

EFFECTIVENESS OF EARLY SKIN-TO-SKIN CONTACT (SSC) ON BREASTFEEDING SUCCESS AND BODY TEMPERATURE AMONG NEWBORNS IN SELECTED HOSPITALS AT MEERUT

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ABSTRACT

Introduction: Early skin-to-skin contact (SSC) is an evidence-based intervention that promotes neonatal adaptation, breastfeeding success, and thermal regulation. It is the best setting for babies to adjust to life outside the uterus. Infants having skin-to-skin contact with their mothers have been shown to display more efficient sucking patterns, earlier initiation of breastfeeding, and longer duration of exclusive breastfeeding compared to those who experience separation after birth. Only 23.6% of the newborns were breastfed within half an hour of birth and only 24.5% within an hour according to National Family Health Survey (NFHS-3).

Objectives: To assess the effectiveness of Skin-to-Skin contact on breastfeeding success and body temperature among newborns.

Methods: A quasi-experimental study was conducted among 60 mothers with their newborns (30 experimental group, 30 control group) in Sardar Vallabh Bhai Patel Hospital and District Women Hospital at Meerut using consecutive sampling technique who met the eligibility criteria and written consents were taken from the sample. The experimental group received Skin-to-Skin Contact for one hour after birth, while the control group received Conventional care. Data were collected using the LATCH breastfeeding assessment tool and an Infrared thermometer before and after the intervention. Descriptive and Inferential Statistics were used for data analysis.

Results: Paired t-test and Unpaired t-test were used to evaluate the effectiveness of early skin-to-skin contact (SSC) on breastfeeding success and body temperature among newborns. The findings revealed a statistically significant improvement in breastfeeding success and body temperature among newborns in the experimental group following the implementation of early skin-to-skin contact. In contrast, no statistically significant improvement in breastfeeding success was observed in the control group, although body temperature showed a statistically significant change. Unpaired t-test demonstrated a statistically significant difference in post-test breastfeeding success and body temperature scores between the experimental and control groups, indicating the effectiveness of early skin-to-skin contact. Pearson's correlation coefficient showed a very strong positive correlation between breastfeeding success and body temperature in the experimental group ($r = 0.7049$, $p = 0.000007$) and a strong positive correlation in the control group ($r = 0.6035$, $p = 0.000207$). Chi-square analysis revealed no statistically significant association between breastfeeding success, body temperature, and selected demographic variables ($p > 0.05$).

Conclusion: There was a statistically significant difference noted in the mean breastfeeding success and body temperature scores between pre-test and post-test among newborns who received early skin-to-skin contact. A statistically significant difference was also observed between the experimental and control groups regarding breastfeeding success and body temperature. This indicates that early skin-to-skin contact effectively enhances breastfeeding success and helps maintain normal body temperature in newborns.

KEYWORDS: Skin-to-skin contact, Breastfeeding success, LATCH score, Neonatal temperature, Newborn, Hypothermia

INTRODUCTION

The hardest transition a person can make is from fetus to newborn life. A baby's health and emotional bond with the mother can be significantly impacted in the first hour following delivery. This period is extremely sensitive and crucial for controlling important bodily processes. Thus, a safe and advantageous technique that promotes a healthy start to life is to keep the mother and baby together as soon as possible after birth. The first 24 hours after birth are the most dangerous

time for both the mother and the child, with 2.9 million babies dying within 28 days (UNICEF). Neonatal care within the first hour of life has a significant impact on both short-term and long-term results. (Sharma, 2017). Placing an unclothed infant directly on the mother's naked chest or belly right after birth or soon after for a short while is known as skin-to-skin contact, or SSC. SSC should be continued for at least an hour after delivery, according to the World Health Organization (WHO). The 2018 update of the Ten Steps to Successful Breastfeeding by the World Health Organization (WHO) and United Nations Children's Fund (UNICEF), which serves as the basis for the Baby-Friendly Hospital Initiative, provides compelling evidence of the significance of skin-to-skin contact in the first hour following delivery. Step 4 specifically states: "Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth" (WHO, 2018). There are several advantages to breastfeeding for the woman, the child, and the environment. Additionally, the success and duration of breastfeeding are positively impacted by a calm and encouraging first hour after birth as well as skin-to-skin contact between mother and infant. The infant faces several difficulties during childbirth and the early postpartum period. While breastfeeding rates are still low in India, newborn death rates remain high. Therefore, there is a need for an easy-to-implement remedy that might address these issues. The best time for babies to begin nursing behaviors such as rooting and sucking is during the first two hours after birth, when they are most sensitive to tactile, temperature, and smell cues from their mothers.

The Objectives of the Study Were

1. To assess the level of breastfeeding and body temperature among newborns in experimental and control group.
2. To evaluate the effectiveness of early skin to skin contact (SSC) on breastfeeding success and body temperature among newborns.
3. To find correlation between breastfeeding success and body temperature in experimental and control group.
4. To find the association between level of breastfeeding success and body temperature among newborns with their selected demographic variables.

RESEARCH METHODOLOGY

The researcher selected 60 mothers and their newborns by using a consecutive sampling technique who met the eligibility criteria. A quasi-experimental research design with experimental and control groups was adopted. The study was conducted at District Women Hospital (DWH), Meerut and Sardar Vallabh Bhai Patel (SVBP) Hospital, Meerut after obtaining written permission from the SIC of both hospitals. District Women Hospital was assigned as the experimental group and Sardar Vallabh Bhai Patel Hospital as the control group. Written informed consent was obtained from all participating mothers after explaining the purpose of the study and assuring confidentiality of the information provided. The experimental group consisted of 30 mothers with their newborns who received early skin-to-skin contact for one hour immediately after birth, whereas the control group of 30 mothers with their newborns received routine postnatal care. Data were collected using a demographic data sheet, the standardized LATCH Breastfeeding Assessment Tool, and an Infrared thermometer for assessment of neonatal body temperature. Pre-test assessment of breastfeeding success and body temperature was carried out in both groups before the intervention, followed by post-test assessment after the intervention. Descriptive and inferential statistics were used for data analysis, including paired t-test, unpaired t-test, Pearson's correlation coefficient, and Chi-square test.

Inclusion Criteria:

- Mothers with normal vaginal delivery.
- Mothers willing to participate.
- Newborns who were stable after birth and eligible for early skin-to-skin contact.
- Mothers and newborns who were available during the data collection period were also included.

Exclusion Criteria:

- Mothers having any postpartum complications or having skin allergies.
- Newborns with congenital anomalies, severe birth complications, or serious illness were excluded.

RESULTS

The findings of study are presented according to the objectives of the study. The data is prepared under the subsequent sections: -

Table 1. Frequency and percentage distribution of mothers according to age in Experimental group and Control group.(N = 60)

Background Variables	Experimental Group		Control Group	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Age of Mother (Years)				
Less than 18 years	2	6.7	4	13.3
18–35 years	12	40.0	16	53.3
More than 35 years	16	53.3	10	33.4

Educational Status				
No Formal Education	4	13.3	7	23.3
Primary Education	10	33.3	13	43.3
Secondary Education	9	30.0	9	30.0
Higher Secondary Education	3	10.0	1	3.3
Graduate	4	13.3	0	0.0
Post Graduate and Above	0	0.0	0	0.0
Occupation of Mother				
Homemaker	16	53.3	27	90.0
Government Job	2	6.7	1	3.3
Private Job	10	33.3	1	3.3
Entrepreneur	2	6.7	1	3.4
Residential Area				
Urban	9	30.0	6	20.0
Rural	15	50.0	20	66.7
Suburban	6	20.0	4	13.3
Monthly Family Income				
Below ₹5,000	4	13.3	2	6.7
₹5,001–₹15,000	18	60.0	15	50.0
₹15,001–₹20,000	1	3.3	8	26.7
More than ₹20,000	7	23.4	5	16.6
Parity				
Primipara	10	33.3	10	33.3
Multipara	18	60.0	18	60.0
Grand Multipara	2	6.7	2	6.7
Gestational Age				
Less than 34 weeks	6	20.0	1	3.3
34–36 weeks	22	73.3	21	70.0
≥37 weeks	2	6.7	8	26.7
APGAR Score at 1 Minute				
Severe Distress (0–3)	0	0.0	0	0.0
Moderate Distress (4–6)	13	43.3	14	46.7
Normal (7–10)	17	56.7	16	53.3
APGAR Score at 5 Minutes				
Severe Distress (0–3)	0	0.0	0	0.0
Moderate Distress (4–6)	0	0.0	0	0.0
Normal (7–10)	30	100.0	30	100.0

Table 2: Frequency And percentage distribution of pretest and posttest level of breast-feeding score among newborns in Experimental Group. (n=30)

LATCH Score	Experimental Group			
	Pre Test		Post Test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Poor	26	86.7	0	0
Moderate	4	13.3	14	53.3

Good	0	0	16	46.7
Total	30	100	30	100

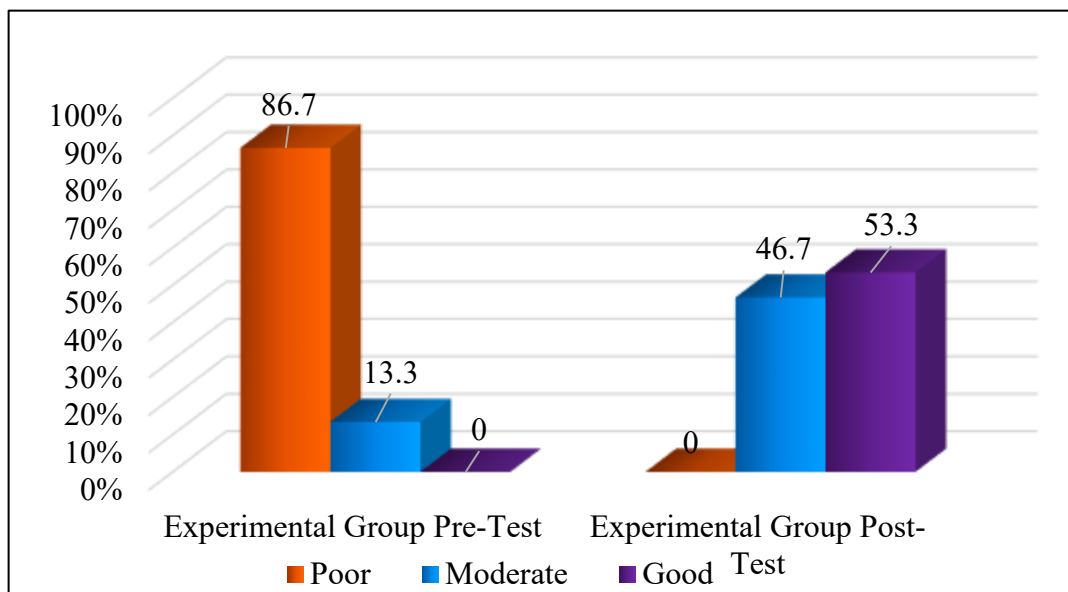


Figure 1: Comparison of pre-test and post-test level of breast feeding among newborns in Experimental Group.

Table 3: Frequency And percentage distribution of pretest and posttest level of breast-feeding score among newborns in Control Group. (n=30)

LATCH Score	Control Group			
	Pre Test		Post Test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Poor	30	100	26	86.7
Moderate	0	0	4	13.3
Good	0	0	0	0
Total	30	100	30	100

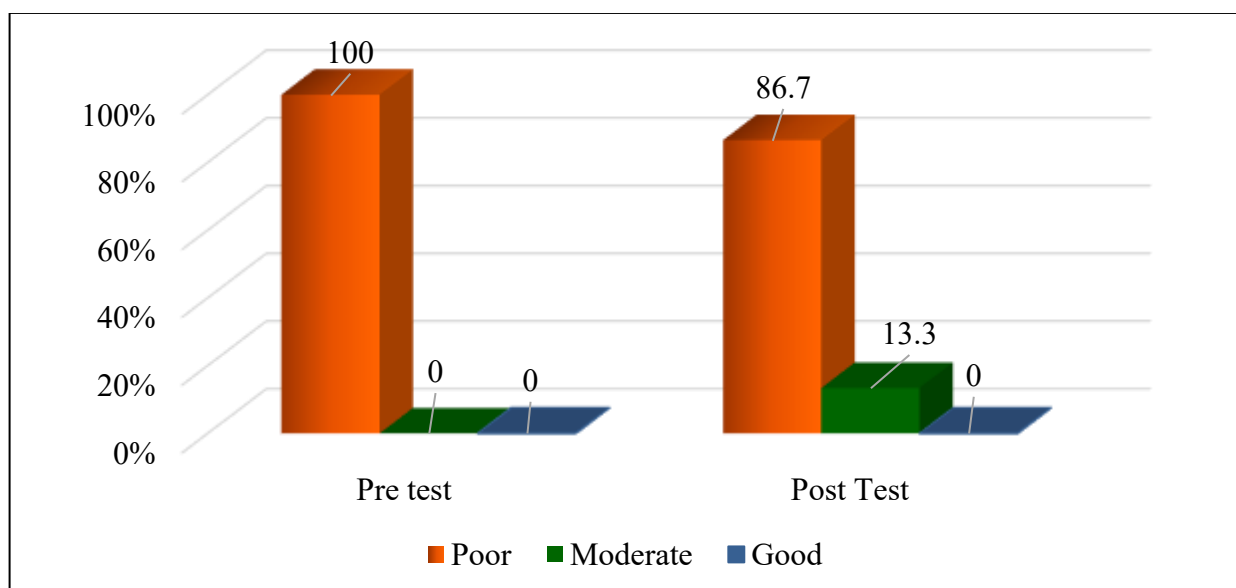


Figure 2: Comparison of pre-test and post-test level of breast feeding among newborns in Control Group.

Table 4 Frequency And percentage distribution of Pretest and Posttest level of Temperature among newborns in Experimental Group. (n=30)

Level of Hypothermia	Experimental Group			
	Pre Test		Post Test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Normal Neonatal temperature	0	0	16	53.3
Mild Hypothermia	0	0	5	16.7
Moderate Hypothermia	22	73.3	9	30
Severe Hypothermia	8	26.7	0	0
Total	30	100	30	100

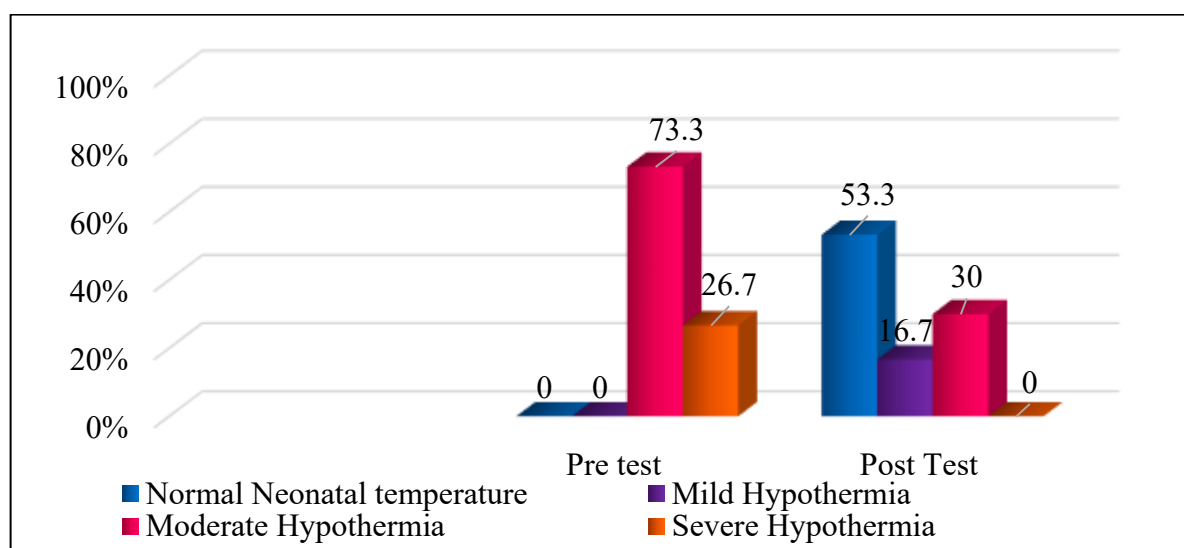


Figure 3: Comparison of pre-test and post-test level of Hypothermia among newborns in Experimental Group.

Table 5: Frequency And percentage distribution of Pretest and Posttest level of Temperature among newborns in Control Group. (n=30)

Level of Hypothermia	Experimental Group			
	Pre Test		Post Test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Normal Neonatal temperature	0	0	0	0
Mild Hypothermia	0	0	0	0
Moderate Hypothermia	23	76.7	26	86.7
Severe Hypothermia	7	23.3	4	13.3
Total	30	100	30	100

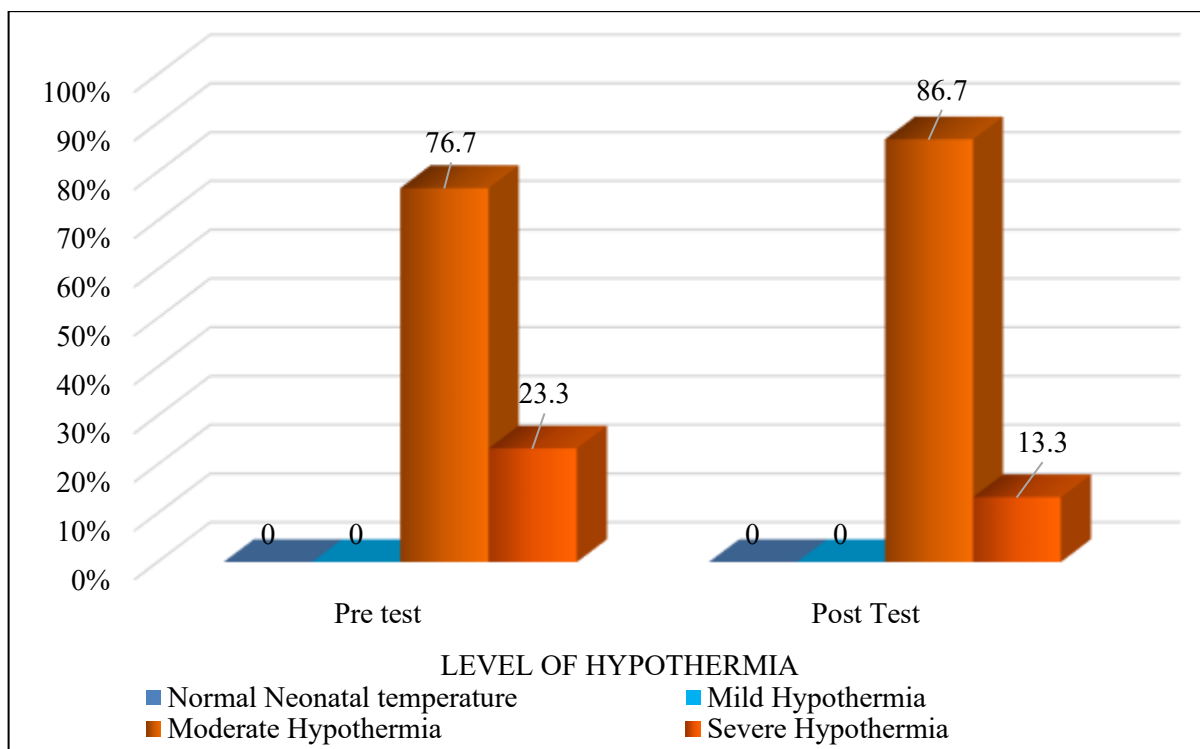


Figure 4: Comparison of pre-test and post-test level of Hypothermia among newborns in Control Group.

Table 6: Comparison of post-test breastfeeding success score among newborns between experimental and control group by unpaired t-test. (N=60)

Group	Mean	Mean Difference	SD	t value	df	P Value	Inference
Experimental Group	7.7	4.84	0.9	20.87	58	0.00	Significant
Control Group	2.63						

*S- Significant, $p < 0.05$

Table-7: Comparison of post-test Temperature scores among newborns between experimental and control group by unpaired t-test. (N=60)

Group	Mean	Mean Difference	SD	t value	df	p value	Inference
Experimental Group	36.41	3.14	0.84	11.525	59	0.00	Significant
Control Group	33.27						

*S- Significant, $p < 0.05$

Table 8: Correlation between post test score of breastfeeding success and body temperature among newborns in experimental group. N=60

Variables	Mean	SD	Mean Difference	r value	P value	Interpretation
Breastfeeding Success	7.7	0.9	28.71	0.7049	0.000007	Significant very strong positive relationship.
Body Temperature	36.41	0.84				

*S- Significant, $p < 0.05$

Table 9: Correlation between post test score of Breastfeeding Success and Body Temperature among newborns in control group. N=60

Variables	Mean	SD	Mean Difference	r value	p value	Interpretation
Breastfeeding Success	2.6	0.9	30.61	0.6035	0.000207	Significant strong positive relationship
Body Temperature	33.27	0.84				

*S- Significant, $p < 0.05$

Table 10: Association between pre-test intervention score of breastfeeding success and Body Temperature with Selected Demographic Variables in the Experimental Group (N = 30)

Background Variables	Breastfeeding Success χ^2 (p value)	Body Temperature χ^2 (p value)
Age of Mother	$\chi^2 = 0.3703$, $p = 0.9848$ (NS)	$\chi^2 = 2.6206$, $p = 0.2697$ (NS)
Educational Status	$\chi^2 = 2.7159$, $p = 0.9873$ (NS)	$\chi^2 = 5.3409$, $p = 0.2541$ (NS)
Occupation of Mother	$\chi^2 = 1.8055$, $p = 0.9367$ (NS)	$\chi^2 = 3.1335$, $p = 0.3714$ (NS)
Residential Area	$\chi^2 = 0.4938$, $p = 0.9741$ (NS)	$\chi^2 = 0.3261$, $p = 0.8496$ (NS)
Monthly Family Income	$\chi^2 = 1.6491$, $p = 0.9490$ (NS)	$\chi^2 = 6.8074$, $p = 0.3389$ (NS)
Parity	$\chi^2 = 0.2469$, $p = 0.9930$ (NS)	$\chi^2 = 1.1222$, $p = 0.5706$ (NS)
Gestational Age	$\chi^2 = 0.5387$, $p = 0.9696$ (NS)	$\chi^2 = 0.5387$, $p = 0.7639$ (NS)
APGAR Score at 1 Minute	$\chi^2 = 2.5490$, $p = 0.6359$ (NS)	$\chi^2 = 0.8624$, $p = 0.6498$ (NS)
APGAR Score at 5 Minutes	$\chi^2 = 0.0000$, $p = 1.0000$ (NS)	$\chi^2 = 0.0000$, $p = 1.0000$ (NS)

Table 11: Association between pre-test intervention score of breastfeeding success and Body Temperature with Selected Demographic Variables in the Control Group. n=30

Background Variables	Breastfeeding Success χ^2 (p value)	Body Temperature χ^2 (p value)
Age of Mother	$\chi^2 = 0.0932$, $p = 0.9545$ (NS)	$\chi^2 = 0.0932$, $p = 0.9545$ (NS)
Educational Status	$\chi^2 = 4.8140$, $p = 0.1859$ (NS)	$\chi^2 = 4.8140$, $p = 0.1859$ (NS)
Occupation of Mother	$\chi^2 = 1.0145$, $p = 0.7977$ (NS)	$\chi^2 = 1.0145$, $p = 0.7977$ (NS)
Residential Area	$\chi^2 = 0.6818$, $p = 0.9949$ (NS)	$\chi^2 = 0.6818$, $p = 0.9949$ (NS)
Monthly Family Income	$\chi^2 = 7.4573$, $p = 0.5896$ (NS)	$\chi^2 = 7.4573$, $p = 0.5896$ (NS)
Parity	$\chi^2 = 0.8696$, $p = 0.9901$ (NS)	$\chi^2 = 0.8696$, $p = 0.9901$ (NS)
Gestational Age	$\chi^2 = 0.3193$, $p = 0.9994$ (NS)	$\chi^2 = 0.3193$, $p = 0.9994$ (NS)
APGAR Score at 1 Minute	$\chi^2 = 0.0532$, $p = 1.0000$ (NS)	$\chi^2 = 0.0532$, $p = 1.0000$ (NS)
APGAR Score at 5 Minutes	$\chi^2 = 0.0000$, $p = 1.0000$ (NS)	$\chi^2 = 0.0000$, $p = 1.0000$ (NS)

In the experimental group during the pre-test, 86.7% of the newborns had poor breastfeeding scores and 13.3% had moderate breastfeeding scores, whereas during the post-test, 53.3% of the newborns achieved moderate breastfeeding scores and 46.7% achieved good breastfeeding scores. In the control group during the pre-test, 100% of the newborns had poor breastfeeding scores, whereas during the post-test, 86.7% remained in the poor breastfeeding category and only 13.3% achieved moderate breastfeeding scores.

In the experimental group during the pre-test, 73.3% of the newborns had moderate hypothermia and 26.7% had severe hypothermia. Following the implementation of early skin-to-skin contact, 53.3% of the newborns attained normal neonatal temperature, 16.7% had mild hypothermia, and 30.0% had moderate hypothermia during the post-test. In the control group, 76.7% of the newborns had moderate hypothermia and 23.3% had severe hypothermia during the pre-test, whereas during the post-test, 86.7% remained in moderate hypothermia and 13.3% remained in severe hypothermia.

The data presented in Tables 8 and 9 show the comparison of post-test breastfeeding success and body temperature scores between the experimental and control groups. Unpaired t-test was computed to determine the significant mean differences in post-test breastfeeding success and body temperature scores between the experimental and control group. The findings revealed a statistically significant difference in post-test breastfeeding success and body temperature scores between the experimental and control groups ($p < 0.05$). These findings indicate that newborns who received early skin-to-skin contact demonstrated better breastfeeding success and improved temperature maintenance compared to those who received routine care.

Pearson's correlation coefficient (r) was computed to determine the relationship between breastfeeding success and body temperature among newborns. The findings revealed a statistically significant very strong positive correlation between breastfeeding success and body temperature in the experimental group ($p < 0.05$). A statistically significant strong positive correlation was also observed in the control group ($p < 0.05$). These findings indicate that newborns with better breastfeeding success tended to maintain better body temperature.

Chi-square test was computed to determine the association between breastfeeding success, body temperature, and selected demographic variables. The findings revealed that there was no statistically significant association between breastfeeding success, body temperature, and selected maternal and neonatal demographic variables in either the experimental group or the control group ($p > 0.05$).

DISCUSSION

The present study revealed that in the experimental group, 86.7% of newborns had poor breastfeeding scores during the pre-test, whereas after the implementation of early skin-to-skin contact, 53.3% achieved moderate breastfeeding scores and 46.7% achieved good breastfeeding scores. Similarly, 53.3% of newborns attained normal neonatal temperature following the intervention, whereas no newborn in the control group achieved normal temperature during the post-test period.

These findings are supported by the study conducted by Moore, Brimdyr, Bergman, et al. (2016) titled "Immediate or Early Skin-to-Skin Contact for Mothers and Their Healthy Newborn Infants." The systematic review reported that newborns who received immediate skin-to-skin contact demonstrated better breastfeeding success, improved temperature regulation, reduced crying, and improved physiological adaptation compared to newborns receiving routine care. The authors concluded that early skin-to-skin contact significantly improves breastfeeding outcomes and neonatal thermoregulation.

The present study further revealed a statistically significant improvement in breastfeeding success and body temperature among newborns who received early skin-to-skin contact. Unpaired t-test also demonstrated a statistically significant difference in post-test breastfeeding success and body temperature scores between the experimental and control groups, indicating the effectiveness of early skin-to-skin contact.

This finding is supported by the study conducted by Huang, Chen, et al. (2022) titled "Evaluation of the Effects of Skin-to-Skin Contact on Newborn Sucking and Breastfeeding Abilities." The study reported that newborns who received uninterrupted skin-to-skin contact for 60 minutes immediately after birth showed significantly improved sucking ability, breastfeeding performance, and neonatal adaptation compared to newborns receiving routine care. The authors concluded that prolonged early skin-to-skin contact is an effective intervention for improving breastfeeding success and neonatal outcomes.

The present study also revealed a statistically significant positive relationship between breastfeeding success and body temperature among newborns in both the experimental and control groups. This finding suggests that newborns who establish effective breastfeeding are more likely to maintain better thermal stability.

This finding is supported by the study conducted by Muthoharoh, Yuriah, Gustiani, et al. (2022) titled "Efficacy of Early Initiation of Breastfeeding for Preventing Hypothermia in Newborns." The study found that newborns who received immediate skin-to-skin contact along with early initiation of breastfeeding maintained significantly better body temperature and demonstrated higher breastfeeding rates compared to those receiving conventional care. The authors concluded that breastfeeding and thermal regulation are closely interrelated neonatal outcomes.

The present study further revealed that there was no statistically significant association between breastfeeding success, body temperature, and selected demographic variables such as maternal age, educational status, occupation, residential area, family income, parity, gestational age, and APGAR scores.

This finding is supported by the study conducted by Kristoffersen Bergseng, et al. (2023) titled "Skin-to-Skin Contact in the Delivery Room for Very Preterm Infants." The study reported that early skin-to-skin contact improved thermal stability and neonatal adaptation irrespective of maternal and neonatal demographic characteristics. The researchers concluded that

the benefits of skin-to-skin contact are broadly applicable across different population groups and are not dependent on demographic variables.

The findings of the present study support the routine implementation of early skin-to-skin contact immediately after birth. Early skin-to-skin contact is a simple, safe, cost-effective, and evidence-based intervention that significantly improves breastfeeding success, maintains neonatal body temperature, and promotes positive neonatal outcomes among newborns.

NURSING IMPLICATIONS

Nursing Education

Nursing education programs should include early skin-to-skin contact as an evidence-based strategy to enhance breastfeeding outcomes and regulate neonatal body temperature. Students should learn about its advantages, proper techniques, and clinical use through hands-on demonstrations, simulation exercises, and case-based discussions.

Nursing Practice

Based on the findings of the present study, nurses can:

- Promote early skin-to-skin contact immediately after birth as a standard newborn care procedure.
- Educate mothers regarding the benefits of skin-to-skin contact for breastfeeding success and temperature maintenance.
- Support the initiation of breastfeeding within the first hour after birth.
- Observe newborns to ensure successful breastfeeding and normal body temperature is sustained.
- Offer ongoing support and assistance to mothers for effective breastfeeding and newborn care.

Nursing Management

Nursing administrators should develop policies and standard operating protocols for the implementation of early skin-to-skin contact in maternity and neonatal units. Regular in-service education and training programs should be organized for nursing personnel to enhance their knowledge and skills regarding evidence-based newborn care practices.

Nursing Research

Further studies can be conducted using larger sample sizes and across various healthcare environments to confirm the findings. Randomized controlled trials and longitudinal studies could be performed to evaluate the long-term effect of early skin to skin contact on breast feeding success neonatal thermoregulation, maternal satisfaction, and mother–infant bonding.

RECOMMENDATIONS

- A longitudinal study can be conducted to assess the long-term effects of early skin-to-skin contact on breastfeeding success and neonatal temperature regulation.
- Future studies may focus on maternal aspects such as maternal satisfaction, bonding, confidence, and psychological wellbeing related to early skin-to-skin contact.
- The intervention may be implemented only in the experimental group with strict monitoring to evaluate its effectiveness more accurately.
- A randomized controlled trial may be conducted in future research to obtain stronger evidence regarding the effectiveness of early skin-to-skin contact.
- Studies with a larger sample size may be undertaken to improve the generalizability and reliability of the findings.
- Similar studies may be conducted in different hospital settings and among diverse populations for better comparison of results.

LIMITATIONS

- **Small Sample Size:** The study was restricted to a total of 60 parturient mothers (30 in the experimental group and 30 in the control group), which may limit the generalizability of the findings to a larger population.
- **Limited Setting:** Data collection was confined to only two specific hospitals in Meerut (SVBP Hospital and District Women Hospital), which may not represent the diverse demographic and clinical practices of other regions.
- **Short Duration of Follow-up**

The study assessed outcomes only in the immediate post-test period, without long-term follow-up of breastfeeding practices or thermal stability.

CONCLUSION

There was a statistically significant improvement in breastfeeding success and body temperature among newborns who received early skin-to-skin contact. The findings indicate that early skin-to-skin contact is a simple, safe, and effective intervention for promoting successful breastfeeding and maintaining normal body temperature among newborns.

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