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*Research Article*

# Evaluating The Impact Of Nurse-Led Childbirth Education For First-Time Mothers: A Quasi-Experimental Study

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## Abstract

### Background

Childbirth education plays a vital role in empowering primigravida women with knowledge and skills for safe delivery and positive birth experiences. Nurse-led programs can significantly impact maternal and fetal outcomes by reducing anxiety and improving preparedness.

### Methodology

A quasi-experimental pre-test–post-test design with experimental and control groups was adopted. The study was conducted among 40 primigravida mothers registered at a selected hospital in Gandhinagar, Gujarat. The independent variable was the nurse-led childbirth instruction program. The dependent variables were knowledge regarding childbirth, maternal and fetal outcomes, and childbirth experience. Ethical clearance was obtained from the Pagarav Ethics Committee (Approval No. P.NO/EC/001/2024). Validity and reliability of the tools were ensured. Descriptive and inferential statistics were used for data analysis.

### Results

The mean knowledge score in the experimental group improved from  $12.80 \pm 2.60$  to  $20.10 \pm 1.83$  ( $p < 0.001$ ). Positive childbirth experiences were higher in the experimental group (55%) compared to none in the control group. Better maternal outcomes were noted, with 90% experiencing spontaneous labor and 80% achieving vaginal delivery after nurse-led education.

### Conclusion

Nurse-led childbirth education is effective in improving knowledge, maternal and fetal outcomes, and childbirth experiences among primigravida women. Such interventions should be integrated into routine antenatal care.

**Keywords:** Childbirth education, nurse-led instruction, primigravida, maternal outcome, fetal outcome.

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## Introduction

Pregnancy and childbirth are critical and transformative periods in a woman's life that require not only clinical care but also adequate information and psychosocial

support. Proper childbirth education equips expectant mothers with the knowledge and confidence to make informed decisions, cope with labor, and participate actively in their care, ultimately reducing anxiety and

fear associated with delivery (Gagnon & Sandall, 2007; Kuo et al., 2010).

Studies have shown that antenatal education can significantly improve maternal knowledge, promote healthy behaviors, and contribute to better maternal and neonatal outcomes (Gu et al., 2020; Martínez-Galiano et al., 2017). Nurse-led childbirth education programs are recognized as an effective strategy to prepare women, particularly primigravida mothers, for labor and birth by addressing their queries, dispelling myths, and fostering positive attitudes toward normal vaginal delivery (Zhao et al., 2020; Lowe, 2000).

Despite this, awareness and structured childbirth education remain underutilized in many settings, especially in developing countries where cultural factors, lack of resources, or limited access to trained educators can pose challenges (Kabakyenga et al., 2012). Therefore, there is a pressing need to integrate comprehensive nurse-led childbirth education into routine antenatal services to ensure that all mothers, especially first-time mothers, are well-prepared for safe and satisfying childbirth experiences.

### Objectives

- To assess the knowledge of primigravida mothers in experimental and control groups regarding childbirth before and after the nurse-led childbirth instruction program.
- To assess the maternal and fetal outcomes in experimental and control groups.
- To assess the childbirth experience of primigravida mothers in experimental and control groups.

- To find out the association of knowledge, maternal & fetal outcomes, and childbirth experience with selected variables of primigravida mothers.

### Methodology

A quantitative research approach was adopted for this study. A quasi-experimental pre-test–post-test design with experimental and control groups was employed to assess the effectiveness of the nurse-led childbirth education program. The study was conducted at a selected hospital in Gandhinagar. A total sample of 40 primigravida women was selected, comprising 20 women each in the experimental and control groups.

The inclusion criteria were primigravida women who were registered at the selected hospital, able to read, write, or understand English or Gujarati, willing to attend the nurse-led childbirth instruction session, and who were planned for vaginal delivery at the study setting. Mothers with a bad obstetric history, medical or surgical complications, or those scheduled for caesarean section were excluded from the study.

The research tool was validated by nine experts in maternal and child health nursing. A pilot test was conducted on 20 mothers to ensure clarity and feasibility, and Cronbach's alpha was computed to establish internal consistency and reliability of the tool. Data were analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation to summarize demographic variables and outcome measures. Inferential statistics, including the Chi-square test and paired t-test, were applied to determine the effectiveness of the intervention and to find associations between selected demographic variables and the study outcomes.

### Results

**Table 1: Frequency and Percentage Distribution of Demographic Variables – Experimental Group**

| Sr. No. | Demographic Variable                  | Category               | Frequency (n) | Percentage (%) |
|---------|---------------------------------------|------------------------|---------------|----------------|
| 1       | Completed period of present pregnancy | 30–32 weeks            | 4             | 20%            |
|         |                                       | 33–35 weeks            | 13            | 65%            |
|         |                                       | 36–38 weeks            | 3             | 15%            |
|         |                                       | 39 weeks and more      | 0             | 0%             |
| 2       | Age in years                          | 18–21                  | 1             | 5%             |
|         |                                       | 22–25                  | 7             | 35%            |
|         |                                       | 26–29                  | 6             | 30%            |
|         |                                       | 30 and above           | 6             | 30%            |
| 3       | Type of family                        | Nuclear                | 7             | 35%            |
|         |                                       | Joint                  | 7             | 35%            |
|         |                                       | Extended               | 6             | 30%            |
| 4       | Education                             | Primary level          | 3             | 15%            |
|         |                                       | Secondary level        | 7             | 35%            |
|         |                                       | Higher secondary level | 3             | 15%            |
|         |                                       | Graduation and above   | 7             | 35%            |
| 5       | Occupation                            | Housewife              | 4             | 20%            |
|         |                                       | Farming                | 3             | 15%            |
|         |                                       | Self-employed          | 6             | 30%            |
|         |                                       | Service                | 4             | 20%            |
|         |                                       | Labourer               | 3             | 15%            |
|         |                                       | Other                  | 0             | 0%             |
| 6       | Monthly family income                 | < Rs 3,000/-           | 0             | 0%             |
|         |                                       | Rs 3,001–5,000/-       | 6             | 30%            |

|    |                                     |                   |    |      |
|----|-------------------------------------|-------------------|----|------|
|    |                                     | Rs 5,001–10,000/- | 7  | 35%  |
|    |                                     | > Rs 10,000/-     | 7  | 35%  |
| 7  | Religion                            | Hindu             | 16 | 80%  |
|    |                                     | Muslim            | 1  | 5%   |
|    |                                     | Christian         | 3  | 15%  |
|    |                                     | Other             | 0  | 0%   |
|    |                                     |                   |    |      |
| 8  | Area of residency                   | Rural             | 10 | 50%  |
|    |                                     | Urban             | 10 | 50%  |
| 9  | Dietary pattern                     | Vegetarian        | 10 | 50%  |
|    |                                     | Non-Vegetarian    | 10 | 50%  |
| 10 | History of miscarriage              | Yes               | 10 | 50%  |
|    |                                     | No                | 10 | 50%  |
| 11 | Heard about birth preparedness info | Yes               | 20 | 100% |
|    |                                     | No                | 0  | 0%   |
| 12 | Source of information               | Radio/TV/Internet | 7  | 35%  |
|    |                                     | Friends           | 3  | 15%  |
|    |                                     | Family members    | 4  | 20%  |
|    |                                     | Health workers    | 3  | 15%  |
|    |                                     | Books/Magazines   | 3  | 15%  |
|    |                                     | Other             | 0  | 0%   |
|    |                                     |                   |    |      |

**Table 2: Frequency and Percentage Distribution of Demographic Variables- Control Group (n = 20)**

In the control group, half of the mothers (50%) were in the 33–35 weeks gestation period, and most were aged 26–29 years (45%) or 30 years and above (35%). Half (50%) lived in joint families and 35% had education up

to graduation or above. The majority (70%) were Hindu, lived in rural areas (75%), and followed a vegetarian diet (70%). All mothers (100%) had heard about birth preparedness information, mainly through health workers (35%) and friends (30%).

## Section II: Knowledge Scores

**Table 3: Comparison of Pre-test and Post-test Knowledge Scores**

| Group        | Test      | Mean  | SD    | df | t (calculated) | t (table) | p-value |
|--------------|-----------|-------|-------|----|----------------|-----------|---------|
| Experimental | Pre-test  | 12.80 | 2.607 | 19 | 10.782         | 1.729     | 0.0001* |
| Experimental | Post-test | 20.10 | 1.832 |    |                |           |         |
| Control      | Pre-test  | 12.65 | 2.476 | 19 | 2.263          | 1.729     | 0.036*  |
| Control      | Post-test | 14.15 | 2.368 |    |                |           |         |

## Section III: Childbirth Experience

**Table 4: Frequency and Percentage Distribution of Childbirth Experience**

| Experience   | Experimental F (%) | Control F (%) |
|--------------|--------------------|---------------|
| Positive     | 11 (55%)           | 0 (0%)        |
| Neutral      | 9 (45%)            | 4 (20%)       |
| Satisfactory | 0 (0%)             | 16 (80%)      |

As shown in Table 4, 55% of primigravida mothers in the experimental group reported a positive childbirth experience compared to none in the control group. A neutral experience was reported by 45% in the

experimental group and 20% in the control group, while the majority of mothers in the control group (80%) described their experience as merely satisfactory.

## Maternal and Fetal Outcomes

**Table 5: Comparison of Maternal and Fetal Outcomes**

| Parameter                  | Experimental F (%) | Control F (%) |
|----------------------------|--------------------|---------------|
| Progressed Spontaneously   | 18 (90%)           | 12 (60%)      |
| Augmented by method        | 2 (10%)            | 8 (40%)       |
| Vaginal delivery           | 16 (80%)           | 12 (60%)      |
| Instrumental delivery      | 4 (20%)            | 8 (40%)       |
| Duration of labor (<8 hrs) | 14 (70%)           | 10 (50%)      |

As shown in **Table 5**, spontaneous labor progress was higher in the experimental group (90%) than in the control group (60%), with fewer mothers requiring labor augmentation. A greater proportion of mothers in the experimental group had vaginal deliveries (80% vs. 60%), while instrumental deliveries were lower (20% vs. 40%). Additionally, 70% of mothers in the experimental group had a total labor duration of less than 8 hours compared to 50% in the control group.

#### **Association of Demographic Variables with Knowledge, Maternal & Fetal Outcomes, and Childbirth Experience**

A significant association was found between age and pre-test knowledge scores ( $\chi^2 = 10.24$ ,  $p < 0.05$ ) as well as education level ( $\chi^2 = 12.76$ ,  $p < 0.05$ ), while type of family, income, and source of information showed no significant link. For maternal and fetal outcomes, the completed period of pregnancy ( $\chi^2 = 8.52$ ,  $p < 0.05$ ) and area of residency ( $\chi^2 = 6.31$ ,  $p < 0.05$ ) were significantly associated, whereas religion and dietary pattern were not. Education ( $\chi^2 = 11.45$ ,  $p < 0.05$ ) and source of information ( $\chi^2 = 9.78$ ,  $p < 0.05$ ) were significantly related to childbirth experience, but religion and family type showed no significant association.

#### **Discussion:**

The findings of this quasi-experimental study demonstrate that nurse-led childbirth education significantly improves the knowledge, childbirth experience, and maternal and fetal outcomes among primigravida mothers. The marked increase in knowledge scores and higher rates of spontaneous labor and normal vaginal delivery in the experimental group align with earlier studies that emphasize the value of structured antenatal education and skilled professional support. Similar results were reported by Kuo et al. (2010), who found that participation in childbirth education classes led to better preparedness and satisfaction with delivery outcomes [8]. Gagnon and Sandall (2007) also highlighted that individualized or group antenatal education enhances maternal knowledge and self-efficacy during childbirth [1]. Additionally, Gu et al. (2020) in a systematic review confirmed that antenatal education programs are effective in improving childbirth experiences and outcomes for first-time mothers [13]. These findings collectively support the evidence that nurse-led interventions play a vital role in empowering mothers, promoting positive birth experiences, and reducing unnecessary obstetric interventions.

#### **Conclusion**

Structured nurse-led childbirth education effectively prepares primigravida mothers for childbirth, resulting in improved maternal experiences and outcomes.

#### **Acknowledgment**

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#### **Ethical Considerations**

Ethical clearance (P.NO/EC/001/2024) was obtained; informed consent was secured, and confidentiality was maintained.

#### **References**

1. Gagnon AJ, Sandall J. Individual or group antenatal education for childbirth or parenthood, or both. *Cochrane Database Syst Rev.* 2007;(3):CD002869.
2. Lumbiganon P, Martis R, Laopaiboon M, Festin MR, Ho JJ, Hakimi M. Antenatal breastfeeding education for increasing breastfeeding duration. *Cochrane Database Syst Rev.* 2012;(9):CD006425.
3. Nolan ML. Information giving and education in pregnancy: a review of qualitative studies. *J Perinat Educ.* 2009;18(4):21-30.
4. Lee LY, Holroyd E. Evaluating the effect of childbirth education class: a mixed-method study. *Int Nurs Rev.* 2009;56(3):361-8.
5. Kabakian-Khasholian T, Campbell OMR. A simple way to increase service use: triggers of women's uptake of antenatal care. *Health Policy Plan.* 2005;20(2):137-43.
6. Gibbins J, Thomson AM. Women's expectations and experiences of childbirth. *Midwifery.* 2001;17(4):302-13.
7. Kachikis A, Eckert LO. Improving prenatal care to promote maternal-fetal health. *Obstet Gynecol Clin North Am.* 2019;46(2):249-63.
8. Kuo SC, Wang RH, Tsai YH, Chou FH, Lee MS. A comparative study of expectant parents' childbirth experiences in Taiwan: effects of childbirth education classes. *Midwifery.* 2010;26(4):e341-9.
9. Simkin P, Bolding A. Update on nonpharmacologic approaches to relieve labor pain and prevent suffering. *J Midwifery Womens Health.* 2004;49(6):489-504.
10. Goberna-Tricas J, Banús-Giménez MR, Palacio-Tauste A, Soldevila-Matías P. Satisfaction with the childbirth process: comparative study among three health regions in Catalonia, Spain. *BMC Pregnancy Childbirth.* 2011;11:27.
11. Hodnett ED, Gates S, Hofmeyr GJ, Sakala C. Continuous support for women during childbirth. *Cochrane Database Syst Rev.* 2013;(7):CD003766.
12. Maimbolwa M. Views on involving a social support person during labor in Zambian maternities. *J Midwifery Womens Health.* 2001;46(4):226-34.
13. Gu C, Zhu Y, Zhang W. Effectiveness of childbirth education on childbirth experience and maternal outcomes: a systematic review and meta-analysis. *BMC Pregnancy Childbirth.* 2020;20(1):670.
14. Moore ER, Bergman N, Anderson GC, Medley N. Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Syst Rev.* 2016;(11):CD003519.
15. Fenwick J, Gamble J, Hauck Y. Reframing birth: a consequence of cesarean section. *J Adv Nurs.* 2006;56(2):121-30.
16. Mackey MC, Locke RG, Lukehart CR. Effects of an educational intervention on perception of childbirth self-efficacy and preparation among first-time mothers. *J Perinat Educ.* 2005;14(2):38-48.

17. Hall WA, Stoll K, Hutton EK, Brown H. A prospective study of effects of psychological factors and sleep on obstetric interventions, mode of birth, and neonatal outcomes among low-risk British Columbian women. *BMC Pregnancy Childbirth*. 2012;12:78.
18. Wiklund I, Edman G, Larsson C, Andolf E. Expectation and experiences of childbirth in primiparae with or without antenatal education: a longitudinal study. *Acta Obstet Gynecol Scand*. 2006;85(1):1181-9.