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RESEARCH ARTICLE

THE EFFECTIVENESS OF BIRTH PLAN PREPARATION IN REDUCING ANXIETY AMONG PREGNANT WOMEN BEFORE CHILDBIRTH

(EFEKTIVITAS BIRTH PLAN SEBAGAI UPAYA PENURUNAN KECEMASAN PADA IBU HAMIL MENJELANG PERSALINAN)

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ABSTRACT

Childbirth is a physiological process accompanied by both physical and psychological changes in pregnant women. Anxiety is one of the psychological responses that may arise as women approach delivery and, when excessive, can affect maternal well-being and the childbirth process. Birth plan preparation is a structured approach that may help women strengthen their readiness for childbirth by providing information and opportunities to discuss their preferences with healthcare providers. This study aimed to analyze the effect of birth plan preparation on anxiety levels among third-trimester pregnant women approaching childbirth at TPMB Midwife Rina Listiana, S.ST, Karawang Regency. A quantitative approach with a pre-experimental one-group pretest–posttest design was employed. Thirty third-trimester pregnant women were selected using purposive sampling. Maternal anxiety was assessed using a modified anxiety questionnaire based on a Visual Analog Scale approach. Data were analyzed using the Wilcoxon Signed-Rank Test at a significance level of 0.05. Before the intervention, moderate anxiety was the most common category (46.7%). After birth plan preparation, 46.7% of respondents reported no anxiety and 46.7% experienced mild anxiety, while moderate anxiety decreased to 6.7%. The mean anxiety score declined from 53.37 before the intervention to 12.80 afterward, with a p-value of 0.0001 ($p < 0.05$). These findings indicate a significant difference in anxiety scores before and after birth plan preparation and suggest that structured birth plan preparation may be considered as part of antenatal education to strengthen maternal psychological readiness for childbirth.

Keywords: birth plan, childbirth anxiety, childbirth preparation, third trimester pregnancy

ABSTRAK

Persalinan merupakan proses fisiologis yang disertai perubahan fisik dan psikologis pada ibu hamil. Kecemasan merupakan salah satu respons psikologis yang dapat muncul menjelang persalinan dan, apabila berlebihan, dapat memengaruhi kesejahteraan ibu serta proses persalinan. Penyusunan birth plan merupakan salah satu pendekatan terstruktur yang dapat membantu meningkatkan kesiapan ibu dengan memberikan informasi dan kesempatan untuk mendiskusikan harapan serta pilihan persalinan bersama tenaga kesehatan. Penelitian ini

bertujuan menganalisis pengaruh penyusunan birth plan terhadap tingkat kecemasan ibu hamil trimester III dalam menghadapi persalinan di TPMB Bidan Rina Listiana, S.ST, Kabupaten Karawang. Penelitian menggunakan pendekatan kuantitatif dengan desain pra-eksperimental one-group pretest–posttest design. Sampel pada penelitian ini sebanyak 30 ibu hamil trimester III yang dipilih secara purposive sampling. Tingkat kecemasan diukur menggunakan kuesioner kecemasan yang dimodifikasi dengan pendekatan Visual Analog Scale. Analisis data menggunakan Wilcoxon Signed-Rank Test pada tingkat kemaknaan 0,05. Sebelum intervensi, kategori kecemasan yang paling banyak adalah kecemasan sedang (46,7%). Setelah penyusunan birth plan, sebanyak 46,7% responden tidak mengalami kecemasan dan 46,7% mengalami kecemasan ringan, sedangkan kecemasan sedang menurun menjadi 6,7%. Rata-rata skor kecemasan menurun dari 53,37 sebelum intervensi menjadi 12,80 setelah intervensi dengan nilai p = 0,0001 (p < 0,05). Hasil tersebut menunjukkan adanya perbedaan yang bermakna pada skor kecemasan sebelum dan sesudah penyusunan birth plan dan menunjukkan bahwa penyusunan birth plan berpotensi menjadi bagian dari edukasi antenatal untuk meningkatkan kesiapan psikologis ibu menghadapi persalinan.

Kata kunci: kecemasan persalinan, kehamilan trimester III, penyusunan birth plan, persiapan persalinan

INTRODUCTION

Childbirth represents the final stage of pregnancy and is a physiological process accompanied by complex biological changes in the maternal body. Alongside these physical changes, women may experience various psychological responses, particularly as they approach the time of delivery. Anxiety is one of the psychological responses frequently experienced during late pregnancy. As women enter the third trimester, their attention is increasingly directed toward the upcoming birth, which may give rise to concerns about labor pain, possible complications, and the safety of both mother and baby.[1]

Anxiety during the later stages of pregnancy may arise from several interrelated factors. Limited knowledge about childbirth, previous unfavorable delivery experiences, and feelings of having limited control over medical procedures may contribute to increased anxiety. [2] Information obtained from family, social networks, or other sources may also be inaccurate or distressing, causing childbirth to be perceived as a threatening event. Unmanaged anxiety during pregnancy has been associated with adverse outcomes, including an increased risk of preterm birth, low birth weight, and prolonged labor. [3]

Maternal anxiety may also intensify the perception of pain during labor and potentially interfere with uterine contractions, thereby affecting labor progression.[4]

The psychological effects of anxiety may continue beyond pregnancy and childbirth. Emotional distress during pregnancy may persist into the postpartum

period and increase the risk of postpartum emotional disturbances, including postpartum blues. Such conditions may interfere with early mother–infant bonding and potentially influence the child's psychosocial development.[5]

Anxiety during pregnancy remains an important maternal health concern worldwide. The World Health Organization has reported that approximately 10–20% of pregnant women experience anxiety disorders during pregnancy.[6] In Indonesia, national data indicate that approximately 12.6% of pregnant women experience anxiety.[6] Similar conditions have been observed at the regional level. Data from the Karawang District Health Office show that among third-trimester pregnant women, 37.38% experienced mild anxiety, 46.17% moderate anxiety, and 16.45% severe anxiety.[7] Research conducted by Isnawati et al. in Karawang also reported that anxiety was commonly experienced by pregnant women during the third trimester as they approached childbirth.[8]

One strategy that may support psychological preparedness for childbirth is birth plan preparation. A birth plan is a written document describing a woman's expectations, preferences, and considerations regarding the childbirth process. It may include preferences concerning delivery methods, pain management, birth companions, and possible medical interventions.[9] Preparing a birth plan together with healthcare providers can provide women with clearer information about childbirth while creating an opportunity to communicate their concerns and preferences.[10]

Although previous studies have suggested that birth planning may contribute to better maternal experiences and outcomes, evidence regarding the use of structured birth plan preparation specifically to reduce anxiety among third-trimester pregnant women in independent midwifery practice settings remains limited. Previous studies have examined birth plans in relation to maternal satisfaction, childbirth experiences, and maternal and neonatal outcomes.[22–25] Differences in healthcare settings, maternal characteristics, cultural context, and methods of birth plan implementation may also influence the outcomes observed.

This study therefore focused on the implementation of a structured birth plan preparation program among third-trimester pregnant women receiving antenatal care at TPMB Midwife Rina Listiana, S.ST, Karawang Regency. The intervention combined education, counseling, and individualized preparation of a birth plan addressing the stages of labor, pain management, delivery options, and possible medical interventions. The novelty of this study lies in examining changes in maternal

anxiety before and after a structured birth plan preparation program in an independent midwifery practice setting. Based on this background, this study aimed to analyze the effect of structured birth plan preparation on anxiety levels among third-trimester pregnant women approaching childbirth at TPMB Midwife Rina Listiana, S.ST, Karawang Regency.

MATERIALS AND METHODS

This study employed a quantitative approach using a pre-experimental one-group pretest–posttest design. The design was used to assess changes in maternal anxiety levels before and after implementation of the birth plan preparation program. Anxiety was assessed at two measurement points: before the intervention (pretest) and after the intervention (posttest).

The study was conducted at the Independent Midwifery Practice of Midwife Rina Listiana, S.ST, Karawang Regency, from May to July 2025. The study population consisted of 45 third-trimester pregnant women who attended antenatal care at the study site in May 2025. A total of 30 participants were selected using purposive sampling based on predetermined eligibility criteria.[12]

The inclusion criteria were third-trimester pregnant women who were willing to participate, able to complete the questionnaire independently or with appropriate assistance, and had not previously prepared a birth plan. Women with severe medical conditions or a history of psychiatric disorders were excluded. These criteria were established to minimize the influence of clinical and psychological factors that might independently affect anxiety levels.[13]

Data were collected using a structured questionnaire consisting of two sections. The first section collected information regarding respondents' demographic characteristics and obstetric history. The second section assessed maternal anxiety using a modified anxiety questionnaire based on a Visual Analog Scale approach. The instrument consisted of 20 items addressing concerns related to childbirth, fear of labor pain, confidence in coping with labor, and uncertainty regarding the childbirth process.

Maternal anxiety was assessed using a 20-item modified Visual Analog Scale (VAS)-based childbirth anxiety questionnaire developed to measure anxiety specifically related to the childbirth process. Each item consisted of a 100-mm horizontal line ranging from 0 mm, indicating no anxiety, to 100 mm, indicating the highest level of anxiety. Respondents were asked to place a mark at the point that best represented their current level of anxiety regarding childbirth.

The questionnaire covered several aspects of childbirth-related anxiety, including fear of labor, concerns about possible complications, perceived readiness for childbirth, fear of labor pain, concerns about maternal and neonatal safety, fear of cesarean delivery, perceived ability to cope with contractions and pain, fear of losing control, concerns regarding healthcare support and birth facilities, preferences regarding the mode of delivery, fear of unexpected events during labor, and concerns about emotional support from partners or family members.

The score for each item was measured in millimeters. The overall anxiety score was calculated as the mean of the 20 item scores, resulting in a final score ranging from 0 to 100. Higher scores indicated a greater level of childbirth-related anxiety. Anxiety categories were determined according to the predetermined scoring criteria established for the instrument.

Before the main study, the questionnaire was tested for validity and reliability among 30 respondents who were not included in the study sample. Item-total correlation coefficients ranged from 0.490 to 0.954, exceeding the critical r-value of 0.361. Thus, all questionnaire items were considered valid. The reliability test produced a Cronbach's Alpha coefficient of 0.966, indicating excellent internal consistency of the instrument.

The intervention consisted of a structured birth plan preparation program delivered through education, counseling, and guided preparation of an individual birth plan over a period of five to seven days. Participants received information concerning the stages of labor, childbirth options, pain management strategies, and possible medical interventions. They were subsequently guided in identifying their expectations, concerns, and preferences regarding childbirth and incorporating them into an individualized birth plan.

Before its use in the main study, the questionnaire underwent validity and reliability testing among 30 respondents who were not included in the study sample. Item-total correlation coefficients ranged from 0.490 to 0.954, exceeding the critical r-value of 0.361; therefore, all items met the validity criteria. Reliability testing using Cronbach's Alpha yielded a coefficient of 0.966, indicating excellent internal consistency.[15]

Univariate and bivariate analyses were performed. Univariate analysis was used to describe the distribution of respondents' anxiety levels before and after the intervention. A Shapiro–Wilk test was conducted to assess data normality. Because the data did not meet the assumption of normality, the Wilcoxon Signed-Rank Test

was used to compare anxiety scores before and after the intervention. Statistical significance was determined at $\alpha = 0.05$.[16]

Ethical approval was obtained from the Health Research Ethics Committee of the Faculty of Health Sciences, Universitas Jenderal Achmad Yani Cimahi, under approval number 060/KEPK/FITKes-Unjani/VII/2025. Written informed consent was obtained from all respondents after they received an explanation regarding the study objectives, procedures, potential benefits, and their rights as research participants.

All respondents provided written informed consent after receiving a full explanation regarding the purpose, procedures, and potential benefits of the study in accordance with ethical principles in health research.

RESULTS AND DISCUSSION

This study involved 30 third-trimester pregnant women who fulfilled the eligibility criteria and participated in the birth plan preparation program. The analysis was conducted to describe maternal anxiety levels before and after the intervention and to assess changes in anxiety following the birth plan preparation program.

Anxiety Levels Before the Birth Plan Intervention

Table 1 presents the distribution of respondents according to their anxiety levels before the birth plan intervention.

Table 1 Distribution of maternal anxiety levels before the birth plan intervention

Anxiety Category	Frequency	Percentage
Mild anxiety	9	30.0
Moderate anxiety	14	46.7
Severe anxiety	7	23.3
Total	30	100

Based on the Table 1, before the intervention, moderate anxiety was the most frequently reported category, involving 14 respondents (46.7%). Nine respondents (30.0%) experienced mild anxiety, while seven respondents (23.3%) experienced severe anxiety. These findings indicate that anxiety was common among the participants during the third trimester as they approached childbirth.

The predominance of moderate anxiety may be associated with concerns regarding labor pain, possible complications, and uncertainty about the childbirth process. Kartika and Claudya reported that pregnant women approaching delivery commonly experienced anxiety related to anticipated labor pain and concerns about complications.[1] Similarly, Rafidah and Safitri emphasized that inadequate knowledge about childbirth procedures may increase perceptions of threat and contribute to maternal anxiety.[2]

From a psychological perspective, moderate anxiety may reduce concentration on non-threatening stimuli, although individuals generally remain able to process information and respond to guidance.[17] Therefore, this level of anxiety may still provide an opportunity for educational interventions because pregnant women retain sufficient cognitive capacity to understand information and develop appropriate coping strategies.

The findings are consistent with previous research by Asni and Puspitasari, which reported that moderate anxiety was commonly experienced by third-trimester pregnant women before childbirth.[18] Abidah also reported that anxiety during late pregnancy may be associated with inadequate psychological preparation and limited understanding of the childbirth process.[19]

Anxiety Levels After the Birth Plan Intervention

Table 2 Distribution of maternal anxiety levels after the birth plan intervention

Anxiety Category	Frequency	Percentage
No anxiety	14	46.7
Mild anxiety	14	46.7
Moderate anxiety	2	6.7
Total	30	100

Following the intervention, 14 respondents (46.7%) were classified as having no anxiety and another 14 respondents (46.7%) experienced mild anxiety. Only two respondents (6.7%) remained in the moderate anxiety category, while no respondents were categorized as having severe anxiety (Table 2).

This change suggests an improvement in maternal psychological preparedness after participation in the birth plan program. One possible explanation is that the intervention provided structured information about labor stages, pain management, delivery procedures, and possible medical interventions. A better understanding of what may occur during childbirth can reduce uncertainty and help women develop more realistic expectations.

Birth plan preparation may also provide women with an opportunity to communicate their preferences and concerns to healthcare providers. This collaborative process can strengthen women's sense of involvement and control in relation to childbirth.[20] Peplau's interpersonal theory similarly emphasizes the importance of adequate information and therapeutic communication in reducing anxiety associated with situations perceived as threatening.[21]

These findings are consistent with previous research examining birth planning. Ahmadpour et al. reported favorable

maternal and neonatal outcomes following implementation of birth plans.[24] Afshar et al. found that birth planning could contribute to improved satisfaction with childbirth experiences,[22–23] while Hidalgo-Lopezosa et al. reported an association between birth plan use and improved maternal outcomes.[25]

Effect of Birth Plan Preparation on Maternal Anxiety

Table 3 Comparison of maternal anxiety scores before and after birth plan preparation

Measurement	n	Mean	Standard Deviation	p-value
Pretest	30	53.37	22.03	
Posttest	30	12.80	10.64	0.0001

The mean anxiety score decreased from 53.37 before the intervention to 12.80 after the birth plan preparation program. The Wilcoxon Signed-Rank Test produced a p-value of 0.0001, which is lower than the significance threshold of 0.05 (Table 3). This indicates a statistically significant difference in maternal anxiety scores before and after the intervention.

The reduction in anxiety may be related to the structured nature of the program, which combined education, counseling, and individualized birth plan preparation. Through this process, women were provided with information regarding childbirth while being encouraged to identify their own expectations and concerns. Such preparation may reduce uncertainty and improve confidence in facing labor.

The birth plan may also strengthen maternal self-efficacy by involving women more actively in preparing for childbirth. Rather than experiencing labor as an entirely unpredictable event, participants were encouraged to understand available options and communicate their preferences with healthcare providers. Greater involvement and perceived control may help reduce fear and anxiety.

The findings are in line with previous studies that have examined the relationship between birth planning and maternal psychological outcomes. Ahmadpour et al. reported favorable outcomes following birth plan implementation, while other studies found associations between birth plan use, maternal confidence, satisfaction, and reduced fear of childbirth.[23-25]

In addition to its potential effect on anxiety, birth planning may support a more positive childbirth experience. By facilitating discussion of expectations and possible interventions, birth plans can strengthen communication between women and healthcare providers and support shared decision-making. Ghahremani et al. emphasized the role of birth plans in

promoting communication and patient-centered maternity care.[9]

Overall, the findings indicate that structured birth plan preparation may be considered as one component of antenatal education for women experiencing anxiety as they approach childbirth. However, because this study used a one-group pretest–posttest design without a control group, the findings should be interpreted as a significant change following the intervention rather than definitive evidence of a causal effect.

Therefore, integrating birth plan education into routine antenatal care programs may serve as **a** practical strategy to improve maternal psychological preparedness before childbirth. Such interventions may also enhance women's participation in decision-making processes related to their own reproductive health.

STUDY LIMITATIONS

Several limitations should be considered when interpreting the findings. First, the pre-experimental one-group pretest–posttest design did not include a comparison group. Consequently, the observed reduction in anxiety cannot be attributed exclusively to the birth plan intervention because other factors, such as routine antenatal care, family support, or additional information received during the study period, may have contributed to the change. Second, the study involved only 30 participants from a single independent midwifery practice. This relatively small and localized sample limits the extent to which the findings can be generalized to pregnant women in other settings or populations with different characteristics. In addition, the study focused on short-term changes in anxiety and did not evaluate whether the improvement was maintained until delivery or during the postpartum period. Future research using larger samples, multiple healthcare settings, and a comparison group is therefore recommended to provide stronger evidence regarding the effectiveness of birth plan preparation.

RESEARCH IMPLICATIONS

The findings have practical implications for antenatal care, particularly in strengthening the psychological preparation of women before childbirth. Structured birth plan preparation may be incorporated into antenatal education to help pregnant women understand the childbirth process, recognize their concerns and preferences, and prepare for decisions that may arise during labor.

For midwives and other maternity healthcare providers, birth plan preparation can provide an opportunity for individualized education and counseling while encouraging women to participate

actively in planning their childbirth care. This approach may contribute to improved maternal confidence, more effective communication with healthcare providers, and greater participation in shared decision-making.

At the service level, implementation may be supported through standardized educational materials, counseling procedures, and appropriate documentation within antenatal care records. Nevertheless, the birth plan should remain flexible and be adapted to each woman's clinical condition, individual preferences, and available maternity services.

Future research should consider controlled or randomized study designs involving larger and more diverse populations. Further studies may also examine the effects of birth plan preparation on maternal satisfaction, childbirth experience, mode of delivery, and participation in shared decision-making.

CONCLUSION

The findings indicate that structured birth plan preparation was associated with a significant reduction in anxiety among third-trimester pregnant women approaching childbirth. The mean anxiety score decreased from 53.37 before the intervention to 12.80 after the intervention, with a p-value of 0.0001. Birth plan preparation may therefore be considered as a component of antenatal education aimed at strengthening maternal psychological readiness and supporting a more positive childbirth experience.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to the conduct of this study or the preparation of the manuscript.

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