

Assessing the Effect of Post-Natal Exercise on Involution of Uterus after Normal Vaginal Delivery among Post-Natal Mothers

Vandana D Shrimali¹, Chaitali Dodiya²

Abstract

The World Health Organisation (WHO) describes the post-natal period as the most critical and yet the most neglected phase in the lives of mothers. To prevent certain complications during the post-natal period exercise is an important component of post-natal care for the involution of the uterus, so such mothers must practice post-natal exercise to prevent such a complication after delivery. A quasi-experimental research design was used. Convenience sampling techniques were used to collect 70 samples. Data were analysed using descriptive and inferential statistics. Majority of post-natal mothers belonged to the 18-20 and 21-25 years of age group (34.3%). In both groups, majority of post-natal mothers belonged to the joint family. Pre-test results in the experimental group: mild involution (51.4%) moderate involution (48.6%), and no good involution (0%) while post-test in the experimental group showed mild involution (0%), moderate involution (11.4%), and good involution (88.6%). The chi-square value was carried out to bring the association, out of which type of family demographic variable was found significantly associated at p-value <0.05 with the effects of post-natal exercise. The study findings revealed that post-natal exercise is effective for the involution of the uterus. Hence, it can be used as postpartum care after normal vaginal delivery, to reduce the risk of complications after delivery.

Key words: : Post-natal period, Vaginal delivery, Post-natal exercise

India's maternal mortality ratio (MMR) has improved from 113 in 2016-18 to 103 in 2017-19. This is according to the special bulletin on MMR released by the Registrar General of India on 14 March 2022. In Gujarat, the MMR rate is registered as 91 in 2022 so we have to undertake many efforts to reduce the MMR. After childbirth, you're likely focused on caring for your baby. But health problems, some life-threatening, can happen in the weeks and months. It is estimated that 50 percent of puerperal mortality occurs within the first 24 hours. At this time the involution process occurred. Involutionary disorders cause complications which is the leading cause of maternal mortality.

The postpartum (or post-natal) period begins immediately after childbirth as the mother's body, including hormone levels and uterus size, returns to a non-pregnant state. The terms puerperium, puerperal period, or immediate postpartum period are commonly used to refer to the first six weeks following childbirth. The WHO describes the

post-natal period as the most critical and yet the most neglected phase in the lives of mothers and babies; most maternal and new-born deaths occur during this period

In the post-natal period, especially in the first 24 hours and 66 percent deaths occur during the first week abdominal muscles may have separated during the pregnancy. They usually go back to normal after birth, but sometimes they can stay separated. The mother will need to do exercises to strengthen these muscles to avoid back pain and injury. In the pelvic floor, the muscles and ligaments that support the bladder, uterus, and bowel can be weakened after pregnancy, especially if mother had a large baby or is pushed for a long time. Regular exercises will help to strengthen pelvic floor muscles.

The postpartum period starts following childbirth and ends at 42 days. The post-natal period is the time during which the mother's body adjusts physically to the childbearing process and reverts to its pre-pregnant state. It is associated with complications like postpartum haemorrhage, deep vein thrombosis, pulmonary embolism, gravita-

The authors are: 1. Assistant Professor; 2. Masters of Nursing Science, both at Department of Obstetrics & Gynaecology Nursing, Shri GH Patel School and College of Nursing Karamsad, Anand (Gujarat).

tional oedema, puerperal infection, breastfeeding problems, postural difficulties, and backache. So she should be taken care of for 1-6 weeks.

Review of Literature

Fadhli et al (2022) conducted a quasi-experiment on the effect of public exercise on internal involution in post-partum mothers with the purpose to analyse the effect of puerperal exercise on the reduction of uterine involution in post-partum mothers on 1-3 days. It was a quantitative study using quasi-experimental involving one control group with two group's pre-test and post-test design. The number of samples was control 8 and the case, 8 people. Consecutive sampling was used. The results were analysed using univariate and bivariate analyses. The results showed that there was a difference in the mean value of uterine involution in postpartum mothers on 1-3 days. The results of statistical tests 1-3 days obtained $p = 0.000$. This can be seen that the p value (probability) is lower than the p value of 0.05. It can be concluded that there is a significant effect of post-natal exercise on uterine involution in postpartum mothers for 1-3 days.

Fahriani et al (2020) conducted a study on the process of uterine involution with postpartum exercise of maternal postpartum. The purpose of the study was to determine the effect of postpartum exercise on a uterine involution maternal postpartum looking for decreasing fundal height in maternal postpartum. It was a pre-experimental study using a Static Group Comparison design and sampling technique by the accidental sampling of 30 people. Data was conducted using pelvimetry. The intervention group did postpartum exercise and then measured the fundal height 6 hours postpartum, day 3, day 6, and day 10. Data were analysed using an independent sample t-test and two-sample Kolmogorov-Smirnov test. The result of this research got the mean fundal height tenth day; in the intervention group it was $0.33 \text{ cm} \pm 0.488 \text{ cm}$ and $1.20 \text{ cm} \pm 0.676 \text{ cm}$ in the control group. There was a significant difference in the decrease in fundal height between the two groups. This study concluded that postpartum exercise has an effect on the decrease of fundal height.

Hadianti & Sriwenda (2019) conducted a quasi-experimental research on effectiveness of postpartum exercise and oxytocin massage on uterus involution using post-test only. This study was conducted at PONED (basic emergency obstetric and neonatal care) in Bandung. The sample size was 50 and quota sampling technique was used. The results of the Mann-Whitney Test statistic were at a 95 percent confidence level; there was a significant difference in uterus involution between the postpartum exercise group and the oxytocin massage group with a value of $p < 0.001$ ($p < 0.05$).

Oxytocin massage is more influential to accelerate uterus involution. It is also more influential than postpartum exercise to uterus involution.

Objectives

The objective of this study was to assess the effect of post-natal exercise on the involution of the uterus after normal vaginal delivery among post-natal mothers.

Research Hypothesis

H1- There will be a significant difference in the involution of the uterus among post-natal mothers both in the experimental group and control group.

H2- There will be a significant association between the practice of post-natal exercise and the involution of the uterus after normal vaginal delivery among post-natal mothers in the experimental group.

Methodology

Research approach: A quantitative research approach was used for the current study.

Research design: Quasi-experimental pre-test post-test control group design.

Sampling technique: The sample size comprised 70 post-natal mothers who had a normal vaginal delivery, during data collection. Sample was selected from the selected hospitals, in Anand district, Gujarat, with the convenience sampling technique. The sample was allocated to two groups: the experimental and the control group. To prevent contamination in the group, we chose different hospitals for both groups through the lottery method.

Variables of the Study

Dependent variables: Variables that change as the independent variable was manipulated by the researcher, sometimes called the criterion variables. In the present study, the dependent variable is the involution of the uterus.

Independent variables: Variables that are purposely manipulated or changed by the researcher. In this study, the dependent variable is post-natal exercise among post-natal mothers.

Demographic variables: The characteristics and attributes of the study subjects are considered demographic variables. In this study, the demographic variables are age, education, occupation, weight, gravida, breastfeeding, baby's condition, community, types of family, and aids used in delivery.

Tool: Structured involution of uterus measuring scale

21-17 cm = mild = Grade 0

16-12 cm = Moderate = Grade 1

11-7 cm = Good = Grade 2

Reliability of tool: Reliability of tool was done by the split half method with help of Pearson correlation coefficient. Reliability found r value was 0.94 so it has been reliable.

Inclusion criteria: Mothers who had a normal vaginal delivery, mothers who were available during the data collection process.

Exclusion criteria: Mother who was not able to follow the command, mother who refused to participate in the study.

Description of intervention

Post-natal exercise: It refers to exercises that are specially carried out following childbirth to help to return to an active lifestyle. They are also an effective way of minimising any post-labour complications such as back pain, pelvic pain, and general weakness that can be consequences of childbirth.

In intervention, pre-test in both group control and experimental group on 1st day of the postpartum day, do a demonstration of the post-natal exercise. Give intervention to only the experimental group for 7 days under the supervision of the care taker.

Data collection procedure

Before conducting the study formal permission was obtained from the institutional ethical committee i.e. from the head of the Hospital. The sample was selected from the selected hospitals in Anand. Convenience sampling technique was used. The sample was allocated to two groups: the experimental and control group, through the lottery method. The researcher introduced herself to each subject and explained briefly the purpose of the study. Written consent was obtained from each participant.

Explanation about the benefits, harm, and intervention to be given to experiment group samples as well as a 1st degree

relative was given. A participation information sheet was also provided. Confidentiality was ensured patients who are willing to participate were only included in the study and also free to withdraw from the study if physical and psychological pain was caused. A researcher was taken for pre-test in both groups control and experimental, on 1st day of postpartum day. Give intervention to only the experimental group for 7 days; after completion of 7 days, conduct a post-test on the 9th day in both groups based on demographical variables and structured involution of the uterus measuring scale.

Table 1: Analysis of socio-demographic characteristics of post-natal mothers

S.N.	Demographic Data	Experimental Group		Control Group	
		Frequency (n=35)	Percentage	Frequency (n=35)	Percentage
1	Age in years				
	18-20	13	37.1	12	34.3
	21-25	13	37.1	12	34.3
	26-30	6	17.1	8	22.9
	31-35	3	8.7	3	8.6
	>35	0	0	0	0
2	Education				
	No Formal	5	14.3	2	5.7
	Primary	9	25.7	13	37.1
	Secondary	11	31.4	13	37.1
	High Secondary, Graduate & above	7	20	5	14.3
3	Occupation				
	Housewife	15	42.9	13	37.1
	Labour work	11	31.4	13	37.1
	Private job	6	17.1	8	22.9
	Govt job	3	8.6	1	2.9
4	Community				
	Urban	18	51.4	17	48.6
	Rural	17	48.6	18	51.4
5	Type of Family				
	Nuclear	15	42.9	10	28.6
	Joint	17	48.6	19	54.3
	Extended	3	8.6	6	17.1
6	Gravida				
	Primigravida	14	40	16	45.7
	Multigravida	21	60	19	54.3
7	Weight (kg)				
	<40	7	20	11	31.4
	40-60	12	34.3	15	42.9
	61-80	11	31.4	9	25.7
	>80	5	14.3	0	0
8	Status of Baby				
	Alive	27	77.1	25	71.4
	Dead	1	2.9	1	2.9
	In NICU	7	20	9	25.7
9	Breastfeeding				
	Given	26	74.3	25	71.4
	Not given	5	14.3	4	11.4
	Alternative any	4	11.4	6	17.1
10	Aids used for Delivery				
	None	29	82.9	28	80
	Forceps	5	14.3	2	5.7
	Ventouse	1	2.9	5	14.3

Plan of data analysis: Descriptive statistics mean (SD), Median (IQR), frequency (%) will be calculated to portray the demographic and clinical and characteristics of the study population. Inferential statistics Independent t-test will be used to compare between groups (E&C) to score. Paired t-test will be used to compare pre- and post-scores in the group (E&C). Chi-square was used to find out the association between demographic and research variables.

Difficulties faced by the investigator: Motivating mothers regarding continuous exercise with caring for the new born.

Result

Frequency and percentage distribution of demographic variables of sample in experimental and control groups

Table 1 shows that there were equal numbers of post-natal mothers in the experimental group, 13 (37.1%) were post-natal mothers aged between 18-22 and 21-25, while none were above 35 years of age. In the control group also equal post-natal mothers, 12 (34.3%) were aged between 18-22 and 21-25, while none were above 35 years of age. Education status of the mothers: 5 (14.3%) with no formal education, 9 (25.7%) had primary education, 11 (31.4%) had secondary education, 7 (20%) had higher secondary education and 3 (8.6%) were graduate and above in experimental group.

In the control group, post-natal mothers were equal in primary and secondary education, 13 (37.1%). As for occupation, majority of post-natal mothers were housewife i.e. 15 (42.9%) in the experimental group. In the control group occupation of mothers was equal as housewife and labour work 13 (37.1%). In the experimental group, post-natal mothers belonging to the urban community were 18 (51.5) and 17 (48.6%) were from rural community, while in the control group situation was opposite from the experimental group. Majority of post-natal mothers belonged to the joint family in experimental group, 17 (48.6%) and control group 19 (54.3%) and 21 (60%). Post-natal mothers were multi-gravida in the exper-

imental group and 19 (54.3%) in the control group. The majority of postnatal mothers 12 (34.3%) had 40-60 kg weight in the experimental group and 15 (42.9%) were 40-60 kg. Majority of the status of the baby alive was 27 (77.1%) in the experimental group and 25 (71.4%) in the control group. The majority of mothers provided breastfeeding in the experimental group i.e. 26 (74.3%) and 28 (80%) in the control group. Aid used for delivery was none in the majority of mothers in both groups 29 (82.9%) in the experimental group, and 28 (80%) in the control group.

Fig 1 shows a level of involution of the uterus before and after the intervention of post-natal exercise among post-natal mothers in the experimental and control group. In the experimental group, 18 (51.4%) had mild involution, 17 (48.6%) had moderate involution and none of them had good involution. In the control group, 25 (71.4%) had mild involution, 10 (28.6%) had moderate involution and none had good involution.

In the experimental group, 4 (11.4%) had moderate involution, 31 (88.6%) had good involution and none of them had mild involution. In the control group, 28 (80%) had moderate Involution, 7 (20%) had good involution and none of them had mild involution.

Chi-square analysis was carried out to bring the association between the mean differences in levels of involution of the uterus and post-natal exercise mothers with their select demographic variables; the demographic variable was found significantly associated at p value <0.05 with knowledge. Hence, the research hypothesis is accepted as there was a significant difference between the level of involution of the uterus and postnatal mother demographic variables.

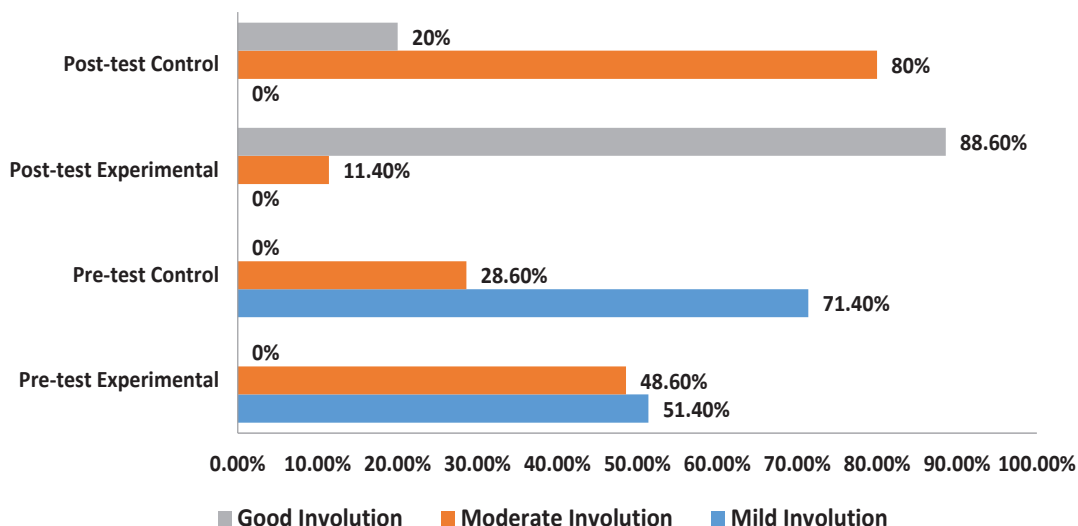


Fig 1: Distribution of post-natal mothers based on the level of uterine involution before and after intervention in experimental and control group.

Discussion

In the current study, exercise for post-natal mothers for involution of the uterus was helpful to post-natal mothers. In current study, majority of post-natal mothers belonged to the 18-20 and 21-25 years of age group (34.3%) in both groups; as for type of the family, majority of post-natal mothers belonged to the joint family. Pre-test results in the experimental group revealed mild involution in 51.4 percent, moderate involution in 48.6 percent, and 0 percent good involution while post-test in the experimental group showed mild involution in none (0%), moderate involution in 11.4 percent, and good involution in 88.6 percent. This shows that there are effects of post-natal exercise on the involution of the uterus while continuing to practice the post-natal exercise. The control group results showed that most of the 12 respondents (60%) in the category were enough with a 1-2 cm decrease. In this group, they were not taught to do postpartum exercises directly but were given a puerperal gymnastic guide that could be used as a reference for postpartum mothers in performing puerperal gymnastics. The difference is, with intervention in the control group postpartum exercise can be carried out by postpartum mothers independently, but the implementation is not scheduled. In the experimental group, the implementation of postpartum exercise is carried out guided and scheduled with the same rhythm every day. Puerperal exercise is significantly effective in accelerating the uterine involution process. So the current study did it in the same way; the exercise was carried out by a guide, and scheduled for the benefit of the mothers, hence good involution of the uterus was achieved.

Implications of the study

At the professional level nurses at any level can educate about post-natal exercise and promote the involution of the uterus via practice post-natal exercise practice after delivery. The nurse can counsel to address the benefits of post-natal exercise and motivate the post-natal mothers to practice exercise. A nurse can schedule the post-natal exercise for the mothers as therapeutic care of the mother. However, the nurse must be competent enough to demonstrate post-natal exercises.

Recommendations

- A similar study could be carried out on a large sample to generalise the findings.
- A similar study can be performed after cesarean section delivery.
- A similar study can be performed in a community setting.

Conclusion

The chi-square is used to identify the association

between selected demographic variables and the level of involution of the uterus and post-natal exercise. Hence, the type of family and the demographic variable was found associated at p value <0.05 . So, the null hypothesis was rejected and the research hypothesis was accepted. From the selected demographic variables it is evident that there is a significant difference between the level of involution of the uterus and post-natal mother's demographic variables.

References

1. Kansky C, Isaacs C. Normal and abnormal puerperium: Overview, routine postpartum care, hemorrhage. 2022 Jan 18 [cited 2023 Apr 1]; Available from: <https://emedicine.medscape.com/article/260187-overview>
2. Gaitzsch J, Appelhans D, Wang L, Battaglia G, Voit B. Synthetic bio-nanoreactor: Mechanical and chemical control of polymersome membrane permeability. *Angew Chem Int Ed Engl* 2012. Apr 27; 51 (18): 4448-51
3. WHO. Executive summary [Internet]. World Health Organization; 2013 [cited 2023 Apr 1]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK190090/>
4. Sengupta R. Maternal mortality in India: What do the recent figures tell us [Internet]. [cited 2023 Apr 1]. Available from: <https://www.downtoearth.org.in/news/health/maternal-mortality-in-india-what-do-the-recent-figures-tell-us-81935>
5. Romano M, Cacciatore A, Giordano R, La Rosa B. Postpartum period: Three distinct but continuous phases. *J Prenat Med* 2010; 4 (2): 22-25
6. Nour NM. An introduction to maternal mortality. *Rev Obstet Gynecol* 2008; 1(2): 77-81
7. Bennett R, Brown L. Myles Textbook for Midwives. Philadelphia: Churchill Livingstone, 1999
8. Kisner C, Colby LA. Therapeutic Exercise Foundations and Techniques. 5th edn, FA. Davis Company 2007
9. Bahadoran P, Abbasi F, Yousefi AR, Kargafard M. Evaluating the effect of exercise on postpartum quality of life. *Iranian J Nursing and Midwifery Research Winter* 2007; 12 (1): 17-20
10. Kusparlina EP, Sundari S. Effectiveness of early exercise against uterine involution in spontaneous postpartum patients. *AIJHA* [Internet]. 2019 Oct 31 [cited 2021 Aug 26]; 2(10). Available from: <http://journal.aloha.academy/index.php/aijha/article/view/144>
11. Fadhli WM. The effect of public exercise on uterine involution in postpartum mothers days 1-3 in Kabelota hospital. *CHMK Midwifery Scientific Journal* 2022; 5(1): 361-370. <https://doi.org/10.37792/midwifery.v5i1.113612>
12. Fahriani, M, Ningsih DA, Kurnia AKS, Mutiara VS. The process of uterine involution with postpartum exercise of maternal postpartum. *J Kebidanan* 2020; 10(1): 48-53
13. Hadianiti DN, Sriwenda D. The effectiveness of postpartum exercise and oxytocin massage on uterus involution. *Open Journal of Nursing* 2019, March; 9(3): 231-38. Doi:10.4236/ojn.2019.93023