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"A Quasi-experimental study to assess the effectiveness of hand and foot massage as complementary therapy on level of pain among post-caesarean mothers admitted in Adesh hospital, Bathinda, Punjab"

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ABSTRACT:

The objective of the study was to assess and compare the effectiveness of hand and foot massage on level of pain among post-caesarean mothers admitted in the postnatal ward of Adesh Hospital. Non randomized non equivalent quasi-experimental research design was adopted for this study and 60 post-caesarean mothers who met the inclusion criteria of the study were selected by non probability convenience sampling technique, 30 in experimental and 30 in control group. The pre-intervention was conducted at 6th hour after caesarean section in the experimental and control group followed by post-intervention, immediately, at 60 minutes and 90 minutes by using numerical pain rating scale. After pre-intervention hand and foot massage was given to the experimental group for about 5 minutes in each upper and lower extremity for 20 minutes. The post-intervention mean pain score in experimental group after hand and foot massage was 1.90 with a SD +/- 0.548 and in control group the mean was 7.03 with a SD +/- 0.556.Un-paired 't' test was computed to show whether there was any significant difference in mean pain score of experimental and control group. The observed 't' value of 36.023 was higher than that of table value at 0.05 (2.709) and it was inferred that there was a statistical significance and results were highly significant at $P < 0.001$.According to these findings, the hand and foot massage can be considered as a complementary method to reduce the pain of caesarean section among the post-caesarean mothers effectively and decrease the need for analgesics.

INTRODUCTION

For most pregnant women, having a baby is a joyful and exciting experience. They were overjoyed to be able to hold, feed, and care for their babies.[1] However, for other women, this joy was tempered by physical discomfort, particularly for those who underwent a caesarean section. They are in level of pain as a result of the caesarean section wound, which is causing them distress. Their discomfort inhibits their relationship with the infant, as well as making mothers uncomfortable to breastfeed.[2]In other circumstances, the infant is admitted to the nursery, and the mother finds it difficult to visit the baby due to her agony.[3]Caesarean section (CS) is a surgical operation exceptional in that it concerns two lives at the same time and brings forth a new life. It is no wonder that abdominal delivery has been enshrined in mythology from olden times.[4]

Despite World Health Organization (WHO) standards saying that caesarean section rates should not exceed 15% of total deliveries per year per nation, the rate of caesarean section deliveries has increased by about 18.5 million each year.[5] The number of caesarean delivery is increasing and accounts for about one-third of all births both in USA and in Italy. Between 2012 and 2013, the caesarean section rate in South Africa grew to 22.5 percent, with roughly 70 percent of these births taking place in the private sector.[6]A caesarean section delivery necessitates substantial surgery, extensive level of pain treatment is required to keep the lady comfortable during the post-delivery period.[7] Proper level of pain management subsequent to a caesarean section delivery can reduce a hospital stay by 50%.[8] Mothers who have had a caesarean section delivery only start mobilising freely after 24 hrs compared to those who have had a vaginal birth.[9]This immobility is associated with insufficient level of pain control.[10]

According to the control theory of level of pain, the concentration of mechanical receptors that block the sense of level of pain are present in hands and feet that is the reason hands and feet are usually chosen for massage to increase the effect.[11]Massage is one of the effective method to relieve level of pain and to relax the patient, it hasten the feeling of well being. Hand and foot massage has the capability to relieve level of pain after surgery.[12]

Gate control theory of level of pain suggests that they switch one sensation for another, providing the neural pathway to the sensation of touch to travel towards the brain at the rate of 35-75 miles per second to relieve the sensation of level of pain. Level of pain normally travels 0.5-2 miles per second for dull level of pain or 5-35 miles per second for severe level of pain. Of course, our ancestors did not think that way; they probably just noticed that it worked. In fact, things are not so different today in the field of therapeutic massage. While there is broad public acceptance and usage of therapeutic massage, and a growing body of literature exploring its safety and efficacy.[13]

Massage of the hands and feet is one of the most affordable and effective ways to relieve level of pain in post-caesarean mothers. Massage of the feet and hands enhances the production of level of pain-relieving endorphins in the nerve fibres. Hand massage is a type of reflexology in which parts of the hands are rubbed with the fingertips, knuckles, and blunt with the purpose of stimulating nerve endings. Foot massage is a technique for relieving stress and level of pain in the soles and arches of the feet. When all non-pharmacological level of pain treatment options for post-caesarean mothers are considered, foot and hand massage offers the most potential for

level of pain alleviation, and it is a simple, effective, low-risk, and easy-to-apply therapy for post-caesarean level of pain management.[14]

STATEMENT OF PROBLEM

"A study to assess the effectiveness of hand and foot massage as complementary therapy on level of pain among post-caesarean mothers admitted in Adesh Hospital, Bathinda, Punjab"

OBJECTIVES OF THE STUDY

Primary Objectives:

- Assessment of pre-intervention level of pain among post-caesarean mothers in experimental and control group.
- Assess the effectiveness of hand and foot massageamong post-caesarean mothers on level of pain in experimental group.
- Assessment of post intervention level of pain among post-caesarean mothers in experimental and control group.
- To compare pre and post intervention level of pain score among post-caesarean mothers in experimental and control group

Secondary objectives:

- To find an association between level of pain scores of post-caesarean mothers with their selected socio demographic variables.

HYPOTHESIS

- **$H_{0.1}$**: There will be no significant difference in pre-intervention level of pain score among post-caesarean mothers between experimental and control group
- **$H_{1.1}$**: There will be a significant difference in pre-intervention level of pain score among post-caesarean mothers between experimental and control group
- **$H_{0.2}$**: There will be no significant difference in post-intervention level of pain score among post-caesarean mothers between experimental and control group
- **$H_{1.2}$**: There will be a significant difference in post-intervention level of pain score among post-caesarean mothers between experimental and control group
- **$H_{0.3}$**: There will be no significant difference in pre and post intervention level of pain score among post-caesarean mothers in experimental and control group
- **$H_{1.3}$**: There will be a significant difference in pre and post intervention level of pain score among post-caesarean mothers in experimental and control group
- **$H_{0.4}$:** There will be no significant association between post-intervention level of pain scores among post-caesarean mothers in experimental and control group with their socio demographic variables.
- **$H_{1.4}$**: There will be a significant association between post-intervention level of pain scores among post-caesarean mothers in experimental and control group with their socio demographic variables.

PROJECTED OUTCOME

The study findings will help to reduce the level of level of pain in post -caesarean mothers and reduce the need for analgesics.

REVIEW OF LITERATURE:

Studies related to cesarean section and level of pain

Studies related to Complementary therapies

Studies related to Hand and foot massage

A study was conducted at a tertiary care centre from April 2019 to September 2019.In this study, 150 women who had caesarean births were included. Emergency caesarean section had a considerably greater percentage in primi gravida women than elective caesarean section (P = 0.0001). Only few women had just one antenatal visit or none at all, as a result of which they had an emergency caesarean section followed by an elective caesarean section (2 = 44.9691, P = 0.001). Some of the women who had no or only one antenatal visit had emergency caesarean sections rather than elective ones (2 = 42.2195, P = 0.0001). Females who had previously had a Lower Segment Caesarean Section (LSCS) had a higher probability of having an elective caesarean section, which was significant at (P = 0.004). [15]

A study was done on primary caesarean section in the Department of Obstetrics and Gynaecology, P.D.U. Medical College and Hospital, Rajkot during one year period from April 1, 2014 to March 31, 2015.The goal of the study was to find out how common primary caesarean sections are in primi and multipara women, as well as the causes behind occurrence. Patients (booked or uncooked) attending the labour room and undergoing primary caesarean delivery within the department will be selected according to the inclusion criteria for this study. Over the course of a year, 1349 CS were done out of 7295 deliveries, resulting in an 18.5 percent CS rate. Primipara (72.4%) women were more likely than multipara (27.6%) women to have a primary caesarean section. In both the study group and the control group, emergency caesarean sections (79.3%) were done more frequently than elective caesarean sections (20.7%), and the majority of them did not receive ANC. 28.5 percent of the patients were unplanned, while 46.6 percent were referred. In both study groups, the most common reason for caesarean sections was malpresentation (34.3 percent).According to the findings, the primary caesarean section rate is 55.8%, which is higher in Primipara than in multipara.[16]

A study was conducted to find out the rate of caesarean section (CS) in Jordan and the causes, associated factors, and neonatal outcomes of caesarean. 18hospitals was selected as sample for the study. Data were collected by interviews and abstraction of data from medical records. The overall rate of CS was 29.1% (13.2% as emergency CS and 15.9% as planned CS). Scarred uterus (59.4%) was the most common reason for planned CS, while prolonged foetal distress was the most common reason for emergency CS (30.0 percent). When compared to vaginal birth (0.9%), the neonatal death rate was greater (p=0.000) for planned CS (2.1%) and emergency CS (2.5%). The rate of CS in Jordan is high (29.1%). CS is associated with increased risk of Neonatal death. [17]

A descriptive study was done to find out factors contributing to the rapid rise of caesarean section in Shanghai by observing changes in the mode of delivery in pregnancy among primiparous Chinese women. From 2010 to 2012, 832primiparouswomen were investigated three times, from in their second and third trimester and then1–2 days postpartum. The information was gathered through interviews and standard questionnaires. The researcher retrieved Caesarean section indications from medical data and compared them to clinical recommendations. Guideline-defined indications, doctor-defined indications, and maternal request were the three types of Caesarean sections studied. In the second trimester, 13.2% of the 832

pregnant women registered requested a caesarean section. Within the trimester, this number increased to 17.0percent among 599 women who were studied. 58.1 percent of the 523 women who completed all three interviews had a caesarean section. However, 34.9 percent of women who had a caesarean section did not have any of the clinical standards' indications or were doing so at the request of the mother. Doctors influence was one of the several risk factors of having a caesarean delivery with doctor-defined indications, according to multinomial multivariate analysis. [18]

A study was conducted to know sensory, affective, and laterality aspects of level of pain after caesarean delivery and vaginal delivery. On postpartum days 1 and 2,a seven-item visual analogue scale was utilized to assess level of pain at rest and during activity, as well as the uneasiness and location of level of pain. The study found that 48 women had caesarean deliveries and 78 had vaginal deliveries out of a total of 126 women. Women who had a caesarean birth reported more level of pain with activity than women who had a vaginal birth (p 0.0002). On the second postpartum day, women who had a caesarean delivery reported considerably more level of pain (p 0.04) than those who had a vaginal delivery, and more caesarean birth women reported lateralized level of pain (p 0.0001).In comparison to vaginal deliveries, women who had a caesarean delivery required twice the quantity of analgesics on postpartum day 1 and four times the quantity on postpartum day 2 (p 0.01 and p 0.001). Caesarean birth was linked to higher level of pain levels, more unpleasant level of pain, more lateralized level of pain, and more opioid use than vaginal birth. [19]

Research Methodology:

POPULATION

Target population In present study includes the postnatal mothers who were undergone caesarean section.

Accessible Population Accessible population for the present study were 60 post-caesarean mothers who were undergone caesarean section and admitted in postnatal ward of Adesh Hospital, Bathinda, Punjab.

SAMPLING TECHNIQUE:

Non- probability convenience sampling technique was used to select the subjects. A total number of 60 subjects were selected for the present study.

CRITERIA FOR SAMPLE SELECTION:

The samples were selected based on the following inclusion and exclusion criteria

Inclusion criteria

- Post-caesarean mothers who had undergone caesarean section.
- Post-caesarean mothers who were willing to participate in the study.

- Post-caesarean mothers were available at the time of data collection**.**

Exclusion criteria

- Post-caesarean mothers with post-natal complications.
- Post-caesarean mothers with medical illness.

VARIABLES:

A variable is a phenomena or characteristics or attributes under study. Variables are the measurable characteristics of a concept and consist of a logical attribute. Three types of variables are included in the study Independent variable, Dependent variable and socio demographic variables.

Independent variable is a variable that stands alone and does not depend on any other. In this study hand and foot massage was the independent variable. Dependent variable is the effect of action on the independent variable. In this study level of pain among post-caesarean mothers was the dependent variable.

RELIABILTY OF THE TOOL

Reliability of research instrument is defined as the extent to which the instrument yields the same results on repeated measures. The tool was tested for reliability during the pilot study and was obtained by split half method. The score obtained was 0.94. So the tool will be considered to be highly reliable to proceed with the study.

DATA COLLECTION PROCEDURE:

Data collection was conducted in the month of March 2021; the researcher introduced herself to the Head of the Department of Obstetrics and Gynaecology in the hospital. After obtaining a written consent, the level of pain in post-caesarean mothers were assessed after 6 hours of caesarean section in both the experimental and control group by using a Numerical pain rating scale followed by a hand and foot massage will be applied to experimental group.

The tool contains two sections:

Section A:

Part-I:Socio demographic variables of the post natal mothers consists of age (in years), religion, educational status, area of residence, type of family, occupational status, family monthly income (in rupees), diet pattern, gender of the new born, hb level (gm/dl), types of antibiotic used and analgesics used..

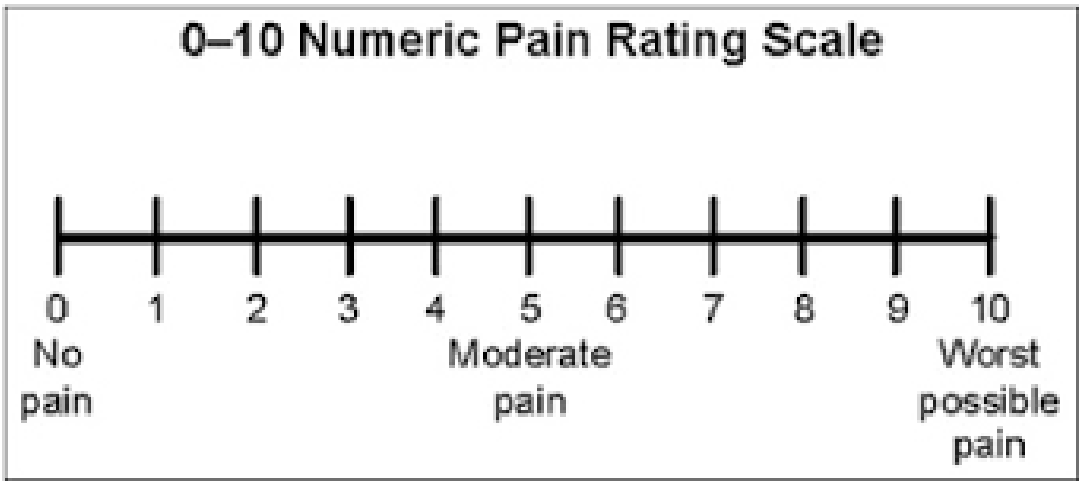
Part- II**:** Maternal variables consist of parity, previous history of caesarean section, weight of mother (in kg), caesarean section at, type of caesarean section.

SECTION B:

Numerical Pain Rating Scale

Section: B consists of Numerical Pain Rating Scale to assess the post-caesarean level of pain.

0 – 10 Numerical Pain Rating Scale



Score of pain

0 - No pain
1 – 3 - Mild pain
4 – 6 - Moderate pain

7-9 - Severe pain

10- Worst possible pain

DESCRIPTION

0 - No pain (relaxed, quiet, normal facial expression)

1-3 – mild (slight restless, some frowning)

4-6 – moderate (grimacing, groans)

7 - 9 - severe (crying).

10 – Worst (clenched fist, grunting teeth, crying)

DEMOGRAPHIC VARIABLES:

N= 60

SECTION-1 Socio-demographic variables		Experimental group		Control group	
		Frequency(f)	Percentage (%)	Frequency(f)	Percentage (%)
Age (in years)	19-23	1	3.3%	4	13.3%
	24-29	25	83.4%	19	63.3%
	30-35	1	3.3%	5	16.7%
	More than 35	3	10.0%	2	6.7%
Educational Status	No Formal Education	1	3.3%	6	20.0%
	Primary Education	6	20.0%	8	26.7%
	Higher Secondary Education	6	20.0%	10	33.3%
	Graduate or above	17	56.7%	6	20.0%
Religion	Sikh	9	30.0%	15	50.0%
	Hindu	13	43.4%	6	20.0%

	Muslim	1	3.3%	0	0.0%
	Others	7	23.3%	9	30.0%
Area of Residence	Rural	15	50.0%	19	63.3%
	Urban	9	30.0%	8	26.7%
	Suburban	6	20.0%	3	10.0%
Type of Family	Nuclear	12	40.0%	16	53.3%
	Joint	18	60.0%	14	46.7%
	Extended	0	0.0%	0	0.0%
Occupation	Home Maker	23	76.7%	22	73.3%
	Agriculture	1	3.3%	2	6.7%
	Government Job	0	0.0%	3	10.0%
	Private Job	6	20.0%	3	10.0%
Family Monthly Income (Rs)	Less than 10000	2	6.7%	6	20.0%
	10001-20000	10	33.3%	9	30.0%
	20001-30000	15	50.0%	11	36.7%
	More than 30000	3	10.0%	4	13.3%
Diet Pattern	Vegetarian	24	80.0%	22	73.3%
	Mixed	6	20.0%	8	26.7%
Gender of the new born Baby	Male	13	43.3%	18	60.0%
	Female	17	56.7%	12	40.0%
Parity	Primipara	13	43.3%	18	60.0%
	Multi Para	14	46.7%	10	33.3%
	Grand multi para	3	10.0%	2	6.7%
Previous History of Caesarean Section	Yes	11	36.7%	13	43.3%
	No	19	63.3%	17	56.7%
Weight of Mother (in kg)	Upto 60 Kg	8	26.7%	9	30.0%
	61 Kg-70 Kg	16	53.3%	12	40.0%
	71Kg-80Kg	6	20.0%	7	23.3%
	Above 80Kg	0	0.0%	2	6.7%
Caesarean section at	Preterm(< 37 weeks)	7	23.3%	9	30.0%
	Term (37-40 weeks)	23	76.7%	21	70.0%
	Post term (> 40 weeks)	0	0.0%	0	0.0%
Type of Caesarean section	i) L.S.C.S	30	100%	30	100.0%
	ii) U.S.C.S	0	0.0%	0	0.0%
Hb level (gm/d	<7gm/d	3	10.0%	2	6.7%
	7-9gm/d	9	30.0%	5	16.7%
	9.1-12gm/d	18	60.0%	20	66.7%
	>12 gm/dl	0	0.0%	3	10.0%
Types of Antibiotic	i) Broad spectrum	30	100%	30	100.0%
	ii) Narrow spectrum	0	0%	0	0.0%

used					
Analgesics used	i) NSAIDS	30	100%	30	100.0%
	ii) Opoids	0	3.3%	0	0.0%

Table 1:depicts that, distribution of post-caesarean mothers according to their age in experimental group shows that majority 25(83.3%) were in the age group of 24-29 years,1(3.3%)in the age group of both 19-23 years and 30-35 years and 3(10%) belongs to the age group of more than 35 years. In control group majority 19(63.3%) were in the age group of 24-29 years,13(13.3%)in the age group of both 19-23 years, 5(16.7%) were in the age group of 30-35 years and 2(6.76%) belongs to the age group of more than 35 years.

Regarding educational status, majority has 17(56.7%) were graduates or above, 6(20%) had primary education,6(20%) had higher secondary education and 1(3.3%) had no formal education in experimental group. In control group majority has 10(33.3%) higher secondary education, 8(26.7%)had primary education,6(20%) and 6(20%) had no formal education.

Regarding religion, many of 13(43.3%) were Hindu, 9(30%) were Sikh,7(23.3%) were from others and 1(3.3%) were Muslims in experimental group. In control group most of them 15(50.0%) were Sikh, 9(30%) were others, 6(20%) were Hindu and none of them were Muslim.

Considering Area of residence in experimental group majority 15(50%) were residing in the rural area,9(30) % in urban and 6(20%) were from sub urban area. In control group most of them 19(63.3 %) were residing in rural area, 8(26.7) in urban area and 3(10%) were residing in sub urban area.

In type of family, majority of them 18(60%) were from joint family and 12(%40) were from nuclear family in experimental group. In control group more 16(53.3%) were from nuclear family and 14(46.7%) were from joint family.

Concerning the occupation most of them 23(76.7%) were homemakers 6(20%) were having private job,1(3.3 %)is from agriculture and no one from government job in experimental group. In control group majority 22(73.7%) were homemakers 3(10%) were having private job, 3(10%) were from government job and 2(6.7 %)is from agriculture.

Most of the subjects family income 15(50%) in experimental group and 11(36.7%) in control group had monthly income Rs20001-30000,10(33.3%) in experimental group and 9(30%) in control group earn Rs10001-20000,3(10%) in experimental group and 4(13.3%) in control group earn more than Rs30000 and only 2(6.7%) in experimental and 6(20%) in control group had less than Rs 10000 as family income per month.

In regard to diet pattern shows that 24(80%) were vegetarian in experimental and 22(73.3%) control group. 6(20%) were mixed type in experimental and 8(26.7%) control group.

Considering the gender of newborn many 17(56.7%) delivered the female baby in experimental group and 12(40%) in control group. 13(43.3%) delivered male baby in experimental group and 18(60%) in control group.

Considering the parity of the mother 14(46.7%) were multi Para in experimental group and 10(33.3%) in control group, 13(43.3%) in experimental and 18(60%) in control group were Primipara and 3(33.3%) age grand multi Para in experimental and 2(6.7%)control group.

Regarding previous history of caesarean section most of them 19(63.3%) in experimental group, 17(56.7%) in control group had no history of previous caesarean section. And 11(36.7%) in experimental group and 13(43.3%) in control group had history of previous caesarean section.

The data shown above about the weight of the mother indicates that the majority 16(53.3%) in experimental group 12(40%) in control group were having weight 61-70, 8(26.7%) in experimental and 9(30%)control group were having weight up to 60, only 6(20%) in experimental group and 7(23.3%) were having weight 71-80 and no one has more than 80 kg in experimental group and2(6.7%) in control group.

Considering the time of caesarean section majority 23(76.7%) have undergone caesarean section at term in experimental and 21(70%) in control group, 7(23.3%) have undergone caesarean section at preterm (< 37 weeks) in experimental group and 9(30%) in control group and no one at post term.

Regarding type of caesarean section 30(100%) had undergone lower segment caesarean section in both experimental and control group.

Considering the Hb level 18(60%) have 9.1-12 gm/dl in experimental and 20(66.7%) in control group, 9(30%) have 7-9 gm/dl in experimental and 5(16.7%) in control group, 3(3.3%) have <7 gm/dl in experimental and 2(6.7%) in control group and 3(10%) in control group have >12 gm/dl and none of them in experimental group.

Regarding use of antibiotics 30(100%) used broad spectrum antibiotics in both the experimental and control group.

Regarding use of analgesics 30(100%) used NSAIDS in both the experimental and control group.

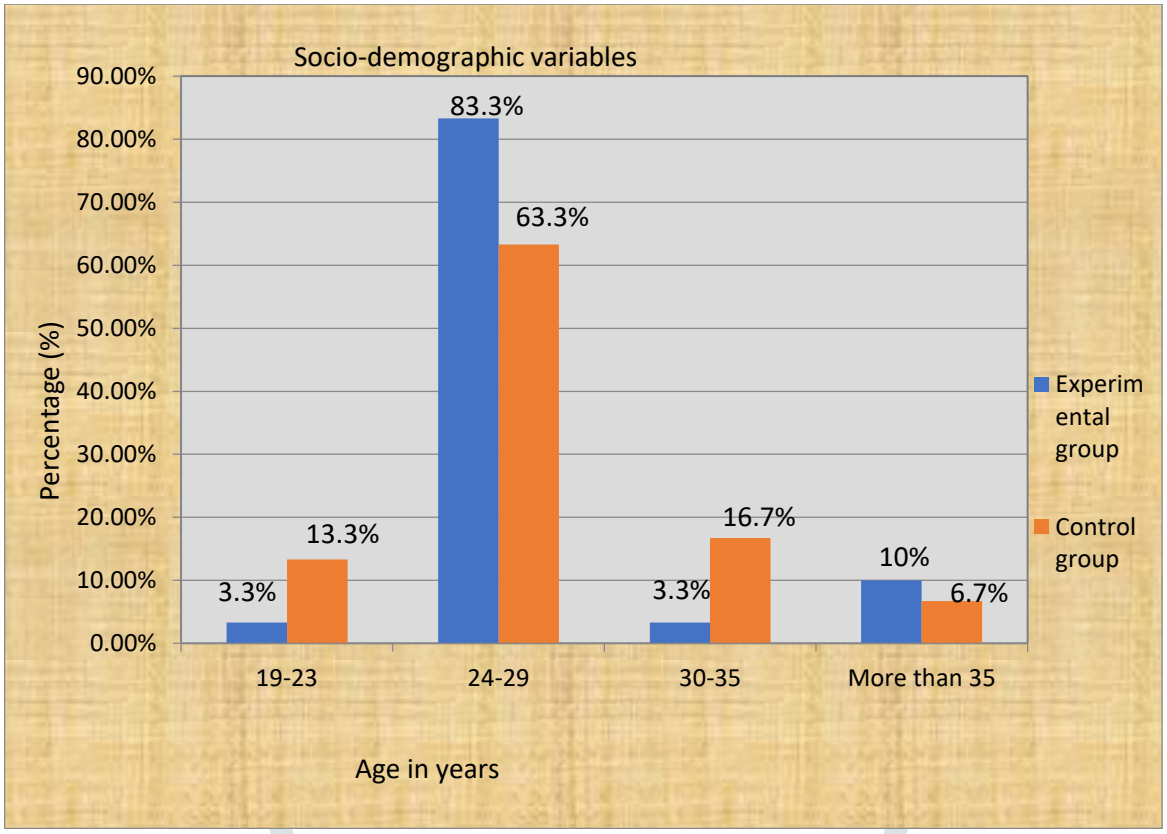


Figure 3: The clustered column diagram shows frequency and percentage distribution of post-caesarean mothers according to the age.

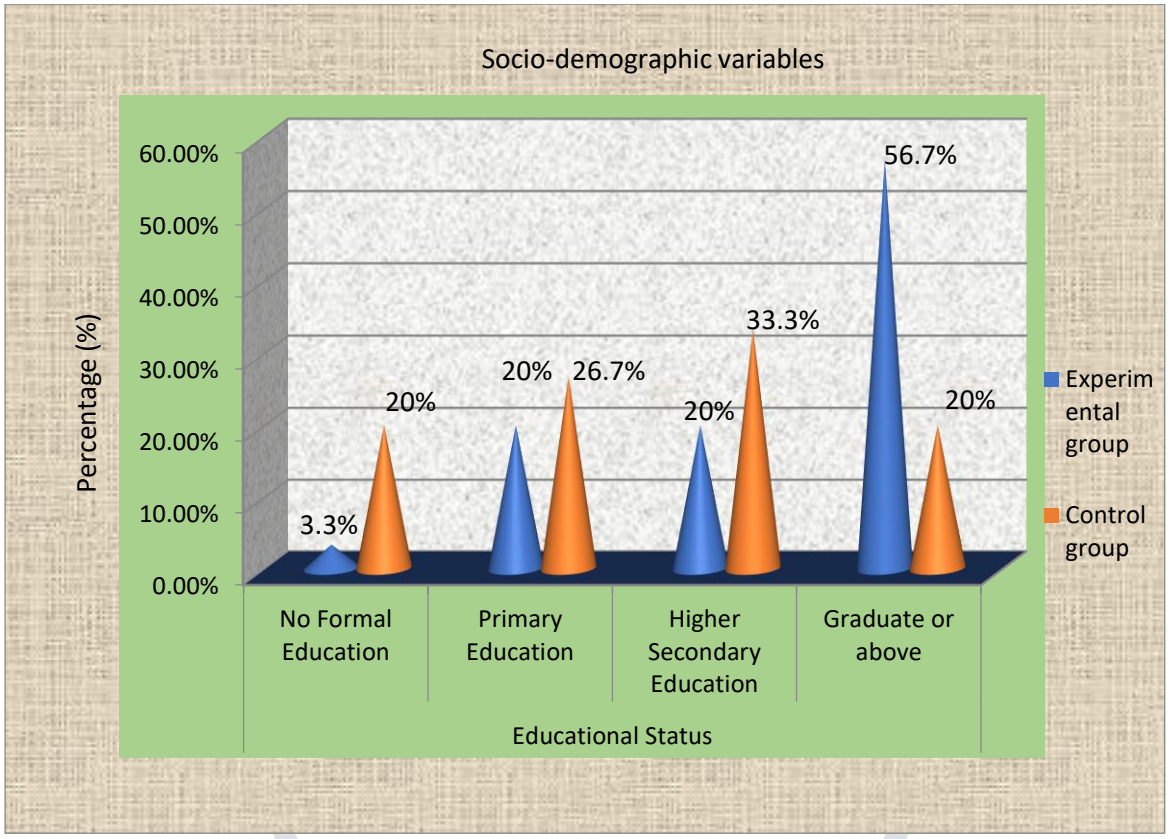


Figure 4: The clustered cone diagram shows frequency and percentage distribution of post-caesarean mothers according to the educational status.

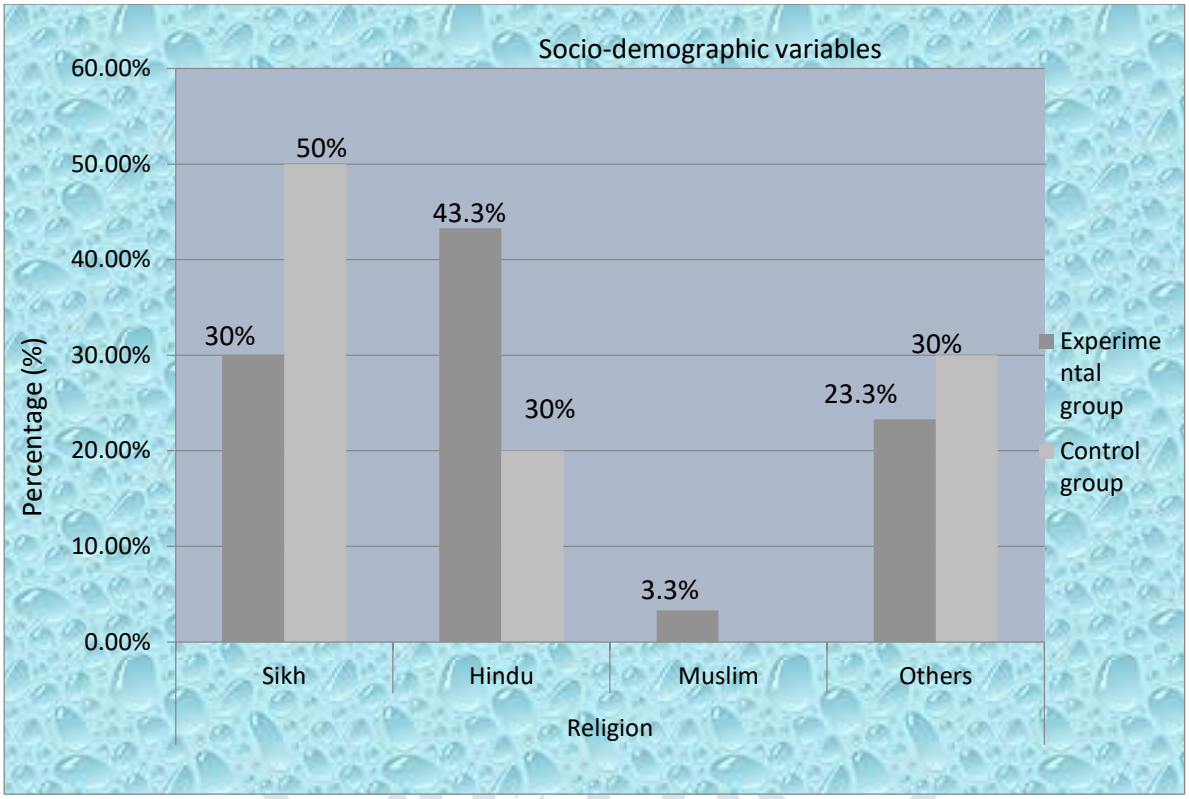


Figure 5: The clustered column diagram shows frequency and percentage distribution of post-caesarean mothers according to the Religion.

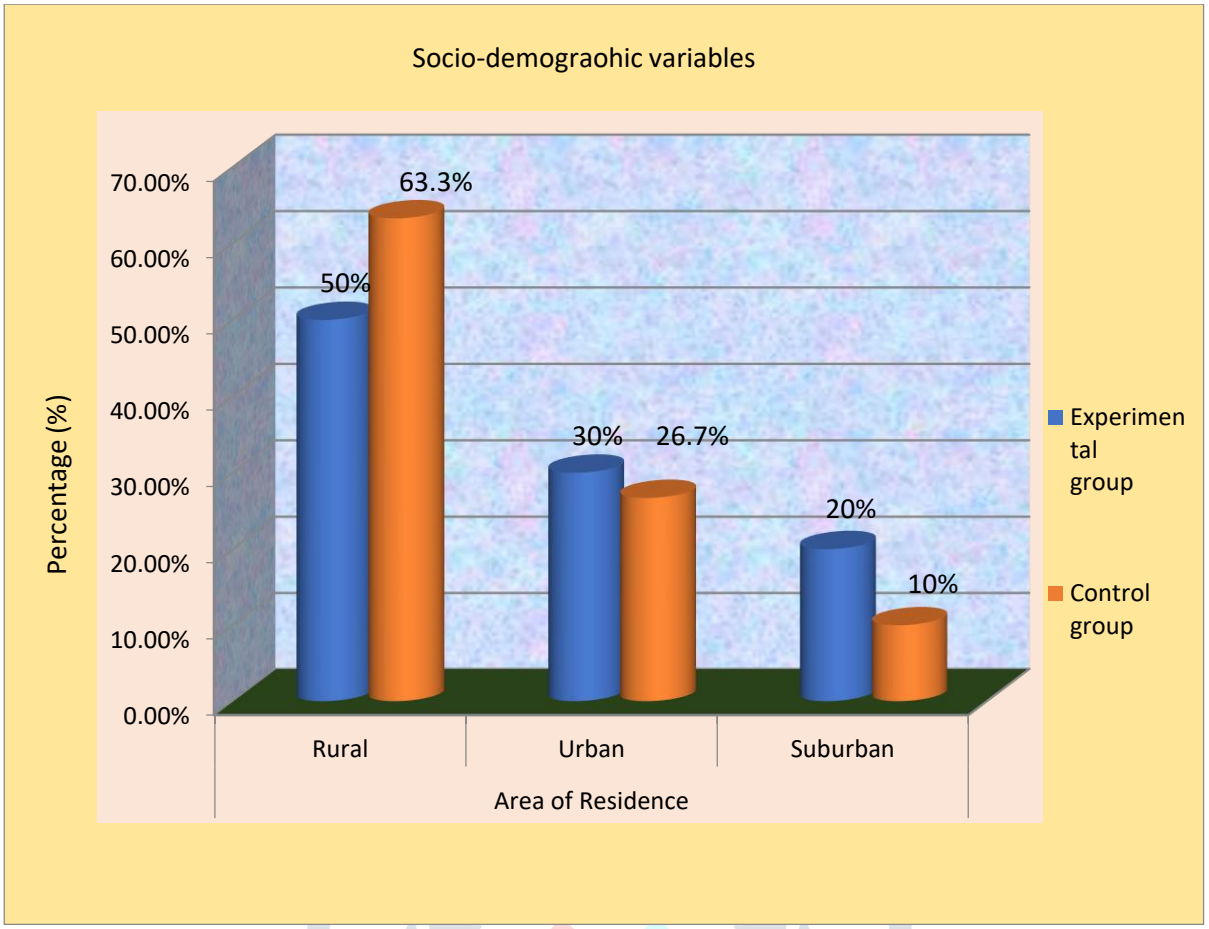


Figure 6:The clustered column diagram shows frequency and percentage distribution of post-caesarean mothers according to the area of residence.

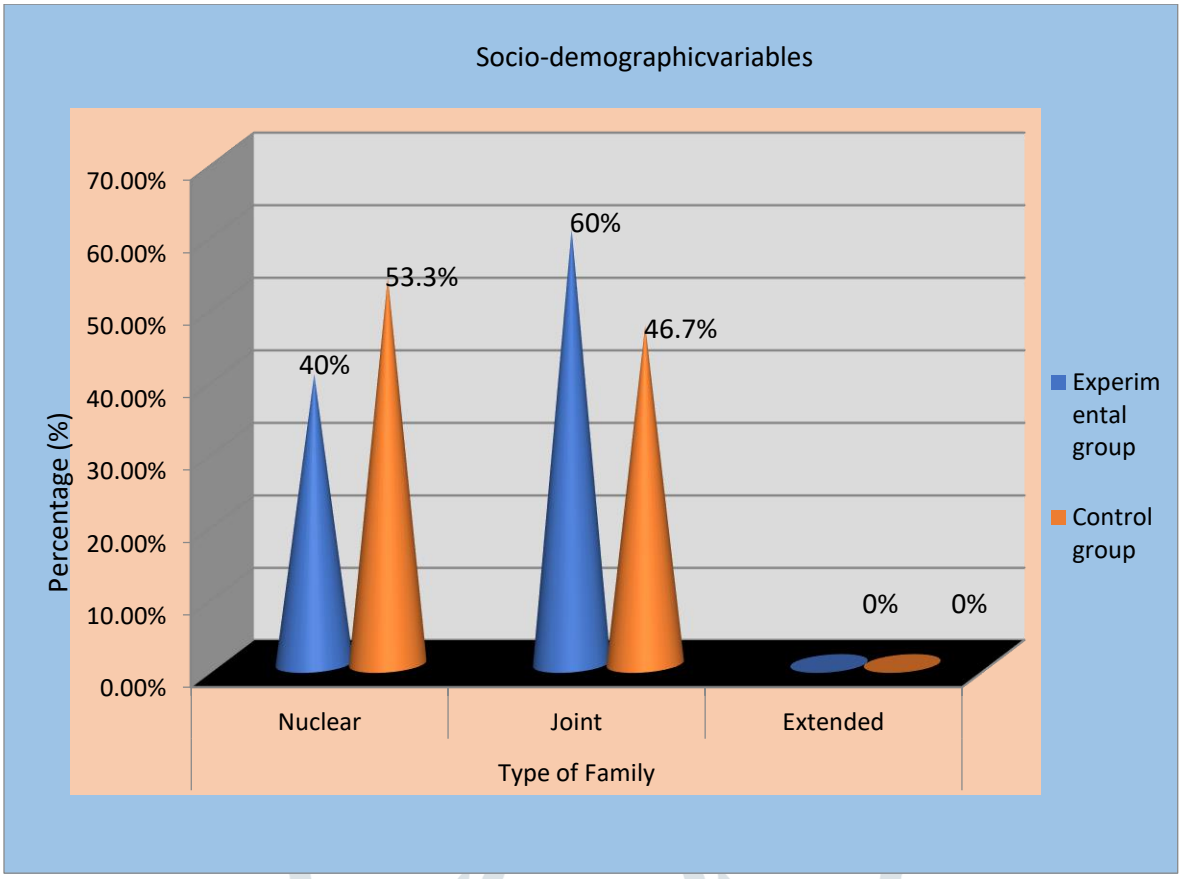


Figure 7: The clustered cone diagram shows frequency and percentage distribution of post-caesarean mothers according to the type of family.

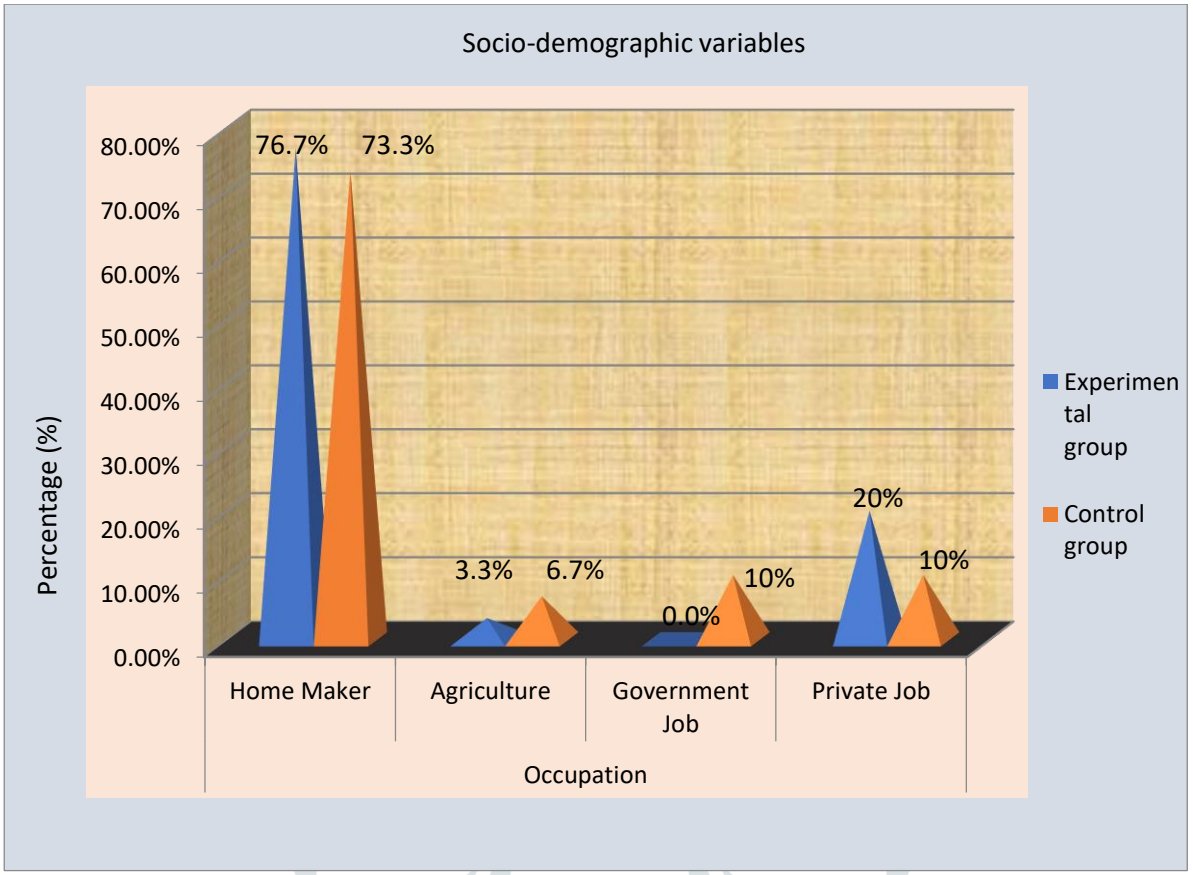


Figure 8: The clustered pyramid diagram shows frequency and percentage distribution of post-caesarean mothers according to regarding to the occupation.

Figure 9:The clustered cylindrical diagram shows frequency and percentage distribution of post-caesarean mothers according to the family monthly income

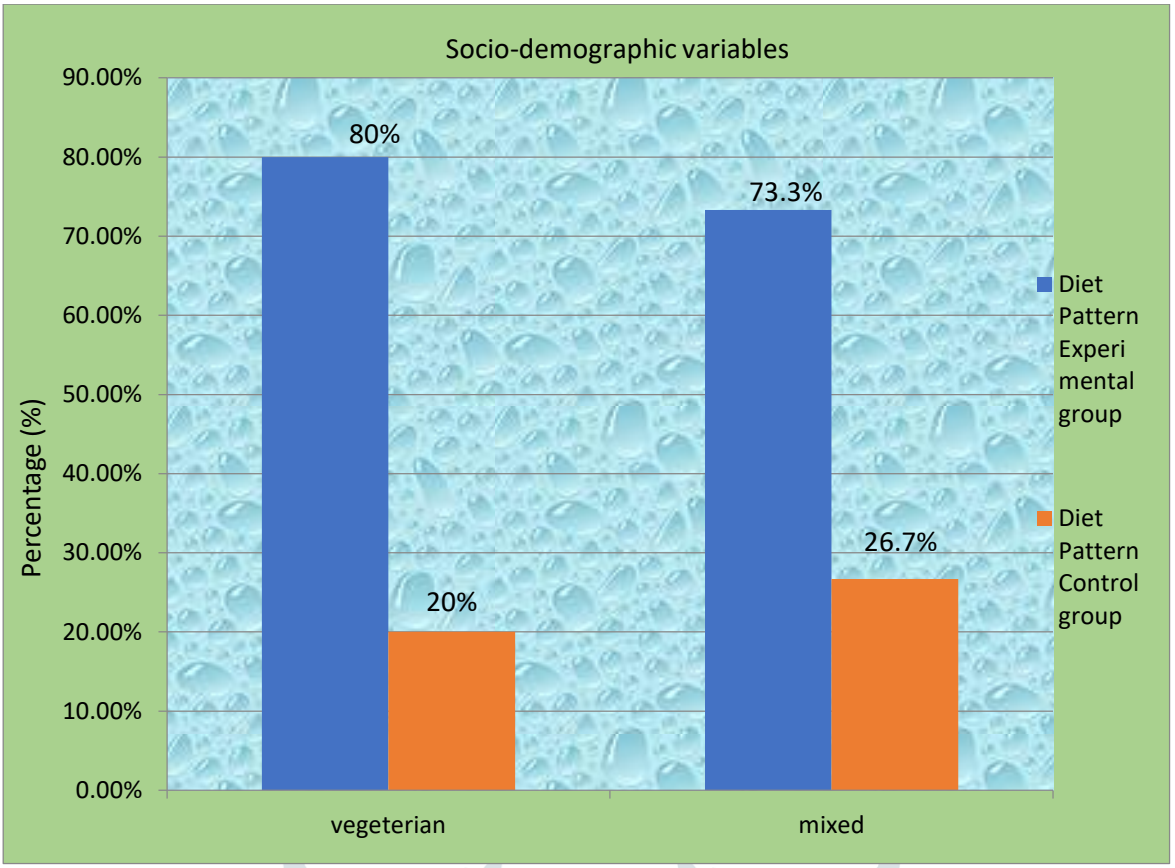


Figure 10: The column diagram shows frequency and percentagedistribution of post-caesarean mothers according to diet pattern.

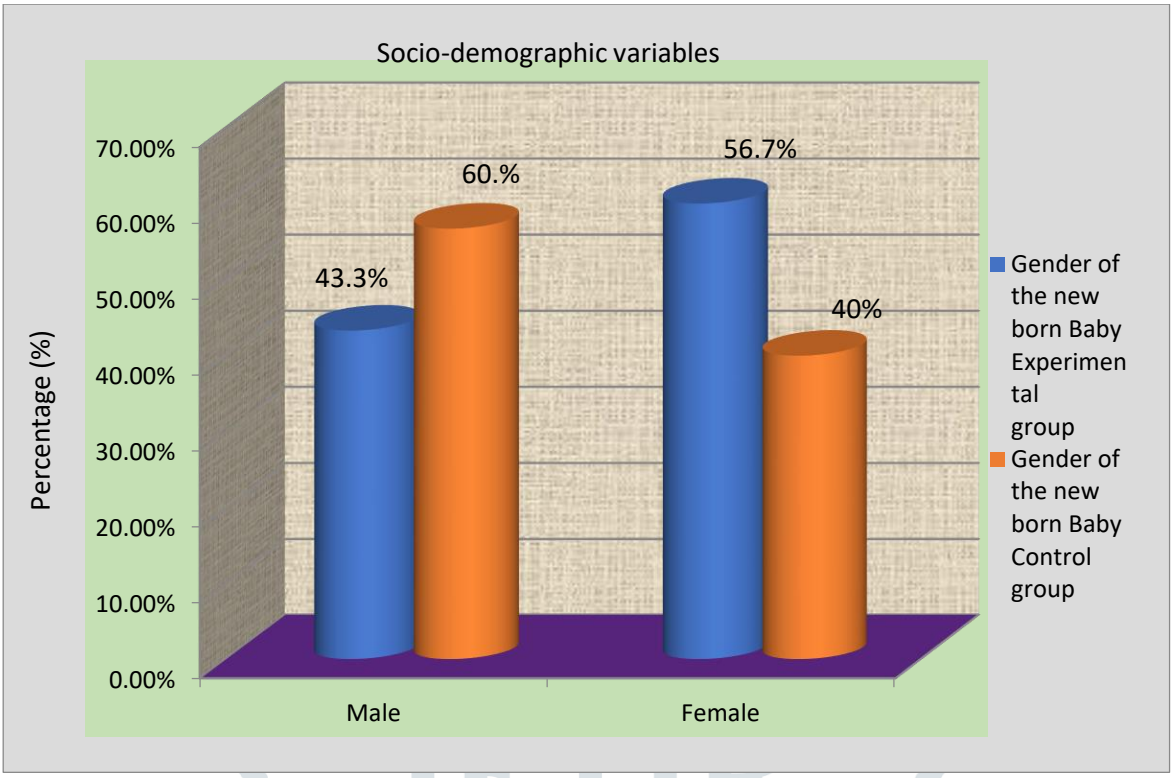


Figure 11: The clustered pyramid diagram shows frequency and percentage distribution of post-caesarean mothers according to gender of new born.

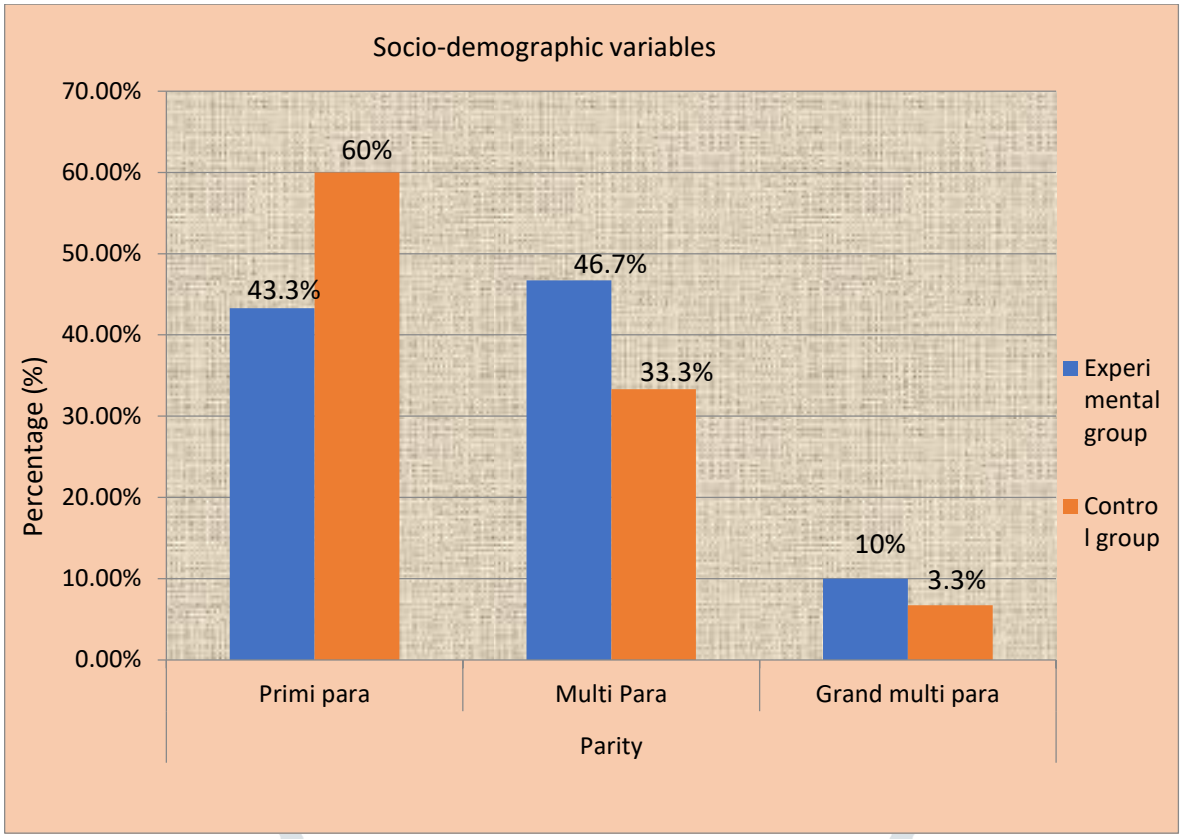


Figure 12: The clustered column diagram shows frequency and percentage distribution of post-caesarean mothers according to parity

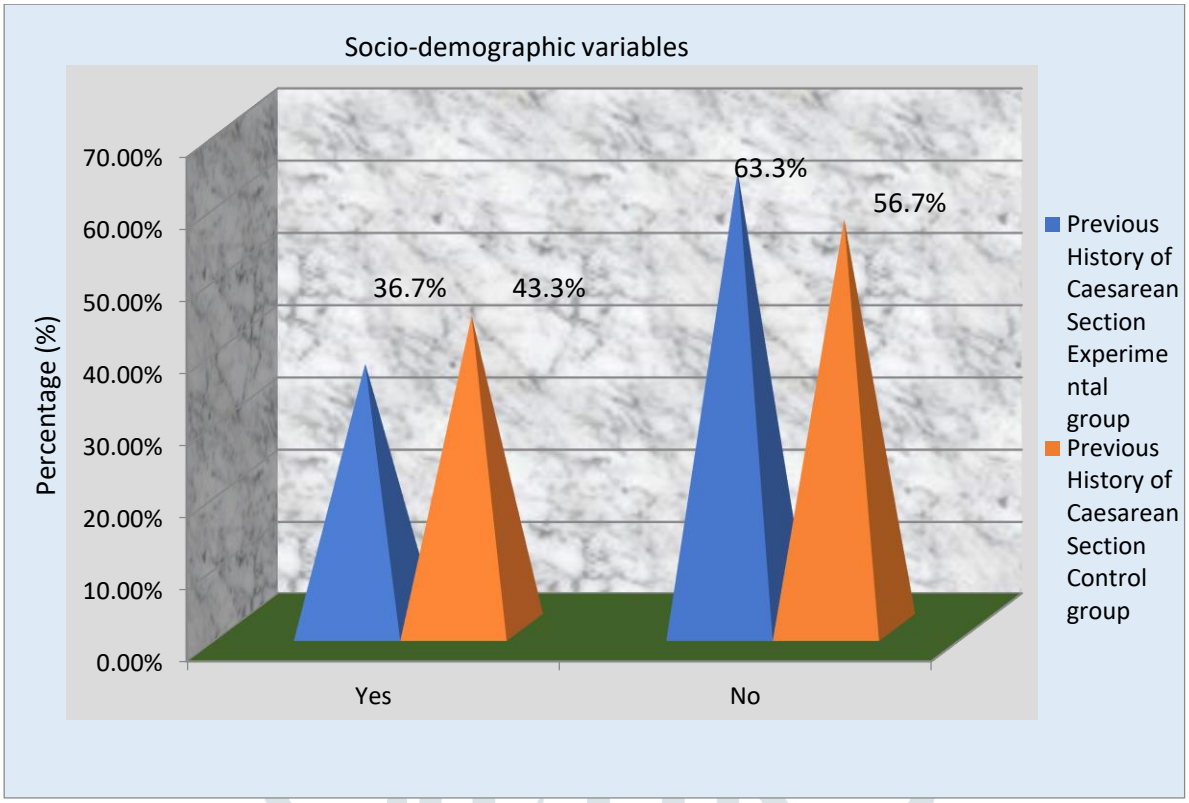


Figure 13:The clustered pyramid diagram shows frequency and percentage distribution of post-caesarean mothers according to previous history of caesarean section.

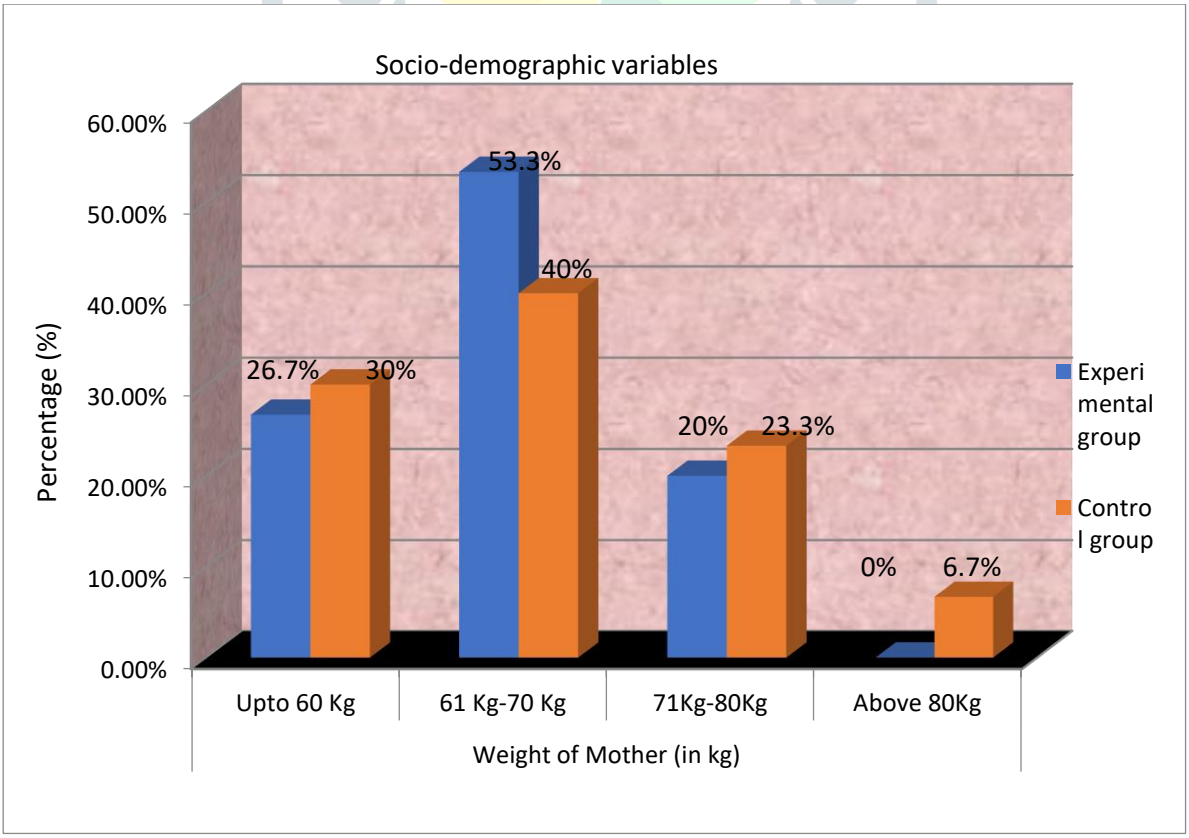


Figure 14: The clustered cylindrical diagram shows frequency and percentage distribution regarding to the weight of the mother.

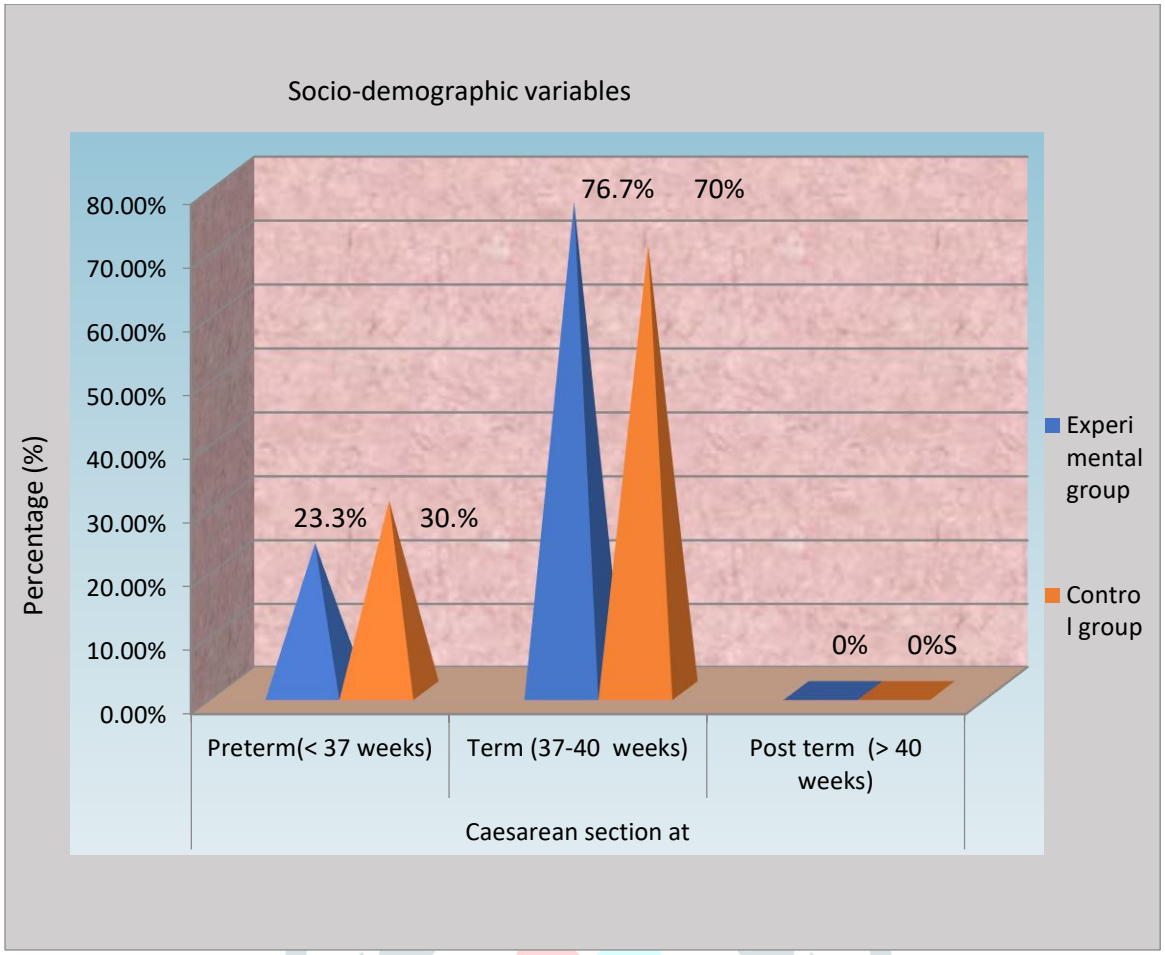


Figure 15: The clustered pyramidal diagram shows frequency and percentage distribution of post-caesarean according to caesarean section at.

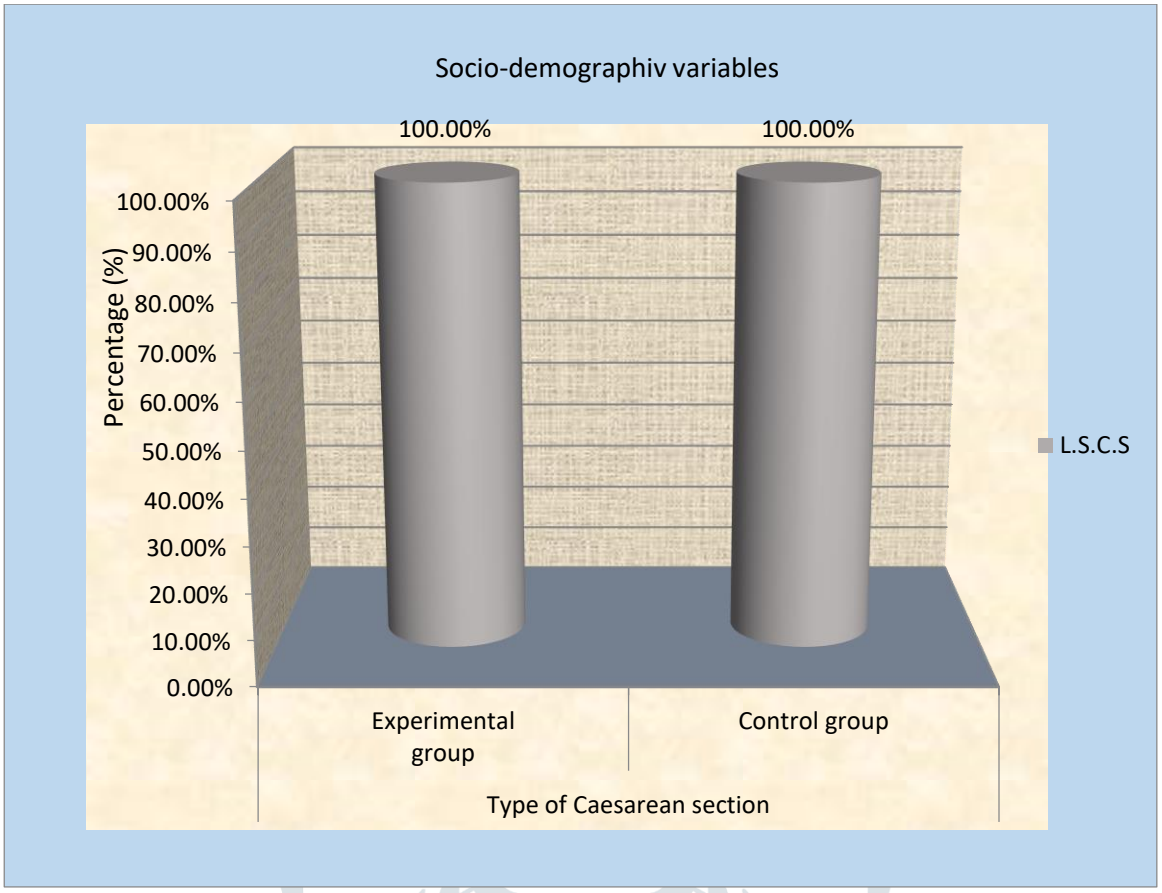


Figure 16: The clustered column diagram shows frequency and percentage distribution of post-caesarean mothers according to type of caesarean section.

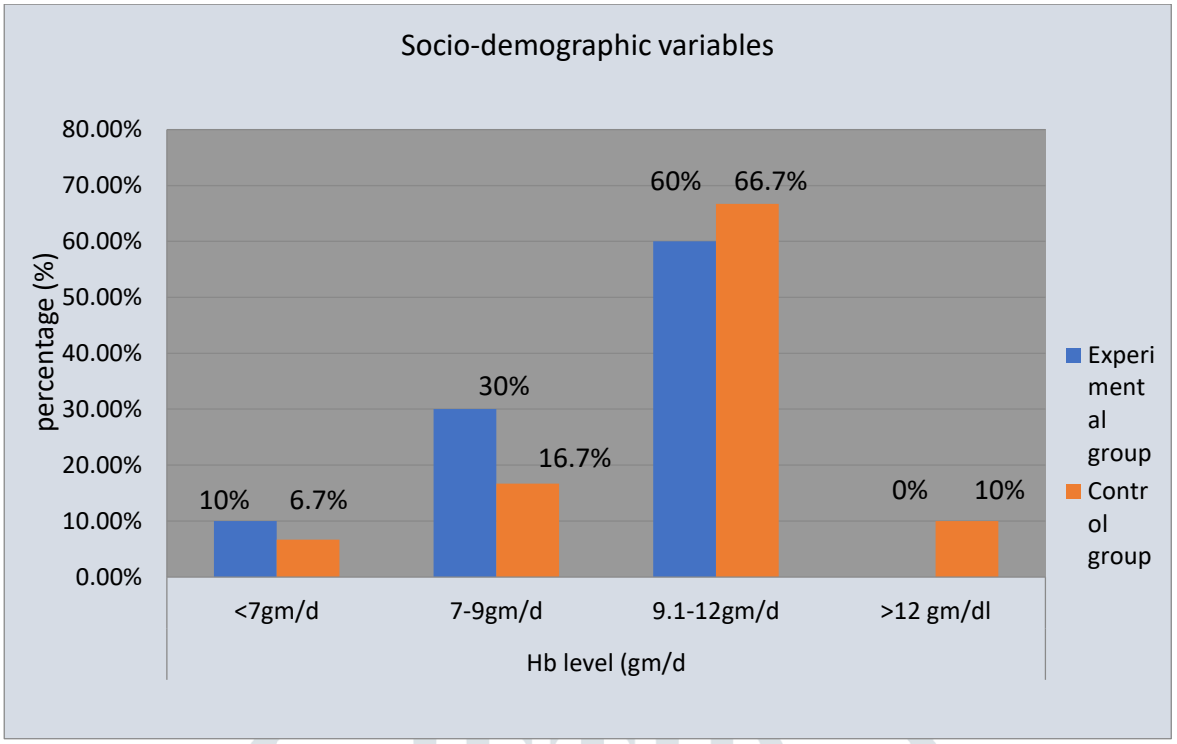


Figure 17: The clustered cylindrical diagram shows frequency and percentage distribution of post-caesarean mothers according to Hb level.

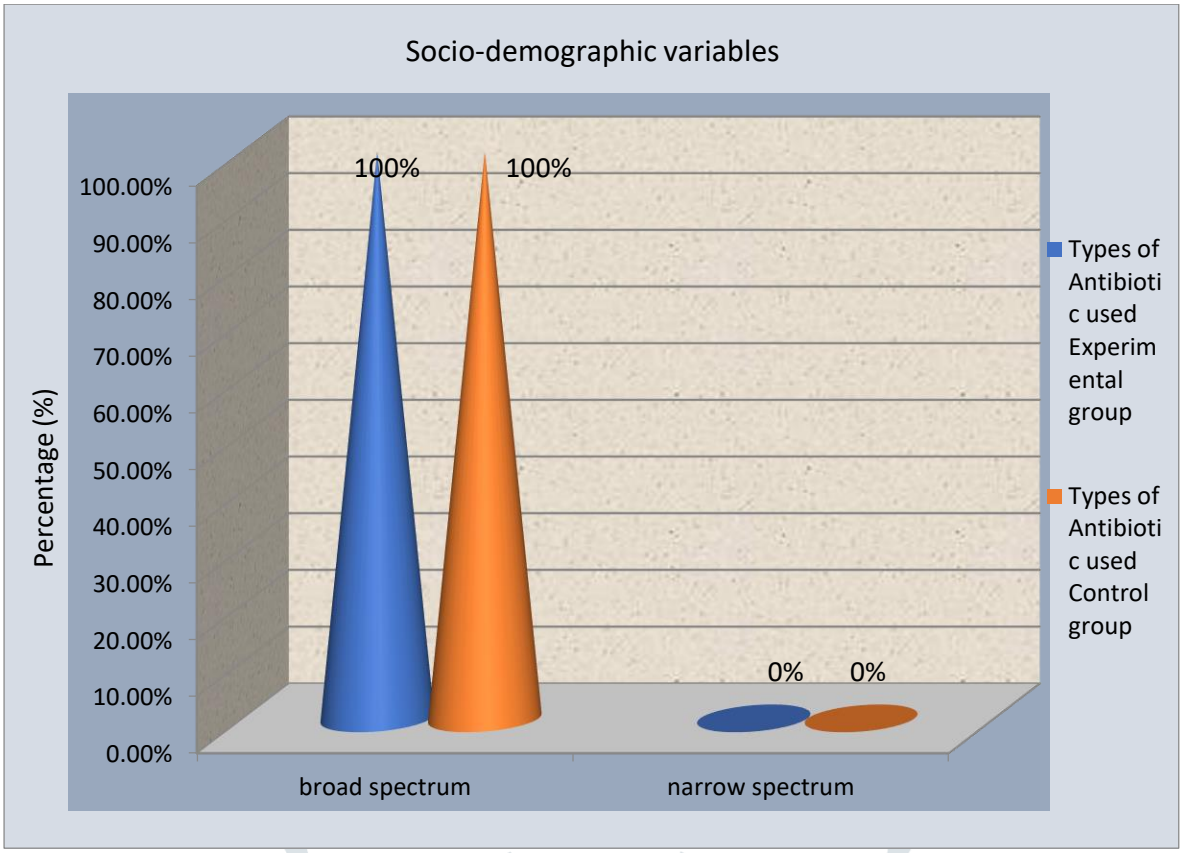


Figure 18: The clustered cone diagram shows frequency and percentage distribution post-caesarean mothers according to type of antibiotic used.

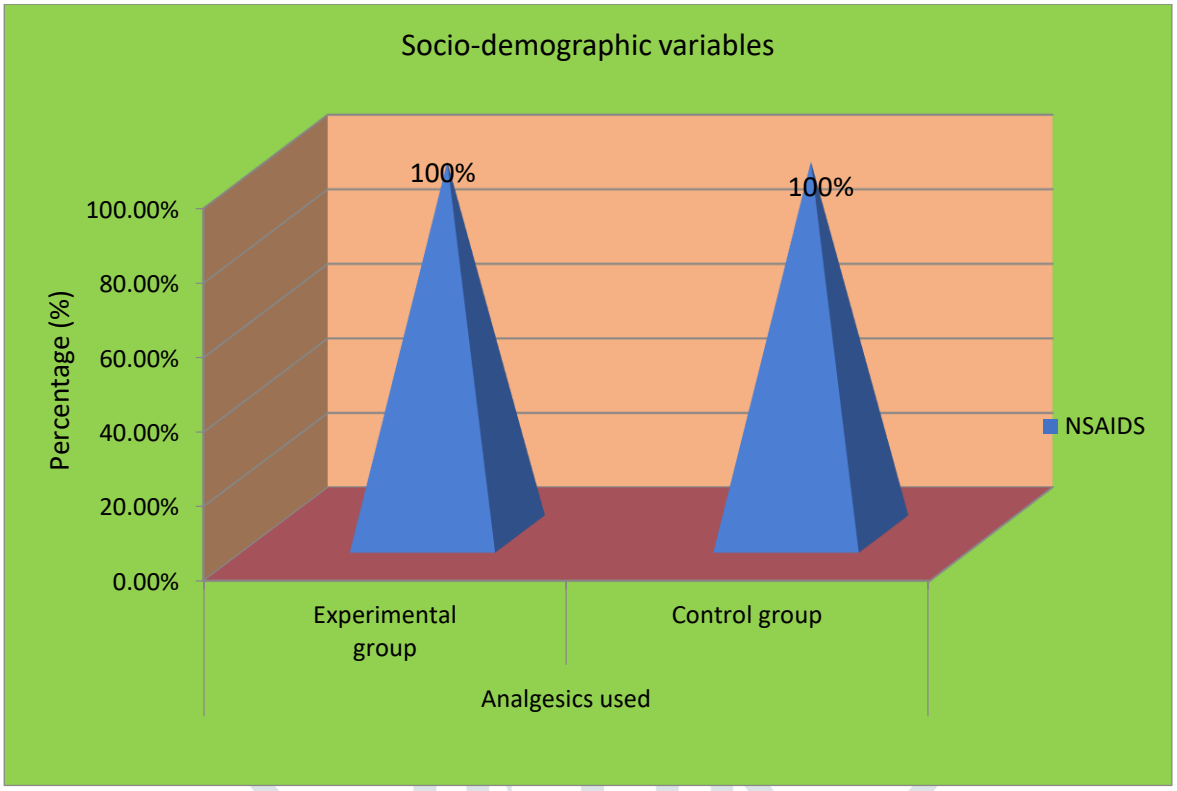


Figure 19: The clustered column diagram shows frequency and percentage distribution of post-caesarean mothers according to type of analgesics used.

SECTION II:FINDINGS RELATED TO PRE-INTERVENTION LEVEL OF PAINAMONG POST CAERSAREAN MOTHERS IN EXPERIMENTAL AND CONTROL GROUP.

Objective 1: Assessment of pre-intervention level of pain among post-caesarean mothers in experimental and control group.

Table 2: Table Showing pre-intervention frequency and percentage distribution of level of pain score among post-caesarean mothers in experimental and control group

N= 60

Description Variable	Experimental Group (Pre-intervention)		Control Group (Pre-intervention)	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Worst level of pain (10)	3	10	0	0
Severe (7-9)	27	90	30	100
Moderate (4-6)	0	0	0	0
Mild (1-3)	0	0	0	0
No level of pain (0)	0	0	0	0

Table 2: depicts that the pre-intervention level of pain score among post-caesarean mothers. Majority 27(90%) in experimental group and 30(100%) in control group had severe level of pain. 3(10%) of mothers had worst level of pain in experimental group. None of them experiences moderate, mild or no level of pain in experimental and control group.

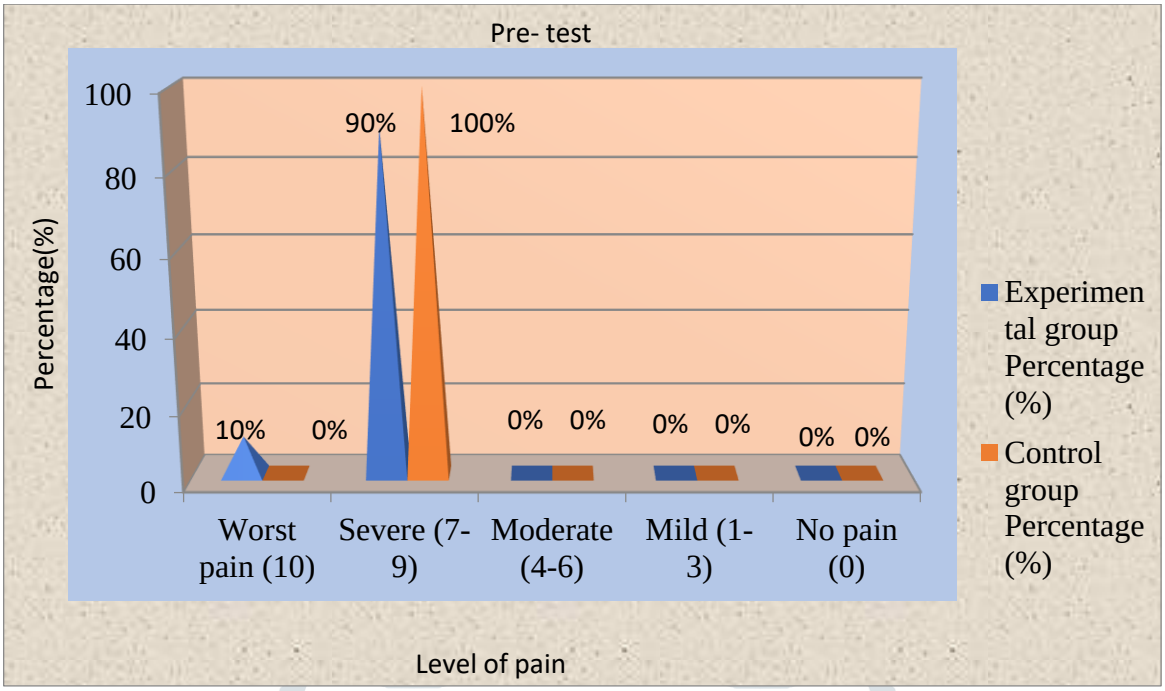


Figure20: The diagram shows the pre-intervention level of pain scores among post-caesarean mothers in experimental and control group.

Table 3:Table showing Mean, S.D, of pre-intervention score of level of pain among post-caesarean mothers in experimental group and control group.

N=60

	Group	N	Mean Score	Mean%	SD
Pre-intervention	**Experimental Group**	30	8.40	84.00	0.855
	Control Group	30	8.43	84.33	0.568

Table 3: shows that the pre-intervention level of pain score among post-caesarean mothers in experimental group had mean of 8.40, mean percentage of 84 with standard deviation of+/- 0.855. The pre-intervention level of pain score among post-caesarean mothers in control group had mean of 8.43, mean percentage of 84.33 with standard deviation of +/- 0.568.

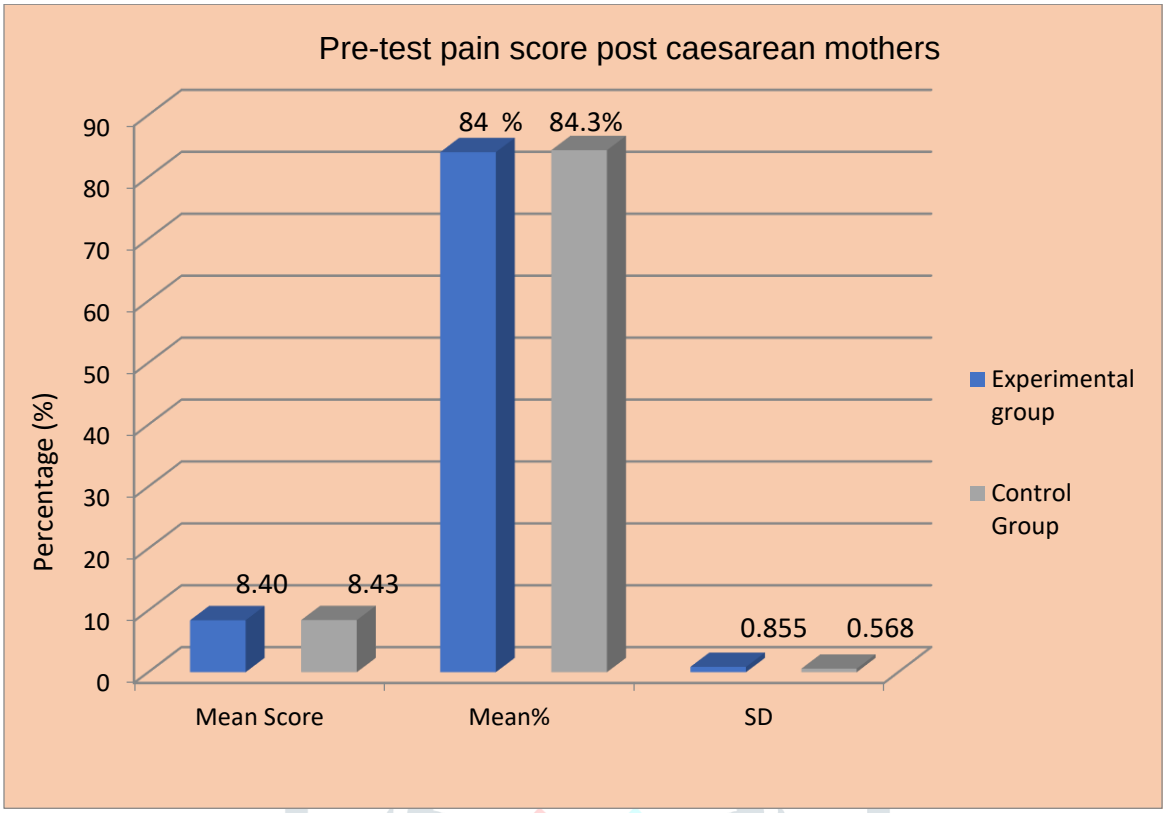


Figure 21: showing Mean, S.D, of pre-intervention score of level of pain among post-caesarean mothers in experimental group and control group

SECTIONIII: FINDINGS RELATED TO EFFECTIVENESS OF HAND AND FOOT MASSAGE IN EXPERIMENTAL GROUP.

Objective 2: Assess the effectiveness of hand and foot massage on level of pain among post-caesarean mothers in experimental.

Table 4: Table Showing post-intervention frequency and percentage distribution of level of pain score among post-caesarean mothers in Experimental group.

N= 30

Description Variable	Experimental Group	
	Frequency (f)	Percentage (%)
Worst level of pain (10)	0	0
Severe (7-9)	0	0
Moderate (4-6)	0	0
Mild (1-3)	30	100
No level of pain (0)	0	0

Table 4: depicts that all the post-caesarean mothers 30(100%) had mild level of pain. None of them had worst, severe, moderate and no level of pain.

Table 5: Comparison of pre-intervention and post-intervention level of pain score in experimental group

N=30

Experimental group	Pre-intervention	Post-intervention 1	Post-intervention 2	Post-intervention 3
Mean	8.40	5.00	3.37	1.90
S.D	0.855	1.083	0.809	0.548
't' value		3.4	5.04	6.5
F- value	506.270			
Table value at 0.05	2.709			
Df	29			
P value	<0.001			
Result		Significant	significant	Significant

Table 5: shows the distribution of pre and post level of pain scores of post-caesarean mothers in terms of Mean, S.D, df, F values'' value and p value in experimental group.

In experimental group it can be seen that the mean and SD of pre-intervention level of pain score of post-caesarean mothers were 8.40, +/-0.855 where as the 1stpost-intervention mean were 5.00 SD, +/-1.083, 2ndpost-intervention mean were 3.37 SD, +/-0.809 and 3rdpost-intervention mean were 1.90 SD,+/-0.548.An ANOVA (F-test) was conducted to determine whether the observed difference in mean was statistically significant. The observed F value 506.270 was higher than that of table value at 0.05 (2.709) and it is inferred that there was statistical significance, at degree of freedom 29 and result was found highly significant at p value <0.001.

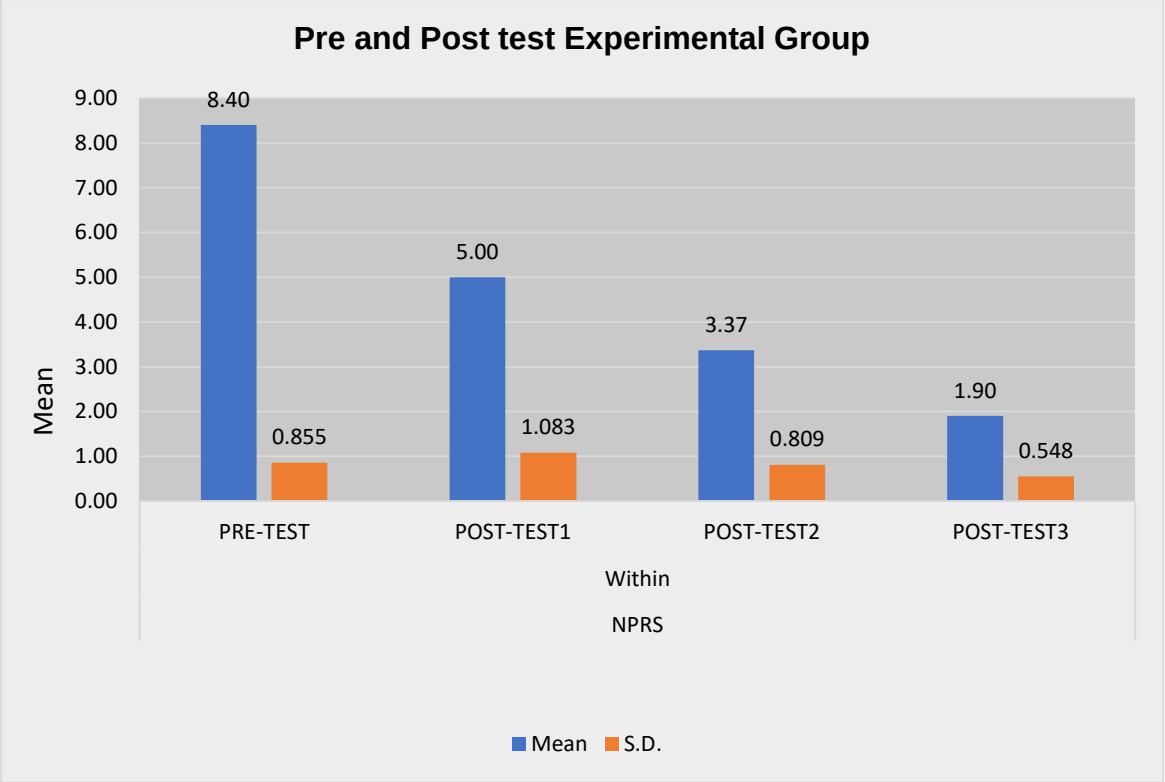


Figure 22:The cluster bar shows comparison of pre-intervention and post-intervention score of level of pain with in Experimental group.

SECTIONIII: FINDINGS RELATED TO POST-INTERVENTION LEVEL OF PAIN AMONG POST CAERSAREAN MOTHERS IN EXPERIMENTAL AND CONTROL GROUP.

Objective 3: Assessment of post intervention level of pain among post-caesarean mothers in experimental and control group.

Table 6: Table showing Mean, S.D, of post-intervention score of level of pain among post-caesarean mothers in experimental group and control group.

N=60

	Groups	N	Mean Score	Mean %	S.D
Post-intervention	Experimental Group	30	1.90	19.00	0.548
	Control Group	30	7.03	70.33	0.556

Tabl 6: shows that the post-intervention mean score of level of pain among post-caesarean mothers in experimental group after hand and foot massage was 1.90 with a SD +/- 0.548. The post-intervention Mean score of level of pain among post-caesarean mothers in control group was 7.03 with a SD +/- 0.556

Section v: To compare pre-intervention and post-intervention score of both experimental and control group

Objective 4: To compare pre and post intervention level of pain score among post-caesarean mothers in experimental and control group

Table 7: Shows post-intervention frequency and percentage distribution of level of pain among post-caesarean mothers in experimental and control group.

N= 60

Level of level of pain				
NPRS	Pre-intervention		Post-intervention	
Score Level	Experimental group	Control group	Experimental group	Control group
WORST LEVEL OF PAIN(10-)	3(10%)	0(0%)	0(0%)	0(0%)
SEVERE(7-9)	27(90%)	30(100%)	0(0%)	26(86.7%)
MODERATE(4-6)	0(0%)	0(0%)	0(0%)	4(13.3%)
MILD(1-3)	0(0%)	0(0%)	30(100%)	0(0%)
NO LEVEL OF PAIN(0-0)	0(0%)	0(0%)	0(0%)	0(0%)

Table 7: depicts that the pre-intervention and post-intervention level of pain level score among post-caesarean mothers. In pre-intervention 3(10%) in experimental group and none of the post-caesarean mothers experiences worst level of pain. 27(90%) in experimental group and 30(100%) in control group experiences severe level of pain and none of them experiences moderate, mild and no level of pain. In post-intervention 26(86.7%) in control group. 0(0%) in experimental group experiences severe level of pain. 4(13.3%) in control group experiences moderate level of pain. 30(100%) experiences mild level of pain in experimental group and 0(0%) in control group. No one is experiencing worst level of pain or no level of pain in experimental and control group.

Table 8: Comparison of pre-intervention and post-intervention level of pain score in experimental group

N=30

Experimental group	Pre-intervention	Post-intervention 1	Post-intervention 2	Post-intervention 3
Mean	8.40	5.00	3.37	1.90
S.D	0.855	1.083	0.809	0.548
't' value		3.4	5.04	6.5
F- value	506.270			
Table value at 0.05	2.709			
Df	29			
P value	<0.001			
Result		Significant	Significant	Significant

Table 8: shows the distribution of pre and post level of pain scores of post-caesarean mothers in terms of Mean, S.D, df, F-value,'t' value and p value in experimental group.

In experimental group it can be seen that the mean and SD of pre-intervention level of pain score of post-caesarean mothers were 8.40, +/-0.855 whereas the 1stpost-intervention mean were 5.00 SD, +/-1.083, 2ndpost-intervention mean were 3.37 SD, +/-0.809 and 3rdpost-intervention mean were 1.90 SD,+/-0.548.An ANOVA (F-test) was conducted to determine whether the observed difference in mean was statistically significant. The observed F value 506.270 was higher than that of table value at 0.05 (2.709) and it is inferred that there was statistical significance, at degree of freedom 29 and result was found highly significant at p value <0.001.

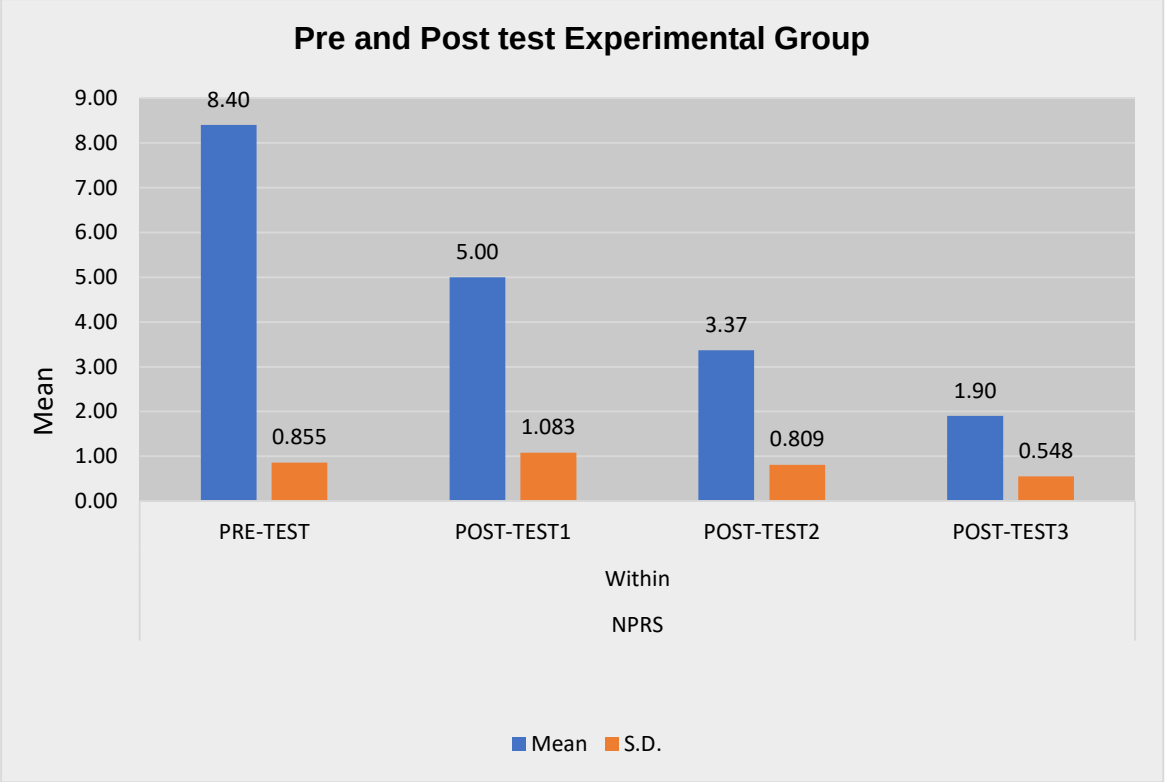


Figure 23:The cluster bar shows comparison of pre-intervention and post-intervention score of level of pain with in Experimental group.

Table 9: Comparison of pre-intervention and post-intervention level of pain score in control group

N=30

Control group	Pre-intervention	Post-intervention 1	Post-intervention 2	Post-intervention 3
Mean	8.43	7.87	7.67	7.03
S.D	0.568	0.434	0.479	0.556
't' value		0.57	0.77	1.4
F value	83.210			
Table value at 0.05	2.709			
P-value	<0.001			
Df	29			
Result		Significant	Significant	Significant

Table 9:shows the distribution of pre and post level of pain scores of post-caesarean mothers in terms of Mean, S.D, df, F value,'t' value and p value in control group.

In control group it can be seen that the mean and SD of pre-intervention level of pain score of post-caesarean mothers were 8.43, +/-0.568 whereas the 1st post-intervention mean were 7.87 SD, +/-0.434, 2nd post-intervention mean were 7.67 SD, +/-0.479 and 3rd post-intervention mean were 7.03 SD,+/-0.556. An ANOVA (F-test) was conducted to determine whether the observed difference in mean was statistically significant. The observed F value 83.210 was higher than that of table value at 0.05 (2.709)and it is inferred that there was a statistical significance, at degree of freedom 29 and result was found significant at p value <0.001.

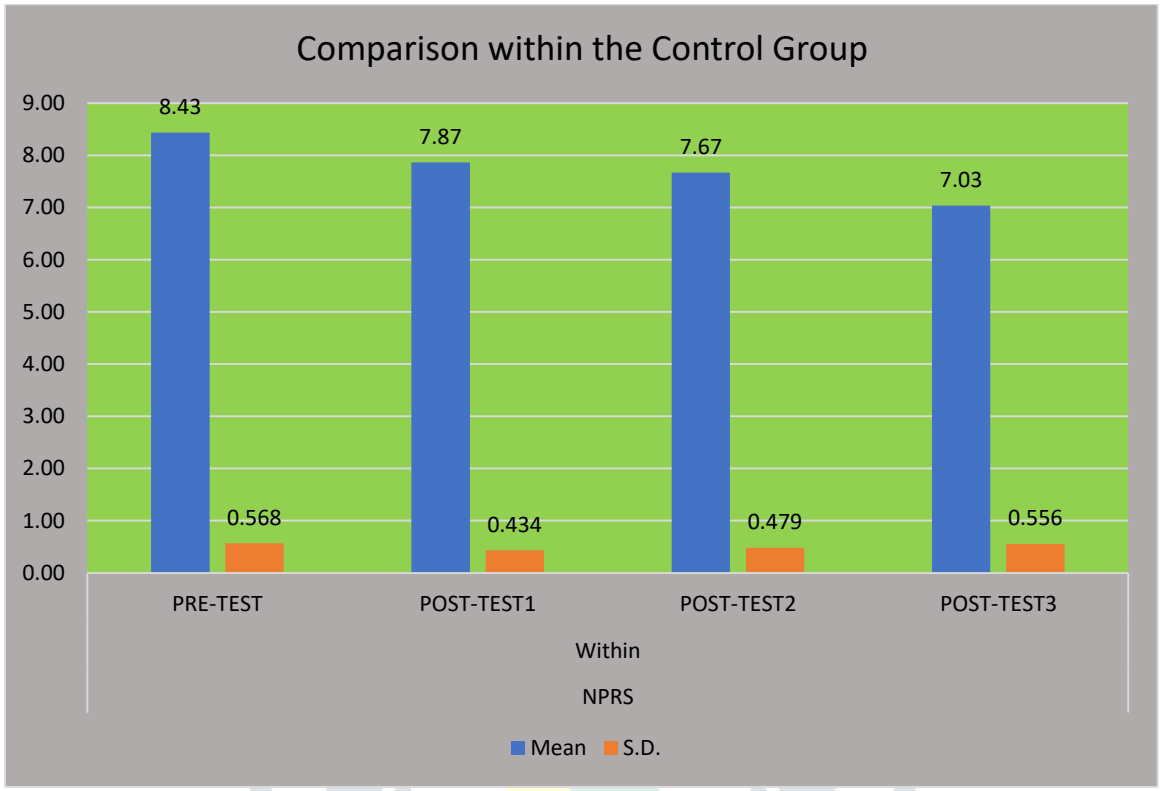


Figure 24: The cluster cylinders shows comparison of pre-interventionand post-intervention score of level of pain in control group.

Table 10: Comparison of pre-intervention and post-intervention level of pain scores between experimental and control group.

Unpaired 't' test	Groups	Mean	S.D	df	Unpaired 't' value	P-value	Result
Pre-intervention	**Experimental**	8.40	0.855	58	0.178	0.8595	Not Significant
	Control	8.433	0.568				
Post-intervention	**Experimental**	1.90	0.548		36.023	<0.001	Significant
	Control	7.03	0.556				

Table 10: shows the distribution mean, SD, df, 't' value and p value of level of pain score among experimental and control group. It can be seen from the table that the pre-intervention mean score of level of pain among post-caesarean mothers in experimental group was 8.40 with a SD +/- 0.855. Similarly the pre-intervention mean score of level of pain among post-caesarean mothers in control group was 8.433 with a SD +/- 0.568. The degree of freedom was 58 and Un-paired 't' test was computed to show whether there was any significant difference in mean level of pain score of experimental and control group. An observed 't' value of 0.178, P value of 0.8595 was lower than the table value indicating that the observed difference in mean score among experimental and control group in pre-intervention was not significant.

The post-intervention mean score of level of pain among post-caesarean mothers in experimental group after hand and foot massage was 1.90 with a SD +/- 0.548.Similarly the Mean score of level of pain among post-caesarean mothers in control group was 7.03 with a SD +/- 0.556 and Un-paired 't' test was computed to show whether there was any significant difference in mean level of pain score of experimental and control group. The observed 't' value of 36.023 was higher than that of table value and it was inferred that there was a statistical significance and result was highly significant at $P < 0.001$.

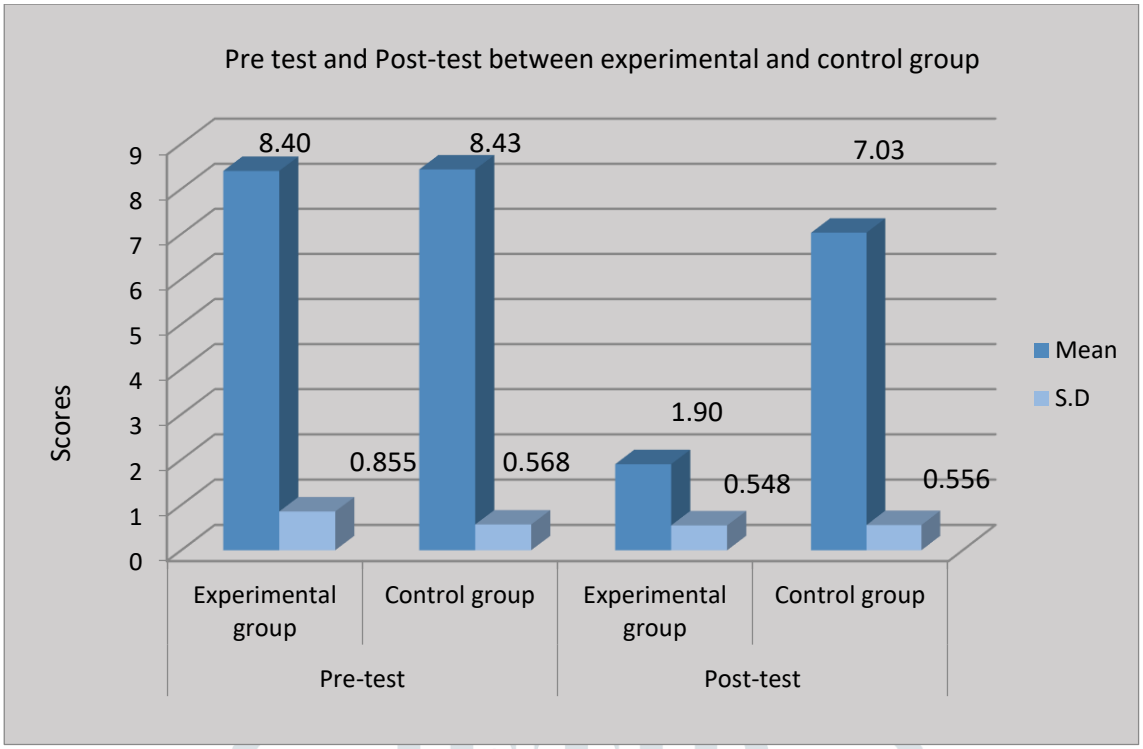


Figure 25:The cluster bar shows comparison of pre-intervention and post-intervention score of level of pain with in Experimental and control group.

SECTION: VI

Objective 4: To find an association betweenlevel of pain scores of post-caesarean mothers with their selected socio- demographic variables.

Table 11: Table Showing Association of level of pain Scores with socio- demographic variables in experimental group

N=30

Socio-demographic Variables		Level of Scores					Association of level of pain Score with Socio-demographic variables in Experimental Group (pre-intervention)				
		WORST LEVEL OF PAIN	SEVERE	MODERATE	MILD	NO PAIN	Chi Test	P Value	df	Table Value	Result
Age (in years)	19-23	0	1				11.926	0.008	3	7.815	Significant
	24-29	1	24								
	30-35	0	1								
	More than 35	2	1								
Educational Status	No Formal Education	0	1				2.549	0.466	3	7.815	Not Significant
	Primary Education	0	6								
	Higher Secondary	0	6								

	Education										
	Graduate or above	3	14								
Religion	Sikh	0	9				11.197	0.011	3	7.815	Significant
	Hindu	2	11								
	Muslim	1	0								
	Others	0	7								
Area of Resident	Rural	3	12				3.333	0.189	2	5.991	Not Significant
	Urban	0	9								
	Suburban	0	6								
Type of Family	Nuclear	2	10				0.988	0.320	1	3.841	Not Significant
	Joint	1	17								
	Extended	0	0								
Occupation	Home Maker	0	23				13.333	0.001	2	5.991	Significant
	Agriculture	0	1								
	Government Job	0	0								
	Private Job	3	3								
Family Monthly Income (Rs)	Less than 10000	0	2				12.593	0.006	3	7.815	Significant
	10001-20000	1	9								
	20001-30000	0	15								
	More than 30000	2	1								
Diet Pattern	Vegetarian	3	21				0.833	0.361	1	3.841	Not Significant
	Mixed	0	6								
Gender of the new born Baby	Male	0	13				2.549	0.110	1	3.841	Not Significant
	Female	3	14								
Parity	Primipara	0	13				3.810	0.149	2	5.991	Not Significant
	Multi Para	3	11								
	Grand multi para	0	3								
Previous History of Caesarean Section	Yes	2	9				1.292	0.256	1	3.841	Not Significant
	No	1	18								
Weight of Mother (in kg)	Upto 60 Kg	0	8				4.769	0.092	2	5.991	Not Significant
	61 Kg-70 Kg	1	15								
	71Kg-80Kg	2	4								
	Above 80Kg	0	0								
Caesarean section at	Preterm(< 37 weeks)	2	5				3.499	0.061	1	3.841	Not Significant
	Term (37-40 weeks)	1	22								
	Post term (> 40 weeks)	0	0								
Type of	L.S.C.S	4	26				0.115	0.735	1	3.841	Not

Caesarean section	U.S.C.S	0	0								Significant
Hb level (gm/d	<7gm/d	0	3				0.370	0.831	2	5.991	Not Significant
	7-9gm/d	1	8								
	9.1-12gm/d	2	16								
	>12 gm/dl	0	0								
Types of Antibiotic used	i) Broad spectrum	4	26				0.115	0.735	1	3.841	Not Significant
	ii) Narrow spectrum	0	0								
Analgesics used	i) NSAIDS	4	26				0.115	0.735	1	3.841	Not Significant
	ii) Opoids	0	0								

Table 11:The above table shows that the association between pre-intervention level of pain score with socio demographic variable in experimental group. Based on the present study there was a significant association between level of pain score of post-caesarean mothers with their socio-demographic variables such as age in years, religion, occupation and family monthly income at p= 0.05.There was no significant association between level of pain score of post-caesarean mothers with their socio- demographic variables such as educational status, area of residence, type of family, diet pattern, gender of the new born, parity, previous history of caesarean section, weight of the mother, caesarean section at, type of caesarean section, Hb level, type of antibiotic and analgesics used.

Table No:12Table Showing Association of level of pain Scores with socio- demographic variables in experimental group (post-intervention)

N=30

Socio-Demographic Variables		**Level of Scores**					**Association of pain Score with Socio-Demographic variables Experimental Group (post-intervention)**				
Variables	**Opts**	**WORST PAIN**	**SEVERE**	**MODERATE**	**MILD**	**NO PAIN**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age (in years)	19-23				1		NA				
	24-29				25						
	30-35				1						
	More than 35				3						
Educational Status	No Formal Education				1		NA				
	Primary Education				6						
	Higher Secondary Education				6						

	Graduate or above				17							
Religion	Sikh				9		NA					
	Hindu				13							
	Muslim				1							
	Others				7							
Area of Resident	Rural				15		NA					
	Urban				9							
	Suburban				6							
Type of Family	Nuclear				12		NA					
	Joint				18							
	Extended				0							
Occupation	Home Maker				23		NA					
	Agriculture				1							
	Government Job				0							
	Private Job				6							
Family Monthly Income (Rs)	Less than 10000				2		NA					
	10001-20000				10							
	20001-30000				15							
	More than 30000				3							
Diet Pattern	Vegetarian				24		NA					
	Mixed				6							
Gender of the new born Baby	Male				13		NA					
	Female				17							
Parity	Primipara				13		NA					
	Multi Para				14							
	Grand multi para				3							
Previous History of Caesarean Section	Yes				11		NA					
	No				19							
Weight of Mother (in kg)	Upto 60 Kg				8		NA					
	61 Kg-70 Kg				16							
	71Kg-80Kg				6							
	Above 80Kg				0							
Caesarean section at	Preterm(< 37 weeks)				7		NA					
	Term (37-40 weeks)				23							
	Post term (> 40 weeks)				0							
Type of Caesarean section	i)LS.C.S				30		NA					
	ii)U.S.C.S				0							
Hb level (gm/d	<7gm/d				3		NA					
	7-9gm/d				9							
	9.1-12gm/d				18							
	>12 gm/dl				0							

Types of Antibiotic used	i) Broad spectrum				30		NA				
	ii) Narrow spectrum				0						
Analgesics used	i) NSAIDS				30		NA				
	ii) Opoids				0						

Table no 12: The above table shows the association between post-intervention level of pain score with socio demographic variable in experimental group. Based on the present study as all the post-caesarean mothers have mild level of pain so chi square test will not be applicable

Table 13: Table Showing Association of level of pain scores with socio-demographic variables in Control group (pre-intervention)

N= 30

Socio-Demographic Variables		**Level of Scores**					**Association of Pain Score with Socio-Demographic variables control Group (pre-intervention)**				
Variables	**Opts**	**WORST PAIN**	**SEVERE**	**MODERATE**	**MILD**	**NO PAIN**	**Chi Test**	**P Value**	**Df**	**Table Value**	**Result**
Age (in years)	19-23		1				NA				
	24-29		25								
	30-35		1								
	More than 35		3								
Educational Status	No Formal Education		1				NA				
	Primary Education		6								
	Higher Secondary Education		6								
	Graduate or above		17								
Religion	Sikh		9				NA				
	Hindu		13								
	Muslim		1								
	Others		7								
Area of Resident	Rural		15				NA				
	Urban		9								
	Suburban		6								

Type of Family	Nuclear		12				NA				
	Joint		18								
	Extended		0								
Occupation	Home Maker		23				NA				
	Agriculture		1								
	Government Job		0								
	Private Job		6								
Family Monthly Income (Rs)	Less than 10000		2				NA				
	10001-20000		10								
	20001-30000		15								
	More than 30000		3								
Diet Pattern	Vegetarian		24				NA				
	Mixed		6								
Gender of the new born Baby	Male		13				NA				
	Female		17								
Parity	Primipara		13				NA				
	Multi Para		14								
	Grand multi para		3								
Previous History of Caesarean Section	Yes		11				NA				
	No		19								
Weight of Mother (in kg)	Upto 60 Kg		8				NA				
	61 Kg-70 Kg		16								
	71Kg-80Kg		6								
	Above 80Kg		0								
Caesarean section at	Preterm(< 37 weeks)		7				NA				
	Term (37-40 weeks)		23								
	Post term (> 40 weeks)		0								
Type of Caesarean section	i)L.S.C.S		30				NA				
	ii)U.S.C.S		0								
Hb level (gm/d	<7gm/d		3				NA				
	7-9gm/d		9								
	9.1-12gm/d		18								
	>12 gm/dl		0								
Types of Antibiotic used	i) Broad spectrum		30				NA				
	ii) Narrow spectrum		0								
Analgesics used	i) NSAIDS		30				NA				
	ii) Opoids		0								

Table no 13: The above table shows the association between pre-intervention level of pain score with socio demographic variable in control group. Based on the present study as all the post-caesarean mothers have severe level of pain so chi square test will not be applicable

Table 14: Table Showing Association of level of pain scores with socio-demographic variables in Control group (post-intervention)

N= 30

Socio-demographic Variables		Level of Scores					Association of Level of pain Score with socio-demographic variables in Control Group				
		WORST LEVEL OF PAIN	SEVERE	MODERATE	MILD	NO LEVEL OF PAIN	Chi Test	P Value	df	Table Value	Result
Age (in years)	19-23		3	1	0		1.101	0.777	3	7.815	Not Significant
	24-29		17	2	0						
	30-35		4	1	0						
	More than 35		2	0	0						
Educational Status	No Formal Education		5	1	0		0.216	0.975	3	7.815	Not Significant
	Primary Education		7	1	0						
	Higher Secondary Education		9	1	0						
	Graduate or above		5	1	0						
Religion	Sikh		13	2	0		0.096	0.953	2	5.991	Not Significant
	Hindu		5	1	0						
	Muslim		0	0	0						
	Others		8	1	0						
Area of Resident	Rural		17	2	0		1.173	0.556	2	5.991	Not Significant
	Urban		7	1	0						
	Suburban		2	1	0						
Type of Family	Nuclear		13	3	0		0.871	0.351	1	3.841	Not Significant
	Joint		13	1	0						
	Extended		0	0	0						
Occupation	Home Maker		18	4	0		1.678	0.642	3	7.815	Not Significant
	Agriculture		2	0	0						
	Government Job		3	0	0						
	Private Job		3	0	0						
Family Monthly Income (Rs)	Less than 10000		6	0	0		1.656	0.647	3	7.815	Not Significant
	10001-20000		8	1	0						
	20001-30000		9	2	0						
	More than 30000		3	1	0						
Diet Pattern	Vegetarian		19	3	0		0.007	0.935	1	3.841	Not Significant
	Mixed		7	1	0						

Gender of the new born Baby	Male		15	3	0		0.433	0.511	1	3.841	Not Significant
	Female		11	1	0						
Parity	Primipara		15	3	0		0.577	0.749	2	5.991	Not Significant
	Multi Para		9	1	0						
	Grand multi para		2	0	0						
Previous History of Caesarean Section	Yes		12	1	0		0.632	0.427	1	3.841	Not Significant
	No		14	3	0						
Weight of Mother (in kg)	Upto 60 Kg		9	0	0		3.214	0.360	3	7.815	Not Significant
	61 Kg-70 Kg		10	2	0						
	71Kg-80Kg		5	2	0						
	Above 80Kg		2	0	0						
Caesarean section at	Preterm(< 37 weeks)		9	0	0		1.978	0.160	1	3.841	Not Significant
	Term (37-40 weeks)		17	4	0						
	Post term (> 40 weeks)		0	0	0						
Type of Caesarean section	i)L.S.C.S		26	4	0		NA				
	ii)U.S.C.S		0	0	0						
Hb level (gm/d	<7gm/d		2	0	0		1.010	0.799	3	7.815	Not Significant
	7-9gm/d		4	1	0						
	9.1-12gm/d		17	3	0						
	>12 gm/dl		3	0	0						
Types of Antibiotic used	i) Broad spectrum		26	4	0		NA				
	ii) Narrow spectrum		0	0	0						
Analgesics used	i) NSAIDS		26	4	0		NA				
	ii) Opoids		0	0	0						

Table 13:shows that the association between post-intervention level of pain score with socio demographic variable in control group. Based on the present study there was no significant association between level of pain score of post-caesarean mothers with their socio- demographic variables such as age, educational status, religion, occupation, family income, area of residence, type of family, diet pattern, gender of the new born, parity, previous history of caesarean section, weight of the mother, caesarean section at, type of caesarean section, Hb level, type of antibiotic and analgesics used.

CONCLUSION

In this study quasi-experimental one group pre-intervention and post-intervention with control group design with evaluative approach was opted. The non-probability convenience sampling technique was opted to select the 60 post-caesarean mothers from AdeshHospital, Bathinda. The data was collected by using Numerical level of pain rating scale and data was further analysed and interpreted by applying statistical methods. The findings revealed that there was thelevel of pain was reduced in experimental group as compare to control group. There was a

significant between pre-intervention and post-intervention scores of level of pain between experimental and control group significant at't'=36.023 ($p<0.001$). Hence the research hypothesis ($H_{1.1}$) was accepted.

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