and decreased milk production. In addition, mothers may experience emotional stress, anxiety, and reduced self-esteem due to their inability to breastfeed successfully. These elements work together to lower exclusive breastfeeding rates, which continue to be a global public health concern.¹²

The use of non-pharmacological and non-invasive therapies to treat breastfeeding issues has become more popular in recent years. Hoffman's exercise is a straightforward, economical, and safe manual method for nipple correction, inversion by stretching and loosening adhesions at the base of the nipple. It can be easily taught to mothers and practiced without the need for specialized equipment or medical supervision.¹³

Hoffman's exercise is widely recommended in clinical practice, there is limited evidence regarding its effectiveness in improving breastfeeding outcomes of new mothers who have nipple abnormalities, particularly in a particular hospital settings. Therefore, it is essential to scientifically evaluate its impact on breastfeeding performance to ensure evidence-based nursing practice.¹⁴

Early identification and management of nipple abnormalities during the antenatal and postnatal periods are crucial for promoting successful breastfeeding. Nurses and healthcare providers play a vital role in educating and supporting mothers through appropriate interventions such as Hoffman's exercise. However, lack of awareness, inadequate training, and insufficient research-based guidelines often limit its implementation.¹⁵

The present study is undertaken to assess Hoffman's exercise's impact on postpartum women with nipple abnormalities' breastfeeding levels. The findings of this study will help in enhancing nursing knowledge, improving clinical practices, and promoting successful breastfeeding among mothers facing anatomical challenges.

Research methodology:

The current research aimed to assess the effectiveness of Hoffman's exercises on breastfeeding among primipara mothers with flat and retracted nipples. Quantitative, non-randomized control-group pre-test/post-test quasi-experimental design was used. Eighty primipara mothers meeting the study criteria were selected by purposive sampling and allocated into an experimental group (n=40) and a control group (n=40). Baseline and post-intervention breastfeeding performance were assessed using a structured tool incorporating the LATCH score. The experimental group received demonstration and supervised practice of Hoffman's exercises, twice daily for 3–5 days; the control group received routine care. Descriptive statistics, paired t-test, unpaired t-test, and chi-square test were used.

Tool for Data Collection-A structured tool was used consisting of:

Section A: Demographics variables

Section B: History of Obstetrics

Section C: Hoffman's Exercise Checklist

Section D: Breastfeeding Evaluation Instrument LATCH Score.

Data was analysed according to the objectives

Section I: Frequency and percentage distribution of demographic variables

Section II: Pre Assessment of Breastfeeding Scores

Section III: Post Assessment of Breastfeeding Scores

Section IV: Comparison within Groups

Table 1: Frequency and percentage distribution of demographical variables.
(n= 40+40)

Sr. No.	Variable	Groups	Experimental		Control	
			Frequency	Percent (%)	Frequency	Percent (%)
1.	Age (in years)	22 to 25	8	20.00	20	50.00%
		25 to 28	10	25.00	12	30.00%
		28 to 31	22	55.00	8	20.00%
2.	Education	Primary	4	10.00	9	22.50%
		Secondary	14	35.00%	4	10.00%
		Higher secondary	18	45.00%	16	40.00%
		Graduation	3	7.50%	9	22.50%
		No formal education	1	2.50%	2	5.00%
3.	Occupation	Housewife	18	45.00%	20	50.00%
		Daily wage worker	7	17.50%	8	20.00%
		Private employee	14	35.00%	10	25.00%
		Government employee	1	2.50%	2	5.00%
4.	Type of family	Nuclear	17	42.50%	12	30.00%
		Joint	12	30.00%	24	60.00%
		Extended	11	27.50%	4	10.00%
5.	Monthly Income	5000 to 10000	8	20.00%	11	27.50%
		10001 to 15000	9	22.50%	8	20.00%
		15001 to above	23	57.50%	21	52.50%
6.	Type of delivery	Caesarean section	12	30.00%	15	37.50%
		Forceps delivery	7	17.50%	3	7.50%
		vacuum delivery	3	7.50%	3	7.50%
		normal delivery	18	45.00%	19	47.50%
7.	Nipple condition	Flat	23	57.50%	8	20.00%
		Retracted	9	22.50%	13	32.50%
		Cracked	4	10.00%	14	35.00%
		Inverted	4	10.00%	5	12.50%

Table 2: Assessment the breast-feeding scores among primipara mother with flat and retracted nipples in Experimental groups before the Hoffman's exercise.

(n = 40)

Variable (Before the Hoffmans exercise)	Groups	Score	Experimental	
			Frequency	Percentage
Breastfeeding among primipara mother	Good	8 – 10	0	0.00%
	Average	5-7	23	57.5%
	Poor	< 5 score	17	42.5%
Descriptive statistics	Minimum		4	
	Maximum		6	
	Average (SD)		4.68 (0.66)	

Table 3: Assessment the breast-feeding scores among prime para mother with flat and retracted nipples in Control groups before the Hoffman's exercise.

(n = 40)

Variable (Before the Hoffmans exercise)	Groups	Score	Control	
			Frequency	Percentage
Breastfeeding among primipara mother	Good	8 – 10	0	0.00%
	Average	5-7	0	0.00%
	Poor	< 5 score	40	100.00%
Descriptive statistics	Minimum		2	
	Maximum		4	
	Average (SD)		3.03 (0.77)	

Result:- A majority (57.5%) had average scores, while 42.5% had poor scores in Experimental Group: The mean score was 4.68 with a standard deviation of 0.66, indicating generally low baseline breastfeeding performance. All mothers (100%) in the control group had poor breastfeeding scores during the pre-assessment. The mean score was 3.03 with a standard deviation of 0.77,

Table 4: Assessment of the breast-feeding scores among primipara mother with flat and retracted nipples in Experimental groups after the Hoffman's exercise.

(n= 40)

Variable (After the Hoffmans exercise)	Groups	Score	Experimental	
			Frequency	Percentage
Breastfeeding among primipara mother	Good	8 – 10	24	60.00%
	Average	5-7	16	40.0%
	Poor	< 5 score	00	0.00%
Descriptive statistics	Minimum		6	
	Maximum		9	
	Average (SD)		7.63 (1.00)	

Table 5: Assessment of the breast-feeding scores among prime para mother with flat and retracted nipples in Control groups after the Hoffman's exercise.

(n= 40)

Variable (After the Hoffmans exercise)	Groups	Score	Control	
			Frequency	Percentage
Breastfeeding among primipara mother	Good	8 – 10	0	0.00%
	Average	5-7	4	10.00%
	Poor	< 5 score	36	90.00%
	Minimum		4	
	Maximum		6	
	Average (SD)		4.68 (0.66)	
Descriptive statistics				

Result:- After the intervention, 60% of mothers achieved good breastfeeding scores, and the remaining 40% had average scores in Experimental Group. The mean score increased to 7.63 with a standard deviation of 1.00, showing a marked improvement. In the control group, majority (90%) remained in the poor category. The mean score was 4.68 with a standard deviation of 0.66, indicating only slight improvement.

Table 6: comparisons of pre-post intervention breast feeding scores within experimental group (n = 40)

Experimental group	Total Score	Mean	S.D.	t value	P value
Pre	187	4.68	0.66	16.50	< 0.05
Post	305	7.63	1.00		

The paired t-test was applied to compare pre-test and post-test scores within the experimental group. The mean score increased from 4.68 (SD = 0.66) to 7.63 (SD = 1.00). The calculated t value was 16.50, which was statistically significant at $p < 0.05$.

This result indicates that Hoffman's exercises were effective in improving breastfeeding among primipara mothers.

Table 7: comparisons of pre-post intervention breast feeding scores within control group. (n = 40)

Control group	Total Score	Mean	S.D.	t value	P value
Pre	121	3.03	0.76	9.30	< 0.05
Post	187	4.68	0.65		

Table 8: Comparison of primipara mother with post-interventions finding between experimental and control group. (n = 80)

Groups	Frequency	Mean	S.D.	t value	P value
Experimental	40	7.63	1.00	5.45	< 0.05
Control	40	4.68	0.66		

An unpaired t-test was used to compare post-test scores between the two groups. The experimental group had a higher mean score (7.63 ± 1.00) compared to the control group (4.68 ± 0.66). The calculated t value was 5.45, which was statistically significant ($p < 0.05$). There is a significant difference between the two groups, confirming that Hoffman's exercises had a positive effect on breastfeeding outcomes.

Table 9: Association with demographic variable (n = 80)

Sr. No.	Variable	Groups	Pre-test Hoffman's exercise score		Chi Square test	d.f.	P Value	Significant
			Experimental	Control				
1.	Age (in years)	22 to 25	8	20	11.86	2	0.002	Significant
		25 to 28	10	12				
		28 to 31	22	08				
2.	Education	Primary	4	9	10.93	4	0.027	Significant
		Secondary	14	04				
		Higher secondary	18	16				
		Graduation	3	09				
		No formal education	1	02				
3.	Occupation	Housewife	18	20	1.1719	3	0.76	Not Significant
		Daily wage worker	07	08				
		Private employee	14	10				
		Government employee	01	02				
4.	Type of family	Nuclear	17	12	8.13	2	0.017	Significant
		Joint	12	24				
		Extended	11	04				
5.	Monthly Income	5000 to 10000	08	11	0.62	2	0.73	Not Significant
		10001 to 15000	09	08				
		15001 to above	23	21				

6.	Type of delivery	Caesarean section	12	15	1.96	3	0.58	Not Significant
		Forceps delivery	07	03				
		vacuum delivery	03	03				
		normal delivery	18	19				
7.	Nipple condition	Flat	23	08	13.65	3	0.003	Significant
		Retracted	09	13				
		Cracked	04	14				
		Inverted	04	05				

Result-A significant association was found ($p < 0.05$), age , education , influences breastfeeding performance. A significant association was noted, indicating that nipple condition affects breastfeeding outcomes.

DISCUSSION: The present study intended to find out the effectiveness of Hoffman's exercises on breast feeding among primipara mothers with flat nipples in selected maternity hospitals. The findings of the present study are discussed with reference to the objectives, hypothesis stated and with findings of other similar studies. Following the implementation of Hoffman's exercise, the experimental group showed marked improvement. A majority of mothers achieved good breastfeeding scores, while the rest reached an average level. On the other hand, the control group exhibited minimal progress, The paired t-test results revealed a statistically significant improvement in the experimental group after the intervention. The unpaired t-test demonstrated a significant difference between the experimental and control groups in post-test scores. This confirms that the improvement observed in the experimental group was a direct effect of Hoffman's exercise rather than a result of chance or external factors. Thus, the intervention proved to be effective in enhancing breastfeeding practices among mothers with nipple abnormalities.

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