International Journal of Community Medicine and Public Health
Vaishnav S et al. Int J Community Med Public Health. 2025 Dec;12(12):5511-5517
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040
DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20254022

Original Research Article

Effectiveness of a self-prepared educational module on newborn and maternal self-care and its impact on maternal confidence, breastfeeding self-efficacy, and depression among postpartum primipara mothers in a selected hospital, Gujarat

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Received: 25 June 2025
Revised: 27 October 2025
Accepted: 13 November 2025

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ABSTRACT

Background: Newborns face the highest risk of mortality during the first 28 days of life, accounting for nearly half of all under-five deaths. Despite progress, many neonatal deaths are still linked to inadequate care during and immediately after birth. Strengthening maternal confidence and knowledge in newborn care is therefore critical.
Methods: This quasi-experimental study was conducted among 200 primiparous postpartum mothers at a tertiary care hospital to assess the effectiveness of a self-prepared educational module on selected variables like maternal confidence, breastfeeding self-efficacy and post-natal depression. Participants were selected using convenient sampling and assessed using a self-structured questionnaire and standardized tools including the maternal confidence questionnaire, breastfeeding self-efficacy scale, and edinburgh postnatal depression scale. The intervention group received the educational module, and pre- and post-test data were analyzed using descriptive and inferential statistics.
Results: The study showed a statistically significant improvement in maternal confidence (p=0.0014) among mothers who received the module, while no significant differences were observed in breastfeeding self-efficacy and postnatal depression.
Conclusions: The study highlighted the importance of structured educational interventions in enhancing maternal confidence and promoting better postnatal outcomes, suggesting that such modules should be integrated into routine postnatal care programs.

Keywords: Breastfeeding self-efficacy, Educational module, Maternal confidence, Newborn care, Postnatal depression, Primiparous mothers

INTRODUCTION

A standard universal newborn health care is the right of every newborn everywhere. The first month of life is the most vulnerable period for child survival, with 2.3 million newborns dying in 2022. Children who die within the first 28 days of birth suffer from conditions and diseases associated with a lack of quality care at birth or skilled care and treatment immediately after birth and in the first days of life.[1] Maternal confidence refers to a mother's perception that she can understand and meet her baby's needs and has the skills and abilities to care for the baby.[2,3] Conversely, a mother's self-doubt or anxiety may lead to hesitation in caring for her newborn, potentially affecting the child's health and development.[4,5] Therefore, fostering a mother's confidence in newborn care plays a

crucial role in promoting both maternal and child well-being.[6] Although the interaction between adult attachment, parenting stress and maternal self-efficacy has been widely studied, there is a paucity of research about maternal confidence in caretaking.[7,8] In particular, the few studies on this theme have focused only on the months following childbirth, without considering the period immediately after the delivery.[9-11]

This study aimed to design and introduce an educational module, addressing concerns in the care of newborn child and mother self-care and to see the effectiveness of the intervention in mother confidence

Objectives

To assess the effectiveness of a self-prepared educational module on maternal confidence, breastfeeding self-efficacy and postpartum depression.

Hypotheses

H_1: There is a significant difference in maternal confidence in mothers receiving the educational module.

H_2: There is a significant difference in breastfeeding self-efficacy in mothers receiving the educational module.

H_3: There is a significant difference in depression levels in mothers receiving the educational module.

METHODS

This study adopted a quantitative research approach using a quasi-experimental design. The research was conducted in the postnatal wards of Shri Krishna Hospital, Karamsad, from December 2023 to September 2024. The target population comprised primipara mothers admitted to the postpartum wards of the same hospital.

The sample included primipara mothers who met the inclusion criteria. The sample size was calculated using a pre–post design formula, which considered an alpha level of 0.05, a power of 0.7, a moderate effect size of 0.5, and a correlation of 0.5 between pre- and post-test measures. Based on these assumptions, a total of 100 participants were required in the experimental group to detect statistically significant differences before and after the intervention with the desired level of power and precision.

Study variables

The independent variable was the self-prepared educational module on maternal self-care and newborn care. The dependent variables were knowledge of newborn care, maternal self-care, breastfeeding self-efficacy, and postpartum depression.

Inclusion and exclusion criteria

Mothers were eligible for inclusion if they were primipara, had undergone vaginal or cesarean delivery at least 24 hours prior, were comfortable and consented to participate, and were aged 20-35 years with the ability to read and write Gujarati. Additionally, only mothers who had delivered healthy newborns weighing between 2.5 kg and 3.5 kg were included. Exclusion criteria comprised mothers who were medically unfit, diagnosed with severe mental health disorders, classified as high-risk, or those whose newborns were stillborn, preterm, or admitted to the NICU.

Preparation and dissemination of the educational module

The development of the educational module followed a systematic process. A needs assessment was first conducted using a structured, pre-tested questionnaire. Initially developed in English, the tool was translated into Gujarati by a professional translator to enhance clarity and later back-translated into English to ensure consistency. Data collection was done through individual interviews with the participants. The questionnaire consisted of three sections: the first covered socio-demographic details (eight items), the second assessed knowledge of maternal self-care (13 items), and the third examined knowledge of newborn care (19 items), including thermoregulation, breastfeeding, immunization, hygiene, and umbilical cord care.

The questionnaire was developed using the WHO tool (16), prior studies (17), and input from public health experts to ensure content validity. The tool was validated by a panel of experts, including two nursing specialists, three pediatricians, one psychiatrist, two obstetricians and gynecologists, and one language expert- all of whom were mothers. Modifications were made based on expert feedback. Reliability was tested through a pilot study involving 20 participants (10 in each group), yielding a Cronbach's alpha of 0.85-0.88, confirming internal consistency.

Gaps identified in previous studies- such as poor knowledge regarding breast milk jaundice and its link to early breastfeeding discontinuation- were addressed by including content on recognizing neonatal danger signs. The module also incorporated demonstrations of correct breastfeeding techniques, latching, and newborn care practices based on literature recommendations.

Objectives of the module

The main objective was to assess the effectiveness of a self-prepared educational module on maternal self-care and newborn care. Learning objectives were structured according to Bloom's Taxonomy. At the knowledge level, mothers were expected to recall key aspects of self-care and newborn care. At the comprehension level, they were

expected to explain the importance of these practices. At the application level, they were expected to demonstrate correct techniques for newborn care and postnatal exercises. At the analysis level, pre- and post-intervention scores were compared to identify changes in maternal confidence, breastfeeding self-efficacy, and depression. Finally, at the evaluation level, the effectiveness of the educational module was assessed based on post-test outcomes.

Teaching methods and implementation

The instructional methods included lecture-cum-discussion, demonstration, and re-demonstration, supported by flip charts as teaching aids. The intervention was conducted during the first postpartum week for mothers who met the inclusion criteria and provided informed consent. It was delivered on a one-to-one basis over 2-3 days until discharge, ensuring privacy and personalized attention. Each mother received the first session on the second day post-delivery (one hour), followed by supervised sessions on the third and fourth days (30 minutes each). Thus, each participant in the intervention group had approximately two hours of total contact time.

Participants were assigned based on their week of delivery: mothers delivering in the 1st and 3rd weeks of the month formed the intervention group, and those delivering in the 2nd and 4th weeks formed the control group. Pre-tests assessing maternal confidence (Karitane parenting confidence scale), breastfeeding self-efficacy (breastfeeding self-efficacy scale-short form), and depression (Edinburgh postnatal depression scale) were conducted for both groups before the intervention. The educational module was then delivered to the intervention group, while the control group received standard care. Post-tests were conducted one week postpartum during follow-up visits to the gynecology OPD.

Validation and pilot testing

The educational module was validated by one pediatrician, two gynecologists, and one nursing expert. A pilot test was conducted with 20 participants (10 per group) to assess feasibility, clarity, and relevance. Feedback was incorporated, and necessary revisions were made to improve content accuracy, reliability, and user-friendliness before full-scale implementation with 100 intervention participants.

Description of tools

Data collection tools included both self-administered questionnaires and standardized scales.

Section A collected demographic information (age, religion, education, occupation, family income, family type, and sources of knowledge).

Section B covered maternal self-care knowledge, including hygiene, nutrition, postnatal exercises, and complications.

Section C focused on newborn care, covering breastfeeding, thermoregulation, immunization, and hygiene.

The standardized scales used were the Edinburgh postnatal depression scale (EPDS) to assess depression, the Karitane parenting confidence scale (KPCS) to assess maternal confidence, and the breastfeeding self-efficacy scale-short form (BFSE-SF) to assess self-efficacy in breastfeeding. Tool validation involved the same panel of multidisciplinary experts mentioned earlier, and pilot testing confirmed reliability (Cronbach's α: 0.85-0.88).

Data collection procedure

Participants were selected according to inclusion and exclusion criteria. Those assigned to the intervention and control groups completed pre-tests measuring knowledge, confidence, self-efficacy, and depression levels. The intervention group received the educational module via lecture-cum-demonstration on an individual basis, while the control group received routine care. Post-tests were conducted after one week to evaluate changes in the dependent variables during the first postpartum OPD visit.

Ethical considerations

Ethical approval for the study was obtained from the institutional ethics committee.

Informed consent was secured from all participants prior to data collection, ensuring voluntary participation, confidentiality, and adherence to ethical research standards.

RESULTS

The results of this study are presented in the following tables.

Table 1: Pre-test and post-test scores in control and intervention group.

Group	Mean	SD	t-statistic	P value
Control pre	31.71	8.22	1.15	0.254
Control post	30.28	9.23	—	—
Intervention pre	28.14	8.10	-2.86	0.005
Intervention post	31.61	9.05	—	—

Maternal confidence (KPCS scores)

The analysis of maternal confidence using the Karitane parenting confidence scale (KPCS) demonstrated that the educational intervention significantly improved

confidence levels among primipara mothers. In the intervention group, the mean pre-test score was 28.14 (SD=8.10), which increased to 31.61 (SD=9.05) post-intervention (t=-2.86, p=0.005). Conversely, the control group showed no significant change, with a pre-test mean of 31.71 (SD=8.22) and post-test mean of 30.28 (SD=9.23) (t=1.15, p=0.254). These results indicate that the self-prepared educational module effectively enhanced maternal confidence in the intervention group, while confidence levels remained relatively stable in the control group.

Hypothesis testing for maternal confidence

H_0: No significant difference in maternal confidence in mothers receiving the educational module (based on KPCS Scale).

H_1: Significant difference in maternal confidence in mothers receiving the educational module.

Assumption: normality check (Shapiro-Wilk test)

Control group: W=0.98357, p=0.281- normally distributed.

Intervention group: W=0.96349, p=0.009476- not normally distributed.

Choice of test: Wilcoxon test (non-parametric alternative to t-test)

Test Statistic (W) =3301.5, p=0.001397

Interpretation: As the p value=0.001397<0.05 reject H_{01} at 5% level of significance.

There was a significant difference in maternal confidence in mothers receiving the educational module.

Table 2: Pre-test and post- test between the control and intervention groups.

Comparison	Control mean±SD	Intervention mean±SD	t-value	P value
Pre-test	29.04±8.41	29.66±8.93	-0.505	0.614
Post-test	31.49±10.06	31.12±10.09	0.259	0.796

Table 3: Pre-test and post-test EPDS scores.

Group	Pre-test Mean±SD	Post-test Mean±SD	t-value	P value
Control	15.38±8.84	15.01±9.07	0.294	0.769
Intervention	14.69±9.43	15.24±8.81	-0.415	0.679

Breastfeeding self-efficacy change

There is no statistically significant difference between the control and intervention groups at pre-test (p=0.614) or post-test (p=0.796) (Table 2).

This indicates both groups were comparable at baseline and showed similar post-test scores overall.

Levels as measured by EPDS.

Hypothesis testing for breastfeeding self-efficacy

H_0: No significant difference in breastfeeding self-efficacy in mothers receiving the educational module (Based on the BFES Scale).

H_2: Significant difference in breastfeeding self-efficacy in mothers receiving the educational module.

Assumption: normality and variance equality

Control group: W=0.99475, p=0.974- normally distributed.

Intervention group: W=0.97381, p=0.05354- normally distributed.

Levene's Test: W=0.13388, p=0.7149- equal variances.

Choice of test: two-sample t-test

Test statistic (t)=1.2744, p=0.2041

Interpretation: As the p value =0.2041>0.05, we failed to reject H_{02} at 5% level of significance.

There was no significant difference in breastfeeding self-efficacy in mothers receiving the educational module.

Postnatal depression level change

No statistically significant difference was found between pre-test and post-test EPDS scores in either group (p>0.05) (Table 3).

This suggested that the intervention did not significantly affect postnatal depression. In summary, the results demonstrated that the educational intervention significantly improved maternal confidence and

influenced positive changes in both maternal self-care and newborn care practices. However, no significant differences were observed in breastfeeding self-efficacy or postnatal depression levels between the intervention and control groups.

Hypothesis testing for postnatal depression

H_0: There is a significant difference in depression levels in mothers receiving the educational module (based on the EPDS scale).

H_3: There is no significant difference in depression levels in mothers receiving the educational module.

Assumption: normality and variance equality

Control group: W=0.97786, p=0.1075- normally distributed.

Intervention group: W=0.98676, p=0.459- normally distributed.

Levene's test: W=0.075479, p=0.7838- equal variances.

Choice of test: two-sample t-test

Test Statistic (t)=-0.43143, p=0.6667

Interpretation: As the p value =0.6667>0.05, we failed to reject H_{03} at 5% level of significance.

There was no significant difference in depression levels in mothers receiving the educational module.

DISCUSSION

Effectiveness of self-prepared educational module on maternal self-care and new-born care

The results of the study show that the educational module developed and administered really boosted mothers' confidence in both new-born care and taking care of themselves. The Wilcoxon test revealed a significant increase in maternal confidence after the intervention (p=0.001397). These results are in line with earlier research, like the work done by Dr. Indra in 2016, which found that structured educational programs can enhance mothers' knowledge and confidence (t-value=20.12, p<0.01). Similarly, a meta-analysis by Guo et al in 2024 showed that education programs focused on new-born care significantly raised mothers' confidence scores (SMD=1.25, p<0.05) and helped lower their anxiety levels.

Additionally, the study highlights how effective maternal education interventions can be in improving self-care habits. The analysis after the intervention indicated that mothers who participated in the educational module showed better self-care practices, such as maintaining hygiene, caring for their perineum, engaging in postpartum exercise and became more aware about their own nutrition.

Impact of educational module on breastfeeding self-efficacy

Even though the intervention showed overall success, the study didn't find a significant difference in breastfeeding self-efficacy between the intervention and control groups (p=0.2041). This suggests that while educational modules can boost general maternal confidence, we might need to explore additional targeted strategies to really enhance breastfeeding self-efficacy. Previous research, like that of Seyyedi et al, points out how effective mobile-based educational interventions can be in improving breastfeeding knowledge and practices. However, the lack of significant results in this study might mean that a more interactive or extended approach- like sessions led by lactation consultants- could be necessary to strengthen breastfeeding self-efficacy over time.

Effect of educational module on postnatal depression levels

The study also looked into whether the educational module affected levels of postnatal depression, using the Edinburgh postnatal depression scale (EPDS) for measurement. The results from the t-test (p=0.6667) indicated that there was no significant difference in depression levels between the intervention and control groups. This finding is consistent with Dol et al, who noted mixed results regarding the effectiveness of mHealth interventions on maternal mental health outcomes.

Postnatal depression is shaped by various factors, such as socioeconomic status, support systems, and any pre-existing mental health issues. Tognasso et al highlight that maternal self-efficacy and parental stress play a role in how maternal attachment relates to confidence in caring for a new-born. To make a more meaningful impact on reducing postnatal depression levels, future interventions might need to include mental health elements like counselling and peer support groups.

Comparative analysis of maternal self-care and new-born care

The study revealed a significant difference in how maternal self-care and new-born care practices changed after the intervention (p=2.2e-16). This indicates that while mothers enhanced their knowledge and practices in both areas, the improvement in self-care was particularly striking. This aligns with the findings of Sarkar, who noted that structured learning packages effectively boosted knowledge and practices related to maternal and new-born care for mothers who had undergone caesarean sections.

The present study had certain limitations that should be acknowledged. Firstly, it was conducted at a single center, which may limit the generalizability of the findings to other settings or populations. Secondly, the follow-up period was relatively short, restricting the ability to observe sustained behavioral changes or the long-term impact of the educational intervention. Lastly, the study did not include a long-term evaluation of outcomes, which could have provided deeper insights into the persistence of improvements in maternal self-care practices, breastfeeding self-efficacy, and postpartum well-being.

Implications for nursing practice, education, and administration

In nursing practice, it is essential that nurses implement structured educational modules in postnatal wards to enhance maternal knowledge, confidence, and self-efficacy in newborn care. Within nursing education, training programs should incorporate simulation-based learning strategies to provide experiential and competency-based training for students. From an administrative perspective, it is recommended that hospitals standardize such educational interventions within institutional protocols to ensure consistency, quality, and sustainability of maternal and newborn care education.

CONCLUSION

The findings of the study indicate that the educational module was effective in enhancing the confidence levels of primipara mothers. It significantly improved maternal self-care and newborn care practices, contributing to an overall boost in maternal confidence. However, its impact on breastfeeding self-efficacy and postnatal depression was comparatively limited, highlighting the need for more specialized and comprehensive strategies in these areas.

Recommendations

Future studies should consider conducting multi-center trials with larger sample sizes to enhance the generalizability of findings across diverse populations. Incorporating mental health counselling into postnatal educational programs is also recommended to provide holistic support to new mothers. Additionally, mobile-based educational platforms could be utilized to improve accessibility and continuity of learning beyond hospital settings. Finally, implementing randomized controlled trials would help generate stronger evidence regarding the effectiveness of educational interventions in improving maternal and newborn care outcomes.

ACKNOWLEDGEMENTS

Authors would like to thanks Dr. Sapna Patel, Asst. Professor, MTIN, Changa, for her guidance in preparing the educational module and Dr. Purvi Patel, HOD, Dept of Pediatrics, Sri Krishna Hospital, Karamsad for her guidance in developing the components of newborn care

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Vaishnav S, Raju PM. Effectiveness of a self-prepared educational module on newborn and maternal self-care and its impact on maternal confidence, breastfeeding self-efficacy, and depression among postpartum primipara mothers in a selected hospital, Gujarat. Int J Community Med Public Health 2025;12:5511-7.