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EFFECTIVENESS OF NEWBORN CARE EDUCATION IN IMPROVING FATHERS' KNOWLEDGE OF BABY BATHING AND CORD CARE

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ABSTRACT

Background: Father participation in newborn care is essential to promote the baby's health and optimal development. However, many fathers still lack adequate knowledge and confidence in performing basic newborn care such as bathing and umbilical cord care. Focused educational interventions are needed to equip fathers with appropriate skills during the perinatal period. **Objective**: This study aimed to determine the effectiveness of newborn care education in improving fathers' knowledge of baby bathing and umbilical cord care. **Methods**: This research employed a quasi-experimental design with a pre-test and post-test control group approach. A total of 66 respondents were selected through purposive sampling, divided equally into experimental and control groups (33 each). The intervention consisted of a structured 7-day education program using an interactive module and instructional videos on newborn bathing and umbilical cord care, delivered through two in-person sessions and daily reminders. Fathers' knowledge was measured using the Father's Knowledge Questionnaire on Newborn Care. Data were analyzed using the Wilcoxon signed-rank test and Mann–Whitney U test. **Results**: The control group showed a mean pre-test score of 4.21 and post-test score of 4.48, while the experimental group's mean pre-test score was 3.94 and post-test score was 6.88. The Mann–Whitney test revealed a significant difference between groups ($p = 0.000 < \alpha\ 0.05$). **Conclusion**: Newborn care education was proven effective in increasing fathers' knowledge regarding baby bathing and umbilical cord care, highlighting the importance of targeted educational interventions for paternal involvem ent in neonatal health.

Keywords: education; fathers; knowledge; newborn care; umbilical cord

INTRODUCTION

Childbirth is a significant physical and emotional process for both mothers and families. During the postpartum period, hormonal changes often cause emotional fluctuations that can lead to psychological problems such as postpartum blues, depression, or even psychosis (Adila et al., 2019; Nabilla Dwiyanti, 2022). Fatigue due to sleep deprivation and the demands of newborn care may also worsen maternal well-being (Oktafia et al., 2022). In Indonesia, the prevalence of postpartum blues remains high, ranging from 50% to 70% (Agency et al., 2020), including findings in Riau Province, where 16.7% of mothers experience this condition (Purwati et al., 2023).

Paternal involvement plays a crucial role in supporting maternal health and promoting the optimal development of newborns. Studies have shown that fathers who are actively involved in postpartum care contribute to reduced maternal stress and improved family dynamics (Bakermans-Kranenburg et al., 2019; Shorey & Ang, 2019). However, educational programs about newborn care often focus solely on mothers, leaving fathers with limited knowledge about essential practices such as baby bathing and umbilical cord care (Takeishi et al., 2019; Dehshiri et al., 2023).

Fathers' participation in newborn care is essential not only to strengthen emotional bonding but also to support the mother's recovery and reduce psychological distress. Effective education and training can improve fathers' confidence and skills in newborn care. Interactive learning media, such as electronic modules, have been proven effective in increasing parental knowledge regarding newborn care (Komang et al., 2024). Therefore, this study aimed to analyze the effectiveness of newborn care education in improving fathers' knowledge about baby bathing and umbilical cord care, as an effort to promote

family-centered postnatal health and prevent maternal psychological problems.

METHOD

This study employed a quasi-experimental design with a pre-posttest control group approach to determine the effectiveness of newborn care education in improving fathers' knowledge about baby bathing and umbilical cord care. A total of 66 respondents were selected using purposive sampling, divided equally into an experimental group (n=33) and a control group (n=33). Inclusion criteria included fathers whose wives were in the third trimester of pregnancy, able to communicate in Indonesian, and residing in the work area of a public health center. Exclusion criteria were fathers with a history of mental illness or whose babies had health complications.

The research instrument was a 10-item knowledge questionnaire adapted from Agnes Sitorus' study, designed to assess fathers' understanding of newborn care practices. Each correct answer was scored 1, and incorrect answers 0, with total scores ranging from 0–10. The instrument was tested for validity (r = 0.472–0.675; r-table = 0.444) and reliability (Cronbach's alpha = 0.782), indicating that the questionnaire was valid and reliable. Data were collected through pretests and posttests. The intervention group received education via modules and videos on baby bathing and umbilical cord care for seven consecutive days, while the control group received no intervention during that period.

Ethical approval was obtained from the Ethics Committee of Payung Negeri Health Institute Pekanbaru (No. 180/IKES PN/KEPK/V/2025). All respondents were given an explanation about the study's purpose and procedures before signing informed consent forms. Confidentiality, beneficence, and justice principles were upheld throughout the study. Data were analyzed using descriptive and inferential statistics. The Wilcoxon test was applied to measure differences within groups, while the Mann–Whitney test was used to compare groups, with a significance level of α = 0.05.

RESULTS

Table 1. Overview of Respondent Characteristics (n = 66)

Characteristics of Respondents	n	%
Age		
26–40 years	57	86.4
> 40 years	9	13.6
Occupation		
Entrepreneur	29	43.9
Civil servant	10	15.2
Private employee	16	24.2
Not working	11	16.7
Education		
Junior High School	7	10.6
Senior High School	25	37.9
Diploma/Bachelor	34	51.5
Total	**66**	**100**

Based on Table 1, most respondents were in the late adulthood category (26–40 years) with 57 respondents (86.4%). The majority worked as entrepreneurs (43.9%), and more than half had a higher education background (Diploma/Bachelor, 51.5%). Homogeneity tests on respondents' characteristics including age, occupation, and education obtained p-values > 0.05, indicating that both experimental and control groups were homogeneous.

Table 2. Mean Differences of Fathers' Knowledge Before and After Education in the Experimental Group (n = 33)

Variable	Mean	SD	p-value
Pre-test	3.94	2.091	0.000
Post-test	6.88	2.247	

Table 2 shows that the mean knowledge score of fathers before the intervention was 3.94 (SD = 2.091) and after education increased to 6.88 (SD = 2.247). The Wilcoxon test yielded a p-value of 0.000 (< 0.05), indicating a significant difference between pretest and posttest results. This demonstrates that newborn care education effectively improved fathers' knowledge about baby bathing and umbilical cord care in the experimental group

Table 3. Mean Differences of Fathers' Knowledge Before and After in the Control Group (n = 33)

Variable	Mean	SD	p-value
Pre-test	4.21	1.996	0.077
Post-test	4.48	2.063	

Table 3 indicates that the control group's knowledge only increased slightly from 4.21 to 4.48. The Wilcoxon test produced a p-value of 0.077 (> 0.05), signifying no significant difference before and after the observation period without intervention.

Table 4. Comparison of Posttest Scores Between Experimental and Control Groups (n = 66)

Variable	Mean	SD	p-value
Experimental Group	6.88	2.247	0.000
Control Group	4.48	2.063	

As shown in Table 4, the Mann–Whitney test revealed a p-value of 0.000 (< 0.05), confirming a significant difference in posttest scores between the experimental and control groups. This indicates that newborn care education was effective in increasing fathers' knowledge about baby bathing and umbilical cord care.

DISCUSSION

This study demonstrated that newborn care education significantly improved fathers' knowledge regarding baby bathing and umbilical cord care. The findings revealed a substantial increase in knowledge in the experimental group compared to the control group, confirming the effectiveness of structured educational interventions. This aligns with previous studies that highlighted the importance of targeted education programs in enhancing parental understanding of neonatal care practices (Sari et al., 2019; Mariani et al., 2024).

The improvement observed in the experimental group can be attributed to the structured and interactive nature of the education sessions. Fathers were provided with clear, practical, and evidence-based information, supported by visual media and demonstrations, which enhanced comprehension and retention. According to the Health Belief Model (HBM), educational interventions that enhance perceived benefits and reduce perceived barriers can effectively change individual behavior (Rosenstock et al., 1988). In this context, fathers who were educated on newborn care perceived greater self-efficacy and responsibility in caring for their infants, motivating them to apply the learned practices.

Similar results were found in studies by Puspitasari and Nugraheni (2021), who reported that father involvement in neonatal care positively influences both child development and maternal recovery postpartum. Purwaningsih et al. (2020) also observed that health education using interpersonal and audiovisual methods can significantly improve family knowledge and engagement in neonatal care. The present findings reinforce these conclusions, suggesting that educational interventions tailored to fathers can enhance their active participation in infant care.

Furthermore, the characteristics of respondents in this study mainly adults in the late adulthood stage (26-40 years) may have contributed to the positive outcomes. Adults in this stage tend to possess higher emotional maturity and learning motivation, particularly when the educational material is directly relevant to their parental roles (Nasution et al., 2025). As noted by Herman et al. (2023), adult learners benefit from practical, clearly delivered information presented at an appropriate pace and supported by interactive learning methods.

Occupational background also played a role. Fathers working as self-employed individuals exhibited greater flexibility in managing their schedules, allowing them to engage more effectively in educational sessions (Roudi et al., 2017). However, this flexibility can also be a limitation, as business unpredictability may hinder consistent participation. Similarly, fathers with secondary education (high school level) demonstrated substantial gains in knowledge, confirming that well-designed educational programs are effective regardless of formal education level when the material is appropriately adapted (Mariani et al., 2024).

The findings also indicate that fathers with higher income levels tend to have better learning opportunities and access to health information. Conversely, lower-income families may experience

stress that limits cognitive and emotional resources for learning (Conger et al., 2010; Fauziah, 2022). Therefore, delivering accessible, contextualized, and engaging education is crucial for reaching all socioeconomic groups. From a media perspective, the use of interactive e-modules and audiovisual materials during the intervention supported learning effectiveness. According to Yulando et al. (2019) and Sabarudin et al. (2020), multimedia approaches that engage multiple senses enhance information retention. These educational tools simplify complex concepts and make learning experiences more engaging and memorable.

The implications of this study suggest that structured newborn care education should be integrated into maternal and child health programs, emphasizing father involvement. Fathers' increased knowledge is expected to improve newborn care quality, promote shared parental responsibilities, and contribute to positive family health outcomes. However, this study had several limitations, including environmental and scheduling constraints during data collection, the absence of gestational age as a respondent characteristic, and the potential risk of intervention contamination between groups. These limitations should be considered when interpreting the findings and may inform improvements in future research designs.

CONCLUSION

This study concluded that newborn care education was effective in improving fathers' knowledge regarding baby bathing and umbilical cord care. The structured educational intervention effectively enhanced fathers' understanding of newborn care practices. The results highlight the importance of involving fathers in newborn care education to ensure better family readiness and neonatal outcomes. The educational intervention used in this study can serve as an alternative learning model for fathers, especially expectant fathers, to enhance their confidence and competence in performing newborn care effectively.

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