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Evaluating Family Bundle Birthing Care to Improve Self-Efficacy and Reduce Maternal Anxiety During Pregnancy

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ABSTRACT

Introduction: Pregnancy-related anxiety can affect both the experience and length of labor. Self-efficacy, defined as an individual's belief in their ability to perform the behaviors required to achieve desired outcomes, plays a vital role in managing this anxiety. The Family Bundle Birthing Care (FBBC) approach, which actively involves the mother and her family especially the husband is believed to help lower anxiety levels and strengthen the pregnant woman's self-efficacy. This study aims to assess the effect of the FBBC approach on reducing anxiety and enhancing self-efficacy among pregnant women.

Methods: A quasi-experimental design was employed with intervention and control groups, each consisting of 50 pregnant women. Data was collected using the childbirth education (W-DEQ-A), (W-DEQ-B), childbirth self-efficacy (CBSEI), and birth confidence (BCSQ) questionnaires to assess anxiety and self-efficacy. Data analysis was conducted using the fisher exact test and independent t-tests.

Results: The results indicated that the intervention group had significantly lower average scores on the W-DEQ-A and W-DEQ-B, and higher scores on the CBSEI and BCSQ questionnaires compared to the control group. The differences were statistically significant, with p-values of 0.001, 0.01, 0.02, and 0.01, respectively, suggesting that the family-based antenatal education program was effective in reducing anxiety and enhancing self-efficacy among pregnant women.

Conclusion: The FBBC program proved effective in reducing anxiety and enhancing self-efficacy in pregnant women. This approach could serve as an alternative method to improve mental preparedness and psychological support for expectant mothers as they approach labor.

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INTRODUCTION

The labor process is often perceived as a life and death struggle, creating anxiety and fear in many pregnant women (1). This perception has become deeply ingrained in society, and fear of pain and uncertainty about the birthing process are often the primary sources of anxiety for expectant mothers (2). A cross-sectional study conducted in Langsa City involving a total of 25 pregnant women revealed that moderate levels of anxiety were more commonly found among multigravidas, while severe anxiety was predominantly experienced by primigravidas and grand multiparas (3). The main fear experienced by pregnant women generally relates to the pain they will experience during labor (4). In fact, psychological trauma from childbirth has been shown to have long-term effects on maternal self-efficacy and temperament towards the baby during the 3 – 12 month postpartum period (5).

Anxiety during pregnancy, particularly about the birthing process, can interfere with a woman's ability to cope with labor. Some women feel uncertain about their ability to give birth due to excessive fear (6). Self-efficacy has been closely associated with anxiety levels during labor. A study revealed that women with a fear of childbirth tend to experience longer active labor phases, about 40 minutes longer than those without excessive fear (7). According to the 2018 RISKESDAS report, one of the most common complications is prolonged labor, which ranks second after premature rupture of membranes (8).

Preventing complications during childbirth is important for ensuring a positive experience for the mother. The government has established a minimum of four antenatal care visits to access health services and prepare for childbirth (9). The frequency of antenatal care visits is linked to access to information about childbirth, with women who are less fearful of labor generally having better access to this information (10). Several recent studies have tested various interventions to reduce anxiety and improve self-efficacy among pregnant women. For instance, a mindfulness-based intervention conducted by Zarenejad et al., (2020) on third-trimester pregnant women showed that training and counseling sessions had no significant impact on reducing anxiety or improving self-efficacy (11). Other study, Toohill et al., (2014) conducted a psycho-educational intervention through telephone counseling, which successfully reduced anxiety, although the limited face-to-face interaction made it harder for participants to fully express their feelings (12).

Family Bundle Birthing Care (FBBC) is an approach designed to involve the family, especially the husband and other family members, in prenatal education and preparation for childbirth (13). The goal is to reduce maternal anxiety and enhance self-efficacy during labor (14). This concept emphasizes the support of the family, not only from healthcare professionals but also from close relatives who actively participate in the preparation and birthing process (15). Another study assessed the effectiveness of a structured childbirth education package for birth companions, which also showed a reduction in anxiety and an increase in self-efficacy during labor (7). However, the results of this study may not be applicable in countries with different childbirth service policies. Previous studies have included women acting as birth companions during the latent phase; however, there is a lack of research involving husbands and other family members in prenatal education (16). This point would be strengthened by supporting evidence from similar cultural or healthcare settings to provide a broader context. In Indonesia, the role of the mother as a birth companion holds strong cultural value, although generational differences in perceptions may exist. The presence of the mother is considered essential for physical and psychological support, especially since some husbands feel anxious and require additional support (16).

Based on this background, there is still a gap in research regarding prenatal education approaches that involve the husband and family to reduce anxiety and increase self-efficacy in pregnant women. This study aims to evaluate the effectiveness of the Family Bundle Birthing Care (FBBC) approach through a quasi-experimental design, by integrating prenatal education that actively involves the mother, husband, and family in childbirth preparation. This research is expected to identify and evaluate the effectiveness of this approach in reducing anxiety and improving self-efficacy among pregnant women.

METHOD

Research Type

This study use a quasi-experimental design with an intervention and control group approach, aimed at measuring the differences between pregnant women who participated in a structured antenatal education and guidance program and those who received standard antenatal services. The study was conducted to evaluate the impact of the

structured antenatal education program on the knowledge, attitudes, and mental preparedness of pregnant women and their families.

Population and Sample/Informants

The population of this study consisted of pregnant women who registered for childbirth at local midwife practices. A random sampling method was used with stratified sampling technique based on inclusion criteria to ensure the suitability and balanced distribution between the intervention and control groups. The inclusion criteria included pregnant women scheduled to give birth during the study period, as well as those accompanied by their husbands and parents. The sample size was determined using Slovin's formula, considering an estimated population of 100 pregnant women, a 95% confidence level, and a 10% margin of error. Based on this calculation, 50 participants were assigned to the intervention group and 50 to the control group.

Research Location

The research took place in Magelang Regency, Central Java Province, Indonesia, from March to May 2024. The location was selected based on considerations of accessibility and the diversity of pregnant women's characteristics, which could provide a representative sample for this study.

Instrumentation or Tools

Data collection was conducted using four internationally validated questionnaires: the Willingness to Participate in Childbirth Education Antenatal (W-DEQ-A), the Willingness to Participate in Childbirth Education Postnatal (W-DEQ-B), the Childbirth Self-Efficacy Inventory (CBSEI), and the Birth Confidence Scale Questionnaire (BCSQ). These instruments were used to assess three core areas related to pregnant women: their knowledge and perceptions of pregnancy and childbirth, their mental and emotional readiness for labor, and their self-efficacy in managing the childbirth process.

Data Collection Procedures

Data will be gathered in two distinct phases. In the antenatal phase, participants will complete the W-DEQ-A and CBSEI questionnaires to evaluate their initial perceptions and self-efficacy related to childbirth. Following delivery, in the postnatal phase, the same participants will be asked to fill out the W-DEQ-B and BCSQ questionnaires to capture changes in their perceptions, emotional experiences, and confidence after childbirth.

Data Analysis

The collected data underwent editing, coding, and tabulation using Microsoft Excel. Each variable was assigned a numerical code according to the respective instruments. Descriptive analysis was carried out by calculating the mean, frequency, and percentage frequency. Statistical analysis was performed using SPSS version 27, applying Chi-square or Fisher Exact tests, as well as independent t-tests or Mann-Whitney tests, to compare differences between the intervention and control groups at each measurement point.

Ethical Approval

This study has received approval from the Ethics Committee of the Faculty of Health Sciences, Jenderal Achmad Yani University, Yogyakarta, with the approval number SKep/071/KEP/IV/2024, ensuring that all research procedures comply with health research ethics principles.

RESULTS

This study presents data on demographic variables assessed between the intervention and control groups, such as age, education level, obstetric status, and employment status of the pregnant women, as shown in Table 1. The average age of pregnant women in the intervention group is 27.90 years (±5.01), with ages ranging from 20 to 38. In the control group, the average age is 27.80 years (±6.2), with ages ranging from 20 to 44. In terms of education level, it was found that the majority of pregnant women in both groups had completed primary education, with 76% in the control group and 56% in the intervention group. More women in both groups had multiparous obstetric status,

with 70% in the intervention group and 60% in the control group. Regarding employment status, the majority of pregnant women in both groups were unemployed: 54% in the intervention group and 66% in the control group.

Statistical analysis revealed that the age difference between the two groups was not significant, with a p-value of 0.761, suggesting a comparable age distribution in both groups. This allows for a fair comparison of the intervention's impact. The difference in educational status was nearly statistically significant, with a p-value of 0.057, which could be relevant, as education may influence the understanding and acceptance of the antenatal education program. The obstetric status showed no significant effect on the groups' response to the intervention, with a p-value of 0.402. Employment status also did not show significant differences, with a p-value of 0.307. Overall, while some demographic differences were observed, they were not statistically significant, indicating that the two groups had similar demographic characteristics and that the study's findings can be generalized to both groups

Table 1. Demographic characteristics of participant

Demographic Variable	Categories	Intervention (%)	Control (%)	p-Value
Age	Years	27.90 (±5.01)	27.80 (±6.2)	0.761
Educational	Primary school	28 (56%)	38 (76%)	0.057
	University	22 (44%)	12 (24%)	
Obstetric Status	Primipara	15 (30%)	20 (40%)	0.402
	Multipara	35 (70%)	30 (60%	
Employment Status	Employed	23 (46%)	17 (34%)	0.307
	Not Working	27 (54%)	33 (66%)	

Regarding the measurements using the W-DEQ-A questionnaire, the intervention group had an average score of 35.76, with a range of 10 to 76 and a standard deviation of 17.721. In contrast, the control group had a higher average score of 56.82, with a range of 21 to 62 and a standard deviation of 13.035. The lower score in the intervention group indicates reduced anxiety and increased self-efficacy during labor. The difference in scores was statistically significant with a p-value of 0.001, suggesting that the intervention program had a positive impact on the preparation of pregnant women during pregnancy. In the W-DEQ-B questionnaire, the intervention group scored an average of 29.98, with a range from 5 to 55 and a standard deviation of 17.012, while the control group scored an average of 46.06, with a range from 28 to 62 and a standard deviation of 16.969. The lower score in the intervention group suggests reduced anxiety and increased self-efficacy post-delivery. The p-value of 0.01 indicates that the antenatal education program played an essential role in reducing anxiety and improving self-efficacy after childbirth in the intervention group compared to the control group.

The CBSEI questionnaire, which measures pregnant women's confidence in facing labor, showed that the intervention group had an average score of 134.36, with a range from 119 to 152 and a standard deviation of 5.652. The control group scored an average of 130.88, with a range from 128 to 136 and a standard deviation of 3.879. These results indicate higher confidence among pregnant women in the intervention group in facing labor, with a significant difference p-value = 0.02, demonstrating an increase in self-efficacy during the labor process, though not as high as in the control group. Lastly, the BCSQ questionnaire results showed that the intervention group had an average score of 41.02, with a range from 28 to 51 and a standard deviation of 7.087, while the control group had an average score of 31.54, with a range from 17 to 48 and a standard deviation of 7.462. The difference yielded a p-value of 0.01, indicating that structured antenatal education significantly improved pregnant women's confidence in facing labor. This also highlights the importance of family support during labor, as it positively influences the comfort and experience of women during childbirth.

Table 2. Questionnaire results and differences between groups

Variable	Group	Minimum	Maximum	Mean	Std. Deviation	p-Value
W-DEQ-A	1	10	76	35.76	17.721	0.001
	2	21	62	56.82	13.035	
W-DEQ-B	1	5	55	29.98	17.012	0.01
	2	28	62	46.06	16.969	
CBSEI	1	119	152	134.36	5.652	0.02
	2	128	136	130.88	3.879	
BCSQ	1	28	51	41.02	7.087	0.01
	2	17	48	31.54	7.462	

*1: Intervention, 2: Control

Generally, the results of this study indicate the family bundle birthing care (FBBC) program and structured antenatal education have a significant impact on reducing anxiety and increasing self-ability of pregnant women in facing the labor process. This is reflected in the statistical analysis of table 2 which is significant in the four variables measured, which illustrates that pregnant women who follow the intervention program are more prepared and more confident in undergoing labor compared to pregnant women in the control group.

DISCUSSION

Based on the findings of this study, it was discovered that both groups exhibited similar characteristics, as indicated by the statistical analysis showing no significant differences. However, the results from the pregnant women's readiness questionnaire revealed that the family bundle birthing care (FBBC) program and structured antenatal education had a significant impact on reducing anxiety and increasing self-efficacy among pregnant women. This finding demonstrates that the differences observed between the groups were meaningful, supported by a notable effect size. This suggests that the FBBC intervention had a significant and practical influence on improving maternal readiness for childbirth.

The FBBC approach, which integrates prenatal education for the mother, partner, and family, aligns with findings from previous studies in various countries that emphasize the importance of family support and education in enhancing self-efficacy and reducing anxiety among pregnant women. Research in Indonesia has shown that family support has a significant correlation with maternal self-efficacy, where instrumental support from family members was found to be the most influential factor (18). A study in China demonstrated that simulation-based education effectively reduced childbirth fear and improved pregnant women's self-efficacy (19). Similarly, research in the United States found that a mindfulness-based childbirth education approach could increase self-efficacy and improve the psychological well-being of mothers (20). In Iran, an educational intervention based on self-efficacy theory successfully reduced pregnancy-related anxiety and led to more positive childbirth outcomes (21). Furthermore, a study in Turkey showed that antenatal education was effective in reducing childbirth fear and increasing maternal self-efficacy (15).

This study also supports findings from research conducted in Bandung, which showed that the family centered maternity care (FCMC) program increased confidence and reduced anxiety among pregnant women (22). This program utilized an approach based on the assessment of pregnant women's needs, facilitating the presence of family members, partners, parents, friends, cadres, and the pregnant women themselves. The approach is similar to the FBBC model, with the main difference being the additional features such as in-depth information about childbirth processes, stress management, relaxation techniques, and strategies to boost self-confidence during labor. This approach had a positive impact on maternal mental health post-birth, reducing the potential for postpartum blues (23).

Other studies have shown that technology-based education programs and application-based training enhance confidence and reduce anxiety among pregnant women (24). Although the methods and types of interventions varied, whether application-based education or face to face classes, the results showed a significant positive influence on pregnant women's self-efficacy.

The FBBC program has demonstrated a positive impact on reducing anxiety and improving maternal readiness for childbirth and child care. One key factor contributing to the program's effectiveness is family involvement, including partners, parents, and close friends, in supporting the pregnant women (25). This accompaniment provides significant benefits in lowering stress levels, boosting motivation, fostering positive behaviors, and strengthening self-confidence and emotional stability during the transition to parenthood (26,27).

Stress management and relaxation techniques during pregnancy and labor are essential for enhancing maternal mental health. Previous meta-analyses have demonstrated that these approaches effectively reduce stress, anxiety, and depressive symptoms, which consequently improve the quality of pregnancy and birth outcomes (28). One key mechanism underlying the effectiveness of this approach is the integrative relationship between the body and mind. Psychological stress can lead to prolonged muscle contractions, increased vasoconstriction, blood pressure, and heart rate, resulting in reduced blood flow and body circulation. Physical relaxation methods, such as breathing techniques and muscle relaxation, help alleviate muscle tension and manage both emerging and pre-existing pathological stress (11).

Generally, the FBBC approach has proven effective in reducing anxiety during pregnancy. It is recommended that this intervention be extended into the postpartum period to help prevent postpartum anxiety and depression. Continuous support after childbirth plays a crucial role in promoting maternal well-being, which in turn positively affects self-care, mother-infant bonding, exclusive breastfeeding, and the child's optimal growth and development (29,30). These recommendations align with guidelines from the American College of Obstetricians and Gynecologists (ACOG), which emphasize the importance of ongoing mental health support for new mothers to improve postpartum outcomes. In the context of healthcare, improving maternal mental health from pregnancy through the postpartum period is an essential aspect that healthcare providers, particularly midwives, must prioritize.

The results of this study emphasize that the FBBC program, which integrates family-based antenatal education, significantly reduces anxiety levels and improves maternal self-efficacy in preparing for labor. Although there were some differences in outcomes between the intervention and control groups, these findings still demonstrate that more inclusive, family-centered antenatal education approaches can enhance maternal mental readiness and reduce anxiety. Therefore, family-based interventions can be an effective strategy to reduce complications and maternal and neonatal mortality (31).

Limitations Study and Recommendations for Future Research

This study encountered several limitations that should be considered when interpreting the findings. The sample was limited to pregnant women from a single geographic area, which restricts the generalizability of the results across different populations and cultural settings. Additionally, the quasi-experimental design without randomization may have introduced selection bias, potentially affecting internal validity. The use of self-reported questionnaires to measure anxiety and self-efficacy could also introduce subjective bias, influenced by individual perceptions or social desirability. Important factors such as social support levels, maternal health status, and other psychosocial variables were not controlled, which might have impacted the outcomes. Furthermore, the influence of sociocultural norms specific to Indonesia such as family roles, community expectations, and cultural beliefs about pregnancy and childbirth may moderate or mediate the effectiveness of family-based antenatal interventions like FBBC. Future research should include more diverse and larger samples, utilize randomized controlled trial designs, and consider mixed methods or objective measures. Exploring how cultural and social factors interact with such interventions would deepen understanding of their impact on maternal anxiety and self-efficacy.

CONCLUSION

This study demonstrates that the family bundle birthing care (FBBC) program, which involves family-based antenatal education, is effective in reducing anxiety and improving self-efficacy among pregnant women. The results show that the intervention group had lower anxiety scores and higher self-confidence compared to the control group.

Family support, including that from partners and parents, plays a crucial role in enhancing the mental readiness of pregnant women. The program has proven to have a positive impact on maternal preparedness for labor and postpartum care. Therefore, this family-based approach can be an effective strategy to reduce anxiety, improve maternal mental health, and reduce the potential for complications during pregnancy and childbirth.

AUTHOR'S CONTRIBUTION STATEMENT

Eniyati was responsible for the conceptual framework, research design, data collection, and drafting the initial manuscript. Fatimah Dewi Anggraeni contributed to data analysis, manuscript writing, and critical revisions. Sujono Riyadi supported the methodological design, interpretation of findings, and manuscript review. Muhammad Farid was involved in the final review and editing process.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to this study.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

While developing this manuscript, the authors utilized generative AI tools, such as Grammarly, to assist with language refinement, academic editing, and the structuring of ideas. All content was then carefully reviewed, validated, and revised by the authors to maintain accuracy, ensure originality, and uphold academic integrity.

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To access the research data and questionnaire is available upon request from the Corresponding Author, accompanied by a clear explanation of the intended purpose.

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