

Effect of Fundal Massage Technique and Alternative Leg Lifting Exercise on After pain Severity and Uterine Involution Among Multipara Women

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Abstract

Background: After pain, is a crampy pain in the abdomen, determinant of uterine involution, which is more clinically observed among multipara women in the first days postpartum after a normal vaginal delivery. **Aim of this study** is to: assess the effect of fundal massage technique and alternative leg lifting exercise on after pain severity and uterine involution among multipara women. **Subjects and Methods: Research design:** Quasi experimental study design with pre and post-test & control group was utilized in the current study. **Setting:** The study was conducted at the postpartum unit and outpatient clinic - maternity hospital at zagazig University Hospital, **Subjects:** Totally 100 postnatal mothers were recruited to participate in the study using purposive sampling technique, 50 women as experimental group and the other 50 women as control group. **Tools of data collection:** Five tools were used for data collection; structured interviewing questionnaire, pain level assessment scale, modified fundal assessment scale, fundal massage & alternative leg lifting exercise (only for experimental group). **Results:** Indicated that; pain perception had been reported commonly among women in the experimental group, level of pain scale and progress of uterine involution had been improved after providing fundal massage and alternative leg lifting exercise. **Conclusion:** The study concluded that; rendering a selected nursing intervention to mothers in the postnatal period was effective and beneficial in reducing the level of afterbirth pain and improving uterine involution. **Recommendations:** based on the findings of the current study the following recommendations are suggested: Because after pain is a sign of uterine involution, hospital should provide strong guidelines and counselling concerning a full examination of after pain for all mothers in the postnatal period in maternity care centers.

Key words: Fundal Massage Technique, Leg Lifting Exercise, after pain & uterine involution, Multipara Women.

Introduction

The postpartum period is a time for healing and regaining one's pre-pregnancy state. The postpartum period is usually defined as the time between the delivery of the placenta and the involution and return of the reproductive organs to their non-pregnant state, which lasts 6 to 8 weeks (Rothman. B. K, 2012).

Guardino .C.M & Schetter C.D ,(2013) stated that; processes of pregnancy and birth challenges the woman's psychological and physiologic coping mechanisms during the postpartum period, sometimes referred to as the fourth trimester of pregnancy, as the woman must adjust to the reality of her new role as a mother, while her body recovers from pregnancy and childbirth.

The mother plays an important role in experiencing the important events that occur during her journey during childbirth, which involves many stages. The uterus contracts and relaxes at regular intervals after the mother gives birth, resulting in postpartum pain that can be very intense. Cramping will be the most intense for the first day or two after delivery, but it should start to fade around the third day. The process of uterine involution begins immediately after the placenta expels, when the contraction of the uterine smooth muscles

begins, which results in afterpain (Namboothiri & Visswanath, (2016)

Because the baby sucking triggers the release of the hormone oxytocin, which is a hormone that aids in uterine contraction and speeds up the involution process. Breastfeeding may be the basis for or make the after pain more intense. Breastfeeding cramps help the uterus shrink back to normal size faster, lowering the risk of postpartum anemia due to blood loss. After pain, if prolonged, could also lead to neuro-hormonal stress response which further leads to anxiety, insomnia fatigue. whatever the form of pain, when prolonged further, increases the chances of depression in the postnatal period (Rani & Priyanka, 2019).

Highlights from World Health Organization, 2013 guidelines (postnatal care for mothers and newborns) ensured that; because post-partum contractions (after pain) during the first 12 to 24 hours may be strong, gradually diminishing in intensity and frequency over the next few days, healthy women and their newborns should remain at a health facility for at least 24 hours and are not discharged early, The mother experiences more pain after giving birth, both physiologically and psychologically (Reda & Nabil Aboushady, 2018).

Pharmacological techniques such as paracetamol, nonsteroidal anti-inflammatory medications are used to treat afterpains, as well as non-pharmacological methods such as; ambulation, abdominal and leg muscle exercises, prone position, oil massage and fundal massage are more effective measures for relieving afterpains (Deussen et al., 2020).

Touch and massage were an important part of the treatment. Massage is an important and necessary component of holistic maternity care. Fundal massage, also known as uterine massage, is a technique for reducing uterine bleeding and cramping after childbirth. The uterus's muscle contracts tightly as it returns to its pre-pregnancy size, which can cause pain. This could decrease the pain and enabling the mother to relax (Rani & Priyanka, 2019).

Uterine massage is really a euphemism and is routinely performed postpartum to encourage the uterus to stay firm and reduce blood loss. It involves pushing firmly on the uterus and rubbing it to stimulate contractions. So, the nurse's role immediately after delivery is to apply massage to the uterus and keep the uterus firm to prevent excessive vaginal bleeding & supports the mother psychologically to reduce anxiety and tension. After pains might be more painful for women who had more than one pregnancy to compensate for the previous stretching of their uterus to return to its pre pregnancy size (Dahlke, 2015).

Significance of the study: -

After pain is a common ailment that affects the physical and mental well-being of mothers in the postnatal period and is an indicator of uterine involution. Breastfeeding induces the uterus to contract, which intensifies the pain (Shyla, 2016). It necessitates the attention of health care providers, and some nurses' interventions during the postnatal period is crucial for promoting uterine involution & pain management. As a result, the current study was carried out to establish stringent protocols in maternity care facilities for a full assessment of after pain & uterine involution and to emphasize the necessity of fundal massage and leg lifting exercise as early as possible to determine the nature and characteristics of uterine involution and intensity of after pain. So, nurses can use these nursing interventions as an auxiliary therapy in their daily care of the mother.

Aims of The Study: -

- are to assess the effect of fundal massage technique and alternative leg lifting exercise on after pain severity and uterine involution among multipara women through.

- Assessing the effectiveness of fundal massage and alternative leg lifting exercise on uterine involution among multipara women in the postnatal period.

- Evaluating the association between level of after-pain with the selected demographic and obstetrical variables among the mothers during the postpartum period.

Research Hypothesis: -

To achieve the aim of this study, the following research hypothesis were formulated:

- The women who will receive the uterine massage and alternative leg lifting exercise will be less likely to suffer from severe after pain in the postnatal period.

- The women who will receive the uterine massage and alternative leg lifting exercise will have better uterine involution during the postpartum period.

Subjects and Methods

A. Technical Design

The technical design included description of the research design, study setting, sample, and tools for data collection.

Research Design:

- **Quasi experimental study design with pre, post- test and control group.**

➤ **Setting**

- The current research study was conducted in the postpartum unit- maternity hospital and also in outpatient clinic at Zagazig University hospital.

➤ **Subjects**

- In this study, a non-probability purposive sampling technique was adopted. The researchers totally enrolled 100 multipara mothers in the postnatal period who fulfilled the inclusive criteria at the maternity hospital/ zagazig University then they were equally divided into two groups (50 as experimental group and 50 as control group).

Sample size: study was done by (Ramasamy and Hepzi 2014) who reported that; moderate pain level after labor among control group was 46.6%, While moderate pain level was reduced among intervention group at post intervention program, to be 13.3% confidence level is 95% two side with power of study 95%. Sample size calculated using Open Epi, is 50 women in each group.

Open Epi: Open Source Epidemiologic Statistics for Public Health, Version. www.OpenEpi.com, updated 06/04/2013.

Inclusion criteria

• Multi para mothers who have undergone normal vaginal delivery.

• Multi para mothers within the first 24 hours after normal vaginal delivery

• Multi para mothers who are willing to participate.

• Multi para-Mother who breast feeding their babies.

Exclusion criteria

- Mothers in the Postnatal period with cesarean section, preterm & instrumental delivery.
- Mothers in the Postnatal period with postnatal complications like postpartum hemorrhage, puerperal infection /puerperal pyrexia.
- Mothers in the Postnatal period who lost the baby.

Variables

The present study consists of independent, dependent and demographic variables.

- **Independent variable:** Selected nursing interventions such as fundal massage, alternate leg lifting exercise.
- **Dependent variable:** Level of afterbirth pain and progress of uterine involution among postnatal mothers.
- **Demographic variables:** General Information: Age, educational status, residence, work pattern, Obstetrical Information: Parity, number of breasts feeding per day.

Tools of data collection:**B) Operational design:**

The operational design included preparatory phase, validity, reliability, pilot study and fieldwork.

***Preparatory phase**

The researchers revised the resent related literature using books, journals, the internet, periodicals, magazines, different studies done in the same field, and the theoretical knowledge of various aspects of the research subjects. All this assisted in the development of the data collection tools.

In this study the investigators used the following tools to assess the need of the mothers.

✓ **Tool (I) Structured interviewing questionnaire**

It includes **2 variables:**

- Demographic variables** like age, education, dietary pattern, work pattern, residence.
- Obstetrical variables:** like parity, vaginal bleeding, baby weight, duration of labor, number of breastfeeding per day, use of oxytocin.

✓ **Tool (II) Numerical rating scale**

It used to assess the level of after pains for both group pre and post the intervention. This scale was developed by McCaffery. M, & Beebe. A, 1993. The scale consists of 0–10 numeric pain, this scale helps to assign a number from zero to ten regarding the severity of the mother pain. The values on the pain scale corresponds to the following pain levels.

- **0 - No Pain**
- **1 - 3 - Mild Pain**
- **4 - 6 - Moderate pain**
- **7 - 10 - Severe pain**

Instructions were given to the Participant prior to use the Pain Assessment with the “0—10 Numeric rating Scale:-

- 1. I would like you to rate your pains on a scale from zero to ten.**
- 2. ‘Zero’ means you have no pains at all.**
- 3. ‘Ten’ means the worst possible pains you can**

image.

4. What number would you give to your pain?**5. Point the number that represents your pain.**

The **pre-test** level of pain is assessed after delivery, while the **post-test** level of pain is assessed before discharge for both groups.

✓ **Tool III, Modified fundal assessment scale.**

To assess the pre and post-test level of uterine involution among mothers in the postnatal period

❖ The height of the uterine fundus in respect to the symphysis pubis is used to determine the rate of uterine involution. A woman's bladder should be emptied, and she should lie flat on her back (supine). Researchers push one hand against the belly to identify the hard mass; after determining the fundus of the uterus, researchers use a measuring tape to collect measurements from the top of the uterus to above the symphysis pubis, which are then scored.

❖ **Scoring Key for fundal assessment scale: -**

Score **1-20**

- **1-7 Good**
- **8-14 Average**
- **15-20 Poor**

✓ **Pretest** fundal assessment was performed after delivery for both group (before nursing interventions) to detect fundal level and exclude cases who unmet inclusion criteria of the study, measurements recorded in specific data entry sheet.

✓ **Posttest** fundal assessment was performed at outpatient clinic after one week from delivery as all cases decided to come for consultation about family planning services. Moreover, it is considering the suitable time for assessing the uterine involution .

✓ **Tool IV Fundal massage for experimental group.**

A fundal massage was performed to multipara women to assist their management with postpartum pains and encourage uterine involution. The mother was informed about the procedure. Encouraged the mother to empty her bladder. anonymity was granted to the mothers. Encouraged the mother to lie in bed flat on her back. One hand should be just over the symphysis pubis, while the other should be on top of the fundus. A mild rotatory massage was administered for 30 seconds, and mothers were instructed to repeat this exercise five times each day until discharge, and to quinine doing it at home with the same steps until the scheduled meeting at the outpatient clinic after one week.

✓ **Tool V Alternative leg lifting exercise for experimental group:-**

Encouraged the mother to lie flat on her back on the bed and then lift her right leg at a 45-degree angle for 30 seconds before returning it to its original position. After that, the woman was told to lift her left leg to a 45-degree angle for 30 seconds before returning it to its previous position. This exercise was done 10 times per day, five times for each leg, and the mother should feel

comfortable and relaxed.

Fundal massage for 30 seconds followed by alternative leg lifting exercise for 1 minute, each leg lifting for 30 seconds respectively. This procedure was repeated for 5 times. All women were instructed to follow and perform these interventions after discharge for relieving the afterpain and promoting good progress of uterine involution. The pre-test and post-test level of pain and fundal assessment scale were assessed in the control group without administration of any intervention to them. The data were analyzed by using descriptive and inferential statistics.

Validity and Reliability

***Validity: -**

content was reviewed by a panel of five specialists in the field of obstetrics and gynecological nursing evaluated the tools for material validity. Based on their judgment, changes were made as required.

***Reliability**

Reliability of the tools, the reliability of the numerical visual analog scale for assessing pain was confirmed by McCaffery & Beebe, (1993) and by a test and retest of a pilot study. Cronbach's alpha coefficient was calculated to assess the reliability of the developed tool through their internal consistency. Reliability of information tool was 0.89, reliability of performance tool was 0.74. Therefore, the tool was considered reliable for study.

Administrative Design.

An official permission was obtained by submitting an official letter from Zagazig University's Faculty of Nursing to the study setting's responsible authorities to obtain their permission for data collection.

Ethical consideration

All ethical considerations were taken into account throughout the report, and the researchers made sure that the subjects' privacy and confidentiality were protected. Prior to their participation, she introduced herself to the moms and gave a brief description of the study's nature and goal, then women were enrolled willingly to participate in the study after signing a written informed permission form. Mothers were also advised that all data acquired during the study would be kept private and utilized strictly for research purposes only, also they informed that they could withdraw from the study at any time

Pilot study

Pilot study was conducted on 10% of the study subject (10 subjects) who were selected and fulfilled the inclusion criteria. oral and written consent was obtained from the subjects for participating in the study. Pilot study aims to insure that the study tools clear, simple and to estimate time need to fill it. Findings of the pilot study

demonstrated that the study was feasible and practicable.

Field work:

The field study of this work was carried out on two phases:

1- First phase: -

Data were collected. From 1st of September 2021 to 31th of December 2021, data was extracted for four months. During the period of data collection, the investigators obtained a list of deliveries from the labor room and selected a sample of multipara mothers who met the inclusion criteria. All recruited women had been provided an informed consent. They were subjected to full history taking and physical examination to rule out any medical or surgical illness that could affect the study. A measuring tape was used to calculate the fundal height and was expressed in cm. After that, they were notified to get postnatal clinic of the same hospital after one week from their delivery for assessing the progress of uterine involution.

2-Second phase:

The researchers introduced themselves to the multipara mothers at postnatal unit. They explained the anatomical and physiological changes that occur in the female reproductive system during the postpartum period. Mothers were explained about the procedure and the assessment tools. They were also encouraged to empty their bladder, to assess the pretest level of after pains; using the numerical pain scale, followed by selected nursing interventions such as fundal massage and alternative leg lifting exercise. The researchers identified the needs of the multipara mothers before administering the selected nursing interventions through analyzing the data collected in the pretest.

Appointments confirmation was adjusted with all cases through the telephone number list which had been recorded during hospital stay after delivery.

The researchers also prepared the contents of the educational sessions about the standardized **Fundal Massage Technique and alternative leg lifting exercise** and methods of teaching. It was reviewed by experts in the same specialty. A pretest self-administered questionnaire was submitted to women. This was also used as post-test assessment. **Self-learning booklet** was developed by the researchers using a recent and evidence-based guideline based on identified mothers' need for the relieving after pain & promotion of uterine involution during postpartum period. They used it as a guide to increase awareness and practice among the experimental group.

Evaluation phase:

At the end of the intervention, the researchers assessed and scored the level of "self-reported" afterpain of the mother (experimental & control group) using a numerical pain scale and also assessed the progress of uterine involution. The researchers spent half an hour with each mother to assess the progress and recording

the results in the evaluation sheet.

Statistical Analysis

All data were collected, tabulated and statistically analyzed using (IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.). Qualitative data were expressed as & (percentage). Marginal Homogeneity Test was used to compare between ordinal paired variables. Percent of categorical variables were compared using Chi-square test. All tests were two sided. p -value < 0.05 was considered statistically significant (S), p -value < 0.001 was considered highly statistically significant (HS) and p -value ≥ 0.05 was considered statistically insignificant (NS).

Results

Table (1) revealed that 50.0% of women in experimental group compared to two thirds (66.0%) in control group their age was more than 30 years old, the majority of them in both groups had higher level of education, worked moderately or heavily.

Table (2) revealed that the majority of postnatal women in both groups had 3 and more previous deliveries. Meanwhile 70.0% of women in both groups had babies with average weight, according to labor duration more than three forth (78.0%) of women in experimental group compared to 72.0% of them in control group had normal labor duration. However, 62.0% of women in the experimental group were received 2 ampules of oxytocin with statistically significant difference. regarding pads used per day, the table also illustrates that nearly quarter (24.0%) of women in the experimental group compared to three fifth (60.0%) of them in the control group used 5 pads and more per day with high statistically significant difference with ($p = 0.0001$).

Figure 1 showed that more than half of women in the experimental group compared to 46.0% of women in the control group had pain perception in all time with no statistically significant difference.

Table (3): - Regarding pain scale among women in experimental group as mentioned in this table (46.0%) had moderate pain and 30.0% had severe pain which improved after providing fundal massage and other selected nursing intervention compared to women in control group who didn't receive the same nursing intervention without improvement in moderate pain degree (72.0%) with high statistically significant difference.

Figure (2) :- The analysis of pre intervention level of the uterine involution revealed that none of them had good uterine involution among the experimental group and also among the control group, meanwhile three fifth (60%) of women in the experimental group and two fifth (40%) in the control group had average uterine involution

Figure (3):- According to the posttest level of uterine involution after one week from delivery this figureshows that more than two thirds (70%) of the mothers in the postnatal period among the experimental group had good involution and 30% of them had average uterine involution without any case had poor involution, meanwhile more than one third (38%) of women in the control group had good involution and more than half of them (54%) had average involution with only 4(8%) cases had poor involution.

Table (4) showed statistically significant relation between Post pain rating scale and breast feeding after labour among the experimental group with ($p = 0.009$). Meanwhile there no significant relation with other items related to basic characteristics.

Table (5) illustrated positive significant relation between post pain scale among the control group and parity with ($p = 0.03$). Meanwhile there was no significant relation among the other items related to the basic characteristics.

Table (1): Basic characteristics in experimental and control group (each group number =50).

Basic characteristics	Studied groups				χ^2	p-value
	Experimental group		Control group			
	No.	%	No.	%		
Age						
≤30 years	25	50.0	17	34.0	2.6	0.105
>30 years	25	50.0	33	66.0		
Education						
Primary	3	6.0	5	10.0	1.25	0.54
Secondary	22	44.0	25	50.0		
University	25	50.0	20	40.0		
work pattern						
Sedentary	5	10.0	6	12.0	1.22	0.54
Moderate	28	56.0	32	64.0		
Heavy	17	34.0	12	24.0		
Residence						
Rural	22	44.0	29	58.0	1.96	0.16
Urban	28	56.0	21	42.0		
dietary pattern						
Vegetarian	30	60.0	28	56.0	0.16	0.69
no vegetarian	20	40.0	22	44.0		

χ^2 Chi square test p<0.001= highly significant p>0.05= non-significant

Table (2): Comparison between Experimental group and Control group regard Labor and postpartum assessment (each group number =50).

Basic characteristic	Studied groups				χ^2	p-value
	Experimental group		Control group			
	No.	%	No.	%		
Parity						
para2	4	8.0	8	16.0	4.24	0.12
para3	25	50.0	30	60.0		
more than three	21	42.0	12	24.0		
baby weight						
low birth weight	4	8.0	6	12.0	.6	0.74
Average	35	70.0	35	70.0		
over weight	11	22.0	9	18.0		
Labor duration						
less than or equal to 12	39	78.0	36	72.0	.48	0.49
more than 12	11	22.0	14	28.0		
breastfeeding time						
less than 10	23	46.0	25	50.0	.75	0.69
from 10 to 15	23	46.0	23	46.0		
more than 15	4	8.0	2	4.0		
Oxytocin						
1 ampule	19	38.0	29	58.0	4.01	0.05
2 ampules	31	62.0	21	42.0		
Pads per day						
5 and more	12	24.0	30	60.0	13.3	0.0001
less than 5	38	76.0	20	40.0		

χ^2 Chi square test p<0.001= highly significant p>0.05= non-significant

Figure 1: percent distribution of postpartum Perception of pain among studied groups.

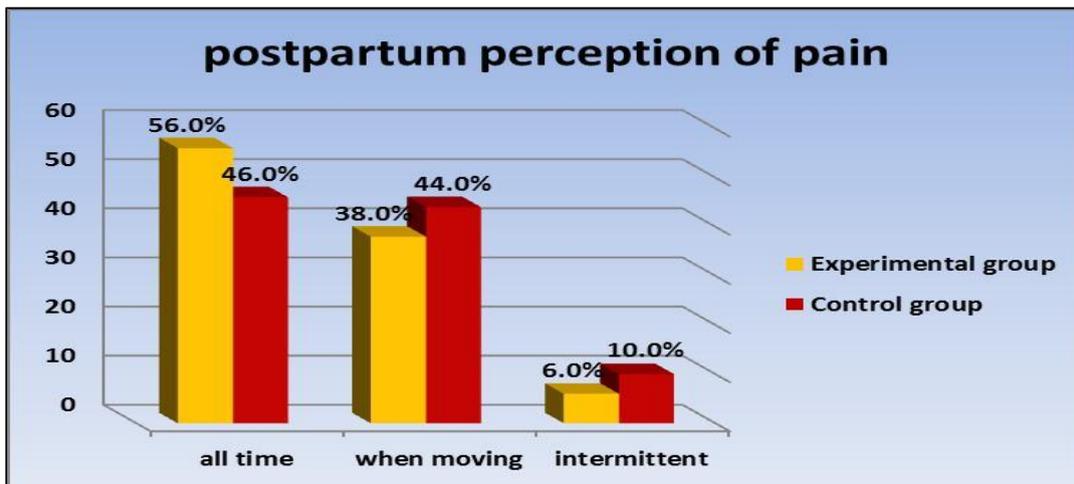


Table (3): Comparison between Experimental group and Control group regard pain scale and uterine involution(each group 50).

pain scale & uterine involution	Experimental group		Control group		between groups			
	Pre	Post	Pre	post	Pre		Post	
	N. (%)	N. (%)	N. (%)	N. (%)	χ^2	P	χ^2	P
pain scale								
No pain	0(0)	15(30)	0(0)	2(4)				
mild pain	12(24)	27(54)	9(18)	7(14)	1.06	0.56	44.5	.0001
moderate pain	23(46)	8(16)	28(56)	36(72)				
sever pain	15(30)	0	13(26)	5(10)				
$\wedge p$	0.0001		0.008					
uterine involution								
Good	0(0)	35(70)	0(0)	19(38)	4.03	0.13	42.05	.0001
average	30(60)	15(30)	20(40)	27(54)				
Poor	20(40)	0(0)	30(60)	4(8)				
$\wedge p$	0.0001		0.008					

\wedge Marginal Homogeneity Test χ^2 Chi square test $p < 0.001 =$ highly significant $p < 0.05 =$ significant

Figure 2: distribution of pretest level of uterine involution among postnatal mothers among the experimental and control group

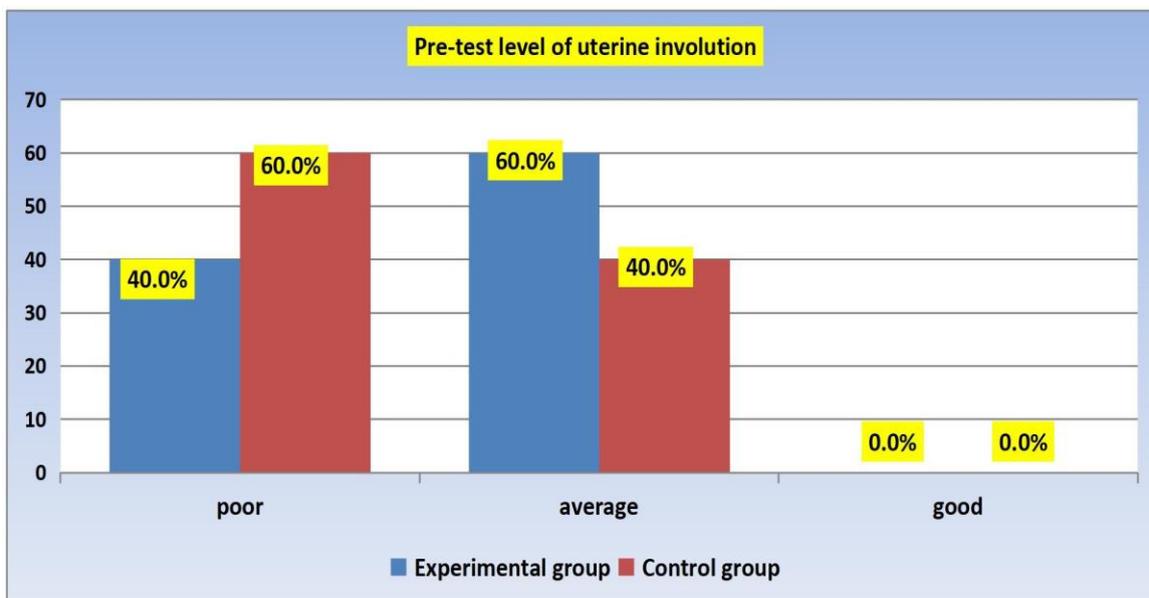


Figure 3: distribution of posttest level of uterine involution among postnatal mothers in the experimental and control group

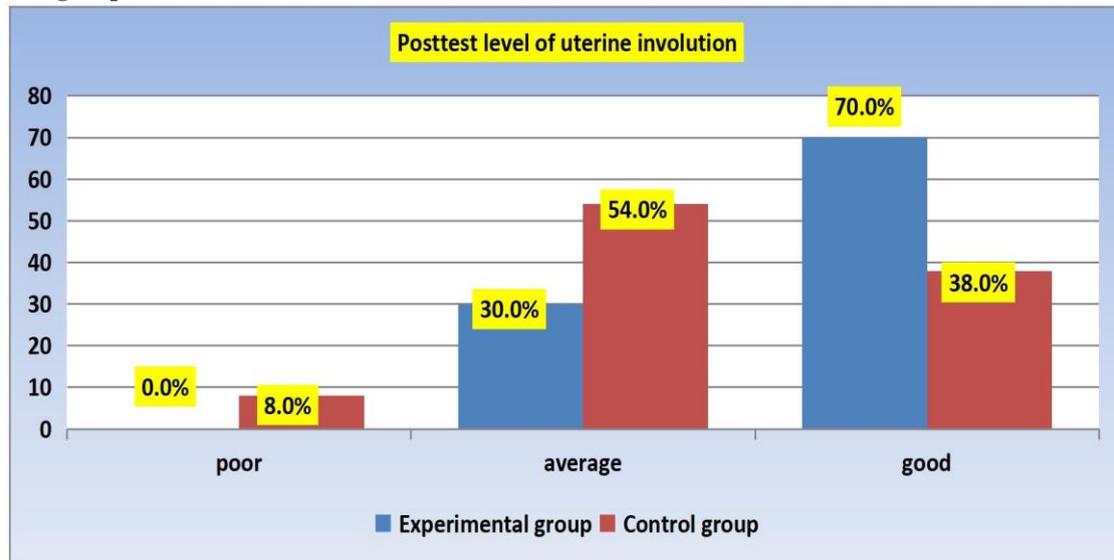


Table (4): The relation between Post pain rating scale among experimental group and their Basic characteristics (n=50).

relation between Post pain rating scale and Basic characteristics	Post pain rating scale among experimental group						n.	χ^2	P
	no pain		mild pain		moderate pain				
	No.	%	No.	%	No.	%			
Age per years									
≤30 years	9	36.0	13	52.0	3	12.0	25	1.14	0.57
>30 years	6	24.0	14	56.0	5	20.0	25		
Education									
Primary	0	.0	3	100.0	0	.0	3	3.8	0.43
Secondary	7	31.8	10	45.5	5	22.7	22		
University	8	32.0	14	56.0	3	12.0	25		
work pattern									
Sedentary	2	40.0	2	40.0	1	20.0	5	2.1	0.72
Moderate	10	35.7	14	50.0	4	14.3	28		
Heavy	3	17.6	11	64.7	3	17.6	17		
Residence									
Rural	6	27.3	13	59.1	3	13.6	22	.42	0.81
Urban	9	32.1	14	50.0	5	17.9	28		
dietary pattern									
Vegetarian	11	36.7	15	50.0	4	13.3	30	1.67	0.44
Non vegetarian	4	20.0	12	60.0	4	20.0	20		
Parity									
para2	1	25.0	3	75.0	0	.0	4	1.43	0.84
para3	7	28.0	13	52.0	5	20.0	25		
more than three	7	33.3	11	52.4	3	14.3	21		
baby weight									
low birth weight	1	25.0	3	75.0	0	.0	4	2.71	0.61
Average	12	34.3	18	51.4	5	14.3	35		
Overweight	2	18.2	6	54.5	3	27.3	11		
Labor duration hours									
≤12	12	30.8	22	56.4	5	12.8	39	1.35	0.51
>12	3	27.3	5	45.5	3	27.3	11		
breastfeeding after labor									
less than 10	9	39.1	12	52.2	2	8.7	23	13.5	0.009 (S)
from 10 to 15	5	21.7	15	65.2	3	13.0	23		
more than 15	1	25.0	0	.0	3	75.0	4		
Oxytocin									
1 ampule	5	26.3	10	52.6	4	21.1	19	.64	0.73
2 ampules	10	32.3	17	54.8	4	12.9	31		
Pads per day									
5 and more	3	25.0	7	58.3	2	16.7	12	.19	0.91
less than 5	12	31.6	20	52.6	6	15.8	38		

χ^2 Chi square test $p < 0.05$ = significant $p > 0.05$ = nonsignificant

Table (5): The relation between post pain scale among control group and their Basic characteristics (n=50).

The relation between post pain scale and their Basic characteristics	post pain scale among control group								n.	χ^2	P
	no pain		mild pain		moderate pain		sever pain				
	No.	%	No.	%	No.	%	No.	%			
Age per years											
≤30 years	1	5.9	3	17.6	10	58.8	3	17.6	17	2.6	0.46
>30 years	1	3.0	4	12.1	26	78.8	2	6.1	33		
Education											
Primary	1	20.0	0	.0	3	60.0	1	20.0	5		
Secondary	1	4.0	4	16.0	18	72.0	2	8.0	25	5.51	0.48
University	0	.0	3	15.0	15	75.0	2	10.0	20		
work pattern											
Sedentary	1	16.7	2	33.3	3	50.0	0	.0	6		
Moderate	0	.0	3	9.4	25	78.1	4	12.5	32	7.85	0.25
Heavy	1	8.3	2	16.7	8	66.7	1	8.3	12		
Residence											
Rural	2	6.9	3	10.3	22	75.9	2	6.9	29	2.92	0.41
Urban	0	.0	4	19.0	14	66.7	3	14.3	21		
dietary pattern											
Vegetarian	1	3.6	3	10.7	21	75.0	3	10.7	28	.63	0.89
Non vegetarian	1	4.5	4	18.2	15	68.2	2	9.1	22		
Parity											
para2	2	25.0	1	12.5	5	62.5	0	.0	8		
para3	0	.0	4	13.3	21	70.0	5	16.7	30	14.25	0.03
more than three	0	.0	2	16.7	10	83.3	0	.0	12		(S)
baby weight											
low birth weight	1	16.7	0	.0	4	66.7	1	16.7	6	4.44	0.62
Average	1	2.9	6	17.1	25	71.4	3	8.6	35		
over weight	0	.0	1	11.1	7	77.8	1	11.1	9		
Labor duration/hours											
≤12	1	2.8	5	13.9	26	72.2	4	11.1	36	.64	0.89
> 12	1	7.1	2	14.3	10	71.4	1	7.1	14		
breastfeeding time											
less than 10	2	8.0	5	20.0	15	60.0	3	12.0	25	7.71	
from 10 to 15	0	.0	1	4.3	20	87.0	2	8.7	23		0.26
more than 15	0	.0	1	50.0	1	50.0	0	.0	2		
Oxytocin											
1 ampule	2	6.9	2	6.9	22	75.9	3	10.3	29	4.09	0.25
2 ampules	0	.0	5	23.8	14	66.7	2	9.5	21		
Pads per day											
5 and more	1	3.3	1	3.3	25	83.3	3	10.0	30	7.52	0.06
less than 5	1	5.0	6	30.0	11	55.0	2	10.0	20		

χ^2 Chi square test p<0.05= significant p>0.05= non-significant

Discussion

Postpartum period is characterized by significant anatomic, physiologic and endocrinology changes related to the involution and lactation process. The uterus contracts and relaxes at regular intervals after birth causing significant afterpain. It is more evident for multipara women. Breast feeding stimulates the uterus to contract and increases the severity of after pains (Almalik, (2017)). As pain may cause anxiety, which may increase the intensity of pain; therefore, this study was conducted to assess the effect of fundal massage technique and alternative leg lifting exercise on after pain severity and uterine involution among multipara women.

Regarding socio-demographic characteristics of the mothers, the present study revealed that; half of women in the experimental group compared to two thirds in the control group their age was more than 30 years old, the majority had high education and

coming from urban areas. The findings of this study were in contrast with Shyla, (2012) who conducted a quasi-experimental study to assess the effectiveness of massage on uterine involution among 60 mothers in the postpartum period admitted in the postpartum ward at Bensam Hospital, Nagercoil. They mentioned that; the highest percentage of mothers' age ranged from 18 to 22 years old, and they were housewives but, they were coming from urban residents.

Also, Rani & Priyanka, 2019, reported in their study that; the majority of women in the experimental group compared to more than half in the control group their age was ranged between 20-25 years old and women in the experimental group had lower level of education than in the control group. The discrepancy among various studies has been attributed to the cultural and religious

belief, high prevalence of late marriage, and the greater tendency towards obtains and completion of education in our society.

Concerning work pattern, the present study revealed that the majority of women in both groups were working women. This was in conformity with **SHYLA, 2012 & Baishya & Nandarani, 2019** who mentioned in their studies that; high percentage of women were professionals. While on the contrary in study done by **Rani & Priyanka, 2019** and **Mohamed, 2021** in Egypt'' under the title Effect of uterine massage and emptying of the urinary bladder on alleviation of afterpains among mothers in the immediate postpartum period'' they reported that; most of women were unemployed. This may be related to the cultural and religious belief.

Regarding dietary pattern, the present study revealed that the high percentage of mothers were vegetarian while **Baishya & Nandarani, 2019** found that; all women in their study were non-vegetarian. This may be related to the genetic factors and personality traits of the participants.

Among the factors that may affect severity of afterpain, and process of uterine involution are parity & breastfeeding. According to the present study finding, it was noticed that significantly women in both groups were associated with high number of paras as the majority of women had 3 and more previous deliveries. Meanwhile women in both groups had babies with average weight. This was matched with, study done by **Priyakumari, (2012)** who reported that half of women in their study had 2 and a greater number of parities with average baby weigh which ranged between 2.6-3.0kg.

Concerning labor duration, the present study revealed that; more than three fourth of women in the experimental group compared to nearly three fourth of them in the control group had normal labor duration and all women in both groups had 2 ampules of oxytocin with statistically significant difference. This was partially in agreement with **Rani & Priyanka, 2019** who reported that; the majority of women in the both groups had labor duration which lasted from 11-15 hours. This is due to the fact that labor duration in multipara women is shorter. Moreover, in study done by **Priyakumari, (2012)** reported that from two to three fifths of the study women had received 1-2 ampules of oxytocin. This may be explained as oxytocin drug is the most common drug used for enhancement or augmentation of the normal labor.

With regards to the perception of pain, the present study showed that more than half of women in the experimental group compared to nearly the half of women in the control group had pain perception in all time with no statistically significant difference. This was in consistent with **Namboothiri & Visswanath, (2016)** study in which they reported that; women

have experienced intermittently pain on all time similar to that of menstrual cramps. In addition; **Dash, 2016** conducted a study in Puducherry to assess the effectiveness of lying flat on the abdomen, emptying the bladder, and oil massage interventions on afterpains among 50 mothers in the postpartum period showed that; afterbirth pain is one of the most common obstetrical problems in most of the women. and most of them experienced afterpains all the time. Moreover; **Soumya et al. (2018) & Mohamed, 2021** showed in their studies that; most of mothers experienced afterpains all the time. This may be explained by that high parity of women associated with high level of pain and this is an indication to give importance to a slight discomfort after childbirth.

Regarding pain scale, women in the experimental group had moderate to severe level of pain which improved after providing fundal massage and other selected nursing intervention compared to women in control group who didn't receive the same nursing intervention without improvement in moderate pain with high statistically significant difference. This was in conformity with **Rani & Priyanka, 2019** who reported that; the majority of women in the experimental group compared to three fifths in the control group had moderate level of pain during pre-intervention which turned into mild among women experimental group compared to severe among women in control group who didn't receive the same nursing intervention during post intervention. It indicates the effectiveness of selected nursing interventions.

In addition, **Dash (2016)** showed that; the mothers in the postnatal period showed a highly significant decrease in the level of after-pain following nursing interventions with ($P, 0.001$). Also, **Ramasamy and Suzan (2014)** conducted a one-group pre-posttest as experimental study to assess the level of afterpains using the Numeric Rating Scale among 60 mothers in the postnatal period at Salem. They showed a highly significant decrease in the level of afterpains following nursing interventions (emptying the bladder, uterine massage, and alternative leg lifting exercises) with $p = < 0.001$ in comparison with the pre interventions of afterpains. Their study concluded that interventions were effective in the reduction of afterpains.

Moreover; the study of **Chakraborty (2016)** in Kolkata revealed that; the mothers among the experimental group showed significant decrease in the level of afterbirth pain with (< 0.001) in comparison to the mothers in the control group. But it was contradicted with the present study findings as the association of post assessment level of pain with selected demographic variable of the experimental group did not show any statistical significance whereas a low significant association was between the educational status and level of afterbirth pain

among the control group with ($p < 0.005$).

The analysis of the *pre intervention level of uterine involution* in the present study revealed that none of the mothers had good uterine involution among the experimental group and the control group, meanwhile three fifth (60%) of women in the experimental group and two fifth (40%) of them in the control group had average uterine involution.

According to the posttest level of uterine involution after one week from delivery this figure showed that more than two thirds (70%) of the postnatal mothers in the experimental group had good involution and 30% of them had average uterine involution with no case had poor involution, meanwhile more than one third (38%) of women in the control group had good involution and more than half of them (54%) had average involution with only 4(8%) cases had poor involution.

According to uterine involution the present study revealed that there was a good progress among women in the experimental group after implementation of the selected nursing intervention with high statistically significant difference ($p = 0.0001$). This ensured the effectiveness of nursing interventions which applied to the experimental group. This was consistent with **SHYLA, 2012** who reported that; the majority of the mothers in the experimental group had good involution and more than one tenth of them had average uterine involution during post intervention. Also, there was a change in the level of uterine involution among control group pre and post intervention as 33.3% of them had good uterine involution and three fifths (60%) of them had average involution with a significant difference. This ensured that postnatal exercises and fundal massage have a good effect on progress of uterine involution.

With regards to the relation between afterpains level before and after the intervention and mothers' variables. The present study indicated a significant relation between afterpains level before and after the intervention with respect to parity and breastfeeding. It showed statistically significant relation between post pain rating scale, parity & breast feeding among women in the experimental group with ($p = 0.009$). This was agree with **Priyakumari (2012) and Tafazoli & Khadem, (2014)**, who proved that breastfeeding increases the intensity of afterpain among multiparas. This result was also supported by **Danasu and Praimathi (2016)** who showed that there was a relation between the pre and post after pains level with selected demographic variables among postnatal mothers. Moreover, **Mohamed, 2021** indicated a significant relation between afterpains level before and after the intervention with respect to age, parity, duration of labor, and hospital stay with ($P < 0.05$). Greater intensities of after pain are expected to be perceived

more by multiparous mothers.

Conclusion

The findings of the study revealed that; specific nursing strategies (fundal massage and alternative leg lifting exercise) were beneficial in relieving pain levels and improving progress of uterine involution among mothers in the postnatal period. As a result, these selected nursing interventions could be used as an auxiliary therapy by nurses while caring for mothers in the hospital. Also, the investigators believes that; more emphasis should be placed on assessing postnatal afterpains & uterine involution using these selected nursing interventions as a non-pharmacological technique to promote good uterine involution and relieving of afterpain. So the study hypothesis were proved according the current study findings.

Recommendations

The study suggests the following to be done in the future :-

- Inservice education should be conducted periodically to the midwives regarding afterpains & uterine involution
- Utilization of the available researches and studies connected by using the various non- pharmacological strategies for afterpain management.
- Encourage nurses to use research-based techniques as well and use conferences, seminars, and articles in nursing journals to disseminate research findings.
- Mass media should be effectively utilized for conducting programs on postnatal period.
- Because after pain is a sign of uterine involution, hospital should provide strong guidelines and counselling concerning a full examination of after pain for all postnatal mothers in maternity care centers.
- A study can be carried out by giving additional nursing interventions, such as prone position and back massage instead of fundal massage to participants to reduce afterbirth pain and promote uterine involution.

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