

Effectiveness of Jacobson's Muscle Relaxation Technique in Reducing Pain among Post-Caesarean Mothers at Selected Hospitals, Meerut

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ABSTRACT

Background: Post-caesarean pain negatively affects maternal recovery, mobility, breastfeeding, and overall well-being. Jacobson's Progressive Muscle Relaxation (JPMR) technique is a non-pharmacological intervention shown to reduce postoperative discomfort.

Aim: To evaluate the effectiveness of Jacobson's Muscle Relaxation Technique in reducing pain among post-caesarean mothers.

Methods: A true experimental pre-test post-test control group design was adopted. Fifty post-caesarean mothers were selected using purposive sampling and allocated to experimental (n=25) and control (n=25) groups. The experimental group received JPMR sessions from Day 1 to Day 5 post-surgery, while the control group received routine care. Pain was assessed using the Visual Analog Scale (VAS). Data were analysed using descriptive and inferential statistics, including paired and unpaired t-tests.

Results: The experimental group showed a significant reduction in pain scores post-intervention (mean = 0.48 ± 0.65) compared to the control group (mean = 6.28 ± 0.75) ($p < 0.05$).

Conclusion: Jacobson's Muscle Relaxation Technique is effective, safe, and non-invasive for reducing post-caesarean pain. Its integration into routine postnatal care can enhance maternal recovery and reduce analgesic dependency.

Keywords: Jacobson's Muscle Relaxation, Caesarean Section, Postoperative Pain, Non-pharmacological Intervention, Visual Analog Scale

INTRODUCTION

Caesarean section (C-section) is a common surgical procedure worldwide, associated with significant postoperative pain that impacts maternal recovery, breastfeeding, mobility, and psychological well-being. While pharmacological interventions such as NSAIDs and opioids are widely used, they pose risks of side effects and may not be suitable for lactating mothers.

Non-pharmacological methods, such as Jacobson's Progressive Muscle Relaxation (JPMR), involve systematic tensing and relaxing of muscle groups to reduce anxiety, tension, and pain perception. Previous studies demonstrate its effectiveness in managing pain in surgical and obstetric patients, but limited research has been conducted among post-caesarean mothers in Indian clinical settings.

OBJECTIVE

- To assess the pre-test and post-test level of pain among Post Caesarean Mothers of experimental and control group.
- To determine the difference between the pre-test and post-test score of pain among experimental and control group of Post Caesarean Mothers.
- To determine the difference between post test score of pain among experimental and control group of Post Caesarean Mothers.
- To find out the association between the pre-test level of pain with the selected demographic variables of Post Caesarean Mothers in experimental and control group.

HYPOTHESES

All 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 pain among experimental and control group of Post Caesarean Mothers.
- H2- There is a significant difference between mean post test scores of pain between experimental and control group of Post Caesarean Mothers.
- H3- There is a significant association between the pre-test level of pain with the selected demographic variables of Post Caesarean Mothers in experimental and control group.

METHODOLOGY

Design: True experimental pre-test post-test control group design.

Setting: Postnatal wards of selected hospitals in Meerut, Uttar Pradesh.

Sample: 50 post-caesarean mothers selected using purposive sampling, divided into experimental (n=25) and control (n=25) groups.

Inclusion Criteria: Post-caesarean mothers who were alert, cooperative, and willing to participate.

Exclusion Criteria: Mothers with postoperative complications or other major health conditions.

Intervention: The experimental group received JPMR sessions twice daily for five days post-surgery. The control group received routine care.

Tool: Pain was assessed using the Visual Analog Scale (VAS).

Analysis: Descriptive and inferential statistics, including paired and unpaired t-tests, were used. A p-value <0.05 was considered statistically significant.

RESULTS

SECTION- 1

Frequency and Percentage Distribution of Selected Demographic Variables among Post Caesarean Mothers in Experimental group

S.No.	Demographic Variables	Frequency (F) N=25	Percentage (%)
1.	AGE IN YEARS		
	18-22	5	20%
	23-27	11	44%
	28-32	6	24%
	Above 32	3	12%
2.	RELIGION		
	Hindu	22	88%
	Muslim	3	12%
	Christian	0	0%
	Other	0	0%
3.	EDUCATION		
	No formal education	4	16%
	Primary education	13	52%
	Secondary education	7	28%
	Higher secondary education	0	0%
	Graduation	1	4%
	Post - graduation and above	0%	0%
4.	RESIDENTIAL AREA		
	Urban	5	20%
	Rural	16	64%
	Semi urban	4	16%
5.	OCCUPATION		
	Private job	2	8%
	Government job	0	0%
	Self employed	0	0%
	Home maker	23	92%
6.	MONTHLY INCOME		
	Less than RS. 10000/-	7	28%
	RS 10001-20000/-	12	48%

	RS 20001-30000/-	6	24%
	RS 30001-40000/-	0	0%
	Above RS 40000/-	0	0%
7.	TYPES OF FAMILY		
	Nuclear family	7	28%%
	Joint family	17	68%
	Extended family	1	4%
8.	PARITY		
	Primigravida	7	28%
	Multigravida	18	72%
	-If multigravida		
	NVD	3	12%
	FORCEPS DELIVERY		
	VACUUM DELIVERY		
	CS	15	60%
9.	TYPES OF CAESAREAN SECTION		
	ELECTIVE CS	21	84%
	EMERGENCY CS	4	16%
10	NUMBER OF CHILDREN		
	1	8	32%
	2	10	40%
	3	4	16%
	MORE THAN 3	3	12%

Frequency and Percentage Distribution of Selected Demographic Variables among Post Caesarean Mothers in Control group.

S.NO	DEMOGRAPHIC VARIABLES	FREQUENCY (f) N=25	PERCENTAGE (%)
1.	AGE IN YEARS		
	18-22	4	16 %
	23-27	9	36%
	28-32	11	44%
	Above 32	1	4%
2.	RELIGION		
	Hindu	19	76%
	Muslim	6	24%
	Christian	0	0%
	Other	0	0%
3.	EDUCATION		
	No formal education	4	16%
	Primary education	7	28%
	Secondary education	9	36%
	Higher secondary education	3	12%
	Graduation	1	4%
	Post - graduation and above	1	4%
4.	RESIDENTIAL AREA		
	Urban	5	20%
	Rural	15	60%
	Semi urban	5	20%
5.	OCCUPATION		
	Private job	3	12%
	Government job	0	0%
	Self employed	2	8%

	Home maker	20	80%
6.	MONTHLY INCOME		
	Less than Rs. 10000/-	4	16%
	Rs 10001-20000/-	12	48%
	Rs 20001-30000/-	8	32%
	Rs 30001-40000/-	1	4%
	Above Rs 40000/-	0	0%
7.	TYPES OF FAMILY		
	Nuclear family	11	44%
	Joint family	14	56%
	Extended family	0	0%
8.	PARITY		
	Primigravida	8	32%
	Multigravida	17	68%
	If multigravida		
	NVD	7	28%
	FORCEPS DELIVERY		
	VACUUM DELIVERY		
	CS	10	40%
9.	TYPES OF CAESAREAN SECTION		
	ELECTIVE CS	16	64%
	EMERGENCY CS	9	36%
10	NUMBER OF CHILDREN		
	1	8	32%
	2	10	40%
	3	6	24%
	MORE THAN 3	1	4%

SECTION 2

Frequency and Percentage Distribution of Pre- test and Post- test level of Pain among Post Caesarean Mothers in Experimental and Control Group.

2.1 Frequency and percentage Distribution of Pre- test level and Post- test level of Pain among Post Caesarean Mothers in Experimental Group.

Level Of Pain In Experimental Group	Pre Test		Post Test	
	Frequency (F)	Percentage (%)	Frequency (F)	Percentage (%)
No pain	0	0%	13	52%
mild pain	0	0%	12	48%
moderate pain	0	0%	0	0%
severe pain	16	64%	0	0%
worst pain	9	36%	0	0%

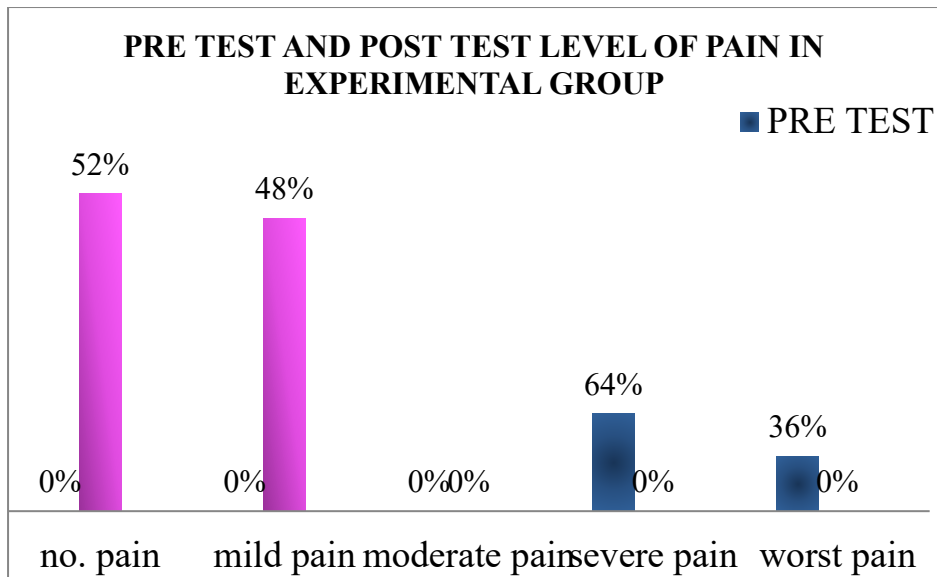


FIGURE.4.11 Percentage Distribution of Pre- test level and Post- test Level of Pain among Post Caesarean Mothers in Hospital in Experimental Group.

2.2 Frequency and percentage distribution of Pre- test Level and Post- test Level of Jacobson's Muscle Relaxation Technique among Post Caesarean Mothers in Hospital in Control Group.

N= 25

Level Of Pain In Control Group	Pre Test		Post Test	
	Frequency(F)	Percentage (%)	Frequency(F)	Percentage (%)
No pain	0	0%	0	0%
Mild pain	0	0%	23	92%
Moderate pain	0	0%	2	8%
Severe pain	12	48%	0	0%
Worst pain	13	52%	0	0%

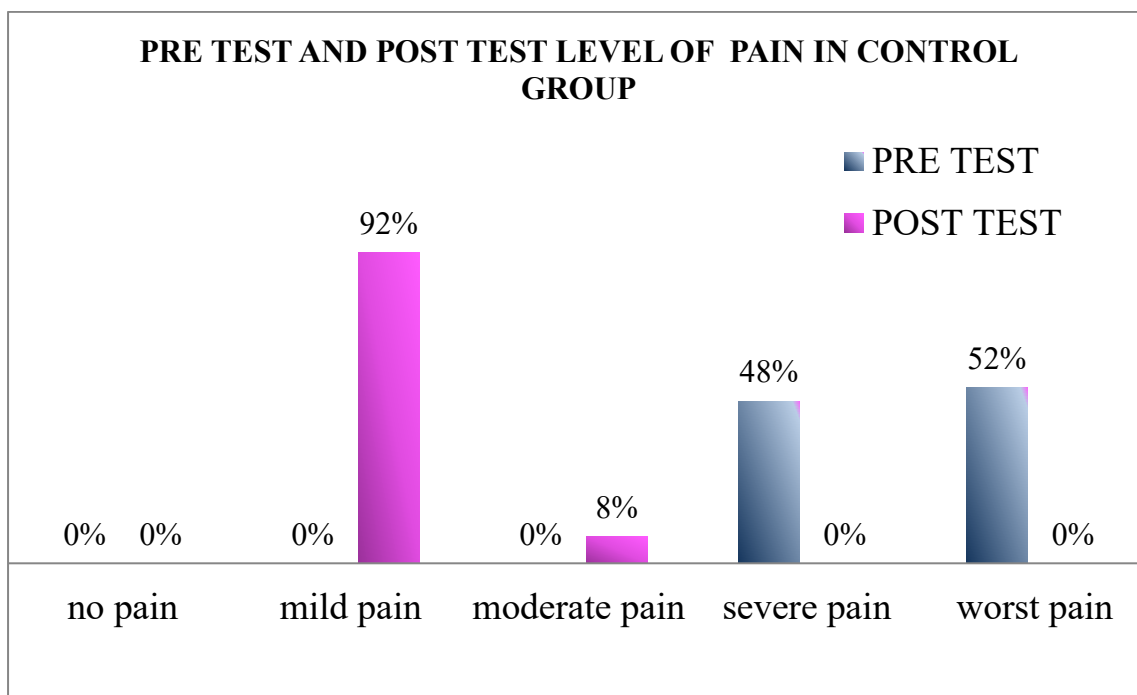


FIGURE.4.12 Percentage Distribution of Pre- test level and Post- test Level of Pain among Post Caesarean Mothers in Control Group.

SECTION: 3

TABLE 3.1 Frequency and Percentage Distribution of Post- test Level of Pain between Post Caesarean Mothers in Experimental and Control Group. N= 50

POST-TEST LEVEL OF PAIN	EXPERIMENTAL GROUP		CONTROL GROUP	
	frequency (f)	Percentage (%)	frequency (f)	Percentage (%)
No pain	13	52%	4	16%
mild pain	12	48%	19	76%
moderate pain	0	0%	2	8%
severe pain	0	0%	0	0%
worst pain	0	0%	0	0%

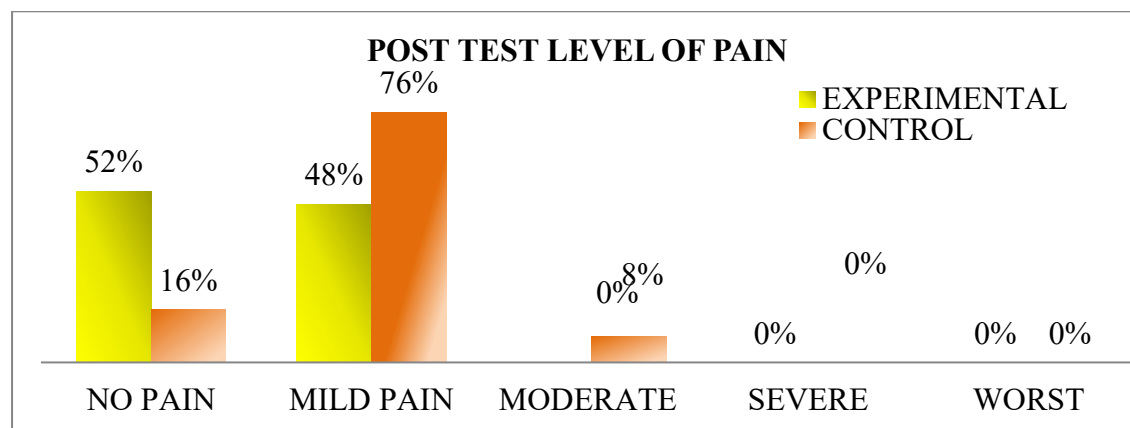


FIGURE.4.13 Percentage Distribution of Post- test Level of Pain among Post Caesarean Mothers in Experimental and Control Group.

SECTION 4

Difference between the mean pre-test and post-test score of pain among experimental and control group of Post Caesarean Mothers.

TABLE 4.1 Difference between the mean pre-test and post-test score of pain among experimental group of Post Caesarean Mothers

Experimental Group	Mean	SD	Mean diff	t value	p value	Interpretation
PRE TEST	9.24	0.663	8.76	56.23	2.06	Significant
POST TEST	0.48	0.51				

$T_{56.23} > p_{2.06} (0.05)$

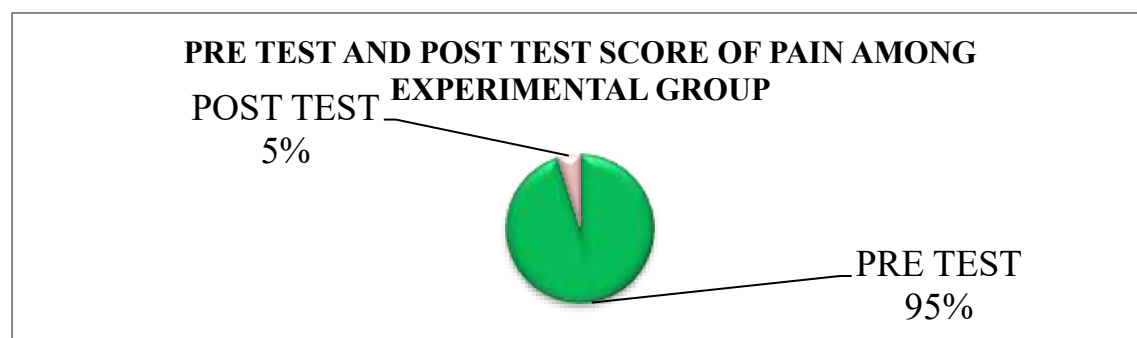


FIGURE 4.14 Difference between the mean Pre-Test and Post-Test Score of Pain among Experimental Group of Post Caesarean Mothers.

TABLE 4.2 Difference between the mean pre-test and post-test score of pain among control group of Post Caesarean Mothers.

CONTROL GROUP	MEAN	SD	Mean diff	t-value	p value	Interpretation
PRE TEST	9.52	0.51	7.12	42.75	2.06	Significant

POST TEST	2.40	0.87				
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$t_{42.75} > p_{2.06} (0.05)$

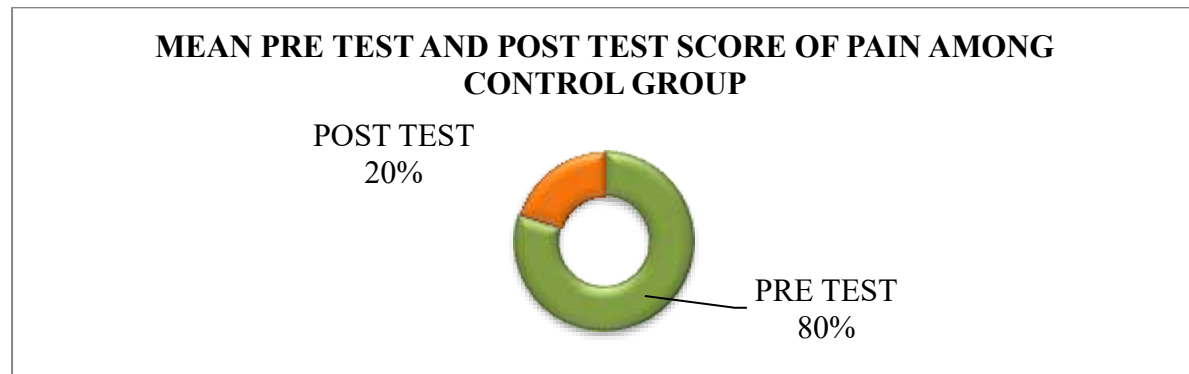


FIGURE 1.15 Difference between the pre-test and post-test score of pain among control group of post caesarean mothers.

SECTION 5

TABLE 5.1 Difference between mean post test scores of pain between experimental and control group of Post Caesarean Mothers.

POST TEST	MEAN	SD	t value	p value	Interpretation
EXPERIMENTAL CONTROL	0.48	0.51	9.55	2.06	Significant
CONTROL GROUP	2.40	0.87			

$T_{9.55} > p_{2.06} (0.05)$

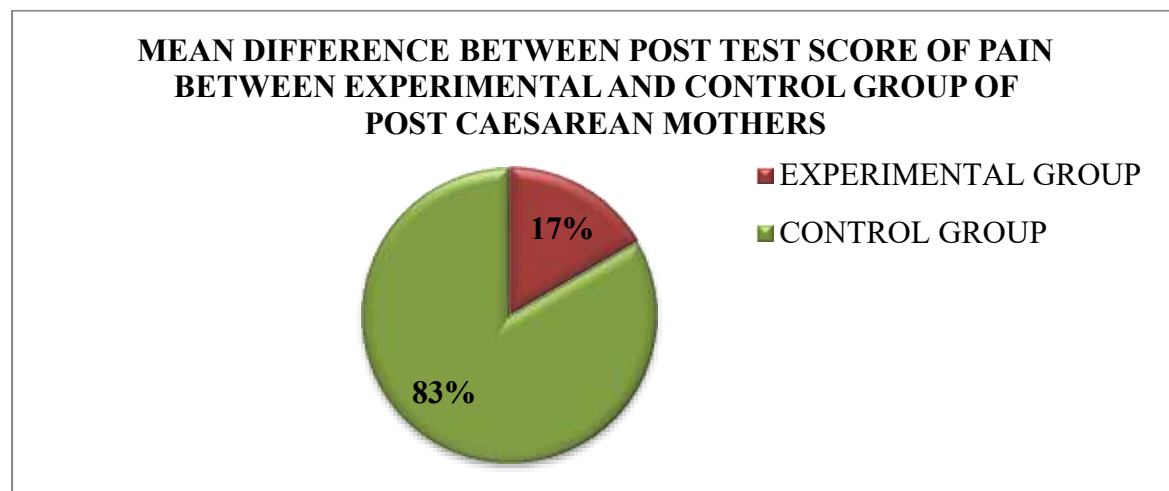


FIGURE 1.16 Difference between mean post test scores of pain between experimental and control group of post caesarean mothers.

SECTION 6

TABLE 6.1 Associations between Pre- Test Levels with their Selected Demographic Variables in the Control Group.

N=25

S. no	Demographic variables	Category	TOTAL SCORE					df	(X ²)	p value
			No pain	Mild pain	Mod-erate pain	Severe pain	Worst pain			
1.	Age In Year	18-22	0	0	0	2	2	12	2.509 NS*	0.1132
		23-27	0	0	0	6	3			
		28-32	0	0	0	8	3			

		Above 32	0	0	0	0	1			
2.	Religion	Hindu	0	0	0	13	6	12	0.6717 NS*	0.4125
		Muslim	0	0	0	3	3			
		Christian	0	0	0	0	0			
		Other	0	0	0	0	0			
3.	Education	No. Formal Education	0	0	0	4	0	20	6.2611 NS*	0.0123
		Primary Education	0	0	0	5	2			
		Secondary Education	0	0	0	5	4			
		Higher Secondary	0	0	0	1	2			
		Graduation	0	0	0	0	1			
		Post-Graduation	0	0	0	1	0			
4.	Residential Area	Urban	0	0	0	3	2	8	0.1157 NS*	0.7337
		Rural	0	0	0	10	5			
		Semi Urban	0	0	0	3	2			
5.	Occupation	Private Job	0	0	0	2	1	12	0.1881 NS*	0.6645
		Government Job	0	0	0	1	1			
		Self Employment	0	0	0	0	0			
		Home Maker	0	0	0	13	7			
6.	Monthly Income	Less Than Rs 1000/-	0	0	0	4	0	12	4.2028 ^s	0.0404
		Rs 10001-20000/-	0	0	0	7	5			
		Rs 20001-30000/-	0	0	0	5	3			
		Rs 30001-40000/-	0	0	0	0	1			
		Above 40000/-	0	0	0	0	0			
7	Type Of Family	Nuclear Family	0	0	0	8	3	8	2.1756 NS*	0.1402
		Joint Family	0	0	0	8	5			
		Extended Family	0	0	0	0	1			
8.	Parity	Primigravida	0	0	0	5	3	12	0.0115 NS*	0.9146
		Multigravida	0	0	0	11	6			
		-If Multigravida								
		NVD	0	0	0	5	2			
		Forceps Delivery	0	0	0	0	0			
		Vacuum Delivery	0	0	0	0	0			
		Caesarean Section	0	0	0	6	4			
		9		Elective Cs	0	0	0	10	6	4

	Type Of Caesarean Section	Emergency Cs	0	0	0	6	3		0.0434 NS*	
10	No. Of Children	1	0	0	0	6	2	12	2.8647 NS*	0.0905
		2	0	0	0	7	3			
		3	0	0	0	3	3			
		More Than 3	0	0	0	0	1			

TABLE 6.2 Find out Association between Pre- Test Levels with their Selected Demographic Variables in the Experimental Group.

N=25

S. no	Demo-graphic variables	Category	Total score					df	(x ²)	P value
			No pain	Mild	Mode-rate	Severe	Worst pain			
1.	Age in year	18-22	0	0	0	2	3	12	0.5851 NS*	0.4443
		23-27	0	0	0	6	5			
		28-32	0	0	0	3	3			
		32 and above	0	0	0	1	2			
2.	Religion	Hindu	0	0	0	11	11	12	0.2937 NS*	0.5879
		Muslim	0	0	0	1	2			
		Christian	0	0	0					
		Other	0	0	0					
3.	Education	No. Formal education	0	0	0	2	2	20	1.1817 NS*	0.2770
		Primary education	0	0	0	7	6			
		Secondary education	0	0	0	3	4			
		Higher secondary	0	0	0					
		Graduation	0	0	0					
		Post-graduation and above	0	0	0					
4.	Residential area	Urban	0	0	0	3	2	8	2.1635 NS*	0.1413
		Rural	0	0	0	6	10			
		Semi urban	0	0	0	3	1			
5.	Occupation	Private job	0	0	0	1	1	12	0.2411 NS*	0.6234
		Government job	0	0	0	0	0			
		Self-employment	0	0	0	0	0			
		Home maker	0	0	0	11	12			
6.	Monthly Income	Less than rs 1000/-	0	0	0	3	4	12	1.1048 NS*	0.2932
		rs 10001-20000/-	0	0	0	5	7			
		rs 20001-30000/-	0	0	0	4	2			
		rs 30001-40000/-	0	0	0	0	0			

		Above 40000/-	0	0	0	0	0			
7	Type of family	Nuclear family	0	0	0	4	3	8	1.3314 ^{NS*}	0.2486
		Joint family	0	0	0	7	10			
		Extended family	0	0	0	0	1			
8.	Parity	Primigravida	0	0	0	4	3	12		
		Multigravida	0	0	0	8	10			
		IF MULTIGRAVIDA								
		NVD	0	0	0	1	2			
		Forceps delivery	0	0	0					
		Vacuum delivery	0	0	0					
		Cesarean section	0	0	0	7	8			
9	Type of caesarean section	Elective cs	0	0	0	10	11	4	0.0076 ^{NS*}	0.9305
		Emergency cs	0	0	0	2	2			
10.	No. Of children	1	0	0	0	4	4	12	5.9028 ^S	0.0151
		2	0	0	0	7	3			
		3	0	0	0	0	4			
		More than 3	0	0	0	1	2			

DISCUSSION

The study revealed that JPMR significantly reduces postoperative pain among post-caesarean mothers. These findings are consistent with earlier research (Ibrahim et al., 2023; Singh & Rani, 2022), which reported that JPMR enhances both physical comfort and psychological well-being.

The technique helps in breaking the pain-tension-anxiety cycle, lowers sympathetic activity, and promotes relaxation. Unlike pharmacological agents, JPMR is cost-effective, safe, and free from side effects, making it a feasible adjunct in postnatal care.

CONCLUSION

Jacobson's Muscle Relaxation Technique is effective in reducing post-caesarean pain and can be integrated into standard postnatal nursing care. Nurse-led implementation can enhance recovery, improve maternal comfort, and reduce dependency on analgesics.

LIMITATIONS: Small sample size, short-term follow-up, and single-district study setting limit generalizability.

RECOMMENDATIONS: Larger multicentre studies are needed to validate findings and establish JPMR as a standard non-pharmacological pain management intervention.

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