ijlpr 2023; doi 10.22376/ijlpr.2023.13.3.L28-L37

International Journal of Life science and Pharma Research

ISSN 2250-0480

Research Article

Nursing for better health care

Effect of Kegel Exercise and Prone Position on Spasmodic Pain and Involution of Uterus Among Postnatal Mothers

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Abstract: Following delivery, women may feel a variety of pains and discomforts, including cramping pain brought on by uterine involution, in which the uterus contracts to stop blood loss and return to its pre-pregnancy size. This study examined the impact of kegal exercise and the prone posture on postpartum moms' spasmodic discomfort and uterine involution. "The research design selected for the study was pre experimental research design". "Non Probability purposive sampling techniques" were used to collect 60 postnatal mothers. "Numerical pain rating scale to assess pain and clinical proforma to assess involution of uterus" was administered to conduct the pre-test and the post test. Each sample received the Kegel exercise (10 secs three times per day for three days) and the prone position (3 to 5 mints three times per day for three days) after the pretest pain and fundal height levels were evaluated. After three days, the same scale was used to assess pain and fundal height. The mean scores for the fundal height and pain pre-tests were 7.66 and 7.83, respectively. Post-test mean scores for fundal height and pain were 3.86 and 4.1, respectively. The pre-test fundal height and pain score had standard deviations of 1.77 and 1.37, and the post-test fundal height and pain score had standard deviations of 1.86 and 2.00. Age, educational attainment, and age of menarche were important factors in the calculated chi square value, but other variables were insignificant. The study's findings supported the notion that the prone posture and the Kegel exercise helped postpartum mothers' fundal height and pain.

Key Words: Kegel exercise, prone position, spasmodic pain, involution of uterus, postnatal mothers

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Received On 27 August, 2022

Revised On 27 January, 2023

Accepted On 4 February, 2023

Published On 1 May, 2023

Funding This research did not receive any specific grant from any funding agencies in the public, commercial or not for profit sectors.

Citation N.Siva Subramanian, Munjapaya Krishna Dhirajlal, B. Mahalakshmi, Prakash. D and Payal Vaghela , Effect of Kegel Exercise and Prone Position on Spasmodic Pain and Involution of Uterus Among Postnatal Mothers.(2023).Int. J. Life Sci. Pharma Res.13(3), L28-L37 http://dx.doi.org/10.22376/ijlpr.2023.13.3.L28-L37

1. INTRODUCTION

One of the most significant occasions in a woman's life is childbirth. The marvel of motherhood is the pleasurable experience that a mother can only have after giving birth to a child and experiencing rebirth[1]. Many women experience physiological, psychological, and social changes at this period[2]. Following delivery, a mother may experience many postpartum diseases and discomforts, including aches, irregular vaginal flow, breast problems, and episiotomy. During this time, mothers experience several physical and mental changes. The two most significant uterine alterations are uterine involution and fundus descent. Soon after the placenta is delivered, involution begins[3]. To shut any open blood vessels on the uterine wall around the placenta, the uterus immediately contracts. These uterine contractions are known as "pains in the uterus following pains," which are spasmodic pain that develops in the lower abdomen after giving birth and linger for anywhere between 2-4 days[4]. The let-down reflex is triggered by oxytocin, which causes the uterus to contract even more and causes milk flow from the breasts. This has the unintended consequence of intensifying gastrointestinal pain. The third day should be the least painful in cramping, with the first day being the worst. The after effects will be less painful if the womb remains tightly closed. When the bladder is full, the uterus cannot contract and instead relaxes, which keeps the after-pain from going away[5]. To protect the women's reproductive health while these changes occur and to make sure they are physically able to accept their new child into their family. A woman's postpartum care has an ongoing effect on her health. Postpartum health is a matter that demands prompt attention. About 58 percent of women say they are tired, 23 percent have perineal issues, 42 percent have backaches, 24 percent have haemorrhoids, 43.5 percent have after-pains[6]. 71% of women reported having difficulty feeding their newborns, according to a poll of women's labor and delivery experiences. They cited discomfort from cramping while breastfeeding as the main justification. The level of cramping is influenced by parity; multipara women are more prone than primi mothers to have severe after pains. Postpartum contractions of the uterus when it reverts to its pre-pregnancy size and position are what produce after pains. The best techniques for women to aid in the restoration of tone to their abdominal walls include using proper body mechanics and posture, getting enough rest, and exercising[7]. By promoting uterine contractions, regaining muscle strength, and exercising your abdominal muscles, alternate leg raising exercises, Kegel exercises, and early ambulation can help you feel better physically and emotionally. Deep breathing exercises can also help. According to the investigator's clinical experience, a number of postnatal mothers experienced excruciating anguish that made it difficult for them to adjust to their new parenting position. In order to successfully relieve pain and make the mother's postoperative period the happiest of her life, it is the nurse's responsibility[8]. Numerous non-pharmacological pain management techniques exist and are crucial during the postnatal period. They include doulas for childbirth, massage, counter pressure, hydrotherapy, breathing exercises, heat and cold packs, position modifications, relaxation techniques, music, aromatherapy, and acupressure points. Position adjustment, abdominal muscle exercise, and uterine massage are more efficient non-pharmacological treatments[9].

1.1. Aim & Objectives

- To assess the pre-test and post-test score of spasmodic pain and involution of uterus among post-natal mother.
- To assess the effectiveness of Kegel exercise and prone position on spasmodic pains and involution of uterus among post-natal mother.
- To find association the posttest level of spasmodic pains and involution of uterus among post-natal mothers with their demographic variable.

2. MATERIALS AND METHODS

2.1. Research approach

The research approach is a strategy and process that progresses from general hypotheses to specific techniques for gathering, analyzing, and interpreting data. The research approach used for this study was a quantitative research approach.

2.2. Research Design

The framework of the research methods and techniques a researcher selects to carry out a study is known as the research design. The research design selected for the present study was pre- experimental one group pre-test post-test design.

2.3. Research setting

The physical, social, or experimental context in which research is carried out is referred to as the research setting. The setting for study was undertaken in Nootan general hospital, Visnagar, Gujarat state.

2.4. Population

A research population is typically a sizable group of people or things that serve as the main subject of a scientific inquiry. Postnatal mothers are the population of the study.

2.5. Target population

The persons in the intervention's target population are the ones on whom research will be done and conclusions will be drawn. In this study, postnatal mothers in Nootan general hospital, Visnagar, Gujarat state.

2.6. Accessible population

The segment of the target population that is available to the researcher is known as the accessible population. This study's accessible population is postnatal mothers in Nootan general hospital, Visnagar, Gujarat state.

2.7. Sampling

Sampling is choosing a portion of the target population for a research project. A nonprobability purposive sampling technique was used for this study.

2.8. Sample size

The number of individuals or observations included in a study is the sample size. In this study the sample size consists of postnatal mothers in Nootan general hospital, Visnagar, Gujarat state.

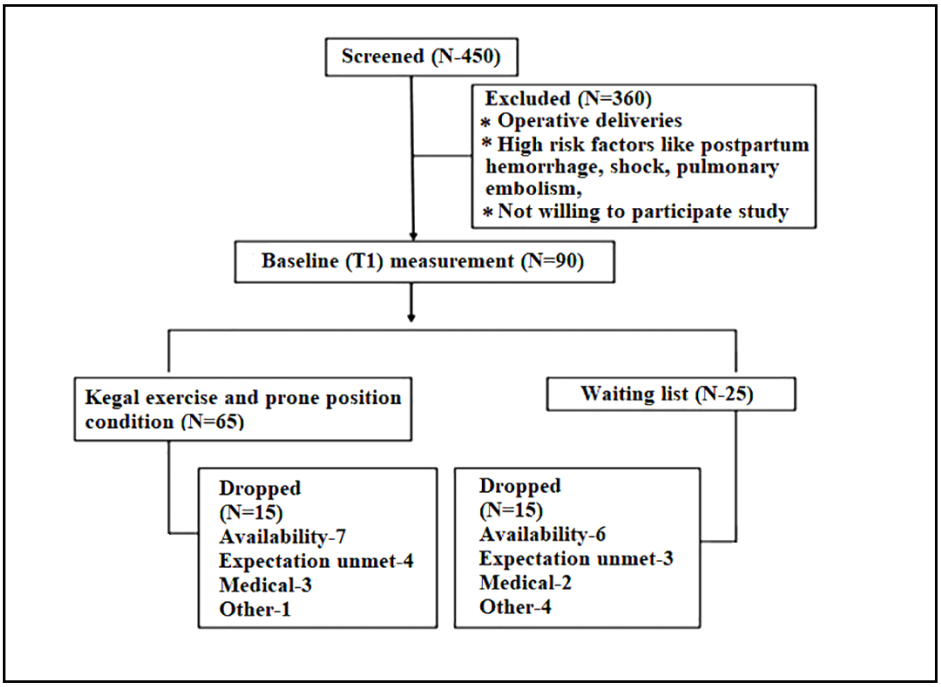

Fig 1: Participant sample flow chart

2.9. Sampling criteria

Table 1 shows that inclusion & exclusion criteria for sample selection.

Table: 1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
➢ Postnatal mothers with singleton gestation that had normal vaginal delivery. ➢ Postnatal mothers with singleton gestation that had normal vaginal delivery with or without episiotomy. ➢ Postnatal mothers who are willing to participate. ➢ Postnatal mothers who can speak and understand the Gujrati.	Postnatal mothers with operative deliveries. High-risk factors like postpartum hemorrhage, placenta accrete, shock, pulmonary embolism, uterine rupture, puerperal multiple sepsis and pregnancies. Who are not willing to participate. Age less than 18 years & more than 35 year

2.10. Description of the tool

Tool is developed after an extensive review of literature from various text books, journals, internet search, and discussion and guidance from the experts in the field of nursing, department of obstetrics and gynecology and physiotherapist. It has two sections 1&2 as follows.

Section-1

Part A- Demographic proforma to collect baseline data.

A structured interview schedule was used to collect demographic data such as age, religion, education, occupation, income, type of family, place of living, type of marriage, height, weight, food habits, age at menarche.

Part B- Numerical pain rating scale to assess level of spasmodic pains.

2.11. Scoring technique Pain

In order to find out the level of pain, a numerical rating scale was used and was given a score from 0-9. The following score indicates the level of pain.

Table 2: Scoring key

S. No	Pain rating scale		Mark
1.	No pain	0	0
2.	Mild pain	1-3	1
3.	Moderate pain	4-6	2
4.	Severe pain	7-9	3

Table 2 shows that scoring key to assess pain level.

Part C- Clinical proforma to assess involution of uterus.

2.12. Involution of the uterus

To find out the performance of involution uterus by assessed daily measuring the fundal height, palpate the consisting of the uterus and observing the lochia (colour, odour and amount)

Section-2

Observation schedule on measurement of fundal height postnatal mothers on involution of uterus

Instruction

The observer measures the fundal height of postnatal mothers and fills the appropriate space.

Table 3: Fundal height assessment chart

S. No	Patient	Time	Pre-test	Post- test		
1				D1	D2	D3
2				cm	cm	cm

Table 3 shows that fundal height of postnatal mothers.

Table 4: Scoring key

S. No	Involution of uterus	Score
1	Good involution	< 11 cm
2	Fair involution	12-13 cm
3	Slow involution	14-15 cm

Table 4 shows that scoring key for involution of uterus

2.13. Ethical consideration

The study objectives, intervention and collection procedure were approved by the research and ethical committee of the institution (Ref No- SPU/NCN/PUB 89-2022). The research proposal was approved by the experts and permission for the main study was obtained from the director and head of the Nootan general hospital Visnagar, Gujarat. An informed consent was obtained from each postnatal woman before starting the data collection, assurance was given for confidentiality and privacy

2.14. Limitation

Sample selection
Lack of support from family members
Family members of sample had fear of spreading infection

2.15. Data collection procedures

A formal permission was obtained from authorities of the selected Nootan general hospital. Actual data collection was done on 60 elderly. The investigator introduced himself and informed the sample about the nature of the study so as to ensure better cooperation during the data collection. The investigator approached the elderly and met the inclusion criteria. Then the researcher approached the participants in the hospital are and explains the purpose of the study and how it would be beneficial for them. The research required their willingness to participate in the study and obtain their written co-sample participating in the unsent. Further, the researcher gave a questionnaire for pre-test to the study accompanied with necessary instruction regarding answering. After the data gathering process, the researcher thanked all participants as well as the authorities for their cooperation.

Phase-1: Pre assessment

The investigator introduced herself and established rapport by explaining the purpose. Informed consent was obtained and confidentiality was maintained. In pre assessment demographic variables, numerical pain rating scale and clinical proforma were used. The researcher spent 90 minutes for each postnatal mothers in administering Kegel exercises and prone Position. Thirty postnatal mothers were initiated to do Kegel exercise for10 seconds for 3times a day 10 repetitions for each time for three days' postnatal mothers were made to lie on prone position for 3 to 5 minutes for three times a day at 30 minutes' interval, 3 repetitions each time for three days. Pre-test will be assessed every day morning before doing Kegel exercise and prone position for 3 days.

Phase- II: Post assessment

The investigator conducted the post assessment of spasmodic pains and involution of uterus assessed by numerical pain rating scale and clinical proforma every day evening after third provision of Kegel exercise and prone position for 3 days. The data analysed were edited, coded and entered in excel sheet. The data were analysed using SPSS version 10. A probability of less than 0.05 was considered to be significant.

Data analysis

"The process of systematically applying statistical and logical techniques to describe, summarizes, and compares data".

Plan of data analysis

The data obtained was analysed in terms of achieving the objectives of the study using descriptive and inferential statistics.

Descriptive statistics

- Frequency and percentage distribution was used to analyse the demographic variables and to assess the level of spasmodic pains and involution of the uterus.
- Mean and standard deviation was used to assess the effectiveness of Kegel exercise and prone position on spasmodic pains and involution of the uterus.

Inferential statistics

- Paired T' test was used to compare the pre and post-test level of spasmodic pains and involution of the uterus in the experimental group.
- Chi-square test was used to find out the association of the post-test level of spasmodic pains and involution of the uterus in an experimental group with their selected demographic variables.

3. RESULTS

Table 5 : Frequency and percentage distribution of pain among post-natal mothers

Level of pain	Day 1				Day 2				Day 3			
	Pre test		Post test		Pre test		post test		Pretest		Post test	
	f	%	f	%	f	%	f	%	f	%	f	S%
Good	0	0	13	21.6	13	21.6	31	51.6	31	51.6	33	55
Fair	26	43.3	47	78.3	47	78.3	29	48.3	29	48.3	27	45
Slow	34	56.6	0	0	0	0	0	0	0	0	0	0

Table 5shows that day one pre-test score was 0% good, 43.3% fair and 56.6% in slow and post test score was 21.6% good, 78.3% fair, 0% slow. Day three pre-test score was 51.5% good, 48.3% fair, 0% slow and post test score was 55% good, 45% fair, 0% slow.

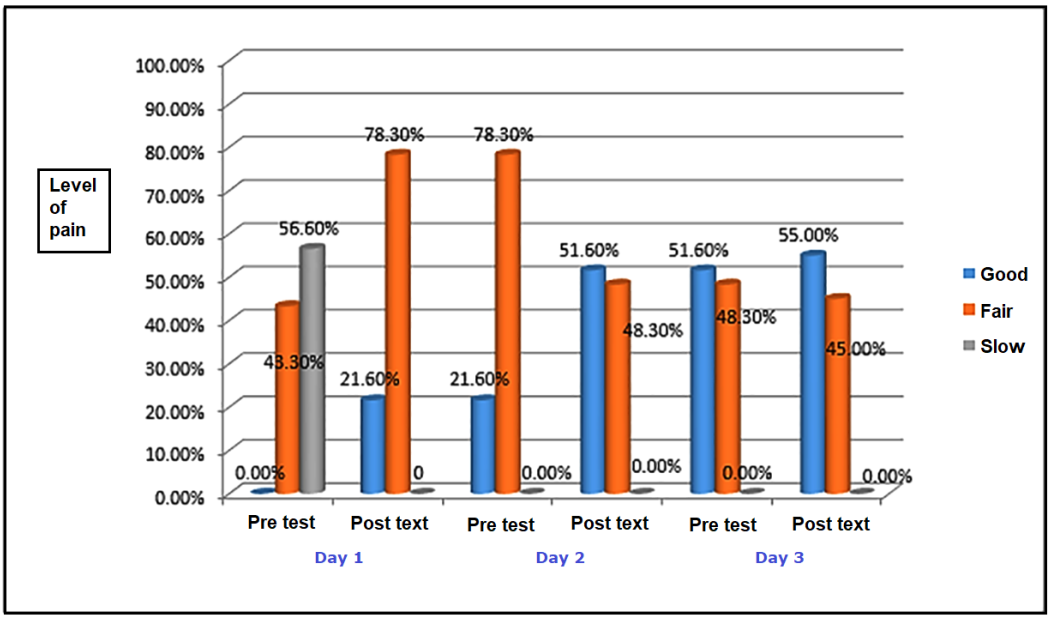

Fig 2: Frequency and percentage distribution of pre-test and post-test level of pain among post-natal mothers

Table 6: Frequency and percentage distribution of pre-test and post-test fundal height scores among post-natal mothers

level of fundal height	Day 1				Day 2				Day 3			
	Pretest		Post test		Pretest		post test		Pretest		Post test	
	f	%	f	%	f	%	f	%	f	%	f	%
Good	0	0	0	0	0	0	16	26.66	16	26.66	35	58.33
Fair	6	10	47	78.3	47	78.3	44	73.33	44	73.33	25	41.66
Slow	54	90	13	21.66	13	21.66	0	0	0	0	0	0

Table 6shows that onepre-test score was 0% good, 10% fair and 90% in slow and post test score was 0% good, 78.3% fair, and 21.66% slow. Day three pretest score was 26.66% good, 73.33% fair, 0% slow and post-test score was 55.33% good, 41.66% fair, 0% slow.

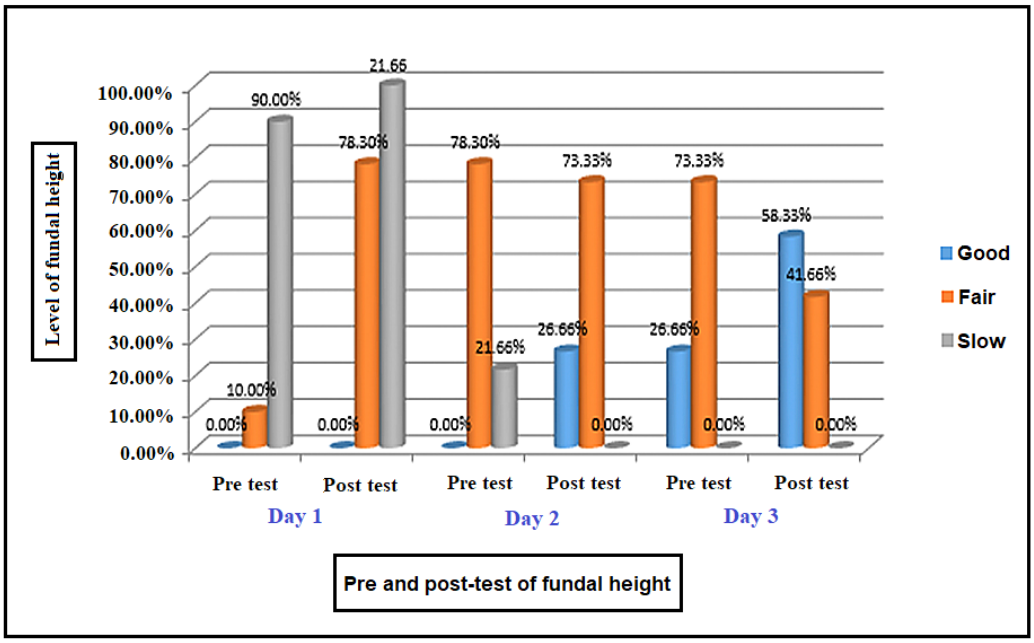

Fig 3: Frequency and percentage distribution of pre-test and post-test fundal height scores among postnatal mother

Table-7: Mean, S.D, Mean difference and 't' value of pre-test and post-test level of pain and fundal height scores of effectiveness of kegel exercise and prone position.

Content	Parameter	Mean	S.D.	Mean differ ence	't' value	Table 't' value	Level of significance 0.05
Fundal height	Pre test	7.66	1.17	3.80	14.61	1.67	S
	Post test	3.86	1.86				
Pain	Pre test	7.83	1.37	3.73	11.99	1.67	S
	Post test	4.1	2.00				

Table 7 shows that the mean posttest reduction fundal height (7.66 ±1.17) and pain (7.83±1.37) score was higher than the mean pretest reduction fundal height (3.86 ±1.86) and (4.1±2.00) score. The calculated value was greater than the table value at 0.05 level of significance that shows the kegel exercise and prone position were effective in increasing the reduction of fundal height and pain score among postnatal mothers.

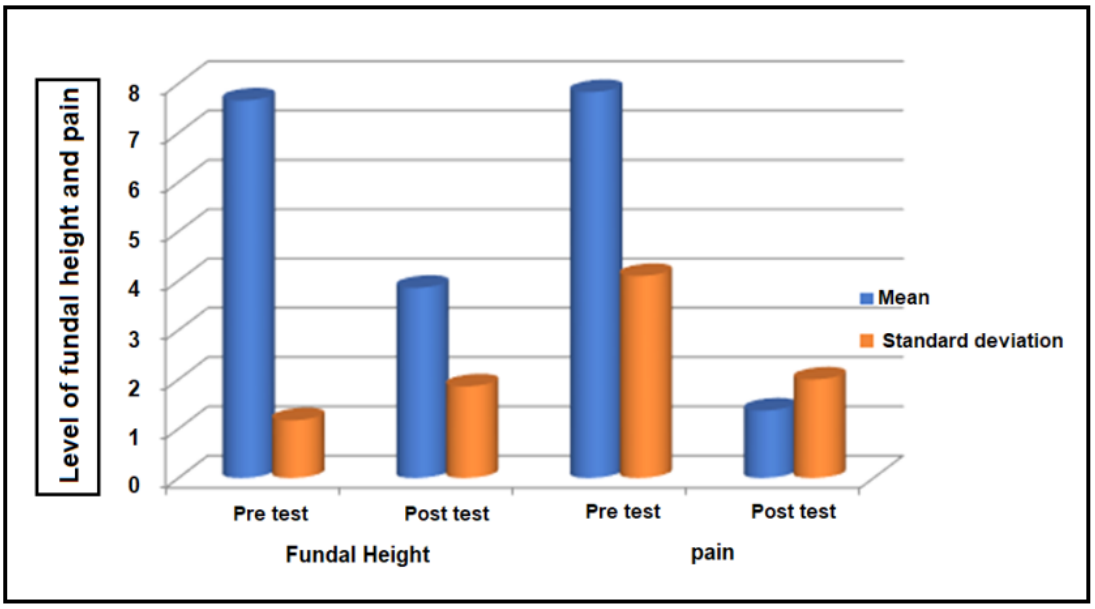

Fig 4: Effectiveness of kegel exercise and prone position on reducing level of pain and fundal height among postnatal mothers.

The above figure shows that pre and post-test mean of fundal height was 7.66 and 3.86, pain was 7.83 and pre and post-test standard deviation of fundal height 1.17 and 1.86, whereas standard deviation of pain was 4.1 and 2.

Table 8: Association between selected demographic variables and the post-test reduction fundal height score of postnatal mothers.

S. no	variable	category	frequency	Fundal height score		D.f	Table value	chi-square	Significant>0.05%
				Fair 12-13 cm	good <11 cm				
1	Age	< 20	21	13	8	3	7.82	9.09	S
		21-25	18	5	13				
		26-30	17	4	13				
		31-35	4	3	1				
2	Religion	Hindu	35	14	21	2	5.99	0.166	NS
		Christian	21	9	12				
		Muslim	4	2	2				
3	Education	Non formal	6	2	4	3	7.82	8.96	S
		Primary	25	5	20				
		Secondary	16	6	10				
		graduate	13	9	4				
4	Occupation	Home maker	42	17	25	3	7.82	2.84	NS
		Daily wages	4	3	1				
		Private Company	4	4	5				
		other	5	1	9				
5	Income	<Rs. 2000	22	9	13	2	5.99	1.77	NS
		2000-3000	32	12	20				
		3000-4000	6	4	2				
6	Type of family	Joint	24	10	14	2	5.99	1.86	NS
		Nuclear	27	13	14				
		Extended	9	2	7				
7	Place of living	Rural	14	4	10	2	5.99	1.35	NS
		Urban	32	15	17				
		Sub urban	14	6	8				
8	Type of marriage	Relative	31	16	15	1	3.84	2.61	NS
		Non-relative	29	9	20				
9	Height	140-145 cm	7	3	4	3	7.82	4.29	NS
		146-150 cm	28	8	20				
		151-155 cm	17	9	8				
		>155cm	8	5	3				
10	Weight	50-55 kg	29	12	17	3	7.82	2.33	NS
		56-65 kg	13	7	6				
		65-70 kg	12	5	7				
		>70 kg	6	1	5				
11	Food habits	Non vegetarian	53	23	30	1	3.84	0.55	NS
		vegetarian	7	2	5				
12	Age at menarche	<12	8	3	5	2	5.99	1.23	NS
		12-1	44	20	24				
		16-19	8	2	6				

Table 8 shows that the chi-square test shows that there is significance association between the post-test reduction fundal height and pain score and selected demographic variables such as age and education.

Table 9: Association between selected demographic variables and the post-test level of pain among postnatal mothers.

S. no	variable	category	frequency	pain score mild mode (1-3) rate (4-6)		D.f	Table value	chi-square	Significant>0.05%
1	Age	< 20	21	13	8	3	7.82	2.14	NS
		21-25	18	9	9				
		26-30	17	10	7				
		31-35	4	7	3				
2	Religion	Hindu	35	20	15	2	5.99	1.55	NS
		Christian	21	12	9				
		Muslim	4	1	3				
3	Education	Non formal	6	4	2	3	7.82	2.45	NS
		Primary	25	12	13				
		Secondary	16	11	5				
		graduate	13	16	7				
4	Occupation	Home maker	42	23	19	3	7.82	3.61	NS
		Coolly	4	3	1				
		Private Company	4	6	3				
		Other	5	1	4				
5	Income	< 2000	22	12	10	2	5.99	0.082	NS
		2000-3000	32	18	14				
		3000-4000	6	3	3				
6	Type of family	Joint	24	15	9	2	5.99	1.05	NS
		Nuclear	27	13	14				
		Extended	9	3	4				
7	Place of living	Rural	14	6	8	2	5.99	1.34	NS
		Urban	32	18	14				
		Sub urban	14	9	5				
8	Type of marriage	Relative	31	18	13	1	3.84	0.24	NS
		Non-relative	29	15	14				
9	Height	140-145	7	3	4	3	7.82	1.76	NS
		146-150	28	15	13				
		151-155	17	9	8				
		>155	8	6	2				
10	Weight	50-55	29	15	14	3	7.82	2.38	NS
		56-65	13	9	4				
		65-70	12	7	5				
		>70	6	1	4				
11	Food habits	Non vegetarian	53	28	25	1	3.84	0.86	NS
		vegetarian	7	5	2				
12	Age at menarche	< 12	8	7	1	2	5.99	6.32	S
		12-15	44	20	24				
		16-19	8	6	2				

Table 9 shows that the chi-square test shows that there is significance association between the post-test reduction fundal height and pain score and selected demographic variable age at menarche.

4. DISCUSSION

The study's goal was to see how effective kegel exercise and prone position is at reducing pain and fundal height among post-natal mothers. Our current study findings supported by Ms. Monalisa Mall research study. In her research study she focuses on how kegel exercises can lessen post-exercise soreness. She concluded that providing targeted nursing treatments to postnatal women helped reduce their level of postpartum discomfort and improve uterine involution[10]. A. K. Latha and G. T. did a study to find out how prone positioning affected postpartum women' postpartum symptoms. Using a visual analogue scale, the subject's level of post-test pain was determined. For the study group, the postnatal mothers had three sessions of 20 minutes each in a prone position. The

outcome of the investigation revealed a highly significant statistical difference between the study group and control group's post-test level of after-pain at (t= 6.793, p 0.001). This research study and current study concludes that prone position was found to be effective in reduction of after pains[11]. A similar study conducted by Kurusamy. A that effects of prone Kegel exercises and the prone position on postpartum moms' after aches and uterine involution. According to the study, prone posture and kegel exercises significantly reduce post-exercise pain (t' test value = 15.12 significant at p = 0.00 level) and improve uterine involution (t' value = 9.54 significant at p = 0.001 level)[12]. Current research study supported by somya Ajaykumar Gautam's review article and she determined that the most important moment in a woman's life is childbirth. After giving birth, it is the most lovely and joyful journey that a woman goes on. After giving birth, mothers experience numerous physiological and psychological changes. She concluded that nurses have an important role in the prevention, treatment, and rehabilitation of patients. Nursing staff should educate mothers in order to improve their quality of life. The technique was found to be quite successful in preventing maternal discomfort and uterine involution [13]. At the Government Hospital Thiruvallur, S. Vimala (2019) did a study to evaluate the impact of the prone position on reducing postpartum pain in mothers who had normal vaginal deliveries. The results showed that prone posture and pillow support were particularly efficient in reducing postpartum pain in women who had normal vaginal deliveries[14].This study also supporting our current research study. Seema sankhla conducted research study regarding kegel excercise and prone position on after pain. She studies revealed that kegel exercise and prone position have significant reduction of after pains as t` test value = 15.12 significant at p= 0.00 level and improvement of involution of uterus as t` value= 9.54 significant at p= 0.001 level. Current study findings are similar to this study[15]. Similar study conducted by dhiramani that study to assess the effectiveness of selected nursing interventions on reduction of after birth pain among postnatal mothers. From the study result, it was concluded that rendering nursing interventions to postnatal mothers were effective in reducing the level of afterbirth pain. These interventions are simple, no pharmacological and cost effective without any adverse effect[16.]

5. CONCLUSION

At Nootan General Hospital in Visnagar, a study was conducted to evaluate the impact of the prone position on postpartum mothers' postpartum pain. In India, mothers often experience spasmodic pains after giving birth. Since nurses play a crucial part in healthcare's curative, preventative, and rehabilitation functions. In order to increase the mothers' quality of life, nursing staff should educate them. In this study the mean scores for the fundal height and pain pre-tests were 7.66 and 7.83, respectively. Post-test mean scores for fundal height and pain were 3.86 and 4.1, respectively. The pre-test fundal height and pain score had standard deviations of 1.77 and 1.37, and the post-test fundal height and pain score had standard deviations of 1.86 and 2.00. Age, educational attainment, and age of menarche were important factors in the calculated chi square value, but other variables were insignificant. The study's findings supported the notion that the prone posture and the Kegel exercise helped postpartum mothers' fundal height and pain The intervention was proven to be quite helpful in preventing mothers' suffering and hastening the uterus' involution. As a result, the investigator believed that it should be given more importance to evaluate how well the postpartum time was planned and delivered.

6. ACKNOWLEDGEMENT

I thank President, Sankalchand Patel University for giving me an opportunity to conduct the research work

7. AUTHORS CONTRIBUTION STATEMENT

Munjapaya Krishna Dhirajlalconceptualized, designed and gathers data. N Siva Subramanian analyzed these data and inputs were given B. Mahalakshmi and Payal vaghela. Prakash. D discussed the methodology, results and contributed to the final manuscript

8. CONFLICT OF INTEREST

Conflict of interest declared none.

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