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A Retrospective Cohort Study of Pregnant Women in Labor at Kediri 1 Public Healthcare Center, Tabanan, Bali, Indonesia: A Focused Discussion on the Increasing Trends in Cesarean Section Deliveries

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Abstract

OBJECTIVE: The cesarean section (CS) is a surgical procedure in obstetrics that serves to protect the health and safety of both mothers and infants during labor process. Nevertheless, its prevalence has increased significantly in recent times. As such, this study aims to examine potential risk factors of expectant mothers in labor in Kediri 1 Public Healthcare Center, Tabanan, Bali, Indonesia.

METHODS: A retrospective cohort study was carried out on 848 pregnant women who received antenatal care at Kediri 1 Public Healthcare Center in Tabanan. The study followed up on electronic cohorts and medical records to determine the birth outcomes. Univariate and multivariate analyses were conducted using SPSS statistical software version 27 to determine the relative risk (RR).

RESULT: Most of women in labor are between 20-33 years old (75.4%) with mean age of 28.6 + 5.6. CS was the most common delivery method (67.9%), with obstetric indications being the most frequent reason (60.3%). Among these obstetric indications, LMR was the most common reason (49.3%). The study also revealed that maternal age and BMI were independent risk factors for CS aRR 1.89, 95% CI (1.19-2.99) p = 0.007 and aRR 2.18, 95% CI (1.01-4.70) p = 0.045, respectively. Additionally, maternal height was identified as a risk factor for CPD with an aRR of 8.39, 95% CI (2.36-29.8) p = 0.001.

CONCLUSION: Several factors have led to the growing acceptance of cesarean sections, including scientific advancements, social and cultural transformations, and medicolegal considerations. However, it should be noted that this procedure entails risks for both the mother and the child, and therefore should only be carried out when it is deemed necessary and beneficial.

Introduction

The global trend in cesarean section (CS) rates has been steadily increasing over the past few decades. According to the World Health Organization (WHO), the global CS rate has risen from around 7% in 1990 to 21% today, surpassing the ideal acceptable rate of 10%–15% [1], [2], [3], [4]. This trend is projected to continue, with estimates suggesting that nearly one-third (29%) of all births will take place by CS by 2030 [1], [2], [3], [4]. The rising trend in CS rates is a significant public health concern, as it can have both positive and negative impacts on maternal and neonatal health.

On the positive side, CS can significantly reduce maternal and neonatal morbidity and mortality when performed under proper indications [5], [6]. However, the increasing rate of non-medically indicated CS, also known as "caesarian on maternal request," is a growing concern [7]. This trend exposes both the mother and the baby to several unnecessary short- and long-term complications, including increased risks of noncommunicable diseases and immune-related conditions among babies later in life [8].

The rising trend in CS rates is not uniform across all regions. While high-income countries have seen a steady increase in CS rates, low- and middle-income countries have experienced a more rapid

increase, often driven by cultural and socioeconomic factors. In some regions, such as Latin America and the Caribbean, CS rates have reached as high as 43% of all births, with five countries (Dominican Republic, Brazil, Cyprus, Egypt, and Turkey) having CS rates higher than vaginal deliveries [9]. The Indonesia Basic Health Research (Riset Kesehatan Dasar/Riskesdas) in 2018 showed that the rate of CS delivery was around 17.6% of all births, exceeding the WHO recommended rate for the population [10].

The increasing trend in CS rates has significant implications for healthcare expenditures. The WHO estimates that the global cost of unnecessary CS procedures is substantial, with the potential to divert resources away from other essential healthcare services. Furthermore, the rising trend in CS rates highlights the need for effective public health education and awareness campaigns to promote the importance of evidence-based obstetric practices and to reduce unnecessary CS procedures [11], [12], [13].

The rising trend in CS rates is a complex issue with both positive and negative implications for maternal and neonatal health. Understanding the factors driving this trend and implementing effective strategies to reduce unnecessary CS procedures are crucial for improving healthcare outcomes and reducing healthcare expenditures. In order to improve maternal health care, public health planning, and an optimal resource allocation, this retrospective cohort study aims to see the general view of patients who underwent cesarean section delivery especially in semi-rural area, how it's prevalence and what are the common indication for cesarean section delivery.

Materials and Methods

This is a retrospective cohort study using a cohort review file of pregnant women who went for antenatal care at Kediri 1 Public Healthcare and pregnant women who gave labor at the working area of Kediri 1 Public Healthcare in Tabanan, Bali, Indonesia, between January 2021 and August 2023. In this study, patient information data collection was carried out using standardized form filling based on the Ministry of Health of the Republic of Indonesia through the Buku Kesehatan Ibu dan Anak (Buku KIA) for antenatal care examinations at the Public Health Services. In the case of the patient who gave birth but did not came for ANC screening at Kediri 1 Public Healthcare but are still in Kediri 1 working area.

There is a village midwife in each area who will later conduct follow-ups related to births that have occurred, the midwife will need to fill birth cohort form and this data collection are based on the birth cohort data in accordance to the Ministry of Health of the Republic of Indonesia.

Ethical Declaration

The research uses a retrospective cohort study design with a purposive sampling method and was approved by the Ethical Clearance of Udayana University with ethical exemption number 0424/UN14.2.2.VII.14/LT/2024.

Patient Characteristics

The study included pregnant women who received antenatal care or who gave birth at the working area of surveillance Kediri I Public Healthcare Center from August 2021 to August 2023.

Outcome Measures

This study evaluated several variables including age, parity, height, body mass index (BMI), mid-upper arm circumference (MUAC), hemoglobin (Hb), blood glucose (BG), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), spontaneous delivery, and section cesarean. Age variables were entered in years. Parity is the number of pregnancies that result in a fetus capable of living outside the uterus (28 weeks) which is divided into three groups, namely groups with the number of parities ≤ 1, 2-3, and > 3. Height variables are entered in centimeters (cm). BMI measurement results were divided into four groups, namely groups with BMI >30 kg/m^2, 25.0-29.9 kg/m^2, 18.5-24.9 kg/m^2, <18.5 kg/m^2. MUAC measurement results are divided into three groups, namely groups with MUAC <23.5 cm, 23.5-33 cm, >33 cm.

Hb measurement results are divided into two groups, namely groups with Hb < 11 g/dl and > 11 g/dl. BG is the blood glucose level of type 2 diabetes mellitus patients in blood plasma at any time, the results of which are divided into two groups, namely groups with BG < 100 mg/dl and ≥ 100 mg/dl. SBP measurement results were divided into three groups, namely groups with SBP < 100 mmHg, 100-129 mmHg, ≥ 130 mmHg. DBP measurement results are divided into three groups, namely groups with DBP < 80 mmHg, 80-89 mmHg, ≥ 90 mmHg.

MAP measurement results were divided into three groups, namely groups with MAP ≤ 90 mmHg and > 90 mmHg. While patients who underwent spontaneous labor or section cesarean delivery were each grouped into two, namely "yes" and "no".

Statistical Analysis

The data obtained will be entered into SPSS version 22 for descriptive, bivariate and multivariate

analysis. Descriptive statistical analysis was used to characterize the study sample. Data with categorical scales are expressed in frequencies and percentages. Data with a continuous scale will be expressed as mean and standard deviation if normally distributed or expressed as median and interquartile range if not normally distributed. Bivariate analysis was performed by the chi square test for categorical data. Multivariate analysis was performed with logistic regression on variables with p value <0.25 in bivariate analysis. This analysis aims to determine which variables have the most influence on the delivery method. All analyses were set at a significant level of p = 0.05.

Results

Base Characteristic

Table 1 provides information on the characteristics of the study participants and the prevalence of pregnant women in labor in the Kediri 1 Public Healthcare Center, located in Tabanan, Bali, Indonesia. The study covers a period of three years, from 2021 until August 2023, during which a total of 848 deliveries were recorded. The study revealed that Banjar Anyar, a relatively more urban area in the regency, was the residence of most participants (31%). The average age of the participants was 28.6 years, and almost two-thirds of them (67.9%) underwent cesarean delivery. The study also discovered that most participants (77.4%) opted for cesarean delivery in a private hospital.

Table 1: Participant Characteristics Who Underwent Labor in the Working Area of Kediri 1 Public Healthcare Center, Tabanan, Bali, Indonesia

Factors	Mean ± SD
Age, year	28.6 ± 5.6
Parity	2.2 ± 1.1
Body Weigt, kg	62.5 ± 11.5
Body Height, cm	154.4 ± 7.6
BMI, kg/m²	22.1 ± 5.2
Upper Arm Circumference, cm	27.9 ± 3.5
Hb, g/dL	12.2 ± 1.4
Random Blood Glucose, mg/dL	107.4 ± 24.6
SBP. mmHg	117.1 ± 12.3
DBP, mmHg	75.7 ± 9.1
MAP, mmHg	89.5 ± 9.2
Region (n=848)	**n (%)**
Abiantuwung	229 (27.0)
Banjar Anyar	263 (31.0)
Kediri	152 (17.9)
Nyitdah	76 (9.0)
Pejaten	81 (9.6)
Pandak Bandung	47 (5.5)
Delivery Method (n=848)	**n (%)**
Cesarean Section	576 (67.9)
Private Hospital	446 (77.4)
Public Hospital	130 (22.6)
Spontaneous Labor	272 (32.1)
Private Hospital	214 (78.6)
Public Hospital	58 (21.3)

BMI: Body Mass Index; Hb: Haemoglobin; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; MAP: Mean Arterial Pressure

Out of 576 pregnant women who underwent caesarean section delivery, 60.3% of cesarean deliveries were performed due to maternal reasons. Among these, locus minoris resistance (LMR) (49.3%) was the most common indication for cesarean delivery due to maternal indication, followed by cephalopelvic

disproportion (CPD) (14.9%), prolonged labor (11.3%), and premature rupture of membranes (PROM) (10.8%). The second most common reason for cesarean delivery was fetal position (25.5%). Fetal floating head was the most frequently observed indication (68.1%) for fetal indication, followed by breech presentation (27.9%). Forty-three participants were went caesarean delivery because of the patient's choice (7.5%). Table 2 presents information about the reasons for cesarean deliveries, as well as the characteristics of babies and postpartum contraceptive preferences of participants in the Kediri and Tabanan areas. Most participants still prefer using hormonal contraceptive injections (35.6%), followed by tubectomy (23%), intrauterine devices (IUDs) (22.3%), and hormonal implant (18.4%). The mean weight of the baby was 3172.9 grams, with 50.3 cm for the mean length.

Table 2: The Characteristics of Indications for Sectio Cesarea Procedures, Neonatal, and Post Delivery Contraceptive in Patients Undergoing Labor Within Kediri 1 Public Healthcare Center, Tabanan, Bali, Indonesia

Cesarean Section Indication (n=576)	n (%)
Maternal	347 (60.3)
Fetal Position	147 (25.5)
Mother's Choice	43 (7.5)
Non-Obstetric	39 (6.7)
Maternal Indication (n=347)	**n (%)**
LMR	171 (49.3)
CPD	52 (14.9)
Prolong Labor	39 (11.3)
PROM	37 (10.8)
Preeclampsia	21 (6.0)
Oligohydramnion	14 (2.0)
Placenta Previa	7 (2.0)
Post Date	6 (1.7)
Fetal Position Indication (n=147)	**n (%)**
Floating Head	100 (68.1)
Breech	41 (27.9)
Other	6 (4.0)
Neonatal	**Mean ± SD**
Infant Birth Weight, gram	3172.9 ± 463.1
Infant Body Length, cm	50.3 ± 31.1
Post Partum Contraceptive (n=309)	**n (%)**
Hormonal Contraceptive Injection	110 (35.6)
Tubectomy	71 (23.0)
IUD	69 (22.3)
Hormonal Implant	57 (18.4)
Barrier	2 (0.6)

LMR: Locus Minoris Resistance; PROM: Premature Rupture of Membrane; CPD: Cephalopelvic Disproportion; IUD: Intrauterine Device

Univariate Analysis

The study conducted a univariate analysis as shown in Table 3. Our findings indicated a significant relationship between different age ranges and cesarean delivery, with a p-value of 0.011. At our center, patients undergo basic anthropometric and vital sign examinations during every antenatal care visit. However, for this study, we collected data during the patient's first visit. We found that there is a significant relationship between cesarean delivery and the participant's height, with a cut-off of 145 cm and a p-value of 0.016. Additionally, BMI and upper arm circumference had a significant relationship with the incidence of cesarean delivery, with p-values of 0.007 and 0.005, respectively. We also found that mean arterial pressure (MAP) had a sig nificant relationship with cesarean delivery, with a cut-off of 90 mmHg and a p-value of 0.043. Furthermore, baseline hemoglobin examination showed a significant relationship, with a p-

value of 0.029. It is important to note that in this study, the hemoglobin examination was conducted during the first 20 weeks of pregnancy.

Table 3: Univariate Analysis of Risk Factor on Patients Who Underwent Labor in the Working Area of Kediri 1 Public Healthcare Center, Tabanan, Bali, Indonesia

Factor	n (%)	p-Value
Age, year (n=848)		
<20	41 (4.9)	
20-34	639 (75.4)	0.011
≥35	168 (19.8)	
Healthcare Insurance (n=848)		
PBI	370 (43.6)	
Non PBI	367 (43.3)	0.547
NA	90 (10.6)	
Parity (n=848)		
≤1	278 (32.8)	
2-3	479 (56.5)	0.847
>3	91 (10.8)	
Body Height, cm (848)		
≤145	137 (16.2)	
>145	711 (83.8)	0.016
BMI, kg/m² (n=827)		
>30	66 (8.0)	
25.0 - 29.9	128 (15.5)	
18.5 - 24.9	427 (51.6)	0.007
<18.5	206 (24.9)	
Upper Arm Circumference, cm (n=848)		
<23.5	83 (9.8)	
23.5-33	595 (70.2)	0.005
>33	170 (20.0)	
Hb, g/dL (n=826)		
<11	115 (13.9)	
≥11	711 (86.1)	0.029
Random Blood Glucose, mg/dL (n=827)		
<100	310 (37.5)	
≥100	517 (62.5)	0.661
SBP, mmHg (n=848)		
<100	41 (4.9)	
100-129	696 (82.1)	0.358
≥130	111 (13.1)	
DBP, mmHg (n=848)		
<80	479 (56.5)	
80-89	340 (40.1)	0.074
≥90	29 (3.4)	
MAP, mmHg (n=848)		
>90	416 (49.0)	
≤90	432 (51.)	0.043

BMI: Body Mass Index; Hb: Haemoglobin; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; MAP: Mean Arterial Pressure; NA: Not Available

Multivariate Analysis

We conducted a multivariate analysis and used a 2x2 table to determine each factor's relative risk (RR). We then carried out adjusted relative risk (aRR) analysis. The study identified three important factors that influence the occurrence of CS, including age over 35 years, BMI at the first visit within the first 20 weeks of pregnancy, and previous history of CS. Table 4 shows that age over 35 years has an RR of 1.22, 95% CI (1.11 – 1.36) p=0.002, after adjusting for aRR, it has aRR 1.89, 95% CI (1.19 – 2.99) p = 0.007. BMI above 30 kg/m2 at the first examination in the early 20 weeks of pregnancy had an RR of 1.31, 95% CI (1.17 – 1.46) p = 0.001 and an aRR of 2.18, 95% CI (1.01 – 4.70) p = 0.045. Patients with a previous history of CS also have a higher risk of occurrence of CS, with an RR of 1.86, 95% CI (1.33 – 2.59) p<0.001, after adjusting for aRR, it has aRR 2.15, 95% CI (1.45 – 3.20) p<0.001.

During the multivariate analysis, we found that patients with a height less than 145 cm during their first examination within the first 20 weeks of pregnancy had a significant association with the occurrence of CS (RR 1.18, 95% CI 1.05-1.32, p = 0.016). Also, patients with an upper arm circumference greater than 33 cm, Hb less than 11 g/dL, and MAP greater than 90 mmHg had

a significant relationship with the occurrence of CS (RR 1.12, 95% CI 1.08-1.31, p = 0.003; RR 1.17, 95% CI 1.04-1.31, p = 0.029; and RR 1.11, 95% CI 1.01-1.22, p = 0.043, respectively). However, we did not find any significant relationship between CS occurrence and these factors after adjusting.

Table 4: Multivariate Analysis of Risk Factor in Patients Underwent Cesarean Section within the working area of Kediri 1 Public Healthcare Center, Tabanan, Bali, Indonesia

Factor	Cesarean Section n (%)	Spontaneous Labor n (%)	RR, 95% CI	p-Value	aRR, 95% CI	p-Value
Age, year						
≥35	93 (77.5)	27 (22.5)	1.22 (1.11 – 1.36)	0.002	1.89 (1.19 – 2.99)	0.007
<35	462 (65.4)	244 (34.6)				
Body Height, cm						
≤145	90 (77.6)	26 (22.4)	1.18 (1.05 – 1.32)	0.016	-	-
>145	465 (65.5)	245 (34.5)				
BMI, kg/m²						
>30	56 (84.8)	10 (15.2)	1.31 (1.17 – 1.46)	0.001	2.18 (1.01 – 4.70)	0.045
≤30	499 (65.7)	261 (34.3)				
Upper Arm Circumference, cm						
≥33	130 (76.9)	39 (23.1)	1.12 (1.08 – 1.31)	0.003	-	-
<33	425 (64.7)	232 (53.3)				
Hb, g/dL						
<11	88 (76.5)	27 (23.5)	1.17 (1.04 – 1.31)	0.029	-	-
≥11	467 (65.7)	244 (34.3)				
MAP, mmHg						
>90	294 (70.8)	121 (29.2)	1.11 (1.01 – 1.22)	0.043	-	-
≤90	261 (63.5)	150 (36.5)				
Previous History of CS						
Yes	141 (25.4)	37 (13.7)	1.86 (1.33 – 2.59)	<0.001	2.15 (1.45 – 3.2)	<0.001
No	414 (74.6)	234 (86.3)				

BMI: Body Mass Index; Hb: Haemoglobin; MAP: Mean Arterial Pressure; RR: Relative Risk; aRR: Adjusted Relative Risk

In our analysis of Table 5, we looked at patients with cephalopelvic disproportion (CPD) who underwent a CS. Our findings suggest that patients who are 145 cm or shorter are at a reasonably high risk, with RR 8.18, 95% CI (3.52-18.96) p<0.001 and aRR 8.39, 95% CI (2.36-29.8) p = 0.001. Additionally, patients with an upper arm circumference measurement greater than 33 cm also have a higher risk of undergoing a CS, with a relative risk (RR) of 4.26 (95% CI: 1.85-9.91; p<0.001), but this finding was not statistically significant after adjusting for other factors.

Table 5: Multivariate Analysis of Risk Factor in Patients Diagnosed with CPD who Underwent Labor within the working area of Kediri 1 Public Healthcare Center, Tabanan, Bali, Indonesia

Factor	CPD n (%)	Non CPD n (%)	RR, 95% CI	p-Value	aRR, 95% CI	p-Value
Maternal Height, cm						
≤145	12 (10.3)	104 (89.7)	8.18 (3.52 – 18.96)	<0.001	8.39 (2.36 – 29.8)	0.001
>145	9 (1.3)	702 (98.7)				
Upper Arm Circumference, cm						
≥33	11 (6.5)	158 (93.5)	4.28 (1.85 – 9.91)	<0.001	-	
<33	10 (1.5)	648 (98.5)				

CPD: Cephalopelvic Disproportion; RR: Relative Risk; aRR: Adjusted Relative Risk

Discussion

Cesarean section (CS) delivery is a surgical procedure that can reduce maternal and infant mortality rates, as well as several pregnancy-related complications. This procedure is mainly carried out based on medical indications and can be performed in emergencies or planned cases. CS delivery has become a common practice in modern obstetrics, with its prevalence increasing globally over the past few decades. According to the World Health Organization (WHO), the global CS rate has risen from around 7% in 1990 to 21% today, surpassing the ideal acceptable

rate of 10%–15%. This trend is projected to continue, with nearly a third (29%) of all births likely to take place by CS by 2030. According to a recent study, the CS delivery rate in Indonesia is higher, with 17% of women undergoing this procedure [14]. However, in the current study found higher rate of caesarean delivery with a proportion of 67.9% of women in Kediri I Healthcare Center, Tabanan, Bali are having CS delivery. There could be several reasons for this higher CS rate, including social factors[15], [16], fear of pain during labor and childbirth [17], [18], previous experience and interactions with healthcare professionals, doctors' advice, changes in lifestyle leading to obesity, an increase in the mother's age at first birth, and the role of private facilities [19], [20].

According to this study, most women who preferred to undergo cesarean delivery opted for private hospitals. This finding aligns with previous research that has also shown that cesarean delivery is more frequently performed in private healthcare facilities. This trend might be attributed to the larger number of private hospitals in the Tabanan region, which are also more widely distributed, making them more accessible to pregnant women. Apart from the number of private hospitals, there could be other reasons behind it. One of the reasons could be Indonesia's health insurance or knowns as Kartu Indonesia Sehat from Badan Penyelenggara Jaminan Sosial (BPJS) Kesehatan. Health insurance divides hospitals into four types - A, B, C, and D - based on their facilities and human resources, with hospital type A is the highest classification. This classification is based on the health care referral system in Indonesia, which helps patients access hospitals based on the severity of the disease and hospital resources. Most private hospitals are type C hospitals which are more easily accessible, whereas most of the public hospitals are type B. This regulation was based on the Indonesia Minister of Health Regulation No.3 of 2020 (Peraturan Menteri Kesehatan) [21], [22]. This insurance scheme may what makes CS delivery seemingly high in Indonesia.

Other socioeconomic and demographic factors are where the mother lives, in urban or rural areas. This study shows that more urban areas like Abian Tuwung, Banjar Anyar, and Kediri are the top three most prevalent CS delivery. Recent studies have also consistently shown that CS rates are higher in urban areas compared to rural areas. For example, a study in Egypt found that CS rates increased from 57% to 69% in the rural district compared to 55% to 58% in the urban district over a three-year period. Similarly, a study in Bangladesh reported that CS deliveries were more prevalent in urban than in rural areas, with mothers above 19 years, and above 16 years at first birth, overweight mothers, and those with higher educational levels being more likely to have CS deliveries in urban areas.

One of the factors that led to CS births was the mother's advanced age at the time of her first pregnancy. This could be due to pre-existing health conditions and increased health risks associated with older mothers. As women age, they may have trouble during childbirth due to a contracted pelvis. In some cases, this condition can be passed down to their offspring. This means that the use of cesarean sections to save lives could potentially increase the occurrence of contracted pelvises over time. As a result of these factors, there is a higher likelihood of cesarean section delivery among older mothers. Studies conducted in various countries have shown a correlation between advanced maternal age and a higher rate of cesarean section deliveries. Additionally, women who gave birth to multiple babies were more likely to have a CS delivery due to the risk of complications such as perinatal mortality [23]. Health professionals may recommend a CS delivery to address these risks and ensure the safety of both mother and child. Elective cesarean, which refers to choosing to have a cesarean delivery without medical reasons, is contributing significantly to the increase in cesarean rates, in addition to other factors. The general perception in the community that cesarean delivery is safer and more beneficial for the health of both the mother and newborn is also leading women to make this choice. These factors should be the focus of future research [24], [25].

In accordance with prior research, our findings demonstrate that women of shorter stature are at a greater risk for cesarean section. CS is often performed due to maternal height, which can increase the risk of obstetric complications during delivery. Short stature (< 145 cm) is associated with a higher risk of labor obstruction due to cephalopelvic disproportion and the current study also found that maternal height significantly associated with CPD [26]. Another factor was BMI, BMI was also significantly associated with CS. Nutritional status is another potential contributing factor that contributes to short maternal stature and cesarean section. In Brazil, shorter women are more likely to be overweight or obese than taller women, and this has been found to increase the likelihood of a cesarean delivery. Additionally, a systematic review has revealed that newborns of overweight or obese mothers before or during pregnancy are more likely to be large for gestational age and have higher birth weight and macrosomia, which can prolong labor in short/very short mothers and increase the likelihood of a cesarean delivery [27], [28].

Strengths and Limitations

This study, which examined the rate of CS deliveries in Tabanan, Bali, Indonesia over two years, was conducted on a population-based cohort with large sample size. However, there were certain limitations associated with the study. For instance, the study did not consider social factors such as educational background, socioeconomic status, labor force participation, and hospital publicity, all of which are

known to have an impact on CS rates. Second, it is challenging to monitor patients who had their initial antenatal care examination at our center since some of them still need to undergo the follow-up examination as required. As a result, we lack data on the birth outcomes of these patients. The description of primary CS indications was unclear and may not be reliable as insurance does not cover CS requested by the mother.

Conclusion

This study has revealed that the CS incidence rate is relatively high in Tabanan, Bali, Indonesia. The high level of CS is attributed to several factors, including maternal age, BMI, and previous history of CS. Although the quality of ANC in primary care is suboptimal, most deaths can still be prevented if hospital care is of optimum quality. This study provides a rough idea of the condition of women undergoing CS in Tabanan. Future research should explore the main drivers influencing Indonesian women's decision-making for childbirth. Deciding on CS is not easy, and the role of the husband and family may be crucial in the Indonesian context. Additionally, it would be helpful to establish an audit and feedback system to enable the Indonesian government to comprehend the current maternal healthcare services.

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Authors' Contribution

The authors have accepted responsibility for the entire content of this manuscript and approved its submission.

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