

Data-Driven Analysis of Husband Support and Psychological Anxiety in Pregnant Women Using Educational Health Analytics

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ABSTRACT

This study examines the relationship between husband support and psychological anxiety among pregnant women using a data-driven educational health analytics approach. A cross-sectional quantitative design was employed at Pratama Suradita Clinic, Tangerang Regency, Indonesia. **The sample consisted** of 85 pregnant women selected from a target sample of 88 respondents using Slovin's formula; three questionnaires were excluded due to incomplete responses. Psychological anxiety was measured using the **Hamilton Anxiety Rating Scale (HARS)**, while husband support was assessed through a structured questionnaire covering emotional, informational, instrumental, and appraisal support. Instrument validity and reliability were confirmed prior to data collection (Cronbach's $\alpha > 0.70$). **Chi-square analysis showed** a statistically significant relationship between husband support and anxiety ($p = 0.001$). Pregnant women receiving adequate husband support had an 88.1% lower probability of experiencing anxiety (OR = 0.119). **These findings** highlight the importance of involving husbands in prenatal educational programs to improve maternal mental health.

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1. INTRODUCTION

Psychological anxiety during pregnancy represents an important maternal health issue because it may negatively influence both the mother and the developing fetus [1]. Throughout pregnancy, women undergo substantial physical, endocrine, and psychosocial adjustments that can generate feelings of worry, fear, and emotional vulnerability. If these psychological responses are not addressed appropriately, they may contribute to adverse outcomes such as elevated blood pressure, sleep disorders, prolonged labor, premature delivery, low birth weight, and postpartum depression [2]. The World Health Organization estimated that approximately 18.2% of pregnant women worldwide experienced clinically meaningful anxiety in 2020, underscoring the need to identify protective factors that can support maternal mental well-being [3].

The occurrence of anxiety during pregnancy differs across countries and healthcare settings. Research from the United Kingdom has shown that a considerable proportion of women experience psychological difficulties during pregnancy, while studies conducted in France reported an anxiety prevalence of 13.2% [4]. In

Indonesia, the Ministry of Health of the Republic of Indonesia reported that 28.7% of pregnant women experience anxiety related to pregnancy. At the provincial level, the Banten Provincial Health Office documented a prevalence of 27.3% in 2019. Collectively, these statistics indicate that maternal anxiety remains a persistent challenge at both international and local levels and requires effective, evidence-based intervention strategies [5].

A wide range of biological, social, and environmental influences may shape anxiety during pregnancy. Among these factors, husband support is considered one of the most influential protective resources. Support from husbands may take several forms, including emotional reassurance, informational guidance, practical and financial assistance, and positive affirmation [6]. Such support can help pregnant women adapt more effectively to the demands of pregnancy, enhance coping abilities, and reduce emotional distress. In contrast, limited husband involvement may increase uncertainty and psychological strain, thereby heightening the likelihood of anxiety symptoms. Adequate support from husbands can enhance maternal confidence, strengthen coping capacity, and reduce emotional distress during pregnancy [7]. Conversely, insufficient husband involvement may increase feelings of isolation and uncertainty, thereby elevating the likelihood of anxiety and stress. Previous studies in Indonesia have shown that psychological changes during pregnancy occur at varying levels of severity, ranging from mild to very severe symptoms [8]. These findings suggest that pregnant women require continuous psychosocial assistance to adapt to the physical and emotional demands of pregnancy. Although family support has been widely acknowledged as beneficial, the specific contribution of husband support remains underexplored, particularly when analyzed using a structured, data-driven approach that can generate actionable insights for maternal health education [9].

From the perspective of educational health analytics, husband support can be conceptualized as a measurable behavioral factor that influences maternal psychological outcomes [10]. Educational health analytics refers to the use of statistical methods and data analysis techniques to transform health-related information into evidence that informs educational interventions and clinical decision-making. This approach enables healthcare providers, especially midwives, to identify high-risk groups and develop targeted family-centered education programs [11]. In accordance with Law No. 4 of 2019 on Midwifery, midwives serve as educators, counselors, and clinical facilitators who play a strategic role in improving maternal mental health through health education and psychosocial support. Pratama Suradita Clinic provides antenatal care services to pregnant women from diverse socioeconomic backgrounds [12]. Preliminary observations at the clinic indicated that several pregnant women attended antenatal visits without their husbands and expressed concerns regarding childbirth and pregnancy outcomes. These conditions suggest that variations in husband involvement may contribute to differences in maternal anxiety levels and merit further investigation [13].

Therefore, this study aims to analyze the relationship between husband support and psychological anxiety among pregnant women using a data-driven educational health analytics approach [14]. The findings are expected to provide empirical evidence to support the development of family-centered educational interventions that actively involve husbands in antenatal care, thereby improving maternal mental health and promoting better pregnancy outcomes.

2. LITERATURE REVIEW

2.1. Pregnancy-Related Psychological Anxiety

Anxiety is a psychological response characterized by excessive worry, tension, and fear toward uncertain future events. During pregnancy, anxiety may arise from concerns regarding fetal health, childbirth complications, maternal role adjustment, and family responsibilities [15]. Pregnancy-related anxiety is a common mental health issue and has been associated with adverse outcomes such as hypertension, sleep disturbances, prolonged labor, preterm birth, low birth weight, and postpartum depression. The World Health Organization estimates that mental health problems affect approximately 10–20% of pregnant women worldwide, with anxiety representing one of the most frequently reported conditions [16]. In Indonesia, anxiety during pregnancy continues to pose an important public health challenge, especially among women who receive inadequate emotional and social support. Anxiety during pregnancy can be categorized into mild, moderate, severe, and panic levels, depending on symptom intensity and its impact on daily functioning. Standardized instruments such as the Hamilton Anxiety Rating Scale are widely used to measure psychological anxiety in clinical and research settings [17].

2.2. Husband Support

Husband support refers to the emotional, informational, instrumental, and appraisal assistance provided by a spouse to a pregnant woman. Social support theory suggests that emotional closeness and practical assistance from significant others can reduce perceived stress and strengthen individual coping capacity [18]. During pregnancy, husband support plays an essential role in helping women adapt to physiological and psychological changes. Emotional support includes empathy, affection, reassurance, and active listening. Informational support involves providing advice and relevant knowledge regarding pregnancy and childbirth [19]. Instrumental support refers to practical and financial assistance, such as accompanying antenatal visits or helping with household responsibilities. Appraisal support consists of encouragement, praise, and positive feedback that enhance self-confidence. Studies consistently show that women who receive adequate husband support report lower levels of anxiety and greater emotional stability throughout pregnancy [20].

2.3. Educational Health Analytics

Educational health analytics is an emerging interdisciplinary approach that integrates health data analysis with educational strategies to improve decision-making and intervention design. By applying statistical techniques to behavioral and clinical data, healthcare providers can identify patterns, assess risk factors, and develop evidence-based educational programs tailored to patient needs [21]. In maternal healthcare, educational health analytics can be used to analyze psychosocial variables such as family support, health literacy, and mental health outcomes. This approach allows midwives and healthcare professionals to transform survey findings into actionable recommendations, such as designing targeted counseling sessions that encourage husband involvement during pregnancy. As a result, educational health analytics enhances the effectiveness of family-centered antenatal education [22].

2.4. Social Support Theory

This study is grounded in Social Support Theory, which posits that support from close relationships can buffer the negative effects of stress. According to this theory, individuals who receive strong emotional and practical support are better able to cope with challenging life events and maintain psychological well-being [23]. In the context of pregnancy, husband support serves as a protective factor that reduces uncertainty and improves maternal resilience. Social Support Theory has been widely applied in maternal and child health research to explain how interpersonal relationships influence mental health outcomes [24]. The theory supports the assumption that pregnant women with adequate husband support are less likely to experience anxiety than those with insufficient support.

3. RESEARCH METHODOLOGY

3.1. Participant characteristics and research design

Figure 1 presents the methodological framework applied in this study [25]. This research employed a quantitative approach with an analytical observational design and a cross-sectional strategy. The quantitative approach was selected because it enables the researchers to measure the relationship between variables objectively through numerical data and statistical analysis. Meanwhile, the analytical observational design was considered appropriate because the study did not involve any intervention or treatment for the participants, but rather focused on observing and analyzing the existing conditions experienced by pregnant women. Through this design, the study aimed to examine the association between husband support and psychological anxiety among pregnant women based on data collected at one specific period. Therefore, the cross-sectional strategy allowed the researchers to obtain a clear overview of the respondents' psychological conditions and the level of support received from their husbands during pregnancy.

The study was conducted at S Primary Clinic, Tangerang Regency, Indonesia, from May to July 2025. This location was selected because the clinic provides maternal health services and regularly serves pregnant women, making it relevant to the focus of the study. The participants involved in this research were pregnant women who met the predetermined inclusion criteria and were willing to participate voluntarily. Data collection was carried out systematically using research instruments designed to measure husband support and psychological anxiety. By using this methodological approach, the study was expected to provide empirical evidence regarding the importance of family support, particularly from husbands, in reducing psychological anxiety among pregnant women. The findings are also expected to contribute to the development of maternal

health services by emphasizing not only physical care but also psychological and emotional support during pregnancy.

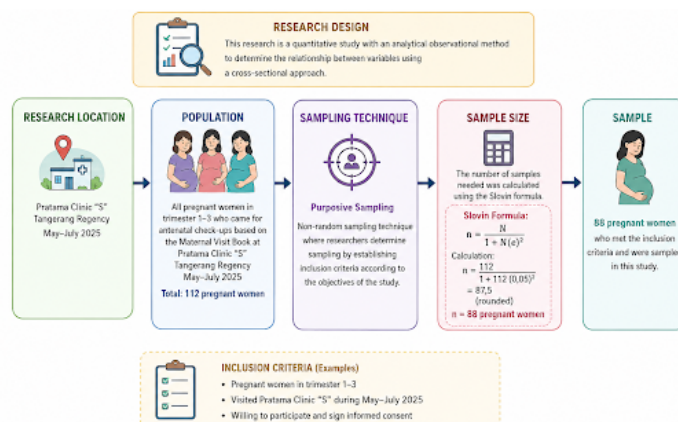


Figure 1. Research Design

The study population comprised 112 pregnant women in the first, second, and third trimesters who attended antenatal care at S Primary Clinic during the study period. The required sample size was calculated using the Slovin formula with a 5% margin of error, yielding 87.5 participants, which was rounded to 88 respondents [26]. Participants were selected using purposive sampling, a non-probability sampling technique in which respondents were chosen according to predefined inclusion criteria that aligned with the objectives of the study [27].

Participants were eligible if they were pregnant women in the first to third trimesters, attended antenatal care at S Primary Clinic during the study period, and provided informed consent to participate. Data collection was carried out using structured questionnaires to measure husband support and maternal anxiety [28]. Husband support was evaluated across four dimensions: emotional, informational, instrumental, and appraisal support. Psychological anxiety was assessed using the Hamilton Anxiety Rating Scale. The data were subsequently analyzed using the Chi-square test to examine the association between husband support and psychological anxiety among pregnant women[29].

Slovin's formula:

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{112}{1 + 112(0.05)^2}$$

$$n = \frac{112}{1.28}$$

$$n = 87.5$$

$$n = 88$$

Information: n: Number of research samples

N: Population size

e: error or allowance for inaccuracy due to sample errors, usually the tolerance is 10%)

3.2. Data analysis

Descriptive analysis was first employed to summarize the main characteristics of the study variables, including husband support and psychological anxiety among pregnant women attending S Primary Clinic, Tangerang Regency, from May to July 2025. The findings were reported as frequencies and percentages to illustrate the distribution of support levels and anxiety categories across the respondents [30].

To investigate the association between husband support and maternal anxiety, inferential analysis was carried out using the Chi-square test. This statistical procedure was considered appropriate because both variables were classified into categorical groups [31]. All analyses were evaluated at a 95% confidence level, with the level of statistical significance set at $\alpha = 0.05$.

A p-value below 0.05 indicated that the null hypothesis was rejected, meaning that husband support was significantly associated with psychological anxiety among pregnant women [32]. In contrast, a p-value greater than 0.05 suggested that no statistically significant relationship was identified. In addition, the odds ratio (OR) was calculated to quantify the strength and direction of the association and to estimate how husband support influenced the probability of experiencing anxiety during pregnancy [33].

4. RESULTS AND FINDINGS

4.1. Characteristic of Respondents

Table 1 presents the frequency distribution of husband support among pregnant women at S Primary Clinic, Tangerang Regency, during May–July 2025. The results indicate that the majority of respondents, 73 out of 85 pregnant women (85.9%), reported receiving insufficient support from their husbands. In contrast, only 12 respondents (14.1%) stated that they received adequate husband support during pregnancy [34].

Table 1. Frequency Distribution of Husband Support Among Pregnant Women at S Primary Clinic, Tangerang Regency

Variable	Frequency (n)	Percentage (%)
Not Support	73	85.9%
Support	12	14.1%
TOTAL	85	100%

These findings suggest that husband involvement in providing emotional, informational, instrumental, and appraisal support remains relatively low [35]. Limited husband support may reduce the ability of pregnant women to cope with physical and psychological changes, thereby increasing their vulnerability to anxiety and emotional distress. From the perspective of educational health analytics, this distribution highlights the importance of developing family-centered educational interventions that encourage greater husband participation in antenatal care. Increasing husband involvement may serve as an effective strategy to improve maternal psychological well-being and reduce the risk of pregnancy-related anxiety.

Table 2 presents the frequency distribution of psychological anxiety among pregnant women at S Primary Clinic, Tangerang Regency, during May–July 2025. The results show that all respondents experienced some level of anxiety during pregnancy. The majority of respondents, 63 out of 85 pregnant women (74.1%), experienced moderate anxiety, while 22 respondents (25.9%) experienced mild anxiety. No respondents were classified as having no anxiety or severe anxiety.

Table 2. Frequency Distribution of Anxiety Among Pregnant Women at S Primary Clinic, Tangerang Regency

Variable	Frequency (n)	Presentase (%)
No Worries	0	0%
Mild Anxiety	22	25.9%
Moderate Anxiety	63	74.1%
Severe Anxiety	0	0%
TOTAL	85	100%

These findings indicate that psychological anxiety is a common condition among pregnant women, with most respondents experiencing moderate levels of anxiety. This condition may be related to concerns

about fetal health, childbirth, and adaptation to maternal responsibilities. Although no severe anxiety cases were identified, the high proportion of moderate anxiety suggests that psychological support remains essential during antenatal care. From an educational health analytics perspective, these results emphasize the need for targeted educational and counseling interventions to help pregnant women manage anxiety effectively. Involving husbands and family members in prenatal education programs may strengthen emotional support and reduce anxiety levels, thereby improving maternal mental health and pregnancy outcomes

Table 3 presents the relationship between husband support and anxiety among pregnant women at S Primary Clinic, Tangerang Regency, during May–July 2025. Among pregnant women who did not receive husband support, 14 respondents (16.4%) experienced mild anxiety and 59 respondents (69.4%) experienced moderate anxiety. Among those who received husband support, 8 respondents (9.4%) experienced mild anxiety and 4 respondents (4.7%) experienced moderate anxiety.

Table 3. Relationship Between Husband Support and Anxiety Among Pregnant Women at S Primary Clinic, Tangerang Regency

Husband's Support	Anxiety								Amount	<i>p</i> value	OR CI (95%)	
	No Worries		Mild Anxiety		Moderate Anxiety		Severe Anxiety					
	N	%	N	%	N	%	N	%				
Not Support	0	0%	14	16.4%	59	34%	0	0%	73	86%	0.001	0.119
Support	0	0%	8	9.4%	4	4.7%	0	0%	12	14%		
Total	0	0%	22	25.8%	63	38.7%	0	0%	85	100%		

The Chi-square test yielded a *p*-value of 0.001, indicating a statistically significant relationship between husband support and anxiety among pregnant women. The odds ratio (OR = 0.119; 95% CI) indicates that pregnant women who received husband support had an 88.1% lower likelihood of experiencing anxiety compared with those who did not receive support. These findings demonstrate that husband support plays an important protective role in reducing psychological anxiety during pregnancy. Greater husband involvement in emotional, informational, and practical support may improve maternal mental health and should be promoted through family-centered antenatal education programs.

This study found that the majority of pregnant women (73 women) lacked support from their husbands, while only 12 (14.1%) did. Sintya's 2022 study found that 11 (73.3%) of 20 pregnant women lacked husband support. Husband support plays a crucial role in addressing anxiety in pregnant women. Providing special attention and support can impact the care and health of both the pregnant woman and her unborn child. 22 pregnant women (25.9%) experienced mild anxiety, while 63 (74.1%) experienced moderate anxiety. Sintya's study found that 13 pregnant women (38.2%) experienced anxiety and 21 (61.8%) did not experience anxiety out of 34 respondents. Research stated that the majority of gravida experienced anxiety, husbands supported with the category of not supporting a number of 11 respondents (73.3%), compared to those who supported as many as 9 respondents (47.4%). Conversely, in the anxious category, the majority of respondents received support from their husbands, 10 respondents received support from their husbands who did not support, namely 4 respondents (52.6%), more than the category of not supporting husband support, namely 4 respondents (26.7%). Based on these results, the *p*-value ≤ 0.04 . This means that there is a significant or correlation between husband support and anxiety in pregnant women in the third trimester during the Covid-19 pandemic in Baleadi Village and Wegil Village, Sukolilo District, Pati Regency. Fitria H's research which states that the active role of husbands will have an influence on the mother's concern for the health of herself and her fetus. Pregnant women will be more confident, happy, and ready to face the process of pregnancy, childbirth, and the postpartum period. This is in line with the results of Nur Widya's research, (2018) Some respondents received support from their husbands (52.27%), those who received less support from their husbands (47.73%). According to Nurheni (2008) in Nuriati stated that husband's support is very necessary for pregnant women to improve psychological well-being and adjustment as well as reduce stress and anxiety during pregnancy and improve and maintain physical health during pregnancy. With the support of the husband, anxiety is reduced because with the presence of loved ones around her, it will make the mother feel calmer in facing her labor. Mild anxiety tends to occur in mothers who are supported by their husbands, so that the risks that may be experienced by the mother in labor will be fewer, so the anxiety felt by the mother tends to be lighter. Moderate and severe anxiety is often experienced by mothers who are not supported by their husbands, thus causing certain fears in the mother, such as fear of what will happen to her. This moderate and severe anxiety can also occur even though her husband has supported her because the mother's nature varies in responding to attention from

her husband, feeling that someone is paying attention so that the perception of labor pain will be more severe, thus affecting the mother's anxiety.

MANAGERIAL IMPLICATIONS

The findings of this study provide important managerial implications for healthcare providers, particularly midwives and clinic managers, in improving maternal mental health services. Since husband support was found to significantly reduce anxiety among pregnant women (OR = 0.119; $p = 0.001$), healthcare institutions should develop family-centered antenatal programs that actively involve husbands in pregnancy education and counseling sessions. Clinic managers at Pratama Suradita Clinic and similar healthcare facilities are encouraged to integrate husband participation into routine antenatal care by offering educational modules on emotional support, pregnancy risk awareness, and childbirth preparation. Attendance monitoring and survey-based analytics can be used to identify pregnant women with limited husband support and prioritize them for targeted interventions. From a policy perspective, the results support the strategic role of midwives as educators and counselors in accordance with Indonesian midwifery regulations. Health authorities and maternal health program coordinators should design evidence-based educational campaigns that emphasize the importance of husband involvement during pregnancy. Strengthening husband engagement is expected to reduce maternal anxiety, improve psychological resilience, and contribute to better pregnancy and neonatal outcomes.

CONCLUSION


Based on the results of this study conducted at S Primary Clinic, Tangerang Regency, during May–July 2025, the majority of pregnant women did not receive adequate support from their husbands. Of the 85 respondents included in the final analysis, 73 pregnant women (85.9%) reported insufficient husband support, while only 12 respondents (14.1%) indicated that they received adequate emotional, informational, instrumental, and appraisal support. These findings suggest that husband involvement during pregnancy remains relatively limited. In the context of maternal mental health, insufficient support may reduce a woman's ability to cope with the physical and psychological changes that occur during pregnancy, thereby increasing the risk of emotional distress and anxiety.


The analysis of anxiety levels revealed that all respondents experienced some degree of psychological anxiety during pregnancy. Most respondents, 63 pregnant women (74.1%), experienced moderate anxiety, while 22 respondents (25.9%) experienced mild anxiety. No respondents were classified as having no anxiety or severe anxiety. Furthermore, the Chi-square test demonstrated a statistically significant relationship between husband support and anxiety levels among pregnant women ($p = 0.001$). The odds ratio (OR = 0.119) indicates that pregnant women who received adequate husband support were 88.1% less likely to experience anxiety compared with those who did not receive support. Moderate anxiety was substantially more common among women without husband support than among those who received support. These results confirm that husband support serves as an important protective factor in maintaining maternal psychological well-being during pregnancy.


The findings of this study emphasize the importance of strengthening husband involvement through structured educational interventions and family-centered antenatal care programs. Healthcare providers, particularly midwives, should enhance counseling and educational activities that encourage husbands to provide emotional reassurance, practical assistance, and positive encouragement throughout pregnancy. From an educational health analytics perspective, the study demonstrates how data-driven evidence can be used to identify psychosocial risk factors and design targeted interventions to improve maternal mental health outcomes. Future research is recommended to adopt mixed-methods approaches in order to explore more deeply the emotional experiences, perceptions, and challenges faced by pregnant women and their spouses. Such studies would provide richer insights into how family support mechanisms can be optimized to reduce anxiety and promote healthier pregnancies.


5. DECLARATIONS

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5.2. Author Contributions

Validation was conducted by: SI. Conceptualization was completed by: IA. The methodology was developed by: AP. Formal analysis was performed by: IA. Writing, review, and editing were carried out by: IA. Visualization was completed by: SI. All authors, including: IA, SI, AP, IA, and AP, have reviewed and approved the final version of the manuscript.

5.3. Data Availability Statement

The data used in this study are available from the corresponding author upon reasonable request, while maintaining ethical considerations and participant confidentiality.

5.4. Funding

This research was conducted independently without any external financial support.

5.5. Declaration of Competing Interest

The authors declare no financial, personal, or other conflicts of interest that could have influenced this study.

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