

Effectiveness of Early Ambulation on Post-operative Pain and Healing in Mothers After Cesarean Section at a Selected Hospital in Bangalore

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Abstract

Introduction: Encouraging early mobilization has proven to be a beneficial approach for the post-operative care of mothers who undergo cesarean sections, contributing to improved maternal recovery. The current study aims to determine the effectiveness of early ambulation on post-caesarean pain and recovery among post-cesarean mothers. **Materials and methods:** A quantitative research methodology employing a true experimental design was carried out at a multispecialty tertiary care hospital located in Bangalore. A total of 60 post-cesarean mothers (30 experimental and 30 control group) were selected through simple random sampling technique using lottery method. Data were collected through standardized numeric pain rating scale and structured assessment sheets. Post-intervention pain score was assessed after ambulation among the experimental group at 6 hours, 12 hours, and 24 hours of cesarean section. The data were analyzed utilizing both descriptive and inferential statistical methods. **Results:** Assessment of the intensity of pain prior to the interventions was moderate for 60% of the mothers and severe for 40% of the mothers in the experimental group, whereas in the control group majority 73.3% had severe pain, 26.6% had moderate pain. Analysis of pain levels indicated that at the 12-hour mark, the experimental group exhibited a mean pain score of 4.6, whereas the control group displayed a mean score of 5.6, yielding a t-test value of 5.4. Similarly, at the 24-hour mark, the experimental group showed a mean score of 3.5, compared to the control group's mean score of 4.5, which was found to be statistically significant at the 0.05 level of significance. **Conclusion:** Study results found that pain scores reduced over a period of 24 hours in mothers who were ambulated early. Therefore, the research findings indicated that early mobilization proved to be beneficial for the post-operative recuperation of mothers who underwent cesarean delivery.

Keywords: Effectiveness, early ambulation, post-cesarean mothers, post-ambulation pain, recovery parameters

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INTRODUCTION

The prevalence of cesarean sections has surged in recent years, becoming one of the most prevalent surgical procedures for fetal delivery when complications arise during childbirth, as noted by Sung S (2021) [1]. This trend is reflected globally, with cesarean sections accounting for more than one-fifth (21%) of all deliveries. Projections suggest that this figure will continue to rise, with nearly a third (29%) of all births expected to occur via cesarean section by 2030, according to the World Health Organization (WHO) in 2021 [2, 3]. The escalating rates of cesarean deliveries over the past two decades have raised concerns among medical

and nursing professionals regarding post-operative pain management. Recent data from 150 countries indicate that cesarean section rates have climbed steadily, with 18.6% of all births now occurring through this method. Notably, developed countries have rates ranging from 6% to 27.2%, with Asia ranking 5th in terms of cesarean rates at 19.2%, according to the WHO global survey. In the last decade, the number of lower sections cesarean section deliveries were increased in many parts of the India reaching as high as 41% deliveries in Kerala, and 58% in Tamil Nadu. Other states like Karnataka have shown an average cesarean rate of 20.1% [4]. Because of the presence of surgical incision, post-operative recovery in LSCS (lower segment cesarean section) mothers takes more time when compared to a mother who delivered through a normal vaginal delivery [5].

Ambulation after delivery promotes blood circulation, adequate uterine involution, enhances the bladder function, stimulates descent of lochia and prevents thrombosis. Post-LSCS mothers often tend to delay ambulation as they believe that their body requires rest for recovery. But studies suggest that incision pain and difficulty in functional activities decreased significantly in women who ambulated early [6]. The aim of this study is to improve post-operative care to promote patient recovery following surgery, ultimately leading to shorter hospital stays and decreased healthcare expenses. The current study aims to determine the effectiveness of early ambulation on post-cesarean pain and recovery among cesarean mothers [7].

METHODOLOGY

A quantitative research method employing a true experimental design was implemented at a multispecialty tertiary care hospital located in Bangalore. The research was conducted within the post-natal wards of Mazumdar Shaw Multispecialty Tertiary Care Hospital, Bangalore, which boasts a total of 500 beds and performs approximately 70–80 cesarean sections monthly.

Sample Size

Sample size was determined using the formula $n=2(Z_a+Z_b)^2 pq/d^2$, where d =difference in proportions, Z_a =critical ratio, p =pooled value, $q=100-p$. In this study 60 post-cesarean mothers aged between 20 and 40 years were selected based on inclusion criteria. Simple random sampling technique with lottery method was used to select 30 experimental and 30 control group post-cesarean mothers. Pilot study was conducted at the selected tertiary care hospital from 3-12-2018 to 7-12-2018 to measure the feasibility.

Data Collection Procedure

Permission was sought from the hospital authorities prior to commencing the study. Written informed consent was obtained from the mothers, ensuring the confidentiality of their information and outlining the study's objectives. Baseline demographic data were collected from both groups before intervention. The initial level of pain was assessed using a numerical pain rating scale before the intervention. Subsequently, pain scores were evaluated in the experimental group at 6, 12, and 24 hours post-cesarean section following ambulation. Concurrently, pain levels were assessed in the control group at the same time intervals, with participants receiving routine care as per hospital policy [8]. Recovery parameters were monitored in both groups for a 24-hour period using a nursing assessment sheet designed by the investigator. The study spanned two months, from January 1st to February 28th, 2019.

Description of the Tool

The tool consists of baseline demographic variables, numerical rating pain scale to assess the pain level and nursing assessment sheets to evaluate the effectiveness of early ambulation.

Data Analysis

Level of pain was assessed using numerical pain scale and effectiveness of early ambulation was calculated using frequency, percentage, and independent t-test.

RESULTS AND DISCUSSION

Table 1 depicts that majority (43.3%) of the study participants were in the age group of 26–30 years both in experimental group and control group. Most of the mothers (76.7%) in experimental group and 66.7% in control group were educated to graduate or post-graduate level and 56.7% and 53.3% in the experimental and control group were unemployed, respectively. Regarding the number of pregnancies, 60% of the samples in experimental group and 50% of the control group had their 2nd pregnancy. In relation to the type of cesarean section, 63.3% of the experimental group and 40% of the control group had an elective cesarean section. In terms of type of family majority of the mothers in both the groups, 93.3% in experimental group and 86.6% in the control group belonged to nuclear family. Most of the mothers, 83.3% in experimental group and 90% in control group belonged to upper middle socio-economic status.

Table 1. Frequency and percentage distribution of baseline variables (N = 60).

S.N.	Baseline variables	Experimental group (N = 30)		Control group (N = 30)	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1.	Age (in years)				
	20–25	03	10	05	16.7
	26–30	13	43.3	13	43.3
	31–35	09	30	08	26.7
	36 and above	05	16.7	04	13.3
2.	Educational qualification				
	High school/Pre-university course	07	23.3	10	33.3
	Graduate/post-graduate	23	76.7	20	66.7
3.	Maternal occupation				
	Employed	13	43.3	14	46.7
	Unemployed	17	56.7	26	53.3
4.	Number of pregnancies				
	First pregnancy	8	26.7	11	36.7
	Second pregnancy	18	60	15	50
	Third pregnancy	03	10	02	6.7
	More than three pregnancies	01	3.3	02	6.6
5.	Type of cesarean section				
	Elective LSCS	19	63.3	12	40
	Emergency LSCS	11	36.7	18	60
6.	Type of family				
	Nuclear	28	93.3	26	86.7
	Joint	02	6.7	04	13.3
7.	Socio-economic status				
	Upper	03	10	02	6.7
	Upper middle	25	83.3	27	90
	Lower middle	02	6.7	01	3.3

Table 2 revealed that post ambulation recovery scores among cesarean mothers. Majority, 100% of mothers in the experimental group and 96.7% in control group in relation to frequency of additional analgesics after ambulation were nil. Regarding passage of first flatus, 80% of the mothers in experimental group and 53.3% in control group were able to pass first flatus within 1 hour of ambulation. In relation to the duration of catheterization, majority, 96.6% of the mothers in experimental group catheter were removed within 24 hours and 73.3% were in control group were removed more than 24 hours of cesarean section. Regarding self-voiding after catheter removal, 56.6% of the mothers in experimental group within 1 hour and 90% of the mothers in control group within 1–2 hours were able to void the urine. Majority 100% of the mothers in experimental group were able to breastfeed and holding the baby independently after 6–9 hours cesarean section, but in control group 73.3% held and breastfeed the baby independently after 14–17 hours of cesarean section. Regarding initiation of oral intake, 66.7% of mothers in the experimental group and 60% in control group, oral intake was started within 10–13 hours. In relation to walking independently after cesarean section, majority of women in the experimental group 70% were able to walk between 13 and 17 hours and 80% were walking independently only after 27 hours of cesarean.

Table 2. Frequency and percentage distribution of the post-ambulation recovery scores among cesarean mothers (N = 60).

S.N.	Recovery variables	Experimental group		Control group	
		F	%	F	%
1.	Frequency of additional analgesics after ambulation				
	Nil	30	100	29	96.7
	1 dose	0	0	01	3.33
2.	First flatus after ambulation				
	Within 1 hour	24	80	14	46.7
	1–2 hours	06	20	16	53.3
3.	Duration of catheterization after cesarean section				
	Within 24 hours	29	96.7	08	26.7
	More than 24 hours	01	3.3	22	73.3
4.	Self-void after catheter removal				
	Within 1 hour	17	56.7	03	10
	1–2 hours	13	43.3	27	90
5.	Breast feeding and holding baby independently				
	6–9 hours	30	100	0	0
	10–13 hours	0	0	0	0
	14–17 hours	0	0	22	73.3
	More than 17 hours	0	0	08	26.7
6.	Start of oral intake				
	6–9 hours	03	10	05	16.7
	10–13 hours	20	66.7	18	60
	14–17 hours	07	23.3	07	23.3
7.	Walking independently post-CS				
	13–17 hours	03	10	0	0
	18–22 hours	21	70	0	0
	23–27 hours	05	16.7	06	20
	More than 27 hours	01	3.3	24	80

Table 3. Comparison of level of pain between the experimental and control group (N = 60).

Group	Duration	Experimental (N = 30)		Control (N = 30)		Mean difference	Independent t-value	p-value
		Mean	SD	Mean	SD			
Pre-intervention	Pain at 6 hours	6.3	0.9	6.6	1.0	0.3	1.17	0.000**
Post-intervention	Pain at 12 hours	4.6	0.7	5.7	0.8	1.1	5.44	0.000**
	Pain at 24 hours	3.5	0.8	4.5	0.7	1	5.28	0.000**

** $p < 0.001$ significant

Table 3 shows that, mean and standard deviation of pre-intervention pain scores in experimental group 6.3 ± 0.9 and 6.6 ± 1.0 in control group and post-intervention pain scores at 12 hours, in experimental group 4.6 ± 0.7 and 5.7 ± 0.8 in control group and at 24 hours, in experimental group 3.5 ± 0.8 whereas in the control group 4.5 ± 0.7 , respectively, which was significant at $p < 0.001$ in both the groups [9, 10].

CONCLUSION

The present study concluded that the mothers who were ambulated early showed faster recovery in aspects of passage of first flatus, duration of catheterization, self-void after catheter removal, and independently holding and breastfeeding the baby after cesarean section when compared to the mothers in the control group. Therefore, the findings of the study indicated that initiating early ambulation was beneficial for the post-operative recovery of mothers who underwent cesarean sections.

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