RESEARCH PAPER

Effectiveness of Demonstration on Knowledge and Practice Regarding Abdominal Cotton Binder among Postnatal Mothers at Selected Hospitals of the City: A Quasi-Experimental Study

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ABSTRACT

An Abdominal Cotton Binder is a supportive, non-pharmacological nursing intervention among postnatal mothers during the early postpartum period. The study includes mothers who have undergone normal vaginal delivery and/or caesarean section.

Objective: To assess the effectiveness of demonstration on knowledge and practice regarding abdominal cotton binder among postnatal mothers at the selected hospital.

Methods: A Quasi-Experimental pre-test post-test design was employed at a selected hospital of the city. Using non-probability convenient sampling technique, 75 postnatal mothers were the samples of this study. Data were collected using a semi-structured demographic questionnaire, a self-administered knowledge questionnaire (reliability r = 0.885), and an observational practice checklist (reliability r = 0.9759). The study was grounded in Ernestine Wiedenbach's Prescription Theory.

Results:

1) Knowledge: With regards to level of knowledge score, 85.33% of postnatal mothers in pretest had poor level of knowledge score, 14.67% in pretest and 45.33% in posttest had average level of knowledge score and 54.67% of postnatal mothers in posttest had good level of knowledge score. Minimum knowledge score in pretest was 3 and at posttest it was 9 and maximum knowledge score in pretest was 6 and in posttest it was 12. Mean knowledge score in pretest was 4.41 ± 0.93 and in posttest it was 10.77±1.10 and mean percentage of knowledge score in pretest was 29.42 ± 6.20 and in posttest it was 71.82±7.39. There was an Association of posttest knowledge score with age and education.

2) Practice: With regards to level of practice score shows that 36% of postnatal mothers in pretest had poor level of practice score, 64% in pretest had average level of practice score and 46.67% and 53.33% of postnatal mothers in posttest had good and very good level of practice score. Minimum practice score in pretest was 4 and at posttest it was 12 and maximum practice score in pretest was 9 and in posttest it was 18. Mean practice. score in pretest was 6.28 ± 1.49 and in posttest it was 15.61±1.94 and mean. percentage of practice score in pretest was 31.40 ± 7.46 and in posttest it was 78.06±9.72. There was an Association of posttest practice score with age.

Conclusion: The intervention significantly improved postnatal mother's outcomes, shifting knowledge from predominantly poor to good and practice levels to very good. Mean scores more than doubled, demonstrating the program's effectiveness. Post-test results further revealed that age and education significantly influenced these gains. This suggests that demonstration should remain an essential component of clinical nursing education.

Key words: Demonstration, Effectiveness, Postnatal Mothers, Knowledge and Practice, Abdominal Cotton Binder, Quasi-Experimental Study.

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INTRODUCTION

The postnatal period is a critical phase of maternal recovery characterised by rapid physiological and functional changes following childbirth. The World Health Organization recommends comprehensive, woman-centred postnatal care during the first six weeks after birth, including appropriate information, reassurance and support to promote maternal well-being and recovery [1]. In India, National Family Health Survey-5 data indicate that 88.6% of births occur in health institutions, 78.0% of mothers receive postnatal care from skilled health personnel within two days of delivery, and 21.5% of births are by

caesarean section, highlighting the need for effective postnatal supportive care [2].

Abdominal binders are non-pharmacological supportive devices used after abdominal surgery and caesarean delivery to provide external abdominal support and potentially improve comfort and mobility. Evidence regarding their effectiveness is clinically important but not uniform. In a randomised controlled trial involving 89 women after caesarean delivery, women using an abdominal binder walked a significantly greater distance during first mobilisation (99.4 ± 27.3 m versus 81.0 ± 22.2 m; p=0.001), had lower pain scores at 24 hours (p=0.004), and demonstrated lower symptom-distress scores [3]. A systematic review and meta-analysis of six randomised trials reported significant reductions in pain at 24 hours (MD −1.76; 95% CI −3.14 to −0.39; p=0.01) and 48 hours (MD −1.21; 95% CI −1.51 to −0.90; p<0.001) [4]. However, another meta-analysis involving 601 women found no statistically significant reduction in pain at 24 or 48 hours, although postoperative distress was significantly reduced [5].

These findings indicate that correct selection, application and use of an abdominal binder are relevant components of supportive postnatal care. Postnatal mothers may differ in their knowledge and practical skill regarding appropriate binder application. Therefore, a structured demonstration can provide standardised, observable and practice-oriented learning. Assessment of pre-test and post-test knowledge and practice is necessary to determine whether demonstration produces a statistically and clinically meaningful improvement in the correct use of an abdominal cotton binder among postnatal mothers.

Need of the Study

The postnatal period is a vulnerable stage in which women experience uterine involution, abdominal wall laxity, postoperative discomfort, restricted mobility and adaptation to newborn care. The World Health Organization emphasizes that women should receive consistent information, reassurance and practical support during the first six weeks after birth [6]. In India, NFHS-5 reported that 88.6% of births occurred in health institutions, 78.0% of mothers received postnatal care from skilled health personnel within two days, and 21.5% of births were by caesarean section [7].

Abdominal binders are simple, non-pharmacological supportive devices used after abdominal surgery and caesarean birth to improve comfort and facilitate recovery. Karaca et al. reported that women using an abdominal binder walked 99.4±27.3 m during first mobilisation compared with 81.0±22.2 m in controls (p=0.001), with significantly lower pain scores at 24 hours (p=0.004) [3]. A systematic review of six randomized controlled trials found significant reductions in pain at 24 hours (MD −1.76; 95% CI −3.14 to −0.39; p=0.01) and 48 hours (MD −1.21; 95% CI −1.51 to −0.90; p<0.001) [4]. A 2025 meta-analysis of 13 randomized controlled trials also demonstrated significant reductions in pain, improved ambulatory function and reduced symptom distress without a significant increase in postoperative complications [8].

The benefit of a binder depends on correct positioning, fitting, duration of use and adherence to precautions. Inadequate knowledge or incorrect application may reduce its effectiveness. Demonstration is therefore a relevant teaching strategy because it combines visual instruction with supervised practical performance. Assessing knowledge and observed practice before and after demonstration can quantify learning gain and determine whether the intervention produces a statistically significant improvement. Hence, the present study is needed to evaluate the effectiveness of demonstration regarding abdominal cotton binder among postnatal mothers and to provide evidence for strengthening practice-oriented postnatal nursing education.

Aim of the Study

The aim of this quasi-experimental study is to evaluate the effectiveness of demonstration on knowledge and practice regarding abdominal cotton binder among postnatal mothers at selected hospitals.

OBJECTIVES

Primary Objective

1. To assess the effectiveness of demonstration on knowledge and practice regarding abdominal cotton binder among postnatal mothers at selected hospitals.

Secondary Objectives

1. To assess the pre-test level of knowledge and practice regarding abdominal cotton binder among postnatal mothers at selected hospital of the city.
2. To assess the post-test level of knowledge and practice regarding abdominal cotton binder among postnatal mothers at selected hospital of the city.
3. To evaluate the effectiveness of demonstration on knowledge and practice regarding abdominal cotton binder among postnatal mothers at selected hospital of the city.
4. To determine the association between post-test knowledge and practice regarding abdominal

cotton binder among postnatal mothers at selected hospital of the city with their demographic variables.

MATERIALS AND METHODS

Research Approach

A quantitative research approach was adopted for the present study.

Research Design

The research design selected for the present study was a quasi-experimental one-group pre-test post-test design.

Sampling Technique

A non-probability convenience sampling technique was used to select the study participants.

Sample Size

A total of 75 postnatal mothers were selected as participants from the selected hospitals.

Setting

The study was conducted at selected hospitals of the city.

Tools and Techniques of Data Collection

- Section I: Semi-structured questionnaire on demographic variables.
- Section II: Self-administered questionnaire to assess knowledge and practice regarding abdominal cotton binder.
- Section III: Semi-structured observational checklist to assess practice regarding abdominal cotton binder.

Intervention

A demonstration regarding the use of an abdominal cotton binder was provided to postnatal mothers from selected hospitals of the city.

Post-test

The post-test knowledge and practice regarding abdominal cotton binder were assessed using the structured questionnaire and observational checklist, respectively.

Content Validity

The tools were distributed to 22 experts for content and construct validation. The experts included specialists in obstetrics and gynecological nursing and a statistician, among others. The experts were selected according to their respective areas of specialization. All 22 validated tools were received after expert review. Based on the experts' suggestions and recommendations, the tools were considered valid for use in the study.

Reliability

The reliability of the questionnaire was established using the Karl Pearson correlation coefficient formula. The questionnaire was considered reliable when the correlation coefficient was greater than 0.8. The obtained correlation coefficient was $r = 0.885$, which was greater than 0.8; therefore, the questionnaire was found to be reliable.

The reliability of the observational checklist was established using the parallel form method (split-half method). The reliability coefficient of the checklist was 0.9759, which was greater than 0.8. Hence, the checklist was considered reliable and valid for the study.

Statistical or Analytical Methods

- Descriptive statistics, including frequency and percentage, will be used to describe the demographic characteristics of the participants.
- Unpaired t-test will be used to compare the post-test knowledge and practice scores.
- ANOVA and t-test will be used to determine the association between post-test knowledge and practice scores and selected demographic variables.

RESULTS

Section I: Distribution of postnatal mothers with regards to demographic variables in selected hospitals.

The demographic characteristics of the 75 postnatal mothers revealed that the majority, 50 (66.7%), were in the age group of 25–31 years, followed by 18 (24.0%) in the age group of 19–24 years and 7 (9.3%) in the age group of 32–38 years. None of the participants belonged to the age group of 39–45 years.

Regarding monthly family income, the majority, 53 (70.7%), had a monthly family income of more than Rs. 20,000. With respect to area of residence, 57 (76.0%) were from urban areas, while 11 (14.7%) were from semi-urban areas and 7 (9.3%) were from rural areas.

In relation to type of family, more than half, 42 (56.0%), belonged to nuclear families, whereas 26 (34.7%) belonged to joint families. Regarding educational status, the majority, 58 (77.3%), were graduates, followed by 14 (18.7%) postgraduates and 3 (4.0%) with secondary education.

With regard to type of delivery, the majority, 53 (70.7%), had undergone caesarean section, whereas 22 (29.3%) had normal vaginal delivery. Concerning previous knowledge regarding abdominal cotton binder, the majority, 67 (89.3%), had no previous knowledge, while only 8 (10.7%) reported having

previous knowledge. Thus, the participants were predominantly young adults, urban residents, graduates, from nuclear families, and had limited prior knowledge regarding abdominal cotton binder.

Section II (A): Assessment of level of pre-test and post-test knowledge regarding abdominal cotton binder among postnatal mothers at selected hospital of the city.

Table 1: Assessment with level of pre-test and post-test knowledge score among postnatal mothers

n= 75

Level of knowledge score	Score Range	Level of Knowledge Score	
		Pre Test	Post Test
Poor	0-5	64(85.33%)	0(0%)
Average	6-10	11(14.67%)	34(45.33%)
Good	11-15	0(0%)	4(54.67%)
Minimum score		3	9
Maximum score		6	12
Mean knowledge score		4.41 ± 0.93	10.77±1.10
Mean % Knowledge Score		29.42 ± 6.20	71.82±7.39

Table 1 shows the distribution of pre-test and post-test knowledge scores regarding abdominal cotton binder among 75 postnatal mothers. In the pre-test, the majority of the postnatal mothers, 64 (85.33%), had poor knowledge, while 11 (14.67%) had an average level of knowledge. None of the participants had a good level of knowledge before the demonstration.

In the post-test, none of the postnatal mothers had poor knowledge. 34 (45.33%) had an average level of knowledge, while 41 (54.67%) had a good level of knowledge. This indicates a marked improvement in the knowledge level of postnatal mothers following the demonstration.

The minimum knowledge score increased from 3 in the pre-test to 9 in the post-test, while the maximum score increased from 6 to 12. The mean knowledge score increased substantially from 4.41 ± 0.93 in the pre-test to 10.77 ± 1.10 in the post-test. Similarly, the mean percentage knowledge score increased from 29.42 ± 6.20% to 71.82 ± 7.39%.

Thus, Table 1 demonstrates a considerable improvement in the knowledge scores of postnatal mothers after the demonstration regarding abdominal cotton binder**,** suggesting that the educational intervention was effective in enhancing their knowledge.

Section II (B): Assessment of level of pre-test and post-test practice regarding abdominal cotton binder among postnatal mothers at selected hospital of the city.

Table 2: Assessment with level of practice score among postnatal mothers in selected hospital

n= 75

Level of practice score	Score Range	Level of Practice Score	
		Pre Test	Post Test
Poor	0-5	27(36%)	0(0%)
Average	6-10	48(64%)	0(0%)
Good	11-15	0(0%)	35(46.67%)
Very Good	16-20	0(0%)	40(53.33%)
Minimum score		4	12
Maximum score		9	18
Mean practice score		6.28±1.49	15.61± 1.94
Mean % Practice Score		31.40±7.46	78.06±9.72

Table 2 shows that in the pre-test, 27 (36%) postnatal mothers had poor practice and 48 (64%) had average practice, while none had good or very good practice. In the post-test, 35 (46.67%) had good practice and 40 (53.33%) had very good practice, with none remaining in the poor or average categories.

The mean practice score increased from 6.28 ± 1.49 in the pre-test to 15.61 ± 1.94 in the post-test. Similarly, the mean percentage practice score increased from 31.40 ± 7.46% to 78.06 ± 9.72%.

Thus, Table 2 indicates a marked improvement in practice regarding abdominal cotton binder following the demonstration.

Section III (A): Evaluation of the effectiveness of demonstration on knowledge regarding abdominal cotton binder among postnatal mothers at selected hospital of the city

Table 3: Significance of difference between knowledge score in pre and post-test of Postnatal Mothers

n=75

Test	Mean	SD	Mean Difference	DF	Calculated "t" value	Tabulated "t" value	p-value
Pre-Test	4.41	0.93	6.36±1.56	74	35.19	1.98	**0.0001 P<0.05 Significant**
Post-Test	10.77	1.10					

Table 3 shows that the mean pre-test knowledge score was 4.41 ± 0.93, while the mean post-test knowledge score was 10.77 ± 1.10, with a mean difference of 6.36 ± 1.56. The calculated t-value was 35.19, which was greater than the tabulated value of 1.98 at 74 degrees of freedom.

The obtained p-value was 0.0001 ($p<0.05$), indicating a statistically significant difference between the pre-test and post-test knowledge scores. Hence, H_0 was rejected and H_1 was accepted, showing that the demonstration was effective in improving knowledge regarding abdominal cotton binder among postnatal mothers.

Section III (B): Evaluation of the effectiveness of demonstration on practice regarding abdominal cotton binder among postnatal mothers at selected hospital of the city.

Table 4: Significance of difference between practice score in pre and post-test of Postnatal Mothers

n=75

Test	Mean	SD	Mean Difference	DF	Calculated "t" value	Tabulated "t" value	p-value
Pre-Test	6.28	1.49	9.33±1.94	74	34.65	1.98	**0.0001 P<0.05 Significant**
Post-Test	15.61	1.94					

Table 4 shows that the mean pre-test practice score was 6.28 ± 1.49, whereas the mean post-test practice score was 15.61 ± 1.94, with a mean difference of 9.33 ± 1.94. The calculated t-value was 34.65, which was greater than the tabulated value of 1.98 at 74 degrees of freedom.

The obtained p-value was 0.0001 ($p<0.05$), indicating a statistically significant difference between the pre-test and post-test practice scores. Hence, H_0 was rejected and H_1 was accepted, demonstrating that the demonstration was effective in improving the practice regarding abdominal cotton binder among postnatal mothers.

Section IV(A): Association of level of post test knowledge score regarding abdominal cotton binder among postnatal mothers in relation to demographic variables.

The association between post-test knowledge score regarding abdominal cotton binder and selected demographic variables revealed that age was significantly associated with post-test knowledge score, with an F-value of 4.88 and p=0.010 ($p<0.05$). Similarly, educational status showed a statistically significant association with post-test knowledge score, with an F-value of 8.67 and p=0.0001 ($p<0.05$).

However, monthly family income (F=0.60, p=0.61), area of residence (F=1.86, p=0.16), type of family (F=0.59, p=0.55), type of delivery (t=0.91, p=0.36), and previous knowledge (t=1.64, p=0.10) were not significantly associated with the post-test knowledge score at the 0.05 level of significance.

Thus, post-test knowledge regarding abdominal cotton binder was significantly associated only with age and educational status among the selected demographic variables.

Section IV(B): Association of level of post test practice score regarding abdominal cotton binder among postnatal mothers in relation to demographic variables.

The association between post-test practice score regarding abdominal cotton binder and selected demographic variables revealed that age was significantly associated with post-test practice score, with an F-value of 3.08 and p=0.046 ($p<0.05$).

However, monthly family income (F=1.25, p=0.29), area of residence (F=0.20, p=0.81), type of family (F=1.67, p=0.19), educational status (F=2.55, p=0.085), type of delivery (t=0.45, p=0.65), and previous knowledge (t=1.17, p=0.24) were not significantly associated with the post-test practice score at the 0.05 level of significance.

Thus, the post-test practice regarding abdominal cotton binder was significantly associated only with age, while the other selected demographic variables showed no statistically significant association.

DISCUSSION

The present quasi-experimental study was conducted to evaluate the effectiveness of demonstration on knowledge and practice regarding abdominal cotton binder among 75 postnatal mothers. The findings revealed a clear improvement in both knowledge and practice after the intervention. In the pre-test, 85.33% of postnatal mothers had poor knowledge and 14.67% had average knowledge, whereas none had good knowledge. After the demonstration, 54.67% attained good knowledge and 45.33% had average knowledge. The mean knowledge score increased from 4.41 ± 0.93 to 10.77 ± 1.10, with a significant mean difference of 6.36 ± 1.56. The calculated t-value of 35.19 with p=0.0001 confirmed that the improvement was statistically significant.

A similar pattern was observed in practice scores. Before the intervention, 36% of mothers had poor practice and 64% had average practice. Following the demonstration, 46.67% achieved good practice and 53.33% attained very good practice. The mean practice score increased from 6.28 ± 1.49 to 15.61 ± 1.94, with a mean difference of 9.33 ± 1.94. The calculated t-value of 34.65 (p=0.0001) demonstrated a highly significant improvement.

These findings are consistent with Chandurkar et al., who reported significant improvement in knowledge and practice among postnatal mothers following demonstration-based teaching [9]. Similar improvements after structured teaching were reported by Prabhakaran and Arulappan among postnatal mothers [10]. Evidence from Karaca et al. also supports the clinical relevance of abdominal binders in improving mobilisation and reducing postoperative discomfort after caesarean delivery [3].

The present study further identified significant associations of post-test knowledge with age and educational status, while post-test practice was significantly associated with age. Overall, the findings confirm that demonstration is an effective nursing educational strategy for improving knowledge and practice regarding abdominal cotton binder among postnatal mothers.

CONCLUSION

The present quasi-experimental study was undertaken to evaluate the effectiveness of demonstration on knowledge and practice regarding abdominal cotton binder among postnatal mothers at selected hospitals. The findings of the study showed that the postnatal mothers had limited knowledge and inadequate practice regarding the correct use of abdominal cotton binder before receiving the intervention. After the demonstration, a clear improvement was observed in both knowledge and practice among the participants.

The study established that demonstration is an effective teaching method for improving the understanding and practical skills of postnatal mothers. It enabled the mothers to learn the purpose, benefits, correct method of application, precautions and appropriate use of the abdominal cotton binder. The intervention also helped in improving their confidence in performing the procedure correctly.

The findings further indicated that certain demographic characteristics, particularly age and educational status, influenced the knowledge and practice of the mothers to some extent. However, the overall improvement observed after the intervention supports the usefulness of demonstration irrespective of most demographic characteristics.

The study concludes that demonstration regarding abdominal cotton binder can be effectively incorporated into routine postnatal nursing care and health education. Nurses can play an important role in providing practical, individualized and evidence-based education to postnatal mothers, thereby promoting safe practices, maternal comfort, self-care and better recovery during the postnatal period.

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