



## The Relationship Between Pregnant Women's Awareness of Pregnancy Risk Factors and Their Readiness for Childbirth at Dr. Hi. Zainal Umar Sidiki Regional Hospital, Gorontalo

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**Abstract.** Pregnant women's readiness for childbirth is an important factor in preventing delays in the management of obstetric complications. One of the main determinants of childbirth readiness is the level of pregnant women's awareness of pregnancy risk factors that can endanger the mother and fetus. This study aims to analyze the relationship between pregnant women's awareness of pregnancy risk factors and their readiness for childbirth in the working area of Dr. Hi. Zainal Umar Sidiki Regional Hospital, North Gorontalo Regency. This study used an observational analytical design with a cross-sectional approach. The study sample consisted of 32 pregnant women selected using a total sampling technique. Data were collected in March–May 2025 using a structured questionnaire to measure the level of awareness of pregnancy risk factors and readiness for childbirth. Data analysis was carried out descriptively and inferentially using the Chi-square test. The results showed that most pregnant women had a moderate level of awareness of pregnancy risk factors and were in the category of being ready for childbirth. Inferential analysis showed a very significant relationship between the level of awareness of pregnant women regarding pregnancy risk factors and their readiness for childbirth ( $p < 0.001$ ). It can be concluded that the higher the level of awareness of pregnant women regarding pregnancy risk factors, the better the mother's readiness for childbirth. These findings emphasize the importance of strengthening antenatal education focused on increasing awareness of pregnancy risks as a strategy to improve childbirth preparedness and support efforts to prevent maternal complications.

**Keywords:** Antenatal Care; Childbirth Readiness; Pregnant Women's Awareness; Pregnancy Risk Factors; Maternal Preparedness.

### 1. INTRODUCTION

Pregnancy and childbirth are physiological processes that can develop into risky conditions if not properly anticipated. Globally, complications of pregnancy and childbirth remain the leading cause of maternal mortality, especially in low- and middle-income countries. The World Health Organization (WHO) reports that approximately 287,000 women died from complications of pregnancy and childbirth in 2020, with the majority of deaths occurring from hemorrhage, hypertension in pregnancy, infections, and complications of childbirth that could have been prevented through early detection and adequate preparedness (WHO, 2023). This fact confirms that the success of reducing maternal mortality depends not only on the availability of health facilities, but also on the readiness of pregnant women to recognize risks and optimally prepare for childbirth. In Indonesia, the problem of maternal mortality remains a serious challenge in maternal health development. Data from the Indonesian Health Survey shows that the maternal mortality ratio remains above the Sustainable Development Goals (SDGs) target, with the main causes similar to global trends, namely hemorrhage, preeclampsia, and other childbirth complications (Ministry of Health of

the Republic of Indonesia, 2023). Despite increasing coverage of antenatal care (ANC) services, various reports indicate that pregnant women's understanding of pregnancy risk factors remains variable. Low awareness of danger signs and risk factors often leads to delays in seeking care, known as *the first delay* in the *Three Delays model* (Thaddeus & Maine, 2017).

Theoretically, pregnant women's awareness of pregnancy risk factors is a crucial component of childbirth preparedness. *The Health Belief Model theory* explains that individual perceptions of the vulnerability and severity of a health condition will influence their readiness and health-seeking behavior (Rosenstock et al., 2018). Pregnant women who are highly aware of risk factors, such as extreme age, anemia, hypertension, or a poor obstetric history, tend to be more physically and psychologically prepared for childbirth, including planning the place of delivery, preparing costs, and preparing for referrals in case of complications. Birth preparedness *and complication readiness* have long been recognized as effective strategies in reducing delays in the management of obstetric complications. This readiness includes the pregnant woman's ability to recognize danger signs, determine a safe place to deliver, prepare a birth companion, and understand emergency referral procedures (Khan et al., 2019). Research in various countries shows that pregnant women with a high level of childbirth preparedness have a lower risk of complications and delays in treatment than those with less preparedness (Tura et al., 2020).

Several previous studies have shown a relationship between maternal knowledge or awareness and childbirth preparedness. A study in Ethiopia reported that pregnant women with a good understanding of pregnancy risk factors were better prepared for childbirth and its complications (Ayele et al., 2021). Similar studies in Nepal and Bangladesh also showed that awareness of pregnancy risk factors significantly contributed to childbirth preparedness and utilization of maternal health services (Sharma et al., 2019; Rahman et al., 2020). However, research in several regions indicates that despite high ANC coverage, childbirth preparedness remains low due to pregnant women's lack of understanding of the meaning of risk factors discussed during prenatal care (Mihretie et al., 2022). In Indonesia, research related to childbirth preparedness generally focuses on sociodemographic factors, such as education level, age, and parity. However, studies specifically examining maternal awareness of pregnancy risk factors are limited, particularly in regions with challenging geographic characteristics and access to health services. Several local studies report that pregnant women often do not fully understand the risks of their pregnancy, despite regular ANC visits (Sari et al., 2021; Lestari & Handayani, 2022). This indicates a gap between the services provided and the understanding they receive.

North Gorontalo Regency is characterized by a largely rural area with limited access to transportation and referral health facilities. As the primary referral hospital, Dr. Hi. Zainal Umar Sidiki Regional General Hospital plays a crucial role in obstetric care. However, a pregnant woman's readiness for childbirth is determined not only by the availability of facilities but also by her level of awareness of her pregnancy risk factors. Low awareness can lead to delays in seeking care, potentially increasing the risk of childbirth complications. To date, there is still *a research gap* regarding the relationship between pregnant women's awareness of pregnancy risk factors and their readiness for childbirth, particularly in the context of eastern Indonesia, which faces unique geographic and sociocultural challenges. Some studies measure general knowledge, but have not specifically assessed mothers' awareness of risk factors relevant to their own pregnancy. Therefore, research is needed that can provide an empirical overview of the relationship between risk factor awareness and childbirth readiness as a basis for strengthening educational interventions in obstetric care.

Based on the above description, this study aims to analyze the relationship between pregnant women's awareness of pregnancy risk factors and their preparedness for childbirth in the working area of Dr. Hi. Zainal Umar Sidiki Regional Hospital, North Gorontalo Regency. The results of this study are expected to provide scientific contributions to the development of risk education-based midwifery care and serve as a basis for planning programs to improve childbirth preparedness to support efforts to reduce maternal morbidity and mortality.

## **2. RESEARCH METHOD**

### **Research design**

This study employed an observational analytical design with a cross-sectional approach. This design was chosen to analyze the relationship between pregnant women's awareness of pregnancy risk factors as the independent variable and their preparedness for childbirth as the dependent variable. The cross-sectional approach allows for simultaneous measurement of both variables at a single observation point without any intervention from the researcher, making it suitable for describing the relationship between variables in the context of midwifery services.

### **Location and Time of Research**

The study was conducted in the working area of Dr. Hi. Zainal Umar Sidiki Regional General Hospital in North Gorontalo Regency, which is a referral hospital for obstetrics services in the region. The study location was selected based on the hospital's strategic role in maternal health care and the region's characteristics, which present geographical challenges

and limited access to healthcare. The study was conducted from March to May 2025, encompassing preparation, data collection, and data processing and analysis.

### **Research Population and Sample**

The population in this study was all pregnant women who underwent pregnancy check-ups in the working area of Dr. Hi. Zainal Umar Sidiki Regional General Hospital during the study period. Sampling was carried out using a total sampling technique, so that all pregnant women who met the inclusion and exclusion criteria were included as respondents with a total sample of 32 pregnant women. Inclusion criteria included pregnant women who were recorded as having an antenatal visit in the working area of Dr. Hi. Zainal Umar Sidiki Regional General Hospital, gestational age  $\geq$  second trimester, able to communicate well, and willing to be research respondents. The exclusion criteria included pregnant women with communication disorders or medical conditions that prevented them from completing the questionnaire, as well as respondents who did not complete the research instrument completely.

### **Research Variables**

The variables in this study consist of independent and dependent variables. The independent variable is the level of awareness of pregnant women regarding pregnancy risk factors, which includes the mother's understanding of pregnancy conditions that can increase the risk of childbirth complications. The dependent variable is readiness for childbirth, defined as the mother's readiness to prepare physically, psychologically, and plan for childbirth. In addition, respondent characteristics were also recorded as descriptive variables and potential confounders, including age, education level, occupation, gravity, parity, gestational age, and family support.

### **Research Instruments**

The research instrument used was a structured questionnaire consisting of three sections. The first section contained data on respondent characteristics. The second section was a questionnaire on pregnant women's awareness of pregnancy risk factors, structured as closed-ended questions with a rating scale to assess mothers' understanding of pregnancy risk factors. The third section was a childbirth readiness questionnaire, which measured aspects of maternal preparedness in planning for childbirth and anticipating complications. The research instruments underwent validity and reliability testing before being used in data collection .

### **Research Procedures**

The research procedure began with obtaining research permits and approval from Dr. Hi. Zainal Umar Sidiki Regional General Hospital. Respondents who met the inclusion criteria were given an explanation of the research objectives and procedures, then asked to provide

their consent through an *informed consent form* . Next, respondents were asked to complete the research questionnaire independently with researcher assistance if necessary. Data collection was conducted throughout the research period, observing the principles of confidentiality and respondent comfort. All collected data were checked for completeness before analysis.

### Data Analysis

Data analysis was conducted descriptively and inferentially. Descriptive analysis was used to describe the characteristics of respondents and the distribution of levels of awareness of pregnancy risk factors and preparedness for childbirth, which were presented in the form of frequency distributions and percentages. Inferential analysis was used to examine the relationship between pregnant women's awareness of pregnancy risk factors and preparedness for childbirth using the Chi-square test. If there were cells with an expected value of less than five, the Fisher's Exact Test was used. All statistical tests were performed at a significance level of  $p < 0.05$ .

## 3. RESULTS AND DISCUSSION

### Results

#### *Characteristics of Pregnant Women Respondents*

The characteristics presented include age, education level, occupation, gravity, and parity, which aim to provide a general overview of the respondent profile before analyzing the relationship between research variables.

**Table 1.** Characteristics of Pregnant Women Respondents in the Work Area of Dr. Hi. Zainal Umar Sidiki Regional Hospital (n = 32).

Characteristics	Category	n	%
Mother's Age	< 35 years	23	71.9
	≥ 35 years	9	28.1
Education	Elementary School	4	12.5
	JUNIOR HIGH SCHOOL	10	31.3
	SENIOR HIGH SCHOOL	10	31.3
Work	S1	8	25.0
	Housewife	20	62.5
	Private	8	25.0
Gravida	Honorary	4	12.5
	G1–G2	14	43.8
	≥ G3	18	56.2
Parity	P0–P1	15	46.9
	≥ P2	17	53.1

Source: Primary research data, 2025.

Based on Table 1, most respondents were in the age group <35 years, namely 23 pregnant women (71.9%), while pregnant women aged  $\geq 35$  years were 9 people (28.1%). In terms of education level, the majority of respondents had junior high school and high school education, each with 10 people (31.3%), followed by undergraduate education with 8 people (25.0%) and elementary school with 4 people (12.5%). Most respondents were housewives, namely 20 people (62.5%). Based on pregnancy status, the majority of respondents were multigravida ( $\geq G3$ ) with 18 people (56.2%) and had parity  $\geq P2$  with 17 people (53.1%), indicating that most pregnant women had previous pregnancy and childbirth experience.

### ***Pregnant Women's Awareness Level of Pregnancy Risk Factors***

The level of awareness is assessed based on questionnaire scores which are then categorized to describe the extent to which pregnant women understand and are aware of risk factors that can affect pregnancy and childbirth.

**Table 2.** Distribution of Pregnant Women's Awareness Levels of Pregnancy Risk Factors in the Work Area of Dr. Hi. Zainal Umar Sidiki Regional Hospital (n = 32).

Level of Consciousness	n	%
Low	9	28.1
Currently	17	53.1
Tall	6	18.8
Total	32	100.0

Source: Primary research data, 2025.

Based on Table 2, the majority of respondents had a moderate level of awareness of pregnancy risk factors, namely 17 pregnant women (53.1%). Nine pregnant women (28.1%) had a low level of awareness, while six pregnant women (18.8%) had a high level of awareness. These findings indicate that although some pregnant women have sufficient awareness of pregnancy risk factors, there is still a proportion whose awareness is not optimal.

### ***Pregnant Women's Readiness for Childbirth***

Childbirth readiness is assessed based on a total readiness score that includes aspects of mental, physical, economic readiness, and husband/family support, which are then categorized to describe the overall level of readiness of the pregnant woman.

**Table 3.** Distribution of Pregnant Women's Readiness for Childbirth in the Work Area of Dr. Hi. Zainal Umar Sidiki Regional Hospital (n = 32).

Readiness Category	n	%
Ready	19	59.4
Just ready	13	40.6
Total	32	100.0

Source: Primary research data, 2025.

Based on Table 3, the majority of pregnant women were in the preparedness category for childbirth, namely 19 (59.4%). Meanwhile, 13 pregnant women (40.6%) were in the moderately prepared category. These results indicate that although the majority of pregnant women were well prepared for childbirth, a significant proportion were still less than optimally prepared and required additional education and support during pregnancy.

***The Relationship Between Pregnant Women's Awareness Level of Pregnancy Risk Factors and Readiness for Childbirth***

The analysis was conducted to determine the relationship between maternal awareness of pregnancy risks and the level of preparedness in facing childbirth.

**Table 4.** Relationship between Pregnant Women's Awareness Level of Pregnancy Risk Factors and Readiness for Childbirth in the Work Area of Dr. Hi. Zainal Umar Sidiki

Regional Hospital (n = 32).

<b>Level of Consciousness</b>	<b>of Readiness (%)</b>	<b>Fairly Ready n</b>	<b>Readiness (%)</b>	<b>Ready n</b>	<b>Total</b>	<b>p-value</b>
<b>Low</b>	9 (100.0)		0 (0.0)		9	
<b>Currently</b>	4 (23.5)		13 (76.5)		17	
<b>Tall</b>	0 (0.0)		6 (100.0)		6	
<b>Total</b>	13 (40.6)		19 (59.4)		32	< 0.001

*Chi-square test . Source: Primary research data, 2025.*

Based on Table 4, all pregnant women with low levels of awareness were in the moderately prepared category for childbirth. Conversely, all pregnant women with high levels of awareness were in the prepared category. In the group of pregnant women with moderate levels of awareness, the majority were in the prepared category, namely 13 women (76.5%). The Chi-square test results showed a p-value <0.001, indicating a highly significant relationship between the level of awareness of pregnant women regarding pregnancy risk factors and their preparedness for childbirth in the work area of Dr. Hi. Zainal Umar Sidiki Regional General Hospital.

**Discussion**

This study aims to analyze the relationship between pregnant women's awareness of pregnancy risk factors and their preparedness for childbirth in the work area of Dr. Hi. Zainal Umar Sidiki Regional General Hospital. The results showed a significant relationship between the two variables, with all pregnant women with a high level of awareness being in the preparedness category, while all pregnant women with a low level of awareness were in the

moderately prepared category. These findings confirm that awareness of pregnancy risk factors is an important determinant of preparedness for childbirth.

Descriptively, most pregnant women in this study had a moderate level of awareness and were categorized as ready for childbirth. However, a proportion of pregnant women still had low awareness and suboptimal readiness. This condition reflects that even though pregnant women have attended antenatal visits, not all information about pregnancy risks can be optimally understood and internalized. Research in Vietnam and the Philippines shows that the quality of pregnant women's understanding of ANC educational messages is often influenced by health workers' communication methods, health literacy levels, and the local sociocultural context (Nguyen et al., 2019; Dizon et al., 2020). The significant relationship between awareness of pregnancy risk factors and readiness for childbirth aligns with the concept of *Birth Preparedness and Complication Readiness (BPCR)*, which emphasizes the importance of individual preparedness in anticipating childbirth and obstetric complications (WHO, 2015). Within the BPCR framework, awareness of risk factors is the initial step that triggers maternal readiness in planning the place of delivery, preparing a companion, transportation, and emergency funds. Pregnant women who are unaware of their pregnancy risks tend to delay preparation and decision-making when complications occur.

The results of this study are consistent with previous research in developing countries. A study in Nigeria showed that pregnant women with high awareness of pregnancy risk factors were more likely to comprehensively prepare for childbirth than those with low awareness (Adewuyi et al., 2018). Studies in India and Pakistan also reported that awareness of pregnancy risks was significantly associated with childbirth readiness and timely utilization of maternal health services (Kaur et al., 2020; Shah et al., 2021). The similarity of these findings suggests that risk awareness is a universal factor influencing childbirth readiness across geographic contexts. From a health behavior theory perspective, these study findings can be explained by *the Theory of Planned Behavior*, which states that an individual's awareness and beliefs about a health condition will influence their intentions and behaviors (Ajzen, 2020). Pregnant women who are aware of pregnancy risks tend to have stronger intentions to prepare for childbirth and follow the advice of health workers. Conversely, pregnant women who are unaware of the risks tend to view childbirth as a completely normal process that requires no special preparation, resulting in lower levels of childbirth readiness.

The finding that all pregnant women with a high level of awareness were in the prepared category also indicates that awareness is not simply factual knowledge but reflects internalized understanding. This aligns with research in Rwanda, which found that good risk awareness

correlates with mothers' emotional and psychological preparedness for childbirth, including readiness for potential referrals and medical interventions (Umubyeyi et al., 2022). Thus, awareness of risk factors plays a role not only in technical planning but also in the mental preparedness of pregnant women. Although the relationship was strong, this study also showed that there was still variation in the level of preparedness among mothers with moderate awareness. This indicates that in addition to risk awareness, childbirth readiness is also influenced by other factors, such as family support, economic conditions, previous childbirth experiences, and access to health facilities. Research in Laos and Cambodia has shown that limited economic resources and family support can hinder childbirth preparedness even when pregnant women have a relatively good risk awareness (Sychareun et al., 2021; Chhea et al., 2019).

The clinical implications of this study are highly relevant to midwifery practice, particularly in antenatal care. The results emphasize that ANC education is not simply about conveying information; it also needs to ensure that pregnant women fully understand and are aware of the risks they face during pregnancy. Midwives play a key role in delivering risk education contextually, using accessible language, and involving husbands and families in the educational process. This approach is expected to improve childbirth preparedness and reduce delays in decision-making when complications arise. Overall, this study contributes to scientific research by strengthening evidence that pregnant women's awareness of pregnancy risk factors is closely related to their preparedness for childbirth. These findings support the importance of strengthening risk-based educational interventions in midwifery care as a strategy to improve childbirth preparedness and support efforts to reduce maternal morbidity and mortality.

#### 4. CONCLUSION

This study aims to analyze the relationship between the level of awareness of pregnant women regarding pregnancy risk factors and their readiness for childbirth in the working area of Dr. Hi. Zainal Umar Sidiki Regional General Hospital. The results of the study indicate a significant relationship between awareness of pregnant women regarding pregnancy risk factors and their readiness for childbirth, confirming that risk awareness is an important factor in shaping maternal readiness physically, psychologically, and in planning for childbirth. Scientifically, these findings strengthen the concept of *birth preparedness and complication readiness* as well as health behavior theory that emphasizes the role of risk awareness in health decision-making. Clinically, the results of the study imply the need to strengthen antenatal

education that focuses on increasing awareness of pregnant women regarding pregnancy risk factors, with an effective communication approach and involving families, to improve childbirth readiness and support efforts to reduce the risk of maternal complications.

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