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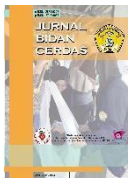

Factors for Decision to C-section Delivery in Indonesia: Insights from IDHS 2017

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ABSTRACT

Introduction: Cesarean delivery (C-sections) showed 17.6% of all deliveries in Indonesia, which exceeded the WHO standard of 15%. C-sections in government hospitals reached 20-25%; in private hospitals, the number was higher, above 30%. **Purpose:** The study aimed to determine the factors influencing the decision of cesarean section delivery in Indonesia. **Method:** The study used a cross-sectional design. Data came from the Indonesian Health Demographic Survey (IDHS) 2017. The population and samples were 2,464 women aged 15-49 years—data analysis using chi-square test and multiple logistic regression. **Result:** The study found that the proportion of cesarean delivery in private hospitals reached 53.8%. Factors related to the decision to c-section delivery ($p<0.05$) were maternal education, place of residence, domicile island, spouse's occupation and education, wealth index, health insurance, and antenatal care history. **Conclusion:** The wealth index was the dominant factor for the decision to c-section delivery. The government is expected to be able to improve the quality of services and facilities in cesarean section delivery by government hospitals so that it can be the alternative decision for the community with a variety of wealth index and education backgrounds.

INTRODUCTION

C-section delivery is a surgical procedure to give birth to the fetus by making an incision to open the abdominal and uterine walls or a hysterotomy to remove the fetus from the mother's womb. In recent years, vaginal delivery has been considered a difficult way of giving birth. It tends to be dangerous for maternity mothers and their babies, so the cesarean section method in some communities has become a decision in the maternity method (Putra et al., 2021). World Health Organization (WHO) reported that the average cesarean section ranged from 10-15% as the maximum targeted range for lifesaving interventions for mothers and children in the event of childbirth (Hailegebreal et al., 2021). The demand for cesarean sections in several developing countries is overgrowing every year. In addition, WHO noted that the prevalence of cesarean delivery increased by 46% in China and 25% in Asia, Europe, and Latin America. The data shows that globally, the number of deliveries through cesarean section is relatively high (Ferinawati & Hartati, 2019).

The Indonesian Ministry of Health stated that the cesarean section delivery rate in Indonesia exceeded the WHO standards' maximum limit of 5-15%. Cesarean delivery in Indonesia reached around 30-80% of the total delivery (Putri Susanto et al.,

2019). The prevalence of cesarean section delivery in women aged 10-54 years was 16.7%, where DKI Jakarta Province occupied the highest position, 31.1%, and Papua Province occupied the lowest place, 6.7%. C-section deliveries were higher in urban areas by 22.1% (National Institute of Health Research and Development, 2018). The increasing trend of cesarean delivery occurred in several private and government hospitals (Ayuningtyas et al., 2018). The number of deliveries C-section in Indonesia, Especially in government hospitals, was about 20-25% of the total number of deliveries, while in private hospitals, the number is higher, which was about 30-80% of the total number of deliveries (Ayuningtyas et al., 2018; Viandika & Septiasari, 2020).

Cesarean delivery must be done if medical indications can endanger the mother and baby. However, many factors outside medical symptoms, both from the mother's and baby's side, cause the decision of cesarean section. According to the theory of deontology (obligation), cesarean delivery without medical indication can be ethical if the doctor has done his duty, carried out the procedure with informed consent, and performed cesarean section following applicable medical procedures without the slightest error. Many factors influence the mother's decision to choose a cesarean delivery site. The factors affecting to the place of decision of cesarean section were maternal age, education, and location of residence (Krisnawati & Sulistiyaningsih, 2018; Kumar & Dhillon, 2020; Ortiz-Prado et al., 2017; Roy et al., 2021), wealth index, birth order, size and type of newborn pregnancy (Krisnawati & Sulistiyaningsih, 2018; Kumar & Dhillon, 2020; Roy et al., 2021), gender, the height of mother (Krisnawati &; Sulistiyaningsih, 2018), history of previous cesarean delivery, desire for cesarean section in early pregnancy, gestational overweight/pre-obesity, and family income (de Oliveira et al., 2016). Therefore, this study aims to determine the factors influencing mothers choosing a cesarean delivery site in Indonesia.

METHODS

The type of research used was quantitative, with a *cross-sectional* approach using secondary data from the Indonesian Demographic and Health Survey (IDHS) 2017. The population of this study was women aged 15-49 years who were successfully interviewed by IDHS, as many as 49,627. The number of samples used in this study was 2,464 women aged 15-49 years who met the inclusion criteria, namely women who had undergone a cesarean section. In contrast, the exclusion criteria were women with incomplete data. The independent variables were age (low-risk if the mother was 20-35 years old and high-risk if the mother was <20 and >35 years old), education (primary, if the mother takes elementary to junior high school education, secondary if the mother studied until high school, and highest if the mother studied until college), occupation (no and yes), residence (urban and rural), domicile island (Sumatra, Java, Bali and NTT, Kalimantan, Sulawesi, Papua, and Maluku), spouse occupation (agricultural sector, informal outside the agricultural industry, employee, professional/technical), spouse education (primary if a spouse takes elementary-junior high school education. secondary if a spouse takes education until high school, and highest if the spouse studied until college), wealth index (quantile 1, quantile 2, quantile 3, quantile 4 and quantile 5), health insurance (no and yes), antenatal care history (≥4 and <4). The dependent variable was the decision to c-section delivery (private and government). The bivariate analysis test was chi-square and multivariate using multiple logistic regression with the backward m*ethod*. Ethical clearance from this study was obtained from DHS with ICF IRB number FWA00000845.

RESULTS

Based on the conducted research, the following results were obtained:

Table 1. The Relationship of Factors Influencing the Decision of Place of Delivery in Indonesia (n=2464)

Variable	Place of Delivery				p
	Private		Government		
	n=1,325	%	n=1,139	%	
Age					
Low Risk	835	54.3	702	45.7	0.505
High Risk	490	52.9	437	47.1	
Education					
Primary	138	42.3	188	57.7	<0.001
Secondary	720	53.2	633	46.8	
Highest	467	59.5	318	40.5	
Occupation					
No	621	52.5	561	47.5	0.254
Yes	704	54.9	578	45.1	
Residence					
Urban	967	59.4	662	40.6	<0.001
Rural	358	42.9	477	57.1	
Domicile Island					
Sumatra	487	59.4	333	40.6	<0.001
Javanese	586	69.1	262	30.9	
Bali & NTT	64	35.4	117	64.6	
Kalimantan	62	31.5	135	68.5	
Sulawesi	102	34.3	195	65.7	
Papua & Maluku	24	19.8	97	80.2	
Spouse Occupation					
Agricultural sector	249	60.0	166	40.0	<0.001
Informal outside the agricultural sector	400	47.6	440	52.4	
Employees	457	55.0	374	45.0	
Professional/technical	219	57.9	159	42.1	
Spouse Education					
Primary	133	38.0	217	62.0	<0.001
Secondary	795	53.4	694	46.6	
Highest	397	63.5	228	36.5	
Wealth Index					
Quantile 1	64	27.2	171	72.8	<0.001
Quantile 2	139	38.3	224	61.7	
Quantile 3	216	47.0	244	53.0	
Quantile 4	353	59.1	244	40.9	
Quantile 5	553	68.4	256	31.6	
Health Insurance					
No	1287	54.3	1083	45.7	0.011
Yes	38	40.4	56	59.6	
Antenatal Care History					
≥4	1231	54.5	1028	45.5	0.021
<4	94	45.9	111	54.1	

Table 1 shows that women who give c-section delivery in private hospitals are 53.8%. There are 835 (54.3%) women with low age risk in private hospitals, while 702 (45.7%) women give birth in government hospitals. The statistical test results obtained

a p-value of 0.505, so it was concluded that there was no significant relationship between age and the decision of place of delivery. Women who gave birth in private hospitals, there were 138 (42.3%) women who had low education, while among mothers who gave birth in government hospitals, there were 188 (57.7%) women had low education. The statistical test results obtained a p-value of <0.001, concluding that there was a significant relationship between maternal education and the decision of place of delivery. Women who gave birth in private hospitals, there were 621 (52.5%) women who did not work, while among mothers who gave birth in government hospitals, there were 561 (47.5%) women who did not work. The statistical test results obtained a p-value of 0.254, so it was concluded that there was no significant relationship between the mother's work and the decision of place of delivery. Women who gave birth in private hospitals, there were 967 (59.4%) women who lived in urban areas, while among mothers who gave birth in government hospitals, there were 662 (40.6%) women who lived in urban areas. The results of statistical tests obtained p values <0.001, so it was concluded that there was a significant relationship between the mother's residence and the decision of place of delivery. Women who gave birth in private hospitals, there were 487 (59.4%) women were domiciled on the island of Sumatra, while among mothers who gave birth in government hospitals, there were 333 (40.6%) women were domiciled on the island of Sumatra. The statistical test results obtained a p-value of <0.001, so it was concluded that there was a significant relationship between the domicile island and the decision of place of delivery. Women who gave birth in private hospitals, there were 249 (60%) of their spouses in the agricultural sector, while among mothers who gave birth in government hospitals, there were as many as 166 (40%) of their spouses in the agricultural sector. The statistical test results obtained a p-value of <0.001, so it was concluded that there was a significant relationship between the work of the couple and the decision of the place of delivery.

Respondents who gave birth in private hospitals, there were 795 (53.4%) respondents who had spouse education in the secondary category. In contrast, among mothers who gave birth in government hospitals, 694 (46.6%) respondents had spouse education in the secondary category. The statistical test results obtained a p-value of <0.001, so it was concluded that there was a significant relationship between the teaching of the couple and the choice of place of delivery. Respondents who gave birth in private hospitals, there were 553 (68.4%) respondents with the most wealth index in quantile 5, while among mothers who gave birth in government hospitals, there were 256 (31.6%) respondents with a wealth index in quantile 5. The results of statistical tests obtained p value <0.001, so it was concluded that there was a significant relationship between the wealth index and the choice of place of delivery. Respondents who gave birth in private hospitals, there were 1287 (54.3%) respondents who did not have health insurance, while among mothers who gave birth in government hospitals, there were as many as 1083 (45.7%) respondents who did not have health insurance. The results of statistical tests obtained a p-value of 0.011; it was concluded that there was a significant relationship between health insurance and the choice of place of delivery. Respondents who gave birth in private hospitals, there were 1231 (54.5%) respondents who had an antenatal care history ≥ 4 times, while among mothers who gave birth in government hospitals, there were 1028 (45.5%) respondents whose antenatal care history≥ 4 times. The statistical test results obtained a p-value of 0.021, concluding a significant relationship between the antenatal care history and the decision of the place of delivery.

Table 2. Multivariate Analysis

Variable	p-value	OR	95%CI OR
Domicile Island			
Sumatra		1	
Javanese	0.001	0.181	0.112 - 0.292
Bali & NTT	0.001	0.139	0.085 – 0.226
Kalimantan	0.007	0.464	0.266 – 0.809
Sulawesi	0.066	0.594	0.341 – 1.034
Papua & Maluku	0.012	0.513	0.305 – 0.862
Spouse Education			
Primary Education		1	
Secondary Education	0.001	1.844	1.340 – 2.536
Higher Education	0.030	1.282	1.024 – 1.603
Wealth Index			
Quintile 1		1	
Quintile 2	0.001	3.204	2.225 – 4.615
Quintile 3	0.001	2.542	1.904 – 3.393
Quintile 4	0.001	1.996	1.539 – 2.589
Quintile 5	0.002	1.448	1.142 – 1.835

Based on Table 2, it is known that the most dominant factor related to the decision of place of delivery, namely the wealth index variable. Women tend to choose private delivery places. On variable domicile islands, islands with access and good infrastructure availability tend to choose cesarean delivery sites at Government Hospitals. In the variable of couple education, the higher the level of education, the mother tends to choose a cesarean delivery place in a private hospital. Similarly, in the wealth index variable, the lower the quintile, the more likely it is to choose a cesarean delivery in a private hospital.

DISCUSSION

The study results concluded that As many as 53.8% of women chose cesarean delivery in private hospitals. The enthusiasm of mothers is still more significant to perform cesarean section delivery in private hospitals than in government hospitals. In line with research conducted in Chile on childbirth data from 2001-2014, which states that the decision of mothers to have cesarean delivery in private hospitals increases yearly (Borrescio-Higa & Valdés, 2019; Mazzoni et al., 2016). Private hospitals are considered capable of providing better cesarean section facilities and providing more competitive cesarean delivery service packages with the support of professionals, cesarean delivery options, and postpartum services that can give service satisfaction for mothers (Azari et al., 2013; Escuriet-Peiró et al., 2015). Factor What influences the decision of cesarean delivery site is the island of domicile, the education of the spouse, and the wealth index.

The number of public hospitals in Indonesia is 2,561, with most private ownership. Women who live in Java have access to larger private hospitals, coupled with the growth of 352 maternity hospitals, of which 224 are in Java (BPS-Statistics Indonesia, 2023). The affordability of access to this hospital certainly makes it easier for women, especially on the island of Java, to get cesarean section delivery facilities.

High-husband education supports the absorption of good health information, especially about safety and health for maternity mothers, so it can be said that husband education influences decisions about the decision of place of delivery to be carried out by mothers (Arief & Sudikno, 2015). The higher the education of the respondent's

spouse, the more likely to choose a place of maternity in a private hospital (Islam et al., 2022). The instruction can influence knowledge in forming attitudes about cesarean sections. Education can create certain beliefs so that a person can have interests, abilities, experiences, skills, and levels of attention. Highly educated people will be more aware of utilizing better health services. Mothers with husbands/partners whose education is higher will support the absorption of good health information, especially about safety and health for maternity mothers, so it can be said that the husband's education influences the decision about choosing a place of delivery.

The higher the wealth quintile, the more women choose to give birth in private hospitals (Hasan et al., 2019; Islam et al., 2022). Vice versa, the lower the wealth quintile, the more likely women are to choose to give birth in a government hospital. Family income is essential in meeting basic needs (primary) and secondary needs. Families with good economic status will be more easily fulfilled than families with low financial levels. Family income or economic status also affects the utilization of health services, in this case, the decision to birthplaces in private hospitals (Nahsriana &; Syahban, 2018; Putri Susanto et al., 2019). Economic status is also positively correlated with cesarean delivery in India. Women from wealthy families may not have the financial constraints to have a C-section. However, an inverse relationship was observed between the household wealth quintile and cesarean delivery in Tamil Nadu (Roy et al., 2021). Personal insurance services in private hospitals support C-delivery services, where the insurance is usually attached to the work of the husband/wife or is also the couple's decision (Borrescio-Higa &; Valdés, 2019). Economic conditions also support this insurance service. From the data above, it can be concluded that the higher the wealth quintile, the higher it is to choose a private hospital. Financial preparation is essential for pregnancy, childbirth, and the puerperium and complications that may occur. Delivery carried out in private hospitals costs more than in government hospitals.

CONCLUSIONS AND ADVICE

Women mainly chose private hospitals for cesarean sections. Lower secondary education tends to have cesarean section delivery in government hospitals, while secondary, upper, and upper secondary education has a common tendency to give birth in government hospitals. The government is expected to be able to improve the quality of services and facilities in cesarean section delivery so that it can be a decision for the community, especially those with secondary to higher education backgrounds.

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