International Journal of Contemporary Sciences (IJCS)
Vol. 4, No. 4, 2026: 1275-1284

The Relationship Between Maternal Parity and Placenta Previa Incidence at Bhayangkara Level III Hospital, Kendari

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A R T I C L E I N F O
Keywords: Parity, Placenta Previa, Maternal Health, Case-Control Study, Kendari

Received : 10 February
Revised : 15 March
Accepted: 30 April

A B S T R A C T
Placenta previa is a serious obstetric complication characterized by abnormal placental implantation on the lower uterine segment, potentially covering the cervical os. It is a leading cause of antepartum hemorrhage and maternal-fetal morbidity. Maternal parity has been identified as a significant risk factor, yet evidence from Indonesian tertiary hospitals remains limited. To determine the relationship between maternal parity and the incidence of placenta previa at Bhayangkara Level III Hospital, Kendari. An analytical survey with a case-control design was employed. A purposive sampling method was used, involving 128 participants (64 cases and 64 controls) with a 1:1 ratio. Data were analyzed using the Chi-square statistical test (α = 0.05). Among the case group, 70.3% (n=45) had high parity (≥4 births), compared to 43.8% (n=28) in the control group. The Chi-square test revealed a statistically significant association (p-value = 0.004 < α 0.05), indicating that mothers with high parity are at greater risk of placenta previa. There is a significant relationship between maternal parity and the incidence of placenta previa. Healthcare providers should prioritize early detection and health education for mothers with high parity. Delivery in qualified healthcare facilities is strongly recommended

INTRODUCTION

Pregnancy complications represent a significant burden on maternal and neonatal health globally. Among these, antepartum hemorrhage—particularly placenta previa—is one of the most severe and potentially life-threatening conditions for both mother and fetus. Placenta previa is defined as the condition in which the placenta implants abnormally on the lower uterine segment, partially or completely covering the internal cervical os, resulting in painless vaginal bleeding during the third trimester of pregnancy.

Globally, placenta previa affects approximately 0.3–0.5% of all pregnancies, though its incidence varies considerably across geographic and socioeconomic contexts. In Indonesia, obstetric hemorrhage—including placenta previa—remains a leading contributor to maternal mortality. The World Health Organization (WHO) reports that hemorrhage accounts for approximately 27% of all maternal deaths worldwide, with a disproportionate burden in low- and middle-income countries.

In Southeast Sulawesi Province, Indonesia, secondary data from multiple hospitals highlight a disturbing trend. At RSUD Bahteramas, placenta previa cases between 2020 and 2024 fluctuated, reaching 38 cases (5.63%) out of 674 deliveries in 2024. At RSUD Kota Kendari, the incidence showed a steady increase from 48 cases (9.02%) in 2020 to 61 cases (8.57%) in 2024. Most strikingly, at Bhayangkara Level III Hospital Kendari—the study site—placenta previa cases rose dramatically from 35 cases (8.27%) in 2020 to 39 cases (19.3%) in 2024, representing one of the highest institutional rates in the region.

Several risk factors have been identified in the literature as contributing to placenta previa, including advanced maternal age, high parity, previous cesarean section, history of uterine curettage, endometrial scarring, and uterine anomalies such as myoma uteri. Among these, maternal parity—defined as the number of live births a woman has had—has been consistently identified as a significant and modifiable risk factor. High parity (≥4 deliveries) is associated with degenerative endometrial changes, including atrophy of the decidua and decreased vascularization, which may cause the placenta to seek a more vascularized implantation site in the lower uterine segment.

Previous studies corroborate this relationship. Mariza (2021) found a statistically significant association between maternal parity and placenta previa in a study conducted at RSUD DR. H. Abdul Moeloek, Lampung, with p-value = 0.008 and OR = 2.786. Similarly, Rachmawati (2022) reported a significant relationship at RSUD Arjawinangun, Cirebon, with p-value = 0.000 for parity. Despite these findings, local evidence from Kendari remains scarce, making this study particularly important for informing regional health policy.

This study therefore aims to determine the relationship between maternal parity and the incidence of placenta previa at Bhayangkara Level III Hospital, Kendari. The findings are expected to contribute to local clinical practice, prenatal counseling protocols, and preventive health strategies targeting high-parity mothers.

LITERATURE REVIEW

Placenta Previa: Definition and Classification

Placenta previa is an obstetric condition characterized by the placenta implanting in the lower uterine segment (segmen bawah rahim), covering the internal cervical os either completely or partially. This condition typically manifests as painless, bright red vaginal bleeding during the third trimester of pregnancy and can lead to significant maternal and fetal morbidity and mortality if not managed appropriately (Mochtar, 2015; Manuaba, 2017).

Clinically, placenta previa is classified into four types: (1) Total placenta previa, where the placenta completely covers the internal cervical os; (2) Partial placenta previa, where the placenta partially covers the os; (3) Marginal placenta previa, where the placental edge reaches the margin of the os; and (4) Low-lying placenta, where the placenta is implanted in the lower uterine segment but does not reach the os. The clinical implications differ across classifications, with total placenta previa presenting the greatest risk for severe hemorrhage.

The pathophysiology of placenta previa involves abnormal trophoblastic invasion into the lower uterine segment. Factors that compromise the endometrial lining, such as prior surgeries, curettage, or repeated pregnancies, create scarring that reduces the availability of the fundal endometrium for implantation. This forces the placenta to migrate to more vascular areas in the lower uterine segment (Manuaba, 2017).

Maternal Parity and Its Role in Placenta Previa

Parity refers to the number of times a woman has given birth to a viable infant (Manuaba, 2017). It is broadly categorized as low parity (1–3 live births) and high parity (≥4 live births). High parity has been widely recognized as a risk factor for various obstetric complications, including placenta previa, placental abruption, postpartum hemorrhage, and uterine rupture.

The mechanism by which high parity increases placenta previa risk is multifactorial. Repeated gestations cause progressive atrophy of the decidua and decreased vascularization of the fundal endometrium. This atrophy creates an inflammatory response and scarring that compromises the structural integrity of the uterine lining. Consequently, during subsequent pregnancies, the placenta seeks alternative implantation sites—often in the lower uterine segment—to meet the nutritional demands of the growing fetus (Dewi, 2021; Sakinah, 2022).

Additionally, with each successive pregnancy, the lower uterine segment becomes progressively more susceptible to placental implantation due to the expanding uterine size and displacement of normal endometrial tissue. This creates a cycle of escalating risk with increasing parity (Manuaba, 2017).

Previous Research

Numerous studies from Indonesia and beyond have established the relationship between maternal parity and placenta previa. Mustika Ayu (2019) conducted a study at RSUD Raden Mattaher, Jambi, and found a significant association between parity and placenta previa incidence. Nirmalasari (2022) reported similar findings at RS Muhammadiyah Palembang, identifying parity, age, and history of curettage as significant predictors. Mursalim and Saharuddin

(2019) conducted a multi-variable risk factor analysis of placenta previa and identified high parity as one of the most consistent independent risk factors.

Internationally, studies from Southeast Asia, Sub-Saharan Africa, and the Middle East have consistently reported that grand multiparous women (≥4 births) face substantially elevated risks of placenta previa compared to primiparous or low-parity women. This evidence underscores the global relevance of the parity–placenta previa relationship.

H1: There is a significant relationship between maternal parity and the incidence of placenta previa at Bhayangkara Level III Hospital, Kendari.

METHODOLOGY

This study employed an analytical survey design with a case-control approach, conducted in May 2025 at Bhayangkara Level III Hospital, Kendari, Southeast Sulawesi Province, Indonesia. The case-control design was selected to enable the identification of associations between maternal parity and placenta previa in a retrospective manner, using existing medical records.

Population and Sampling

The study population consisted of all mothers who delivered at Bhayangkara Level III Hospital, Kendari, between 2020 and 2024. The case group comprised mothers diagnosed with placenta previa, while the control group comprised mothers without this diagnosis. A 1:1 case-to-control matching ratio was applied, yielding a total sample of 128 participants (64 cases and 64 controls). The purposive sampling technique was employed based on predefined inclusion and exclusion criteria.

Inclusion criteria for cases were: (1) mothers diagnosed with placenta previa documented in hospital medical records; (2) singleton pregnancies; (3) delivery at Bhayangkara Level III Hospital during the study period. Exclusion criteria included mothers with incomplete medical records, multiple pregnancies, and cases with other confounding obstetric pathology.

Variables

The independent variable was maternal parity, categorized as: Low parity (1–3 live births) and High parity (≥4 live births). The dependent variable was the incidence of placenta previa, categorized dichotomously as Yes (diagnosed) or No (not diagnosed).

Data Collection and Analysis

Secondary data were extracted from hospital medical records. A structured checklist was used to ensure consistent data collection. The data were processed through editing, coding, scoring, and tabulation stages before statistical analysis. Descriptive statistics were used to summarize demographic and clinical characteristics. For bivariate analysis, the Chi-square test was employed with a significance level of $\alpha = 0.05$. All analyses were performed using IBM SPSS Statistics.

Ethical considerations were upheld throughout the study. Permission for data collection was obtained from the hospital administration and the relevant provincial research and development body in Southeast Sulawesi.

RESEARCH RESULT

Demographic Characteristics of Respondents

Table 1 presents the demographic characteristics of the 128 respondents. The majority of mothers (76.6%, n=98) were aged 20–35 years, considered the reproductive prime age group. A smaller proportion was aged under 20 years (7.8%, n=10) or above 35 years (15.6%, n=20). In terms of education, the predominant level was Senior High School (SMA) at 43.0% (n=55), followed by Junior High School (SMP) at 32.8% (n=42), and higher education levels at a combined 21.1%. Regarding occupation, the largest group was housewives (IRT) at 51.6% (n=66), followed by self-employed (35.2%), civil servants (7.0%), and private sector employees (6.2%).

Table 1. Demographic Characteristics of Respondents (n=128)

Characteristic	Category	Frequency (n)	Percent (%)
Maternal Age	< 20 Years	10	7.8
	20–35 Years	98	76.6
	> 35 Years	20	15.6
Education Level	Elementary (SD)	4	3.1
	Junior HS (SMP)	42	32.8
	Senior HS (SMA)	55	43.0
	Diploma (DIII)	12	9.4
	Bachelor (S1)	15	11.7
Occupation	Housewife (IRT)	66	51.6
	Self-employed	45	35.2
	Civil Servant (PNS)	9	7.0
	Private Sector	8	6.2
TOTAL		**128**	**100.0**

Source: Secondary Data, 2025

Univariate Analysis

Table 2 presents the distribution of maternal parity and placenta previa incidence among the study participants. The majority of respondents (57.0%, n=73) were classified as high parity (≥4 births), while 43.0% (n=55) were classified as low parity (1–3 births). With respect to placenta previa, the sample was equally distributed, with 50.0% (n=64) in the case group (diagnosed with placenta previa) and 50.0% (n=64) in the control group (no placenta previa).

Table 2. Frequency Distribution of Parity and Placenta Previa (n=128)

Variable	Category	n	%
Maternal Parity	Low Parity (1–3)	55	43.0
	High Parity (≥4)	73	57.0
Placenta Previa	Yes (Case)	64	50.0
	No (Control)	64	50.0
Total		**128**	**100.0**

Source: Secondary Data, 2025

Bivariate Analysis: Relationship Between Parity and Placenta Previa

Table 3 presents the results of the bivariate analysis examining the relationship between maternal parity and placenta previa incidence using the Chi-square test.

Table 3. Relationship Between Maternal Parity and Placenta Previa Incidence (n=128)

Parity	Placenta Previa: Yes		Placenta Previa: No		Total	p-value
	n	%	**n**	%	**n**	
Low Parity (1–3)	19	29.7	36	56.2	55	**0.004**
High Parity (≥4)	45	70.3	28	43.8	73	
Total	**64**	**100**	**64**	**100**	**128**	

Source: Secondary Data (SPSS Output), 2025

As shown in Table 3, among the case group (mothers with placenta previa), 70.3% (n=45) had high parity (≥4 births) and only 29.7% (n=19) had low parity. In contrast, among the control group (mothers without placenta previa), 56.2% (n=36) had low parity and 43.8% (n=28) had high parity. The Chi-square test yielded a p-value of 0.004 (< α 0.05), indicating a statistically significant relationship between maternal parity and placenta previa incidence. Therefore, H0 is rejected and Ha is accepted: there is a significant relationship between maternal parity and the incidence of placenta previa at Bhayangkara Level III Hospital, Kendari.

DISCUSSION

This study found a statistically significant relationship between maternal parity and the incidence of placenta previa (p-value = 0.004). Mothers with high parity (≥4 births) were overrepresented in the case group (70.3%) compared to the control group (43.8%), strongly suggesting that high parity increases the risk of placenta previa.

These findings are consistent with the theoretical framework proposed by Manuaba (2017), who argues that endometrial deterioration—resulting from repeated pregnancies with short inter-delivery intervals, prior cesarean sections, curettage procedures, or uterine myoma—impairs the structural integrity of the upper uterine segment. As the endometrium of the fundal region becomes progressively less suitable for placental implantation due to atrophy and scarring, the placenta migrates to the lower uterine segment to access adequate vascularity for fetal nutrition.

The biological plausibility of this relationship is further supported by research on decidual atrophy. Sakinah (2022) demonstrated that frequent pregnancies cause repeated episodes of decidual atrophy and reduced vascularization. Each subsequent pregnancy accelerates the deposition of scar tissue, diminishing nutrient and blood supply to the fundal region. The placenta compensates by expanding its implantation surface into the lower uterine segment—a process that predisposes to placenta previa. This mechanism explains not only the increased incidence of placenta previa with high parity but also the increased severity and extent of placentation found in grand multiparous women.

Dewi (2021) similarly proposed that repeated gestations reduce the viability of the fundal endometrium, compelling the placenta to seek alternative implantation sites. When the fundal region becomes less hospitable due to degenerative changes, the lower uterine segment serves as the default site, leading to the pathological implantation characteristic of placenta previa.

The present study's findings are in agreement with Mariza (2021), who reported a significant association between parity and placenta previa (p-value = 0.008, OR = 2.786) at RSUD Dr. H. Abdul Moeloek, Lampung. Rachmawati (2022) also found significant relationships at RSUD Arjawinangun, Cirebon, with p-values of 0.006 for age and 0.000 for parity, further reinforcing the evidence base. The strong association observed in this study may also reflect contextual factors unique to Kendari. The rising trend of placenta previa cases at Bhayangkara Level III Hospital—from 8.27% in 2020 to 19.3% in 2024—suggests that systemic

and demographic factors beyond individual parity may be contributing. These could include limited access to family planning services, cultural preferences for large family sizes, inadequate prenatal screening, and delays in seeking emergency obstetric care.

From a public health perspective, the findings underscore the importance of targeted interventions for high-parity mothers. Family planning programs that encourage optimal birth spacing and limit total fertility to three or fewer children could substantially reduce the burden of placenta previa and associated maternal hemorrhage. Health education delivered by midwives and community health workers should emphasize the obstetric risks of high parity, beginning during antenatal care.

Furthermore, mothers with high parity should be considered a priority group for enhanced prenatal surveillance, including routine third-trimester ultrasonography to screen for placenta previa. Early detection allows for timely planning of hospital delivery, availability of blood products, and consideration of elective cesarean section, all of which can significantly reduce maternal and neonatal mortality associated with this condition.

CONCLUSIONS AND RECOMMENDATIONS

This study demonstrates a statistically significant relationship between maternal parity and the incidence of placenta previa at Bhayangkara Level III Hospital, Kendari (p-value = 0.004). Mothers with high parity (≥4 births) face a substantially elevated risk of placenta previa compared to those with low parity. These findings validate the hypothesis and align with both theoretical frameworks and previous empirical studies from Indonesia and the global literature.

The clinical and public health implications of these findings are considerable. Healthcare providers, particularly midwives and obstetricians, should integrate parity assessment into routine antenatal risk stratification. High-parity mothers should receive intensified prenatal surveillance, including placental localization via ultrasound in the third trimester, to enable early detection and appropriate management of placenta previa.

At the community level, family planning programs that promote optimal birth spacing and limit total parity can serve as effective preventive strategies. Health promotion campaigns should clearly communicate the risks associated with high parity to empower women and families in making informed reproductive health decisions.

Finally, all deliveries—particularly among high-parity and high-risk mothers—should be conducted in accredited healthcare facilities equipped with obstetric emergency capabilities. This can minimize complications arising from placenta previa and other parity-related complications during labor and delivery.

ACKNOWLEDGMENT

The author expresses sincere gratitude to the management and staff of Bhayangkara Level III Hospital, Kendari, for granting access to medical records and supporting this research. Deep appreciation is extended to the primary thesis advisor, Andriyani, SST., M.Kes, and secondary advisor, Ano Luthfa, SST., M.Kes, for their invaluable guidance, patience, and expertise throughout the research process. Thanks are also due to Dr. Dra. Hj. Rosmawati Ibrahim, SST., MS., M.Kes (Chairperson of STIKes Pelita Ibu), Wa Ode Sri Kamba Wuna, SST., M.Keb, Dr. Ns. Fajar Kurniawan, S.Kep., M.Kes, and all faculty and staff of the Midwifery Study Program at STIKes Pelita Ibu for their institutional support. The author also acknowledges the invaluable support of family and fellow students throughout this journey.

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