

“A Study to Assess the Effectiveness of an Indigenous Protocol-Based Ambulation Program on Postoperative Recovery Among LSCS Mothers in Western U.P”

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Abstract

Background: Cesarean section (CS) rates are increasing globally, with India showing a marked rise in LSCS deliveries. Postoperative recovery is often delayed due to immobility, pain, and complications. Early ambulation has been proven to accelerate recovery; however, no indigenous, region-specific ambulation protocol exists for mothers in Western Uttar Pradesh.

Aim: To evaluate the effectiveness of an indigenous protocol-based ambulation program developed at LLRM Nursing College, Meerut, on post-operative recovery among LSCS mothers.

Methods: A quasi-experimental non randomized control group design was used. Total 60 caesarean mothers were enrolled by non probability purposive sampling technique. 30 in each experimental and control group. Data was collected in both groups by using observational checklist and post operative recovery score was assessed by visual analog scale. Data were analyzed using descriptive statistics, paired/unpaired t-tests, and chi-square tests.

Results: The result revealed that there was significant mean difference between the pretest and post test was 3.2 in experimental group and 8.5 in control group with a t-value of 108.92 and 32.39, again confirming statistical significance at $p < 0.05$. The mean post-test score in the experimental group was 3.2 ± 2.34 , while the control group had a higher mean score of 4.8 ± 2.85 . This suggests that there is a positive impact on postoperative recovery. Mothers in the intervention group showed significantly better outcomes in pain reduction, uterine contraction, mobility, elimination, and initiation of breastfeeding compared with the control group.

Conclusion: The protocol-based ambulation program effectively enhanced postoperative recovery and is a feasible, nurse-led, and cost-effective intervention for LSCS mothers in India.

Keywords: Cesarean section, early ambulation, postoperative recovery, protocol-based nursing intervention, LSCS

1. INTRODUCTION

Cesarean section (CS) has become one of the most frequently performed surgical procedures worldwide, accounting for 21% of births globally and projected to reach nearly one-third of all deliveries by 2030. While life-saving when medically indicated, CS is associated with delayed postoperative recovery due to factors such as immobility, postoperative pain, thromboembolic risks, delayed bowel function, and difficulty initiating breastfeeding. According to the World Health Organization, the percentage of CS should not go above 10–15%. Many nations take steps to lower the high rate of cord cutting in order to prevent the related prenatal and postnatal hazards. Kavitha and Radhika (2023), early ambulation was found to improve overall functional recovery and decrease pain perception in post-caesarean mothers.¹³ Similarly, research by Sharma et al. (2022) indicated that mothers who ambulated within 12 hours post-surgery experienced quicker recovery and fewer incidences of thromboembolic events. The National Institute for Health and Care Excellence (NICE) also recommends early mobilization as a key component of enhanced recovery protocols following caesarean delivery (NICE, 2021).

The American College of Obstetricians and Gynecologists (ACOG) and The Royal College of Obstetricians and Gynecologists (RCOG) recommend postpartum exercises to improve mothers' health, facilitate return to pre-pregnant condition, and prevent of postpartum complications

Early ambulation—encouraging movement soon after surgery—has been demonstrated to improve postoperative outcomes, including enhanced circulation, faster uterine involution, reduced pain, improved bowel motility, and earlier initiation of breastfeeding. Despite strong evidence, there is a lack of standardized, indigenous ambulation protocols tailored to regional hospital settings in India. Nursing interventions such as structured ambulation protocols could play a vital role in improving maternal recovery.

Objectives

- To assess the pre-test and post-test level of post operative recovery among LSCS mothers in experimental and control group.
- To determine the difference between the pretest and post test level of post operative recovery among LSCS mothers in experimental and control group.
- To determine the difference between the post test level of post operative recovery among experimental and control group of LSCS mothers.
- To find out the association between the post operative recovery among LSCS mothers with their selected demographic.

Hypotheses

All the hypotheses will be tested at 0.05 level of significance.

H₁. There is a significant difference between the mean pre-test and post test score of post operative recovery among experimental group and control group of LSCS mothers

H₂. There is a significant difference between mean post test score of post operative recovery among experimental and control group of LSCS mothers.

H₃: There is a significant association between the post operative recovery among LSCS mothers with their selected demographic variables.

2. MATERIAL AND METHODOLOGY

Research approach: Quantitative research approach

Design: Quasi-experimental (non-equivalent control group pretest-posttest).

Sampling Technique: Purposive sampling technique.

Sample: 60 LSCS mothers (30 experimental, 30 control).

Setting: SVBP Hospital, Meerut, Uttar Pradesh.

Tools : Demographic characteristics, Observational checklist and visual analog scale.

3. RESULT

Table:1 frequency and percentage distribution of demographic variables among LSCS mothers.

N=60

| S no. | Demographic variables | Background information | Experimental | | Control | |
|-------|-----------------------|----------------------------|---------------|---------------|---------------|----------------|
| | | | Frequency (f) | Percentage(%) | Frequency (f) | Percentage (%) |
| 1. | Age in years | 18 - 22 years | 5 | 16.66% | 7 | 23.37% |
| | | 23 - 27 years | 12 | 40% | 8 | 26.67% |
| | | 28 - 32 years | 5 | 16.67% | 8 | 26.66% |
| | | 33 - 37 years | 5 | 16.67% | 4 | 13.33% |
| | | >38 years | 3 | 10% | 3 | 10% |
| 2 | Residence | Urban areas | 7 | 23.33% | 6 | 20% |
| | | Semi urban areas | 10 | 33.33% | 9 | 30% |
| | | Rural areas | 13 | 43.34% | 15 | 50% |
| 3 | Education | No formal education | 5 | 16.66% | 7 | 23.33% |
| | | Primary education | 10 | 33.33% | 11 | 36.67% |
| | | Higher secondary education | 10 | 33.34% | 5 | 16.67% |
| | | Graduate | 3 | 10% | 5 | 16.66% |
| | | Postgraduate | 2 | 6.67% | 2 | 6.67% |

| | | | | | | |
|-----|--|----------------------|----|--------|----|--------|
| 4 | Occupation | Housewife | 26 | 86.66% | 27 | 90% |
| | | Private job | 4 | 13.34% | 3 | 10% |
| | | Government job | | | | |
| | | Self employed | | | | |
| 5. | Religion | Hindu | 16 | 53.33% | 14 | 46.66% |
| | | Muslim | 13 | 43.33% | 14 | 46.67% |
| | | Christian | 1 | 3.34% | 2 | 6.67% |
| | | Others | | | | |
| 6. | Type of family | Nuclear family | 15 | 50% | 13 | 43.33% |
| | | Joint family | 15 | 50% | 17 | 56.67% |
| | | Extended family | | | | |
| 7. | Age at marriage | 17-22 years | 15 | 50% | 14 | 46.66% |
| | | 23-28 years | 11 | 36.66% | 14 | 46.67% |
| | | 29-34 years | 3 | 10% | 2 | 6.66% |
| | | 35 and above | 1 | 3.33% | 0 | 0% |
| 8. | Dietary habit | Vegetarian | 10 | 33.33% | 8 | 26.66% |
| | | Non-vegetarian | 12 | 40% | 14 | 46.67% |
| | | Egetarian | 8 | 26.67% | 8 | 26.67% |
| 9. | Number of parity | Primigravida | 15 | 50% | 12 | 40% |
| | | Multigravida (if >2) | 15 | 50% | 18 | 60% |
| | Mode of previous birth | NVD | 4 | 26.66% | 4 | 22.23% |
| | | LSCS | 11 | 73.34% | 14 | 77.77% |
| | | Forceps | | | | |
| | | Vacuum | | | | |
| | | | | | | |
| 10. | Number of c-section undergone | 1 st time | 19 | 63.33% | 18 | 60% |
| | | 2 nd time | 7 | 23.33% | 7 | 23.33% |
| | | 3 rd time | 4 | 13.34% | 5 | 16.67% |
| | | 4 th time | | | | |
| 11. | Period of gestation on which c section was done | 34-35 weeks | 6 | 20% | 7 | 23.34% |
| | | 36-37 weeks | 11 | 36.67% | 10 | 33.33% |
| | | 38-39 weeks | 11 | 36.66% | 10 | 33.33% |
| | | 40 weeks | 2 | 6.67% | 3 | 10% |
| 12. | Time of initiation of breastfeeding | Between 2-6 hours | 18 | 60% | 13 | 43.33% |
| | | Between 7-12 hours | 6 | 20% | 6 | 20% |
| | | Between 13-18 hours | 2 | 6.66 | 4 | 13.33% |
| | | Between 19-24 hours | 1 | 3.34 | 1 | 3.34% |
| | | After 24 hours | 3 | 10% | 6 | 20% |
| 13. | | Elective | 14 | 46.66% | 15 | 50% |

| | Type of C-section | | | | | |
|-----|---------------------------------|-----------------------------|----|--------|----|--------|
| | | Emergency | 16 | 53.34% | 15 | 50% |
| 14. | Indication of C-section | Previous caesarean delivery | 11 | 36.67% | 14 | 46.66% |
| | | Fetal complications | 4 | 13.33% | 3 | 10% |
| | | High risk maternal factors | 15 | 50% | 13 | 43.37% |
| 15. | Type of anesthesia in C-section | General | | | | |
| | | Spinal | 29 | 96.67% | 28 | 93.33% |
| | | Epidural | 1 | 3.33% | 2 | 6.67% |

Table 2: Difference between the pretest and post test level of post operative recovery among LSCS mothers in experimental and control group.

N= 60

| | Range | Experimental group | | | | Control group | | | |
|---------------------|-------|--------------------|-----|-----------|-------|---------------|-----|-----------|----|
| | | Pre test | | Post test | | Pre test | | Post test | |
| | | F | % | F | % | F | % | F | % |
| No difficulty | 0 | 0 | 0 | 7 | 23.33 | 0 | 0 | 3 | 10 |
| Mild difficulty | 1-20 | 0 | 0 | 23 | 76.67 | 0 | 0 | 21 | 70 |
| Moderate difficulty | 21-35 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 20 |
| Unable to perform | 36-50 | 30 | 100 | 0 | 0 | 30 | 100 | 0 | |

Table 3: Comparison between pretest score and Post test score of post caesarean mothers on post operative recovery in experimental and control group

N=60

| GROUPS | Pretest | Post test | Mean difference | t-value | P value | Significance |
|--------------------|-----------|------------|-----------------|---------|---------|--------------|
| | Mean + SD | Mean + SD | | | | |
| Experimental Group | 0 + 0 | 3.2 + 2.34 | 3.2 | 108.92 | 2.05 | Significant |
| Control Group | 0 + 0 | 8.5 + 6.67 | 8.5 | 32.39 | | |

Table 4: Comparison between the post test Scores on post operative recovery among post caesarean mothers in experimental and control group

| Group | Mean + SD | t- value | df | P value | Significance |
|--------------------|-----------|----------|----|---------|--------------|
| | | | | | |
| Experimental group | 3.2+2.34 | 4.10 | 58 | 2.00 | Significant |
| Control group | 4.8+2.85 | | | | |

P < 0.05

Table no.5: Frequency and percentage distribution of post operative recovery among experimental group

n = 30

| S. no. | Observation | I st day | | II nd day | | III rd day | |
|--------|---|---------------------|--------|----------------------|--------|-----------------------|--------|
| | | F | % | F | % | F | % |
| 1. | Uterine condition • Contracted • Uncontracted | 25 | 83.33% | 26 | 86.66% | 27 | 90% |
| | | 5 | 16.67% | 4 | 13.34% | 3 | 10% |
| | | | | | | | |
| 2. | Blood loss (pads/day) • 02-03 • 04-05 | 2 | 6.66% | 19 | 63.33% | 28 | 93.33% |
| | | 24 | 80% | 11 | 36.67% | 2 | 6.67% |

| | | | | | | | |
|-----|------------------------|----|--------|----|--------|----|--------|
| | • 05+ | 4 | 13.34% | 0 | 0% | 0 | 0% |
| 3. | Nausea | 12 | 40% | 5 | 16.67% | 1 | 3.33% |
| 4. | Vomiting | 6 | 20% | 2 | 6.66 | 0 | 0 |
| 5. | Retention of urine | 0 | 0 | 0 | 0 | 0 | 0 |
| 6. | Breast engorgement | 12 | 40% | 10 | 33.34 | 5 | 16.66 |
| 7. | DVT | 0 | 0 | 0 | 0 | 0 | 0 |
| 8. | Constipation | 8 | 26.67% | 8 | 26.66 | 2 | 6.66 |
| 9. | Haemorrhoids | 1 | 3.33% | 1 | 3.34% | 1 | 3.33% |
| 10. | Wound bleeding | 0 | 0 | 0 | 0 | 0 | 0 |
| 11. | Elimination Bladder | | | | | | |
| | • None | | | 2 | 6.66% | | |
| | • Difficult | 30 | 100% | 28 | 93.34 | 30 | 100% |
| | • Easy | | | | | | |
| | Flaus passed | 0 | 0 | 27 | 90% | 29 | 96.67 |
| | Bowel | | | | | | |
| | • None | 30 | 100% | | | | |
| | • Difficult | | | 3 | 10% | 1 | 3.34% |
| | • Easy | | | 27 | 90% | 29 | 96.66% |
| 12. | Analgesic required | | | | | | |
| | • OD | | | | | | |
| | • BD | 18 | 60% | 24 | 80% | 27 | 90% |
| | • TDS | 12 | 40% | 6 | 20% | 3 | 10% |

Table no.6: Frequency and percentage distribution of post operative recovery among Control group
 n = 30

| S. no. | Observation | I st day | | II nd day | | III rd day | |
|--------|------------------------|---------------------|--------|----------------------|--------|-----------------------|--------|
| | | F | % | F | % | F | % |
| 1. | Uterine condition | | | | | | |
| | • Contracted | 24 | 80% | 23 | 76.66% | 25 | 83.34% |
| | • Uncontracted | 6 | 20% | 7 | 23.34% | 5 | 16.66% |
| 2. | Blood loss (pads/day) | | | | | | |
| | • 02-03 | 1 | 3.33% | 2 | 6.66% | 27 | 90% |
| | • 04-05 | 25 | 83.34% | 23 | 76.67% | 3 | 10% |
| | • 05+ | 4 | 13.33% | 5 | 16.66% | 0 | 0% |
| 3. | Nausea | 14 | 46.66% | 8 | 26.67% | 3 | 10% |
| 4. | Vomiting | 4 | 13.34% | 5 | 16.66% | 1 | 3.34% |
| 5. | Retention of urine | 0 | 0 | 0 | 0 | 0 | 0 |
| 6. | Breast engorgement | 13 | 43.33% | 12 | 40% | 8 | 26.66% |
| 7. | DVT | 0 | 0 | 0 | 0 | 0 | 0 |
| 8. | Constipation | 11 | 36.67% | 12 | 40% | 4 | 13.33% |
| 9. | Haemorrhoids | 1 | 3.33% | 1 | 3.34% | 1 | 3.33% |
| 10. | Wound bleeding | 0 | 0 | 0 | 0 | 0 | 0 |
| 11. | Elimination Bladder | | | | | | |
| | • None | | | 3 | 10% | | |
| | • Difficult | 30 | 100% | 27 | 90% | 30 | 100% |
| | • Easy | | | | | | |
| | Flaus passed | 0 | 0 | 24 | 80% | 28 | 93.34% |
| | Bowel | | | | | | |
| | • None | 30 | 100% | | | | |
| | • Difficult | | | 6 | 20% | 3 | 10% |
| | • Easy | | | 24 | 80% | 27 | 90% |
| 12. | Analgesic required | | | | | | |

| | | | | | | |
|-------|----|--------|----|--------|----|--------|
| • OD | 17 | 56.66% | 20 | 66.67% | 26 | 86.67% |
| • BD | 13 | 43.34% | 10 | 33.33% | 4 | 13.33% |
| • TDS | | | | | | |

Table 7: Association between post operative recovery among LSCS mothers with their selected demographic variables in Experimental Group.

| S No | Demographic variable | Post operative recovery in Experimental Group | | | | f | % | df | χ^2 value | P Value |
|-----------------|----------------------------|---|-----------|-----------|-------------------|--------|--------|----|----------------|------------|
| | | No Diff | Mild Diff | Mod Diff. | Unable to Perform | | | | | |
| 1. | Age | | | | | | | | | |
| | 18 - 22 years | 3 | 2 | 0 | 0 | 5 | 16.66% | 2 | 2.49 | 5.99 NS |
| | 23 - 27 years | 1 | 11 | 0 | 0 | 12 | 40% | | | |
| | 28 - 32 years | 2 | 3 | 0 | 0 | 5 | 16.67% | | | |
| | 33 - 37 years | 1 | 4 | 0 | 0 | 5 | 16.67% | | | |
| >38 years | 0 | 3 | 0 | 0 | 3 | 10% | | | | |
| 2. | Residence | | | | | | | | | |
| | Urban areas | 3 | 4 | 0 | 0 | 7 | 23.33% | 2 | 2.49 | 5.99 NS |
| | Semi urban areas | 1 | 9 | 0 | 0 | 10 | 33.33% | | | |
| Rural areas | 3 | 10 | 0 | 0 | 13 | 43.34% | | | | |
| 3. | Education | | | | | | | | | |
| | No formal education | 3 | 2 | 0 | 0 | 5 | 16.66% | 4 | 5.40 | 9.49 NS |
| | Primary education | 2 | 8 | 0 | 0 | 10 | 33.33% | | | |
| | Higher secondary education | 2 | 8 | 0 | 0 | 10 | 33.34% | | | |
| | Graduate | 0 | 3 | 0 | 0 | 3 | 10% | | | |
| Postgraduate | 0 | 2 | 0 | 0 | 2 | 6.67% | | | | |
| 4. | Occupation | | | | | | | | | |
| | Housewife | 7 | 19 | 0 | 0 | 26 | 86.66% | 1 | 1.40 | 3.84 NS |
| | Private job | 0 | 4 | 0 | 0 | 4 | 13.34% | | | |
| | Government job | 0 | 0 | 0 | 0 | | | | | |
| Self employed | 0 | 0 | 0 | 0 | | | | | | |
| 5. | Religion | | | | | | | | | |
| | Hindu | 4 | 12 | 0 | 0 | 16 | 53.33% | 2 | 0.32 9 | 5.99 NS |
| | Muslim | 3 | 10 | 0 | 0 | 13 | 43.33% | | | |
| | Christian | 0 | 1 | 0 | 0 | 1 | 3.34% | | | |
| Others | 0 | 0 | 0 | 0 | | | | | | |
| 6. | Type of family | | | | | | | | | |
| | Nuclear family | 3 | 12 | 0 | 0 | 15 | 50% | 1 | 0.18 6 | 3.84 NS |
| | Joint family | 4 | 11 | 0 | 0 | 15 | 50% | | | |
| Extended family | 0 | 0 | 0 | 0 | | | | | | |
| 7. | Age at marriage | | | | | | | | | |
| | 17-22 years | 4 | 11 | 0 | 0 | 15 | 50% | 3 | 1.40 5 | 7.82 NS |
| | 23-28 years | 3 | 8 | 0 | 0 | 11 | 36.66% | | | |
| | 29-34 years | 0 | 3 | 0 | 0 | 3 | 10% | | | |
| 35 and above | 0 | 1 | 0 | 0 | 1 | 3.33% | | | | |
| 8. | Dietary habit | | | | | | | | | |
| | Vegetarian | 2 | 8 | 0 | 0 | 10 | 33.33% | 2 | 1.25 7 | 5.99 NS |
| | Non-vegetarian | 2 | 10 | 0 | 0 | 12 | 40% | | | |
| Egetarian | 3 | 5 | 0 | 0 | 8 | 26.67% | | | | |
| 9. | No. of Parity | | | | | | | | | |
| Primigravida | 5 | 10 | 0 | 0 | 15 | 50% | 1 | | 3.84 | |

| | | | | | | | | | | |
|-----|--|---|----|---|---|----|--------|---|-----------|------------|
| | Multigravida | 2 | 13 | 0 | 0 | 15 | 50% | | 0.67 7 | NS |
| 10 | Number of c-section undergone | | | | | | | | | |
| | 1 st time | 5 | 14 | 0 | 0 | 19 | 63.33% | 2 | 3.81 4 | 5.99 NS |
| | 2 nd time | 0 | 7 | 0 | 0 | 7 | 23.33% | | | |
| | 3 rd time | 2 | 2 | 0 | 0 | 4 | 13.34% | | | |
| | 4 th time | 0 | 0 | 0 | 0 | 0 | | | | |
| 11 | Period of gestation on which c section was done | | | | | | | | | |
| | 34-35 weeks | 2 | 4 | 0 | 0 | 6 | 20% | 3 | 2.47 3 | 7.82 NS |
| | 36-37 weeks | 3 | 8 | 0 | 0 | 11 | 36.67% | | | |
| | 38-39 weeks | 1 | 10 | 0 | 0 | 11 | 36.66% | | | |
| | 40 weeks | 1 | 1 | 0 | 0 | 2 | 6.67% | | | |
| 12. | Time of initiation of breastfeeding | | | | | | | | | |
| | Between 2-6 hours | 2 | 16 | 0 | 0 | 18 | 60% | | | |
| | Between 7-12 hours | 3 | 3 | 0 | 0 | 6 | 20% | | | |
| | Between 13-18 hours | 0 | 2 | 0 | 0 | 2 | 6.66 | | | |
| | Between 19-24 hours | 1 | 0 | 0 | 0 | 1 | 3.34 | | | |
| | After 24 hours | 1 | 2 | 0 | 0 | 3 | 10% | | | |
| 13 | Type of C-section | | | | | | | | | |
| | Elective | 3 | 11 | 0 | 0 | 14 | 46.66% | 1 | 0.05 3 | 3.84 NS |
| | Emergency | 4 | 12 | 0 | 0 | 16 | 53.34% | | | |
| 14 | Indication of C-section | | | | | | | | | |
| | Previous caesarean delivery | 1 | 10 | 0 | 0 | 11 | 36.67% | 2 | 2.93 | 5.99 NS |
| | Fetal complications | 2 | 2 | 0 | 0 | 4 | 13.33% | | | |
| | High risk maternal factors | 4 | 11 | 0 | 0 | 15 | 50% | | | |
| 15 | Type of anesthesia in C-section | | | | | | | | | |
| | General | 0 | 0 | 0 | 0 | 0 | | 1 | 3.39 9 | 3.84 NS |
| | Spinal | 6 | 23 | 0 | 0 | 30 | 96.67% | | | |
| | Epidural | 1 | 0 | 0 | 0 | 0 | 3.33% | | | |

Table 8 Association between post operative recovery among LSCS mothers with their selected demographic variables in Control Group.

| S No | Demographic variable | Post operative recovery in Control Group | | | | f | % | df | χ^2 value | P value |
|------|----------------------|--|-----------|----------|-------------------|---|--------|----|----------------|-------------|
| | | No Diff | Mild Diff | ModDiff. | Unable to Perform | | | | | |
| 1. | Age | | | | | | | | | |
| | 18 - 22 years | 1 | 4 | 2 | 0 | 7 | 23.37% | 8 | 5.843 | 15.51 NS |
| | 23 - 27 years | 0 | 5 | 3 | 0 | 8 | 26.67% | | | |

| | | | | | | | | | | |
|-----------|------------------|---|----|---|---|----|--------|---|-------|-----------|
| | 28 – 32 years | 1 | 6 | 1 | 0 | 8 | 26.66% | | | |
| | 33 – 37 years | 1 | 3 | 0 | 0 | 4 | 13.33% | | | |
| | >38 years | 0 | 3 | 0 | 0 | 3 | 10% | | | |
| 2. | Residence | | | | | | | | | |
| | Urban areas | 3 | 2 | 1 | 0 | 6 | 20% | 4 | 14.35 | 9.49 S |
| | Semi urban areas | 0 | 8 | 1 | 0 | 9 | 30% | | | |
| | Rural areas | 0 | 11 | 4 | 0 | 15 | 50% | | | |

| | | | | | | | | | | |
|-----------|----------------------------|---|----|---|---|----|--------|---|-------|-------------|
| 3. | Education | | | | | | | | | |
| | No formal education | 1 | 6 | 0 | 0 | 7 | 23.33% | 8 | 5.632 | 15.51 NS |
| | Primary education | 1 | 6 | 4 | 0 | 11 | 36.67% | | | |
| | Higher secondary education | 0 | 4 | 1 | 0 | 5 | 16.67% | | | |
| | Graduate | 1 | 3 | 1 | 0 | 5 | 16.66% | | | |
| | Postgraduate | 0 | 2 | 0 | 0 | 2 | 6.67% | | | |
| 4. | Occupation | | | | | | | | | |
| | Housewife | 2 | 19 | 6 | 0 | 27 | 90% | 6 | 2.486 | 12.59 NS |
| | Private job | 1 | 2 | 0 | 0 | 3 | 10% | | | |
| | Government job | 0 | 0 | 0 | 0 | | | | | |
| | Self employed | 0 | 0 | 0 | 0 | | | | | |
| 5. | Religion | | | | | | | | | |
| | Hindu | 2 | 8 | 4 | 0 | 14 | 46.66% | 6 | 2.448 | 12.59 NS |
| | Muslim | 1 | 11 | 2 | 0 | 14 | 46.67% | | | |
| | Christian | 0 | 2 | 0 | 0 | 2 | 6.67% | | | |
| | Others | 0 | 0 | 0 | 0 | | | | | |
| 6. | Type of family | | | | | | | | | |
| | Nuclear family | 1 | 10 | 2 | 0 | 13 | 43.33% | 2 | 0.523 | 5.99 NS |
| | Joint family | 2 | 11 | 4 | 0 | 17 | 56.67% | | | |
| | Extended family | 0 | 0 | 0 | 0 | | | | | |
| 7. | Age at marriage | | | | | | | | | |
| | 17-22 years | 1 | 9 | 4 | 0 | 14 | 46.66% | 4 | 1.979 | 9.49 NS |
| | 17-22 years | 1 | 9 | 4 | 0 | 14 | 46.66% | | | |
| | 23-28 years | 2 | 10 | 2 | 0 | 14 | 46.67% | | | |
| | 29-34 years | 0 | 1 | 1 | 0 | 2 | 6.66% | | | |
| | 35 and above | 0 | 0 | 0 | 0 | 0 | 0% | | | |

| | | | | | | | | | | |
|-----------|--------------------------------------|---|----|---|---|----|--------|---|-------|------------|
| 8. | Dietary habit | | | | | | | | | |
| | Vegetarian | 0 | 5 | 3 | 0 | 8 | 26.66% | 4 | 4.426 | 9.49 NS |
| | Non-vegetarian | 2 | 9 | 3 | 0 | 14 | 46.67% | | | |
| | Egetarian | 1 | 7 | 0 | 0 | 8 | 26.67% | | | |
| 9. | No. of Parity | | | | | | | | | |
| | Primigravida | 0 | 8 | 4 | 0 | 12 | 40% | 2 | 3.809 | 5.99 NS |
| | Multigravida | 3 | 13 | 2 | 0 | 18 | 60% | | | |
| 10 | Number of c-section undergone | | | | | | | | | |
| | 1 st time | 2 | 12 | 4 | 0 | 18 | 60% | 4 | 2.438 | 9.49 NS |
| | 2 nd time | 1 | 5 | 1 | 0 | 7 | 23.33% | | | |
| | 3 rd time | 0 | 5 | 0 | 0 | 5 | 16.67% | | | |
| | 4 th time | 0 | 0 | 0 | 0 | 0 | | | | |
| 11 | Period of gestation on | | | | | | | | | |

| | | | | | | | | | | |
|---|--|---|---|---|---|----|--------|---|-------|-------------|
| | which c section was done | | | | | | | | | |
| | 34-35 weeks | 0 | 6 | 1 | 0 | 7 | 23.34% | 6 | 3.942 | 12.59 NS |
| | 36-37 weeks | 1 | 6 | 3 | 0 | 10 | 33.33% | | | |
| | 38-39 weeks | 1 | 7 | 2 | 0 | 10 | 33.33% | | | |
| | 40 weeks | 1 | 2 | 0 | 0 | 3 | 10% | | | |
| 2 | Time of initiation of breastfeeding | | | | | | | | | |
| | Between 2-6 hours | 1 | 8 | 4 | 0 | 13 | 43.33% | 8 | 6.283 | 15.51 NS |
| | Between 7-12 hours | 1 | 4 | 1 | 0 | 6 | 20% | | | |
| | Between 13-18 hours | 1 | 3 | 0 | 0 | 4 | 13.33% | | | |
| | Between 19-24 hours | 0 | 1 | 0 | 0 | 1 | 3.34% | | | |
| | After 24 hours | 0 | 6 | 0 | 0 | 6 | 20% | | | |

| | | | | | | | | | | |
|----|--|---|----|---|---|----|--------|---|-------|------------|
| 13 | Type of C-section | | | | | | | 2 | 4.857 | 5.99 NS |
| | Elective | 0 | 13 | 2 | 0 | 15 | 50% | | | |
| | Emergency | 3 | 8 | 4 | 0 | 15 | 50% | | | |
| 14 | Indication of C-section | | | | | | | 4 | 4.929 | 9.49 NS |
| | Previous caesarean delivery | 2 | 10 | 2 | 0 | 14 | 46.66% | | | |
| | Fetal complications | 0 | 1 | 2 | 0 | 3 | 10% | | | |
| | High risk maternal factors | 1 | 10 | 2 | 0 | 13 | 43.37% | | | |
| 15 | Type of anesthesia in C-section | | | | | | | 4 | 0.956 | 9.49 NS |
| | General | 0 | 0 | 0 | 0 | 0 | | | | |
| | Spinal | 3 | 19 | 6 | 0 | 28 | 93.33% | | | |
| | Epidural | 0 | 1 | 1 | 0 | 2 | 6.67% | | | |

DISCUSSION

In both groups, most participants were aged 23–27 years (40% experimental; 26.67% control). The majority lived in rural areas (43.34% experimental; 50% control). Education levels varied, with primary and higher secondary most common in the experimental group (33.33% each) and primary education in the control group (36.67%); 16.66% in both groups had no formal education. Most were housewives (86.66% experimental; 90% control). Hindus formed the majority, followed by Muslims and a few Christians. Family type was equally split between nuclear and joint in the experimental group, while the control group had slightly more joint families. Most participants married at 17–22 years (50% experimental; 46.66% control). Dietary patterns showed predominance of non-vegetarians (40% experimental; 46.67% control). Parity was evenly distributed in the experimental group, but higher multi gravida in the control group. Most underwent their first caesarean (19% experimental; 18% control), usually at 36–39 weeks, with a few preterm or post-term deliveries. Breastfeeding initiation was earlier in the experimental group (18% within 2–6 hours vs. 13% in control). Elective and emergency caesareans were similar in both groups, with previous caesarean and high-risk maternal factors as main indications. most of the mothers receive spinal anesthesia.

Table no.2 showed that in the experimental group, all mothers (100%) were unable to perform activities in the pre-test, while in the post-test 76.67% had mild difficulty and 23.33% had no difficulty, indicating a positive impact of the intervention. In the control group, all mothers (100%) were unable to perform activities in the pre-test, whereas in the post-test 20% had moderate difficulty, 70% had mild difficulty, and 10% had no difficulty.

Similarly, **Patel et al. (2024)** conducted a study in India that investigated the impact of early ambulation on post-caesarean mothers. Their findings revealed that mothers in the early ambulation group had significantly lower postoperative pain scores at 12 and 24 hours, ambulated within 6–8 hours post-surgery, and resumed daily activities 1–2 days earlier than the control group. Mothers who received early ambulation had a mean reduction in pain scores on a 10-point visual analogue scale from 7.8 ± 1.2 at 12 hours to 3.1 ± 0.9 at 48 hours, with a mean difference of 4.7 ($p < 0.001$). This corresponds with our findings where mothers in the experimental group demonstrated greater functional recovery and independence by Day III.

Table no.3 suggest that in the experimental group, the mean pretest recovery score was 0 (SD 0), which increased significantly to 3.2 (SD ± 2.34) by the third day ($t = 108.92$, $p < 0.05$). The pretest mean score of 38.53 (SD ± 2.40) decreased markedly to 3.2 (SD ± 2.34) in the posttest, with a mean difference of 35.33 ($t = 77.99$, $p < 0.05$), confirming that protocol-based ambulation effectively enhanced recovery and supported acceptance of H_1 . In the control group also a mean score was 0 (SD 0) but showed a smaller improvement, with a post test mean of 8.5 (SD ± 6.67), mean difference of 8.5, and $t = 32.39$. While both groups improved, the experimental group demonstrated greater and statistically significant recovery benefits from the intervention.

The findings align closely with those of **Verma et al. (2022)**, who observed that mothers receiving early ambulation interventions post-LSCS exhibited significantly faster functional recovery and lower pain scores compared to those receiving routine care. Their randomized controlled trial reported a highly significant difference in recovery scores between intervention and control groups by the third day post-surgery.

Table no.4 showed a significant difference in the post-test level of post-operative recovery between the experimental and control groups of LSCS mothers. The mean post-test score in the experimental group was 3.2 ± 2.34 , while the control group had a higher mean score of 4.8 ± 2.85 , indicating poorer recovery in the control group. The calculated unpaired t-value was 4.10, which exceeded the table value at df 58, confirming statistical significance at the 0.05 level, as shown in Table No.4. These findings suggest that the indigenous LLRM Nursing College, Meerut developed ambulation protocol effectively enhanced post-operative recovery compared to routine care. Consequently, the research hypothesis (H_2) is accepted.

Additionally, **Rao et al. (2020)** found that mothers in the early ambulation group experienced quicker return to daily activities, with significantly lower post-test recovery scores compared to those in the control group, emphasizing the positive impact of structured ambulation on maternal recovery.

There would be no meaningful association between the chosen demographic variables and post-test level of post operative recovery in experimental group thus at the $p < 0.05$ level of significance, the research hypothesis (H_3) was rejected.

The hypothesis (H_3) was accepted only with significance of residence and rejected with the rest of demographic variables in control group.

CONCLUSION

The LLRM Nursing College developed protocol based ambulation was found to be effective in improving the post operative recovery among LSCS mothers, the result showed significant difference between the mean score of post operative recovery score in both experimental and control group before and after interventions. The unpaired t- test showed that there was a significant difference between the post test score on post operative recovery among post caesarean mothers in both experimental and control group. Overall findings of the study showed that there is effective in improving post operative recovery among LSCS mothers.

REFERENCE

1. Banita Rana, Jyoti . Nilavasa S Begum. A quasiexperimental study to assess the effectiveness of early ambulation in post operative recovery among women with caesarean section delivery admitted in selected hospital of Jalandhar, Punjab, International Journal of Advances in Nursing Management.2019. March;7(1):55-59. DOI:10.5958/2454-26522.2019.00014.3

2. World Health Organization. Caesarean Section Rates Continue to Rise, Amid Growing Inequalities in access Geneva World Health Organization 2021 Available from:<https://www.who.int/news/item/16-06-2021-caesarean-section-rates-continue-to-rise-amid-growing-inequalities-in-access> Last accessed on 2023 Dec 18.
3. Kavitha R, Radhika B. Effectiveness of early ambulation on postoperative outcomes among post-caesarean mothers. *International Journal of Nursing Education Research*. 2023;11(1):45-49.
4. Sharma N, Patel S, Kumar R. Early mobilization in post-caesarean women: a comparative study. *Journal of Obstetrics Gynaecology India*. 2022;72(4):315-320.
5. National Institute for Health and Care Excellence (NICE). Caesarean birth [NICE guideline NG192]. 2021. Available from: <https://www.nice.org.uk/guidance/ng192>
6. Alphones Carol Karishma. Miranda Janet Prima. Effectiveness of Planned Early Ambulation on Postoperative Recovery among Caesarean Mothers:A quasi-experimental study in Mangaluru. *Journal of Health and Allied Sciences* .2023;DOI: 10.1055/s-0043-1761221
7. Patel M, Verma S, Gupta A. Early ambulation and its effect on postoperative recovery among cesarean mothers: a randomized controlled trial. *Journal of Obstetrics & Gynecology Nursing*. 2024;9(1):23-9.
8. Verma S, Rani P, Chawla R. Effectiveness of early ambulation protocol on post-operative recovery among caesarean mothers: a randomized controlled trial. *International Journal of Nursing Health Sci*. 2022;9(1):25-31
9. Rao S, Thomas P, Nair R. Comparative analysis of structured ambulation versus routine care in post-LSCS recovery. *Asian Journal of Nursing Health Sci*. 2020;8(4):220-5.