



Hippocratica: Journal of Modern Medicine and Healthcare Practice

Vol 1 No 3 September 2026, Hal 73-85
ISSN: 3125-1501 (Print) ISSN: 3125-1498 (Electronic)
Open Access <https://sovereignresearch.org/hippocratica>

The Relationship Between Third Trimester Ultrasound Examination and a Decrease in Maternal Anxiety Levels Before Delivery at Talang Jawa Community Health Center in 2025

Hesti Kusmayanti^{1*}, Bagus Perdana Kusuma Zain²

¹⁻² Rejosari Health Center Lampung, Indonesia

Email: kusmahesti28@gmail.com¹

Article Info :

Received:
18-08-2026
Revised:
25-08-2026
Accepted:
20-09-2026

Abstract

Anxiety among third-trimester pregnant women approaching childbirth is an important psychological concern that may affect maternal well-being and the preparation process for delivery. Third-trimester ultrasound examination provides clinical information about maternal and fetal conditions and may also contribute to psychological reassurance by reducing uncertainty regarding pregnancy. This study aimed to determine the relationship between third-trimester ultrasound examination and maternal anxiety levels before delivery at Talang Jawa Community Health Center in 2025. A quantitative cross-sectional design was employed among all third-trimester pregnant women receiving antenatal care at the health center, with total sampling resulting in 45 respondents. Data were collected using a medical record observation sheet for ultrasound examination and the Hamilton Anxiety Rating Scale (HARS) to assess maternal anxiety, followed by univariate and bivariate analysis using the chi-square test. The results showed that 27 respondents (60.0%) underwent third-trimester ultrasound examination, while 18 (40.0%) did not. Regarding anxiety levels, 12 respondents (26.7%) experienced no anxiety, 18 (40.0%) mild anxiety, 11 (24.4%) moderate anxiety, and 4 (8.9%) severe anxiety. A statistically significant relationship was identified between ultrasound examination and maternal anxiety levels ($p=0.011$), with mothers who underwent ultrasound showing a higher proportion of no to mild anxiety. The findings support the integration of third-trimester ultrasound with supportive communication as part of comprehensive antenatal care.

Keywords: Antenatal Care, Anxiety, Childbirth, Maternal Health, Third-Trimester Ultrasound.



©2026 Authors.. This work is licensed under a Creative Commons Attribution-Non Commercial 4.0 International License.
(<https://creativecommons.org/licenses/by-nc/4.0/>)

INTRODUCTION

Childbirth is the culmination of a series of reproductive processes that are naturally physiological, yet often perceived as a critical period full of uncertainty for a mother. Entering the third trimester, pregnant women tend to focus increasingly on the final stages of pregnancy, while concerns about labor, fetal well-being, bodily changes, and the anticipated delivery experience may intensify psychological distress and anxiety (Dewi et al., 2022). Anxiety during this period is not merely an emotional response to an uncertain future but may interact with physiological adaptation throughout late pregnancy, creating a psychophysiological condition that is relevant to maternal well-being and preparation for childbirth (Sari et al., 2024). Longitudinal evidence further indicates that maternal stress, anxiety, well-being, and sleep quality fluctuate across pregnancy, suggesting that psychological vulnerability should be considered as a dynamic component of antenatal care rather than an incidental condition occurring immediately before delivery (Pascal et al., 2023). Maternal anxiety has also been discussed in relation to pregnancy and fetal well-being, reinforcing the importance of psychological assessment alongside routine monitoring of physical and obstetric conditions (Jorge & Nomura, 2023). The final trimester therefore represents a clinically meaningful period in which information, reassurance, and communication may shape how pregnant women interpret bodily sensations and anticipated childbirth. When anxiety becomes persistent or excessive, the psychological burden may affect the woman's perceived readiness for delivery and may complicate the broader process of maternal adaptation to childbirth.

Quality antenatal care (ANC) is consequently expected to address not only the detection of obstetric complications but also the informational and psychological needs that accompany pregnancy, particularly as women approach delivery. In Indonesia, the Maternal and Child Health Handbook

establishes ultrasound examination as an important component of ANC, with ultrasound services incorporated into the recommended sequence of antenatal monitoring (Ministry of Health of the Republic of Indonesia, 2023). Ultrasound provides clinically relevant information concerning fetal growth, fetal position, placental conditions, and other pregnancy characteristics, while the examination itself creates an opportunity for healthcare providers to communicate findings directly to pregnant women. At the level of primary healthcare, however, implementation of ultrasound within ANC remains influenced by the availability of trained personnel, equipment, service organization, and other facility-level conditions (Dewi et al., 2026). A systematic scoping review similarly indicates that strengthening ultrasound provision in primary health facilities is relevant to improving the quality and comprehensiveness of antenatal services (Murtadho et al., 2026). Beyond its diagnostic function, ultrasound may also influence how women experience pregnancy because visual information about the fetus can contribute to parental perceptions and the developing psychological connection between parents and the unborn child (Skelton et al., 2023).

Previous research has nevertheless shown that maternal anxiety before childbirth is multidimensional and cannot be attributed to a single clinical or psychosocial factor. Fear of childbirth among low-risk women has been associated with a range of individual and pregnancy-related determinants, indicating that anxiety is shaped by interacting characteristics rather than by gestational age alone (Ibrahim et al., 2024). Indonesian research has likewise identified demographic and obstetric characteristics, including age, parity, and educational background, as factors associated with anxiety among women approaching delivery (Yanti & Hasrida, 2024). Other evidence has emphasized that anxiety may remain prevalent among third-trimester pregnant women even when the specific contribution of an antenatal intervention is not examined, leaving uncertainty regarding which components of routine care can meaningfully modify psychological outcomes (Herlina et al., 2023). The role of social support further complicates the interpretation of anxiety because husband's support has been found to be inversely associated with maternal anxiety during childbirth preparation, suggesting that psychological outcomes are embedded within broader interpersonal contexts (Mamlukah, 2023). These findings establish that maternal anxiety is a complex outcome, but they also reveal that much of the existing literature has concentrated on identifying correlates rather than examining whether a specific component of ANC can produce a measurable change in anxiety. The distinction is important because identifying women who are more anxious does not necessarily explain whether the clinical information they receive during antenatal care can reduce that anxiety.

Recent ultrasound research has begun to address this issue by examining whether the manner, timing, and informational content of ultrasound encounters influence maternal psychological responses. Evidence concerning information provision indicates that written and audiovisual preparation may alter anxiety surrounding obstetric ultrasonography, highlighting the importance of how clinical information is communicated rather than treating ultrasound as a purely technical procedure (Ahmed et al., 2026). A prospective study of the 20-week morphology scan similarly indicates that women's level of informedness before scanning is relevant to their anxiety during the examination, suggesting that uncertainty surrounding the procedure itself can become a psychological determinant (Feng et al., 2026). Experimental evidence has further examined visual and verbal information delivered during ultrasound and positioned communication during the examination as a potential pathway through which prenatal imaging may influence state anxiety (Koç et al., 2026). Research among pregnancies with different levels of risk has also continued to investigate whether detailed ultrasonography is associated with changes in anxiety and depressive symptoms, indicating growing recognition that the psychological consequences of fetal imaging deserve independent evaluation (Eser & Dogan, 2026). Collectively, these studies shift the research perspective from ultrasound as an exclusively diagnostic technology toward ultrasound as an encounter involving information, interpretation, reassurance, and emotional responses. Yet differences in gestational age, pregnancy risk, ultrasound protocols, psychological instruments, and healthcare settings make it difficult to determine whether findings from second-trimester or specialized ultrasound services can be directly applied to women in the third trimester receiving routine care at primary health facilities.

The empirical literature also presents an important inconsistency that makes a focused investigation of third-trimester ultrasound clinically relevant. A large pragmatic cluster-randomized trial among low-risk pregnant women found limited evidence that simply offering a routine third-trimester ultrasound changes pregnancy-specific anxiety or mother-to-infant bonding, although

responses appeared to vary according to selected maternal characteristics and satisfaction with the examination (Westerneng et al., 2022). This finding contrasts with qualitative evidence emphasizing positive parental experiences and bonding associated with pregnancy ultrasound, suggesting that psychological benefits may depend not only on whether an examination occurs but also on how women perceive and experience the encounter (Skelton et al., 2023). Evidence from randomized research involving home ultrasound has also explored whether more frequent visualization of fetal well-being can influence maternal anxiety in women with previous recurrent pregnancy loss, but the highly specific clinical population limits direct generalization to low-risk women approaching routine delivery (Yıldırım et al., 2024). Meanwhile, intervention studies involving hypnobirthing and hypnopregnancy among third-trimester women demonstrate that anxiety can be modified through targeted psychological preparation, but these approaches do not establish whether routine diagnostic ultrasound itself has a comparable association with reduced anxiety (Dewi & Permatasari, 2025). The unresolved issue is therefore not simply whether pregnant women experience anxiety, but whether a routine third-trimester ultrasound encounter within ordinary primary-care ANC is associated with a measurable reduction in maternal anxiety before delivery. Examining this question in a community health center is particularly important because the psychological meaning of ultrasound may differ when the examination is integrated into accessible, routine antenatal services rather than delivered within specialized hospital-based research settings.

Against this background, the present study positions third-trimester ultrasound examination as the principal clinical factor of interest and maternal anxiety before delivery as the psychological outcome requiring empirical examination. The study is situated specifically within the service context of Talang Jawa Community Health Center in 2025, thereby addressing the need for evidence generated from primary-level maternal healthcare rather than extrapolating exclusively from hospital-based or highly selected populations. The research focuses on the period immediately preceding childbirth because late-pregnancy uncertainty represents a clinically relevant context in which information concerning fetal condition may have particular psychological meaning for pregnant women. Rather than treating ultrasound solely as a diagnostic procedure, this study considers the examination as an antenatal encounter that may provide information capable of reducing uncertainty and supporting psychological preparation for delivery. The study therefore aims to determine the relationship between third-trimester ultrasound examination and a decrease in maternal anxiety levels before delivery at Talang Jawa Community Health Center in 2025. Its specific contribution is to characterize third-trimester pregnant women undergoing ultrasound, assess maternal anxiety before and after the examination, and empirically examine whether the observed change is associated with the ultrasound encounter. Theoretically, the study contributes to the understanding of how a routine diagnostic component of ANC may intersect with maternal psychological adaptation, while methodologically it provides a primary-care-based empirical framework for examining the relationship between obstetric imaging and maternal anxiety in the period preceding childbirth.

RESEARCH METHODS

This study employed an empirical quantitative approach with a cross-sectional design to examine the relationship between third-trimester ultrasound examination and maternal anxiety levels before delivery at Talang Jawa Community Health Center in 2025. The study population comprised all pregnant women in the third trimester who received antenatal care within the working area of Talang Jawa Community Health Center during the study period, with participants selected using a total sampling technique from those who met the predetermined eligibility criteria (Masriadi, 2022). The inclusion criteria were pregnant women with a gestational age of 28–40 weeks, who underwent or were scheduled to undergo a third-trimester ultrasound examination, were able to communicate effectively, and voluntarily agreed to participate in the study, while women with severe mental disorders, severe pregnancy complications requiring immediate referral or intensive treatment, or conditions that prevented them from completing the assessment were excluded. Data collection involved recording information regarding third-trimester ultrasound examination from relevant health-service or medical-record documentation and obtaining maternal anxiety data directly from eligible respondents before and after the ultrasound examination. The recruitment and data-collection procedures followed a structured sequence involving identification of eligible participants, explanation of the study objectives and procedures, provision of informed consent, completion of the anxiety assessment, and documentation

of relevant ultrasound examination information. The selection of participants and systematic collection of clinical and questionnaire data were conducted in accordance with established principles of health research methodology to ensure that the empirical data were obtained from an appropriately defined study population (Setyawan, 2025).

The research instruments consisted of a structured observation sheet for documenting third-trimester ultrasound examination and a Hamilton Anxiety Rating Scale (HARS) questionnaire for assessing maternal anxiety levels before and after the examination. The HARS assessment generated anxiety-level classifications that were subsequently organized into categorical data for statistical analysis, while the observation sheet recorded whether and when the relevant third-trimester ultrasound examination had been performed. Data were analyzed in two stages, beginning with univariate analysis to describe participant characteristics and the distribution of ultrasound examination and maternal anxiety variables, followed by bivariate analysis to determine the statistical relationship between the ultrasound examination and maternal anxiety level. Because the principal variables were analyzed categorically, the Chi-square test was applied to examine the association between third-trimester ultrasound examination status and maternal anxiety categories, with statistical significance established at a p-value of <0.05 (Masriadi, 2022). All collected data were checked for completeness before analysis, coded systematically, and processed using statistical software to minimize data-entry and classification errors. Ethical procedures included obtaining ethical clearance from the relevant research ethics authority and securing informed consent from every participant before data collection, while confidentiality, voluntary participation, the right to withdraw, and protection of participant information were maintained throughout the research process (Ministry of Health of the Republic of Indonesia, 2023).

RESULTS AND DISCUSSION

Respondent Characteristics

The study included 45 pregnant women in the third trimester who received antenatal care within the working area of Talang Jawa Community Health Center in 2025. The participants were selected using a total sampling approach after applying the predetermined inclusion and exclusion criteria. The respondent characteristics were examined to provide an empirical context for interpreting maternal anxiety and participation in third-trimester ultrasound examination. Maternal age, educational attainment, and parity were considered relevant characteristics because demographic and obstetric backgrounds may shape women's perceptions of pregnancy, childbirth, health information, and anticipated delivery experiences. Previous research has demonstrated that age, education, and parity may be associated with anxiety levels among women approaching childbirth, although the strength and direction of these associations may vary across populations (Yanti & Hasrida, 2024). The distribution of these characteristics therefore provides an important baseline for understanding the composition of the study population before examining the relationship between ultrasound examination and maternal anxiety.

The age distribution showed that most respondents were 20–35 years old, accounting for 71.1% of the sample, whereas 13.3% were younger than 20 years and 15.6% were older than 35 years. This concentration within the 20–35-year age group indicates that most participants were within the reproductive age range commonly encountered in routine maternal health services. From a psychological perspective, however, reproductive age alone does not eliminate the possibility of anxiety because emotional responses during the third trimester are influenced by anticipated childbirth, perceptions of fetal well-being, and individual experiences of pregnancy. Sari et al. (2024) reported that physiological and psychophysiological changes during the third trimester may affect maternal emotional conditions as women approach delivery. The relatively small proportions of respondents below 20 years and above 35 years also suggest that the sample contained fewer women situated at age groups that may require particular attention in maternal health assessment. These characteristics are relevant when interpreting the anxiety findings because age represents one component of the broader maternal context rather than an independent explanation for anxiety levels.

Table 1. Distribution of Respondent Characteristics (n=45)

Characteristics	Category	Frequency (n)	Percentage (%)
Age	<20 years	6	13.3
	20–35 years	32	71.1
	>35 years	7	15.6
Education	Elementary (Elementary–Middle School)	9	20.0
	Middle School (SMA)	26	57.8
	Higher Education (PT)	10	22.2
Parity	Primigravida	19	42.2
	Multigravida	26	57.8

As presented in Table 1, educational attainment was concentrated at the secondary-school level, represented by 26 respondents (57.8%), followed by higher education at 22.2% and elementary-level education at 20.0%. Educational background is relevant to maternal healthcare because the ability to understand explanations concerning pregnancy examinations may influence how women interpret clinical information and respond to perceived risks. A higher level of education does not automatically indicate adequate health literacy, but educational experience can facilitate the processing of information provided by healthcare professionals. In the context of ultrasound services, the mother's understanding of the purpose, procedure, and findings of the examination may influence whether the information is perceived as reassuring or generates additional concern. Feng et al. (2026) found that greater maternal understanding before a morphology ultrasound examination was associated with lower anxiety, emphasizing the importance of informational preparedness in the psychological experience of antenatal imaging. The predominance of respondents with secondary education in the present study therefore provides a relevant contextual characteristic when considering how information delivered during antenatal services may be received and interpreted.

Parity also showed a notable distribution, with 26 respondents (57.8%) classified as multigravida and 19 respondents (42.2%) classified as primigravida. The predominance of multigravida women indicates that more than half of the participants had experienced at least one previous pregnancy, potentially providing them with experiential knowledge concerning pregnancy monitoring and childbirth. Previous childbirth experience may shape expectations and perceptions of delivery differently from those of women experiencing pregnancy for the first time. Ibrahim et al. (2024) found differences in childbirth fear between nulliparous and multiparous women, indicating that parity is an important contextual factor in understanding maternal psychological responses during the third trimester. At the same time, previous pregnancy experience does not necessarily protect mothers from anxiety because each pregnancy may involve different physical, emotional, and clinical circumstances. The distribution of parity in this study therefore needs to be considered when interpreting the relationship between access to ultrasound information and anxiety rather than being treated as a direct determinant of maternal psychological status.

The combined characteristics of age, education, and parity indicate that the respondents represented a heterogeneous maternal population despite the predominance of several categories. Most participants were aged 20–35 years, had secondary education, and were multigravida, while smaller groups represented younger or older mothers, different educational backgrounds, and first pregnancies. Such variation is clinically relevant because maternal anxiety is a multidimensional phenomenon that may reflect psychological, social, obstetric, and informational factors rather than a single demographic attribute. Dewi et al. (2022) described anxiety among third-trimester pregnant women approaching labor as a condition that may arise from concerns surrounding the delivery process and anticipated maternal and fetal outcomes. Mamlukah (2023) also demonstrated the relevance of social support in maternal anxiety during preparation for childbirth, indicating that demographic characteristics should be interpreted together with interpersonal and informational factors. Consequently, the respondent profile establishes an important contextual foundation for examining whether third-trimester ultrasound examination is associated with differences in anxiety levels within this particular primary-care population.

From a clinical research perspective, the respondent characteristics also highlight the importance of avoiding an interpretation in which demographic composition is assumed to explain the

observed anxiety pattern by itself. The predominance of women aged 20–35 years and multigravida participants provides a specific population context, while the presence of women from different age and educational groups indicates that maternal psychological responses cannot be reduced to one demographic category. Yanti and Hasrida (2024) identified significant associations of parity, age, and education with anxiety among third-trimester pregnant women, supporting the relevance of these characteristics in maternal psychological assessment. Nevertheless, the present study was designed to examine the relationship between third-trimester ultrasound examination and anxiety rather than to estimate the independent effects of age, education, or parity. These characteristics should therefore be understood as descriptive and contextual variables that frame the interpretation of subsequent analyses. The next analysis focuses on the distribution of third-trimester ultrasound examination, which provides the clinical exposure variable for assessing its relationship with maternal anxiety.

Third Trimester Ultrasound Examination

The third-trimester ultrasound examination was assessed as the principal clinical examination variable in this study based on information documented in the medical records of Talang Jawa Community Health Center. Among the 45 respondents, 27 women (60.0%) had undergone a third-trimester ultrasound examination, whereas 18 women (40.0%) had not undergone the examination. This distribution indicates that ultrasound utilization was already present among a majority of pregnant women receiving antenatal care in the study area, although access or participation had not yet reached the entire study population. In primary maternal healthcare, ultrasound has an important role in complementing routine antenatal assessment because imaging can provide information that cannot be obtained through physical examination alone. Murtadho et al. (2026) emphasized that implementation of ultrasonography in primary healthcare facilities can strengthen the quality of antenatal services by expanding access to pregnancy assessment and supporting clinical decision-making. The proportion of women receiving ultrasound in this study therefore reflects both the availability of an important diagnostic service and the continuing need to examine factors associated with maternal utilization of that service.

The distribution of ultrasound examinations is presented in Table 2, which shows a 20-percentage-point difference between respondents who underwent the examination and those who did not. The presence of 18 respondents without a documented third-trimester ultrasound examination is clinically relevant because the third trimester represents a period in which assessment of fetal growth, fetal position, placental condition, and other pregnancy-related findings may contribute to clinical monitoring. Dewi et al. (2026) reported that implementation of ultrasound examination as part of antenatal care at community health centers involves not only equipment and service availability but also organizational and provider-related considerations. Thus, the 60.0% examination proportion should not be interpreted solely as an indicator of individual maternal willingness to undergo ultrasound. Service organization, referral pathways, provider availability, information received by mothers, and perceptions of the examination may also influence utilization. The findings consequently provide a practical context for interpreting the psychological dimension of ultrasound examination in this study.

Table 2. Distribution of Third Trimester Ultrasound Examination in Respondents (n=45)

Third Trimester Ultrasound Examination	Frequency (n)	Percentage (%)
Underwent examination	27	60.0
Did not undergo examination	18	40.0
Total	45	100

As shown in Table 2, the majority of respondents had undergone ultrasound examination during the third trimester, suggesting that ultrasound constituted a relatively accessible component of pregnancy monitoring for this group. Beyond its diagnostic function, the examination can provide mothers with concrete information regarding fetal condition and pregnancy development, particularly when findings are explained directly by healthcare professionals. Skelton et al. (2023) found that ultrasound imaging during pregnancy can influence parental experiences and perceptions of the fetus, including experiences related to parent–fetal bonding. This psychological dimension is relevant because

information obtained through imaging may reduce uncertainty concerning aspects of pregnancy that cannot be directly perceived by the mother. For pregnant women approaching delivery, the ability to obtain understandable information about fetal condition may also influence perceptions of safety and preparedness. The clinical value of ultrasound in this context therefore extends beyond image acquisition and includes the informational interaction surrounding the examination.

The potential psychological relevance of ultrasound is particularly important when considering that the examination provides both visual information and an opportunity for interaction between pregnant women and healthcare providers. A maternal perception of uncertainty may persist when examination findings are not adequately communicated, whereas clear explanations may help women interpret the information in a more structured manner. Ahmed et al. (2026) demonstrated that written and audiovisual information provided before obstetric ultrasonography can influence anxiety among primigravida women, indicating that preparation and communication are important components of the ultrasound experience. Similarly, Koç et al. (2026) found that the provision of visual and verbal information during second-trimester ultrasound was associated with reduced state anxiety among pregnant women. These findings suggest that the psychological relevance of ultrasound cannot be separated completely from the communication process accompanying the examination. In the Talang Jawa setting, the informational value of the examination may therefore depend not only on whether an ultrasound was performed but also on how clinical findings were communicated to the mother.

The findings can also be interpreted within the broader development of ultrasound services in primary maternal healthcare. The availability of ultrasound at the primary-care level can reduce dependence on higher-level facilities for basic pregnancy imaging and may facilitate earlier recognition of findings requiring further assessment. Dewi et al. (2026) described the implementation of ultrasound in community health centers as part of efforts to strengthen antenatal service quality, while Murtadho et al. (2026) identified primary-level ultrasonography as an important component in improving the accessibility and comprehensiveness of antenatal services. Such integration is particularly relevant for pregnant women who may have limited opportunities to obtain additional information about fetal development outside routine healthcare visits. At the same time, service availability alone does not establish that ultrasound will automatically reduce maternal anxiety, because psychological responses may depend on individual expectations, prior experiences, and interpretation of examination results. This distinction becomes important when the ultrasound distribution is subsequently compared with the maternal anxiety categories observed in the study.

The 40.0% proportion of respondents who had not undergone third-trimester ultrasound also warrants attention from a maternal healthcare perspective because non-utilization may reflect differences in clinical indication, referral, access, information, or maternal decision-making. The present data do not permit determination of the specific reason why individual respondents did not undergo the examination, and the cross-sectional design does not establish whether examination status preceded changes in psychological condition. Evidence from Eser and Dogan (2026) indicates that the relationship between ultrasonography and maternal psychological outcomes may also vary according to pregnancy-risk status, demonstrating that the meaning of an ultrasound examination is influenced by clinical context. Yıldırım et al. (2024) likewise reported psychological effects of home ultrasound among women with recurrent pregnancy loss, a population with a substantially different clinical background from the respondents in the present study. These differences reinforce the need to interpret ultrasound-related psychological findings within the characteristics of the population and healthcare setting being studied. The distribution in Table 2 consequently serves as the empirical basis for examining whether ultrasound examination status corresponds with different levels of maternal anxiety before delivery, which is addressed in the subsequent analysis.

Maternal Anxiety Levels Before Delivery

Maternal anxiety before delivery was assessed using the Hamilton Anxiety Rating Scale (HARS), which categorized respondents into four levels consisting of no anxiety, mild anxiety, moderate anxiety, and severe anxiety. The measurement was conducted among 45 pregnant women in the third trimester who met the study eligibility criteria. The distribution of anxiety levels provides an empirical description of the psychological condition of respondents as they approached childbirth and establishes the outcome variable for the subsequent bivariate analysis. Anxiety during late pregnancy may emerge from concerns regarding the labor process, maternal safety, fetal well-being, and

uncertainty about the events surrounding delivery. Dewi et al. (2022) reported that pregnant women in the third trimester may experience anxiety related to the approaching labor and delivery process, demonstrating that psychological preparation is an important component of maternal care. The distribution observed in this study therefore needs to be interpreted within the physiological, psychological, and informational changes that characterize the final stage of pregnancy.

The largest proportion of respondents experienced mild anxiety, comprising 18 women (40.0%), followed by 12 women (26.7%) who reported no anxiety. Moderate anxiety was identified in 11 respondents (24.4%), while severe anxiety was present in 4 respondents (8.9%). As shown in Table 3, the distribution indicates that anxiety was not concentrated exclusively among women with clinically severe symptoms, but rather extended across different levels of psychological response. The presence of moderate and severe anxiety in 15 respondents is clinically relevant because heightened psychological distress approaching childbirth may influence maternal comfort, perceptions of labor, and the ability to process information provided during antenatal care. Herlina et al. (2023) similarly examined anxiety among third-trimester pregnant women approaching delivery and highlighted the relevance of maternal psychological assessment during this period. These findings support the use of a structured anxiety assessment to identify differences in maternal psychological status rather than relying solely on subjective impressions during routine antenatal encounters.

Table 3. Distribution of Anxiety Levels of Pregnant Women in the Third Trimester Approaching Delivery (n=45)

Anxiety Level	Frequency (n)	Percentage (%)
No anxiety	12	26.7
Mild anxiety	18	40.0
Moderate anxiety	11	24.4
Severe anxiety	4	8.9
Total	45	100

The pattern in Table 3 demonstrates that mild anxiety represented the most frequent category, while approximately one-third of respondents experienced moderate or severe anxiety. This distribution suggests that approaching delivery can remain psychologically challenging even when most mothers do not reach the highest anxiety category. Pregnancy-related anxiety is not necessarily determined by the presence of an obstetric complication because anticipation of childbirth and concerns about fetal and maternal outcomes can independently contribute to psychological distress. Jorge and Nomura (2023) explained that maternal anxiety may have implications for pregnancy and fetal well-being, making psychological assessment relevant to comprehensive maternal healthcare. Pascal et al. (2023) further demonstrated that maternal stress and anxiety can vary across pregnancy and are connected with broader dimensions of maternal well-being and sleep quality. The anxiety distribution in the present study therefore illustrates the importance of incorporating psychological considerations into antenatal care, particularly during the period immediately preceding delivery.

The predominance of mild anxiety may partly reflect the composition of the respondents, particularly because most participants were aged 20–35 years and more than half were multigravida. Previous pregnancy or childbirth experience may provide mothers with experiential knowledge that helps them anticipate the delivery process, although such experience does not eliminate anxiety in every pregnancy. Ibrahim et al. (2024) identified differences in fear of childbirth according to parity among low-risk pregnant women during the third trimester, indicating that previous reproductive experience can contribute to variation in maternal psychological responses. Conversely, first-time mothers may encounter greater uncertainty because they have less direct experience of labor and may rely more heavily on information obtained from healthcare professionals and their social environment. Mamlukah (2023) also identified husband's support as a relevant factor in maternal anxiety during preparation for childbirth, illustrating that psychological responses are shaped by interpersonal circumstances in addition to individual characteristics. The respondent profile in the present study consequently provides a plausible contextual explanation for the variation in anxiety categories, although the available analysis does not permit independent estimation of the contribution of each characteristic.

Educational background may also influence how pregnant women understand information about pregnancy, fetal development, and the anticipated delivery process. In this study, 57.8% of respondents had secondary education, while 22.2% had higher education and 20.0% had elementary-level education. The variation in educational attainment suggests that respondents may differ in their capacity to seek, interpret, and integrate health information, although educational level should not be equated directly with health literacy. Yanti and Hasrida (2024) reported significant relationships between education and anxiety among third-trimester pregnant women, alongside parity and age, indicating that demographic characteristics may be relevant when evaluating maternal psychological conditions. The availability of comprehensible information may be particularly important when mothers face uncertainty about fetal condition or the forthcoming delivery. Within antenatal care, communication that matches maternal comprehension can help transform complex clinical information into information that is meaningful for decision-making and emotional preparation. This consideration becomes particularly important for interpreting the potential contribution of ultrasound examination because imaging may provide reassurance only when mothers understand the clinical information communicated through the examination.

The distribution of anxiety in this study also indicates that maternal psychological care should not be limited to respondents with severe anxiety. The presence of mild anxiety in 40.0% of respondents suggests that a substantial group may experience manageable but meaningful psychological concerns, while the moderate-to-severe categories identify mothers who may require closer assessment and appropriate supportive interventions. Non-pharmacological interventions, including hypnobirthing and hypnopregnancy, have been shown to reduce anxiety among third-trimester pregnant women by supporting psychological preparation and emotional regulation (Dewi & Permatasari, 2025). At the same time, the present study examines ultrasound examination as an element of routine maternal healthcare rather than as a standalone psychological intervention. The distribution shown in Table 3 establishes the baseline outcome pattern that can subsequently be compared according to ultrasound examination status. This comparison is essential for determining whether the observed differences in anxiety categories correspond statistically with third-trimester ultrasound examination, which constitutes the principal relationship examined in this study.

Relationship Between Third Trimester Ultrasound Examination and Maternal Anxiety Levels

The bivariate analysis demonstrated a statistically significant relationship between third-trimester ultrasound examination and maternal anxiety levels before delivery at Talang Jawa Community Health Center in 2025. As presented in Table 4, the Chi-square test produced a p-value of 0.011, which was below the predetermined significance level of 0.05. Among the 27 respondents who underwent a third-trimester ultrasound examination, 22 women (81.5%) were classified as having no anxiety to mild anxiety, while only 5 women (18.5%) experienced moderate to severe anxiety. In contrast, among the 18 respondents who did not undergo the examination, only 8 women (44.4%) were in the no-anxiety to mild-anxiety category, whereas 10 women (55.6%) experienced moderate to severe anxiety. The difference in these proportions indicates that maternal anxiety categories varied substantially according to ultrasound examination status within the study population. The result is consistent with evidence that ultrasound-related information and maternal understanding of pregnancy assessment may be associated with maternal psychological responses during pregnancy (Koç et al., 2026).

Table 4. Relationship between Third Trimester Ultrasound Examination and Maternal Anxiety Level

Third Trimester Ultrasound Examination	Not Anxious–Mild	Moderate–Severe Anxiety	Total	p-value
Underwent examination	22 (81.5%)	5 (18.5%)	27 (100%)	0.011
Did not undergo examination	8 (44.4%)	10 (55.6%)	18 (100%)	

The distribution in Table 4 suggests that women who underwent ultrasound examination had a substantially greater proportion of lower anxiety categories than women who did not undergo the examination. The difference may be interpreted through the role of clinical information in reducing

uncertainty concerning fetal condition, particularly during the late stage of pregnancy when anticipation of delivery becomes increasingly salient. Ultrasound provides visual information regarding aspects of pregnancy that cannot be directly observed by the mother, potentially allowing maternal concerns to be addressed through objective examination findings and professional explanation. Koç et al. (2026) found that visual and verbal information delivered during ultrasound examination was associated with a reduction in state anxiety among pregnant women, supporting the relevance of informational and communicative components of ultrasound care. Skelton et al. (2023) likewise demonstrated that ultrasound imaging can influence parental experiences and perceptions of the fetus, indicating that the examination may have psychological meaning in addition to its clinical diagnostic function. The present findings are therefore compatible with a conceptual pathway in which access to understandable information about fetal condition may lessen uncertainty and contribute to a lower level of maternal anxiety.

The relationship observed in this study also needs to be considered in relation to the quality of information provided before and during ultrasound examination. An ultrasound image by itself does not necessarily provide sufficient clinical meaning to a pregnant woman because interpretation of fetal structures and pregnancy findings generally requires professional explanation. Feng et al. (2026) reported that greater pre-scan informedness was associated with lower anxiety during the 20-week morphology ultrasound, suggesting that maternal knowledge and preparedness may influence the psychological experience of imaging procedures. Ahmed et al. (2026) similarly found that written and audiovisual information concerning obstetric ultrasonography could affect anxiety among primigravida women, reinforcing the importance of communication as part of ultrasound-related care. These findings indicate that the observed association at Talang Jawa Community Health Center may reflect not only examination exposure but also the informational interaction accompanying the examination. Consequently, strengthening explanations concerning the purpose, findings, and clinical implications of ultrasound may be relevant when ultrasound services are incorporated into anxiety-sensitive antenatal care.

The findings are broadly consistent with several studies reporting psychological benefits associated with ultrasound, although the magnitude and direction of findings have differed according to population and clinical context. Eser and Dogan (2026) examined the effect of detailed ultrasonography on anxiety and depression among women with high-risk and low-risk pregnancies, illustrating that maternal psychological responses to ultrasound can vary according to pregnancy-risk characteristics. Yıldırım et al. (2024) also reported psychological effects of home ultrasound among women with recurrent pregnancy loss, a population in which concerns about pregnancy continuation and fetal well-being may be particularly prominent. These studies provide support for the possibility that access to fetal-related information through ultrasound can have psychological relevance, while also demonstrating that the context in which imaging is provided matters. The present study differs from these populations because the respondents were pregnant women receiving care in a primary community health center and were not defined specifically by recurrent pregnancy loss or high-risk pregnancy. The observed relationship should therefore be interpreted as a finding within the Talang Jawa population rather than generalized automatically to women with substantially different obstetric circumstances.

Not all previous evidence demonstrates a statistically significant association between routine ultrasound and maternal psychological outcomes. Westerneng et al. (2022), in a pragmatic cluster-randomized controlled trial involving low-risk pregnant women in the Netherlands, found that offering routine third-trimester ultrasound did not significantly reduce pregnancy-specific anxiety or improve mother-to-infant bonding in the overall study population. Differences between that finding and the present result may relate to differences in healthcare context, baseline access to antenatal information, study design, measurement instruments, and characteristics of the participating women. Kusumah et al. (2025) likewise reported that factors related to antenatal care history did not show statistically significant associations with anxiety among third-trimester pregnant women, although the ANC variable in that study was broader than the specific ultrasound examination examined here. The distinction is important because general antenatal attendance does not necessarily provide the same type of visual and clinical information as a dedicated ultrasound examination. The present result therefore adds evidence concerning the specific relationship between ultrasound examination status and maternal anxiety rather than treating ultrasound as an undifferentiated component of ANC.

From a maternal healthcare perspective, the findings indicate that third-trimester ultrasound examination may be considered alongside informational and psychological components of antenatal care when supporting women approaching childbirth. The observed association is particularly relevant because 55.6% of respondents without an ultrasound examination experienced moderate to severe anxiety, compared with 18.5% among those who underwent the examination. This pattern does not establish that ultrasound independently caused the reduction in anxiety because the cross-sectional design does not establish temporal or causal relationships, and other factors such as parity, education, social support, prior pregnancy experiences, and individual perceptions may also contribute to maternal anxiety. Ibrahim et al. (2024) identified childbirth fear as a multifactorial maternal psychological outcome, while Mamlukah (2023) highlighted the relevance of husband's support during preparation for childbirth. The clinical implication is that ultrasound should be positioned as one component of comprehensive antenatal support, accompanied by clear communication and appropriate psychological assessment rather than being regarded as a sole intervention for anxiety. Within the Talang Jawa Community Health Center setting, integrating accessible ultrasound services with effective maternal counseling may provide an evidence-informed approach to addressing uncertainty and supporting psychological preparation for delivery.

CONCLUSION

The results indicate that there was a statistically significant relationship between third-trimester ultrasound examination and maternal anxiety levels before delivery at Talang Jawa Community Health Center in 2025, with a p-value of 0.011. Mothers who underwent third-trimester ultrasound examinations showed a higher proportion of no anxiety to mild anxiety compared with mothers who did not undergo the examination. This finding indicates that ultrasound examination is associated with more favorable maternal psychological responses during the period approaching childbirth. The provision of information regarding fetal condition and pregnancy development may help reduce uncertainty and provide mothers with greater psychological reassurance before delivery. Third-trimester ultrasound can consequently be considered an important component of comprehensive antenatal care that addresses both clinical assessment and maternal psychological needs. The findings also demonstrate that maternal anxiety remains an important aspect of pregnancy care because psychological responses may influence the experience of preparing for childbirth. Since the study used a cross-sectional design, the observed relationship should be interpreted as an association rather than evidence of a direct causal effect of ultrasound examination on anxiety reduction.

At Talang Jawa Community Health Center, third-trimester ultrasound services need to be supported by adequate facilities, appropriate equipment, and competent health personnel. Clear and supportive communication during ultrasound examinations is also important to help mothers understand information about their pregnancy and fetal condition. Pregnant women are encouraged to utilize available antenatal and ultrasound services according to clinical recommendations as part of preparation for childbirth. Antenatal care should address maternal psychological needs alongside routine assessment of maternal and fetal health. Health workers can strengthen this approach by providing understandable explanations before and after ultrasound examinations and responding appropriately to maternal concerns. Future studies should involve larger samples and use experimental or longitudinal designs to assess changes in maternal anxiety more accurately over time. Further research may also examine factors such as parity, previous pregnancy experiences, social support, and the quality of information provided during ultrasound examinations to obtain a more comprehensive understanding of maternal anxiety before delivery.

REFERENCES

- Ahmed, M., et al. (2026). The effect of written and audiovisual information on anxiety before obstetric ultrasonography in primigravida women. *Journal of Midwifery & Reproductive Health*. <https://doi.org/10.1016/j.jmir.2025.102184>
- Dewi, A. U. M., Kartasurya, M. I., & Purnami, C. T. (2026). Analysis of the implementation of ultrasound examination in antenatal care (ANC) at community health centers in Semarang City. *MAHESA: Malahayati Health Student Journal*, 6(2), 353–369. <https://doi.org/10.33024/mahesa.v6i2.20925>

- Dewi, R. K., & Permatasari, A. S. (2025). The effect of hypnobirthing on the anxiety levels of third trimester pregnant women in preparation for childbirth at the Sahabat Bumil Clinic. *Indonesian Midwifery Professional Journal*, 5(1). <https://pbi.ejournal.unan.ac.id/index.php/1/article/view/51>
- Dewi, R., Noviyanti, N., & Idiana, A. (2022). Anxiety of pregnant women in the third trimester facing the labor and delivery process. *Holistic Health Journal*, 16(2), 157–163. <https://doi.org/10.33024/hjk.v16i2.6314>
- Eser, A., & Dogan, H. (2026). The effect of detailed ultrasonography on anxiety and depression levels in high-risk and low-risk pregnancies. *BMC Pregnancy and Childbirth*. <https://doi.org/10.1186/s12884-026-09289-6>
- Feng, M., Pereira, I., Boyle, J., & Uribe, S. (2026). Pre-scan informedness and anxiety during the 20-week morphology ultrasound: A prospective cross-sectional study. *Sonography*, 13(2), 1–10. <https://doi.org/10.1002/sono.70067>
- Herlina, S. M., Ulya, Y., & Pricilia, R. Y. (2023). Analysis of anxiety levels in pregnant women in the third trimester approaching delivery. *Professional Health Journal*, 4(2), 261–267. <https://ojsstikesbanyuwangi.com/index.php/PHJ/article/view/361>
- Ibrahim, H. A., Alshahrani, M. S., & Elgzar, W. T. I. (2024). Determinants of prenatal childbirth fear during the third trimester among low-risk expectant mothers: A cross-sectional study. *Healthcare*, 12(1), 1–14. <https://doi.org/10.3390/healthcare12010050>
- Jorge, M. L. M. P., & Nomura, R. M. Y. (2023). Maternal anxiety and its effects on pregnancy and fetal well-being. *Revista da Associação Médica Brasileira*, 69(3). <https://doi.org/10.1590/1806-9282.20221011>
- Koç, Ö., Sönmez, T., Oğlak, S. C., Akçabay, Ç., & Kavak, S. B. (2026). The effect of visual and verbal information during second-trimester ultrasound on state anxiety in pregnant women: A single-blind randomized controlled trial. *BMC Pregnancy and Childbirth*, 26(1). <https://doi.org/10.1186/s12884-025-08432-z>
- Kusumah, S. P., Rejeki, S., & Setiawan, M. R. (2025). Analysis of risk factors for anxiety in pregnant women in the third trimester approaching delivery at Dr. Adhyatma, MPH Regional General Hospital, Central Java Province. *Indonesian Journal of Medical and Health Sciences*, 5(2), 112–123. <https://doi.org/10.55606/jikki.v5i2.6056>
- Lestari, E. F., & Prihardja, D. (2025). The effect of hypnopregnancy on anxiety of third trimester pregnant women facing childbirth. *Indonesian Midwifery Scientific Journal (JIKI)*, 15(1), 9–16. <https://doi.org/10.33221/jiki.v15i01.3857>
- Mamlukah, L. (2023). The relationship between husband's support and maternal anxiety levels during childbirth preparation in Ciwaruga Village, West Bandung Regency, 2022. *Jurnal Kebidanan*, 13(1), 128–139. <https://jurnal.stikesypib.ac.id/index.php/JKEb>
- Masriadi. (2022). *Research methodology: Health, medicine, and nursing*. Trans Info Media. <https://www.transinfomedia.com/produk/metodologi-penelitian-kesehatan/>
- Ministry of Health of the Republic of Indonesia. (2023). *Maternal and child health (KIA) handbook*. Ministry of Health of the Republic of Indonesia. <https://www.kemkes.go.id/resources/download/info-publik/Buku-KIA-2023.pdf>
- Murtadho, M., Sriatmi, A., & Winarni, S. (2026). Implementation of ultrasonography examination in primary health facilities as an effort to improve the quality of antenatal services: A systematic scoping review. *Indonesian Journal of Health Management*, 14(1), 43–53. <https://ejournal.undip.ac.id/index.php/jmki/article/download/82303/30518>
- Pascal, R., et al. (2023). Maternal stress, anxiety, well-being, and sleep quality across pregnancy: A longitudinal study. *Journal of Clinical Medicine*, 12(23), 7333. <https://doi.org/10.3390/jcm12237333>
- Sari, W. I. P. E., Kurniyati, K., Yusniarita, Y., & Mardalena, I. (2024). Psychophysiological changes in pregnant women in the third trimester: A descriptive study. *Jurnal Medikes (Health Information Media)*, 11(2), 135–152. <https://doi.org/10.36743/medikes.v11i2.778>
- Setyawan, F. E. B. (2025). *Conceptual and analytical research methods*. UMMPress. <https://books.google.co.id/books?id=SZJdEQAAQBAJ>

- Skelton, K. R., et al. (2023). The impact of ultrasound imaging during pregnancy on parental experiences and parent–fetal bonding: A qualitative study. *PLOS ONE*, 18(6). <https://doi.org/10.1371/journal.pone.0286578>
- Westerneng, M., de Jonge, A., van Baar, A. L., Witteveen, A. B., Jellema, P., Paarlberg, K. M., Rijnders, M., & van der Horst, H. E. (2022). The effect of offering a third-trimester routine ultrasound on pregnancy-specific anxiety and mother-to-infant bonding in low-risk women: A pragmatic cluster-randomized controlled trial. *Birth*, 49(1), 61–70. <https://doi.org/10.1111/birt.12573>
- Yanti, F., & Hasrida. (2024). The relationship between parity, age, and education of pregnant women in the third trimester and anxiety levels in facing the period leading up to childbirth at the Petir Community Health Center. *Muhammadiyah Nursing Journal*, 9(1), 7–14. <https://journal.um-surabaya.ac.id/JKM/article/view/21787>
- Yıldırım, G., et al. (2024). The effect of home ultrasound on maternal anxiety in women with recurrent pregnancy loss: A randomized controlled trial. *American Journal of Obstetrics & Gynecology Maternal-Fetal Medicine*. <https://doi.org/10.1016/j.ajogmf.2024.101447>