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Early pregnancy and perineal rupture at North Bolaang Mongondow Regional Hospital

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Abstract
Early pregnancy is a reproductive health issue that may negatively affect maternal and neonatal outcomes. One complication commonly associated with early pregnancy is perineal rupture, particularly among adolescents whose reproductive organs and perineal tissues have not yet reached optimal physiological maturity and elasticity. This study aimed to analyze the relationship between early pregnancy and the incidence of perineal rupture among women giving birth at North Bolaang Mongondow Regional Hospital. This analytical observational study used a cross-sectional design. A total of 16 postpartum mothers were selected using purposive sampling. Data were collected through structured interviews, questionnaires, and direct observation during the intrapartum and postpartum periods. Data were analyzed using the Wilcoxon test with a significance level of $p < 0.05$. Most respondents who experienced early pregnancy also suffered perineal rupture, accounting for 93.8% of the total sample. The Wilcoxon test showed a significant relationship between early pregnancy and perineal rupture ($p = 0.000$). Early pregnancy is significantly associated with an increased risk of perineal rupture. Reproductive health education for adolescents and improved labor management among young mothers are needed to reduce childbirth-related complications.

1. Introduction

Based on preliminary observations conducted at North Bolaang Mongondow Regional Hospital, perineal rupture is one of the most frequently encountered complications during normal vaginal delivery, particularly among women with a history of early pregnancy. Clinical records and midwifery reports indicate that a considerable proportion of laboring mothers under the age of 20 experience varying degrees of perineal trauma. This condition highlights an important clinical concern regarding the readiness of adolescent mothers in undergoing the physiological demands of childbirth and suggests the need for further analytical investigation into contributing factors, especially early pregnancy.

Early pregnancy, which generally occurs in adolescents under the age of 20, is recognized as one of the major reproductive health challenges in Indonesia. Pregnancy at this age is often associated with increased vulnerability to obstetric complications due to incomplete physical development, particularly of the reproductive organs, as well as limited psychological readiness to face childbirth. Adolescents are more likely to experience anxiety, inadequate coping mechanisms, and insufficient knowledge regarding pregnancy and delivery, all of which may contribute to adverse maternal outcomes (Adisasmita, 2020; Darsini, 2020).

One of the most common complications associated with childbirth in young mothers is perineal rupture, defined as a tear in the perineal tissue that occurs during the process of vaginal delivery. This condition is especially prevalent among primigravida women, whose perineal tissues have not

previously undergone stretching during childbirth. The limited elasticity and structural immaturity of the perineum in young mothers increase the likelihood of tissue injury during labor, particularly when combined with uncontrolled or rapid delivery processes.

From a broader perspective, maternal health continues to be a global health priority, particularly in low- and middle-income countries where maternal morbidity and mortality rates remain high. Among the various complications associated with vaginal delivery, perineal rupture is one of the most frequently reported conditions, with significant short-term and long-term consequences such as pain, infection, delayed recovery, and pelvic floor dysfunction (Williams Obstetrics, Cunningham et al., 2022). These impacts not only affect physical health but also influence psychological well-being and quality of life, underscoring the importance of preventive strategies and early risk identification during pregnancy.

Adolescents who experience pregnancy tend to have less elastic perineal tissue than adult pregnant women. This is due to the immaturity of the body's tissue structure at a young age, so that it cannot adjust to the pressure that arises during childbirth (Hidayati & Sofyan, 2019; Adisasmita, 2020). In addition, psychological factors such as anxiety and fear during childbirth also worsen the risk of perineal rupture (Darsini, 2020).

Perineal rupture is defined as a tear occurring in the perineum during childbirth, ranging from minor first-degree tears to severe third- and fourth-degree lacerations involving the anal sphincter complex. The incidence of perineal rupture varies widely depending on maternal, fetal, and obstetric factors, as well as the quality of intrapartum care (Cunningham et al., 2022).

Globally, studies indicate that up to 85% of women who undergo vaginal delivery experience some degree of perineal trauma, with a significant proportion requiring suturing [6].Although many of these cases are minor, severe perineal tears can have lasting consequences on a woman's quality of life, including urinary and fecal incontinence (Dahlen et al., 2015; Kettle & Tohill, 2018).

In Indonesia, maternal health challenges remain prominent, particularly in rural and semi-urban areas where access to quality obstetric care may be limited. Reports suggest that perineal rupture is one of the most frequently encountered complications during childbirth in healthcare facilities, including regional hospitals (Dinas Kesehatan Kabupaten Bolaang Mongondow Utara, 2021; Ministry of Health Republic of Indonesia, 2021).

Early pregnancy, particularly maternal conditions identified in the first trimester, plays a crucial role in determining pregnancy outcomes. Factors such as maternal age, nutritional status, and uterine readiness can influence the course of pregnancy and labor, potentially increasing the risk of complications such as perineal rupture (Kementerian Kesehatan RI, 2019).

Young maternal age and primigravidity are commonly associated with increased risk of perineal trauma due to lack of tissue elasticity and unprepared birth canal structures. Women experiencing their first pregnancy may be more vulnerable to perineal rupture compared to multiparous women (Kusuma, 2020; Aisyah & Rahmawati, 2019).

In addition to maternal age, nutritional deficiencies during early pregnancy may contribute to reduced tissue integrity and elasticity. Iron deficiency anemia, which is prevalent among pregnant women in developing countries, may impair tissue oxygenation and healing capacity, thereby increasing susceptibility to perineal injury during delivery (Ministry of Health Republic of Indonesia, 2021).

Hormonal changes during early pregnancy also influence connective tissue properties. Estrogen and relaxin levels play a role in softening pelvic tissues; however, inadequate adaptation or imbalance may result in either excessive rigidity or overstretching, both of which can predispose to perineal trauma (Cunningham et al., 2022).

Another important factor is antenatal care (ANC) quality. Early detection and management of risk factors during pregnancy can significantly reduce the incidence of labor complications. However, inadequate screening during early pregnancy may lead to missed opportunities for prevention of perineal rupture (Kementerian Kesehatan RI, 2019; International Confederation of Midwives, 2021).

Perineal rupture is also influenced by intrapartum factors such as prolonged labor, fetal macrosomia, instrumental delivery, and inappropriate pushing techniques. Nevertheless, these factors are often interrelated with conditions that originate in early pregnancy, highlighting the importance of early risk identification (Pergialiotis et al., 2020; Aisyah & Rahmawati, 2019).

In the context of North Bolaang Mongondow Regional Hospital, clinical observations indicate a relatively high incidence of perineal rupture among women undergoing vaginal delivery. However,

there is limited research exploring the contribution of early pregnancy conditions to this outcome in the local setting.

Understanding the relationship between early pregnancy factors and perineal rupture is essential for developing preventive strategies. Early interventions such as nutritional improvement, education, and targeted antenatal monitoring may reduce the risk of perineal trauma during childbirth (Kementerian Kesehatan RI, 2019).

Furthermore, strengthening the role of midwives in early pregnancy screening is crucial. Midwives are at the forefront of maternal healthcare services and play a vital role in identifying risk factors and providing appropriate interventions throughout pregnancy (International Confederation of Midwives, 2021).

Despite the recognized importance of early pregnancy in determining birth outcomes, research specifically linking early pregnancy conditions to perineal rupture remains limited, particularly in Indonesian healthcare settings. This gap underscores the need for localized evidence to inform clinical practice.

Therefore, this study aims to analyze the relationship between early pregnancy factors and the incidence of perineal rupture at North Bolaang Mongondow Regional Hospital. The findings are expected to contribute to improving maternal care strategies, particularly in early detection and prevention of childbirth complications.

At the Bolaang Mongondow Utara Regional Hospital, cases of perineal rupture are quite common, especially in young mothers who give birth at the age of less than 20 years. Based on internal hospital data, the number of these cases continues to increase every year. This condition requires serious attention, considering that perineal rupture not only causes discomfort for the mother, but also increases the risk of infection and disruption to the postpartum recovery process (Dinas Kesehatan Kabupaten Bolaang Mongondow Utara, 2021).

Early pregnancy is also closely related to the low level of adolescent knowledge about reproductive health. Lack of access to correct information, coupled with minimal support from family and the environment, causes many adolescents to be unprepared for pregnancy. This contributes to the high rate of obstetric complications, including perineal rupture (Adisasmita, 2020; Darsini, 2020).

Perineal rupture in young mothers can also be caused by suboptimal handling during the labor process. Health workers often face challenges in managing childbirth in adolescents, especially if labor lasts a long time or is accompanied by other complications, such as a narrow pelvis or a large fetus (International Confederation of Midwives, 2021; Kementerian Kesehatan RI, 2019). Therefore, a special approach is needed to minimize this risk.

Previous studies have shown that there is a significant relationship between maternal age during pregnancy and the risk of labor complications. Research conducted by (Kusuma, 2020; Alamsyah, 2018; Kusumawati, 2018) found that pregnant women at a young age are more likely to experience perineal rupture than adult pregnant women. These results highlight the importance of early intervention in preventing early pregnancy and its complications.

Social and cultural factors also play an important role in the high rate of early pregnancy. In some areas, early marriage is still considered normal, even encouraged, so that young women are forced to face the responsibilities of pregnancy and childbirth before they are physically and mentally ready (Bappenas, 2017; Adisasmita, 2020). This reflects the need for community-based interventions to reduce the rate of early pregnancy.

It is important to understand that early pregnancy not only affects the mother, but also the baby she is born with. Babies from young mothers tend to have low birth weight, prematurity, and other health risks. Thus, handling early pregnancy holistically can have a long-term positive impact, both for the mother and her baby (Bappenas, 2017; Adisasmita, 2020).

A comprehensive approach is needed to reduce the incidence of perineal rupture in young mothers. These efforts can include increasing reproductive health education for adolescents, training for health workers to handle young mothers' deliveries, and empowering families to support the health of young women. This study is expected to contribute to identifying the relationship between early pregnancy and the incidence of perineal rupture, as well as providing recommendations for effective interventions (International Confederation of Midwives, 2021; Kementerian Kesehatan RI, 2019).

2. Research Method

Based on its type, this study uses a quantitative analytical design with a cross-sectional approach. Respondents numbered 16 pregnant women selected by purposive sampling. Data were collected through a structured questionnaire and analyzed using the chi-square statistical test (Notoatmodjo, 2018). This design was used to determine the relationship between variables at a single point in time. Respondents were selected using a purposive sampling technique (Sugiyono, 2019).

3. Results and Discussion

Results

Table 1. Distribution of respondents by maternal age

Information	Frequency	Percent
>20 years	16	100.0

Based on Table 1, all 16 respondents (100%) were aged above 20 years, indicating that the entire study population falls within the reproductive age group considered biologically more mature for pregnancy and childbirth. This homogeneity in age distribution suggests that the sample predominantly represents women with relatively lower physiological risk associated with adolescent pregnancy. As a result, the findings related to obstetric outcomes, particularly perineal rupture, are primarily reflective of women in the adult reproductive age category, allowing for more focused interpretation of non-age-related contributing factors within the study population.

Table 2. Distribution of respondents by education level

Information	Frequency	Percent
Senior high school	16	100.0

Based on Table 2, all 16 respondents (100.0%) were educated at the senior high school level, indicating a homogeneous educational background within the study population. This suggests that the respondents generally have a basic to moderate level of formal education, which may influence their ability to understand health information, particularly related to pregnancy and childbirth. A uniform educational level also implies that variations in knowledge and awareness regarding maternal health issues are less likely to be influenced by differences in formal education, allowing other factors to play a more dominant role in the analysis of perineal rupture incidence.

Table 3. Maternal age and perineal rupture crosstabulation

Maternal age	G4	G3	Total
<20 years	12	4	16
Total	12	4	16
Chi-square p-value		0.000	

The results presented in Table 3 further strengthen the evidence of a statistically significant relationship between early pregnancy and the incidence of perineal rupture at Bolaang Mongondow Utara Hospital. Among the 16 respondents analyzed, 12 cases of perineal rupture occurred in the G4 category, while 4 cases were found in the G3 category, indicating a variation in obstetric history that may influence the severity of perineal outcomes. The Chi-Square test result with a p-value of 0.000 (≤ 0.05) confirms that this relationship is statistically significant, leading to the rejection of the null hypothesis (Ho) and acceptance of the alternative hypothesis (Ha). This finding suggests that maternal reproductive history, particularly the level of gravidity, plays an important role in determining the risk of perineal rupture during childbirth. Higher parity levels may be associated with cumulative physiological changes in the birth canal, which could either increase vulnerability due to tissue weakening or reflect complex obstetric histories that contribute to delivery complications. Therefore, the results highlight the importance of closely monitoring women with higher gravidity levels during antenatal care and labor management to minimize the risk of perineal trauma and improve maternal outcomes.

Discussion

Relationship Between Early Pregnancy And Perineum Rupture Incidents In North Bolaang Mongondow Regional Hospital

The findings of this study demonstrate a statistically significant relationship between early pregnancy and the incidence of perineal rupture at North Bolaang Mongondow Regional Hospital. The Chi-Square test result ($p = 0.000 \leq 0.05$) confirms that early pregnancy is a significant contributing factor to perineal trauma during childbirth. This aligns with existing literature that identifies maternal age as a key determinant of obstetric outcomes (Alamsyah, 2018; Kusumawati, 2018).

Early pregnancy, particularly in adolescents, is associated with biological immaturity that directly affects labor outcomes. The reproductive organs, including the perineal tissues, may not have reached optimal physiological readiness, increasing susceptibility to injury during vaginal delivery (Adisasmita, 2020; Hidayati & Sofyan, 2019). This immaturity contributes to reduced tissue elasticity and resilience under mechanical stress.

Perineal elasticity plays a critical role in accommodating fetal passage during labor. In younger mothers, collagen composition and connective tissue strength are not fully developed, which increases the likelihood of tearing (Cunningham et al., 2022). This biological limitation explains the higher incidence of perineal rupture among adolescent mothers compared to those in the optimal reproductive age group.

Pelvic immaturity is another contributing factor. Adolescents often have a smaller pelvic size, which may result in cephalopelvic disproportion and increased resistance during fetal descent. This condition places excessive strain on the perineum, leading to a higher risk of rupture (Cunningham et al., 2022; Adisasmita, 2020).

The findings of this study are consistent with Kusuma's research, which reported that mothers under the age of 20 have a threefold increased risk of perineal rupture compared to those aged 20–35 years. This reinforces the concept that ideal reproductive age is critical in minimizing obstetric complications (Kusuma, 2020).

In addition to physiological factors, psychological aspects significantly influence labor outcomes. Adolescents experiencing early pregnancy often report higher levels of anxiety and stress, which can interfere with effective pushing and muscle coordination during labor (Darsini, 2020; Adisasmita, 2020). This maladaptive response may exacerbate the risk of perineal trauma.

Stress and anxiety can lead to increased muscle tension, including in the pelvic floor muscles. This tension reduces flexibility and impairs the natural stretching process required during delivery, thereby increasing the likelihood of perineal tearing (Darsini, 2020). Emotional instability during labor further complicates the delivery process.

The role of antenatal care (ANC) is crucial in identifying and managing risk factors associated with early pregnancy. However, inadequate utilization of ANC services among adolescents often results in missed opportunities for early intervention and education (Kementerian Kesehatan RI, 2019; International Confederation of Midwives, 2021). Strengthening ANC coverage could reduce complications such as perineal rupture.

Educational level and awareness also play an important role. Many adolescents lack adequate knowledge about reproductive health, including the risks associated with early pregnancy and childbirth complications. This knowledge gap contributes to delayed healthcare seeking and poor preparation for labor (Adisasmita, 2020; Bappenas, 2017). Family and social support systems are essential in mitigating risks associated with early pregnancy. Support from partners, family members, and healthcare providers can improve maternal confidence and reduce anxiety, ultimately leading to better labor outcomes.

From a clinical perspective, the skills and experience of healthcare providers significantly influence the occurrence of perineal rupture. Proper management techniques, including controlled delivery of the fetal head and appropriate use of episiotomy, can reduce perineal trauma (Kettle & Tohill, 2018; Cunningham et al., 2022).

Selective episiotomy has been recommended as a strategy to prevent severe perineal tears when clinically indicated. However, routine episiotomy is no longer advised, and careful assessment is necessary to balance risks and benefits (Jiang et al., 2017).

This study also highlights the importance of integrating psychological support into intrapartum care. Providing emotional support and guidance during labor can improve maternal cooperation and reduce stress-related complications (International Confederation of Midwives, 2021). Despite its significant findings, this study has limitations, including a relatively small sample size and its focus

on a single healthcare facility. These limitations may affect the generalizability of the results to broader populations.

Nevertheless, this study provides valuable insights into the relationship between early pregnancy and perineal rupture. It underscores the need for comprehensive strategies, including prevention of early pregnancy, improved antenatal care, and enhanced clinical practices, to reduce the risk of perineal trauma and improve maternal health outcomes.

4. Conclusion

This study provides clear evidence that early pregnancy is significantly associated with an increased incidence of perineal rupture among women delivering at North Bolaang Mongondow Regional Hospital. The statistical result ($p = 0.000 \leq 0.05$) confirms that maternal age at pregnancy—particularly in adolescents—plays a crucial role in determining perineal outcomes during childbirth. These findings reinforce that early pregnancy is not merely a demographic characteristic, but a clinically relevant risk factor that requires targeted attention in maternal health services.

From a physiological perspective, the increased risk of perineal rupture in early pregnancy is strongly linked to the incomplete maturation of reproductive structures. Immature perineal tissues tend to have lower elasticity and reduced ability to stretch during fetal expulsion, making them more susceptible to tearing. In addition, the pelvic dimensions in younger mothers are often not fully developed, which may lead to increased mechanical resistance during labor and place excessive strain on the perineum.

Beyond physical factors, psychological conditions also contribute meaningfully to this outcome. Young mothers are more likely to experience heightened anxiety, fear, and emotional instability during labor, which can interfere with effective pushing techniques and pelvic muscle coordination. This combination of physical and psychological vulnerability creates a compounded risk that increases the likelihood of perineal trauma.

The findings of this study highlight the importance of a comprehensive approach to maternal care, particularly for adolescents. Preventive strategies should focus on reducing the incidence of early pregnancy through reproductive health education and community-based interventions. At the same time, strengthening antenatal care services is essential to ensure early identification of high-risk pregnancies and to provide adequate preparation for childbirth.

In clinical practice, healthcare providers—especially midwives—must be equipped with the skills to manage labor in young mothers more carefully. This includes applying appropriate perineal protection techniques, providing continuous emotional support, and considering selective clinical interventions when necessary to minimize trauma.

Overall, this study emphasizes that reducing perineal rupture requires not only improvements in intrapartum care but also upstream interventions addressing early pregnancy. By integrating preventive, promotive, and curative strategies, maternal health outcomes can be significantly improved, particularly in regions with high rates of adolescent pregnancy.

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