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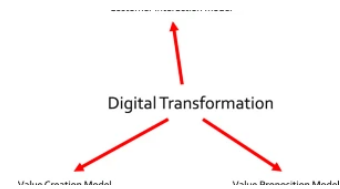
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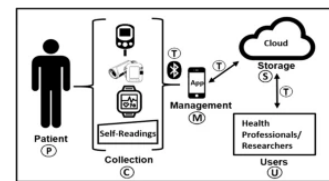
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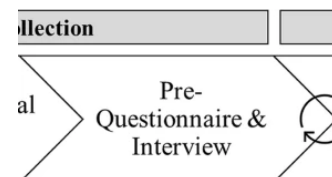


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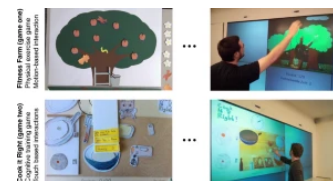


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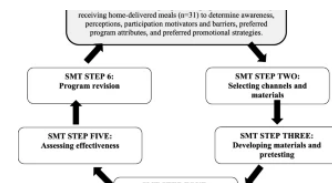
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The barrier to maternity care in rural Indonesia

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Abstract

Aim The purpose of this study was to analyse the barriers to healthcare utilization for delivery in rural Indonesia.

Subjects and methods The included subjects were women aged 15–49 years who had given birth in the last 5 years in rural Indonesia. The sample size was 9046 women. The variables analysed included the utilization of healthcare facilities, age, education, work, marital status, parity, wealth, health insurance, autonomy of family finances, autonomy of health, knowledge of pregnancy, and antenatal care (ANC). The barriers were determined by binary logistic regression.

Results Women with higher education were 2.288 times more likely to utilize healthcare facilities for delivery than women with no education. Multiparous women were 1.582 times more likely to use healthcare facilities for delivery than grand multiparous women. The richest women were 4.732 times more likely to use healthcare facilities for delivery than the poorest women. Women who were covered by health insurance were 1.363 times more likely to utilize healthcare facilities for delivery than women who did not have insurance. Women who knew the danger signs of pregnancy were 1.497 times more likely to use healthcare facilities for delivery than women who did not know the danger signs. Women who underwent ANC ≥ 4 times were 1.976 times more likely to use healthcare facilities for delivery than women who underwent ANC < 4 times.

Conclusion There were six factors that were identified as barriers to the utilization of healthcare facilities for delivery in rural Indonesia. These six factors were low education, high parity, poverty, not having health insurance, not knowing the danger signs of pregnancy, and ANC < 4 times.

Keywords Maternal health · Childbirth · Rural area · Barrier · Maternity care

Introduction

At present, the maternal mortality rate (MMR) in Indonesia is still high. Although it has decreased, it still tends to be higher than that in other regional countries in Southeast Asia. In 2015, the MMR in Indonesia was 305 per 100,000 live births, while in the same year, it was 24 per 100,000 live births in Malaysia, 69 per 100,000 live births in Vietnam, 221 per 100,000 live births in the Philippines, 25 per 100,000 live births in Thailand, and 170 per 100,000 live births in Cambodia (Widyaningtyas 2018). This condition makes the government encourage every delivery being in a health care

facility. This is intended to reduce risk factors related to childbirth.

According to the World Health Organization (WHO), maternal mortality is calculated as the death of a woman that occurs during pregnancy or 42 days after the end of pregnancy due to any cause related to or exacerbated by the pregnancy or its treatment (Hill and Choi 2004). Maternal deaths caused by accidents or injuries are not included in this criterion.

In Indonesia, compared to urban areas, rural areas are one of the areas that most often experience imbalances in the development process, including in the health sector. The accessibility of healthcare facilities in rural communities tends to be lower than that in urban areas (Mubasyiroh et al. 2016; Wulandari and Laksono 2019; Laksono et al. 2019). The impact is also reflected in the health status of rural communities, which lags behind that of urban communities (Suparmi et al. 2018).

Based on this background, it is important to carry out research on maternity care. The government, in this case, the Ministry of Health, needs to obtain information about the reasons for inequalities in access to health. The government

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needs to know what obstacles are preventing Indonesian women from giving birth at healthcare facilities. This information is crucial if the government is serious about reducing maternal mortality in Indonesia. For this reason, the purpose of this study was to analyse the barriers to the utilization of healthcare facilities for delivery in rural Indonesia.

Subject and methods

Data source

Data were sourced from the 2017 Indonesian Demographic Data Survey (IDHS). The IDHS was part of the International Demographic and Health Survey (DHS) programme conducted by the Inner City Fund (ICF). Stratification and multistage random sampling were used in the selection of the 2017 IDHS sample. The subjects included in this study were women aged 15–49 years who had given birth in the last 5 years in rural Indonesia. The total sample size was 9046 women.

Data analysis

The determination of rural areas refers to the criteria issued by the Indonesian Central Statistics Agency. Data on deliveries performed in healthcare facilities, including healthcare centres (Puskesmas), clinics, and maternity hospitals, and the practices of health workers and hospitals were obtained (Ministry of Health of the Republic of Indonesia 2015).

The independent variables analysed included age group, education level, work status, marital status, parity, wealth status, coverage by health insurance, autonomy of family finances, autonomy of health, knowledge regarding pregnancy, and ANC. Because all variables were dichotomous variables, the chi-square test was used to assess whether there were statistically significant differences in the utilization of healthcare facilities for delivery. Barriers were determined using binary logistic regression because of the nature of the dependent variable. All statistical analyses were carried out using SPSS 19 software.

Ethical statement

The 2017 IDHS obtained ethical approval from the national ethics committee. The respondents' identities were all deleted from the dataset. Respondents provided written approval for their involvement in the study. The use of the 2017 IDHS data for this study received permission from ICF International through its website: <https://dhsprogram.com/data/new-user-registration.cfm>.

Results

A collinearity test was performed before the binary logistic regression analysis. The collinearity test results are shown in Table 1, and there was no collinearity between the dependent and independent variables. Table 1 shows that the tolerance value for all variables was greater than 0.10. The VIF value for all variables was less than 10.00. Then, based on the multicollinearity test, it was concluded that there were no indications of multicollinearity in the regression model.

Descriptive results

Table 2 is a description of the characteristics of the female respondents aged 15–49 who gave birth to live infants in the last 5 years in Indonesia. Table 2 shows that women who used healthcare facilities for delivery were predominantly women in the 30–34-year age group. Women who did not utilize healthcare facilities for delivery were predominantly women in the 25–29-year age group.

Table 2 shows that regardless of whether the women used healthcare facilities for delivery, most women had undergone secondary education. Table 2 also shows that regardless of their utilization of healthcare facilities for delivery, most women did not work.

Table 2 also shows that regardless of their utilization of healthcare facilities for delivery, most women were married. Meanwhile, healthcare facilities were utilized for delivery predominantly by women who were covered by health insurance.

Table 2 further shows that regardless of their utilization of healthcare facilities for delivery, most women had autonomy of health. In the “know the danger signs of pregnancy”

Table 1 Results for the co-linearity test of the use of healthcare facilities for maternity care in rural Indonesia ($n = 9046$)

Variables	Collinearity statistics	
	Tolerance	VIF
Age	0.609	1641
Education level	0.760	1316
Work status	0.940	1063
Marital status	0.849	1179
Parity	0.574	1743
Wealth status	0.814	1228
Health insurance	0.974	1026
The autonomy of family finances	0.776	1288
The autonomy of health	0.714	1400
Know the dangers of the pregnancy	0.905	1105
ANC	0.885	1130

Dependent variable: the use of healthcare facilities for delivery

Table 2 Descriptive statistic of the use of healthcare facilities for maternity care in rural Indonesia (*n* = 9046)

Characteristics	Place of delivery		All	<i>P</i>
	Non-healthcare facilities	Healthcare facilities		
Age				0.076
15–19	126 (3.3%)	135 (2.6%)	261 (2.9%)	
20–24	672 (17.7%)	946 (18.0%)	1618 (17.9%)	
25–29	981 (25.9%)	1352 (25.7%)	2333 (25.8%)	
30–34	932 (24.6%)	1366 (26.0%)	2298 (25.4%)	
35–39	703 (18.6%)	945 (18.0%)	1648 (18.2%)	
40–44	291 (7.7%)	430 (8.2%)	721 (8.0%)	
45–49	83 (2.2%)	84 (1.6%)	167 (1.8%)	
Education level				0.000***
No education (ref.)	175 (4.6%)	53 (1.0%)	228 (2.5%)	
Primary	1569 (41.4%)	1429 (27.2%)	2998 (33.1%)	
Secondary	1722 (45.5%)	2888 (54.9%)	4610 (51.0%)	
Higher	322 (8.5%)	888 (16.9%)	1210 (13.4%)	
Work status				0.762
No work	2051 (54.1%)	2830 (53.8%)	4881 (54.0%)	
Work	1737 (45.9%)	2428 (46.2%)	4165 (46.0%)	
Marital status				0.931
Never married	10 (0.3%)	15 (0.3%)	25 (0.3%)	
Married	3664 (96.7%)	5091 (96.8%)	8755 (96.8%)	
Divorced	114 (3.0%)	152 (2.9%)	266 (2.9%)	
Parity				0.000***
Primipara	748 (19.7%)	1602 (30.5%)	2350 (26.0%)	
Multipara	2403 (63.4%)	3289 (62.6%)	5692 (62.9%)	
Grandmultipara (ref.)	637 (16.8%)	367 (7.0%)	1004 (11.1%)	
Wealth status				0.000***
Poorest (ref.)	2361 (62.3%)	1740 (33.1%)	4101 (45.3%)	
Poorer	727 (19.2%)	1356 (25.8%)	2083 (23.0%)	
Middle	383 (10.1%)	1029 (19.6%)	1412 (15.6%)	
Richer	235 (6.2%)	711 (13.5%)	946 (10.5%)	
Richest	82 (2.2%)	422 (8.0%)	504 (5.6%)	
Covered by health insurance				0.000***
No (ref.)	1717 (45.3%)	2029 (38.6%)	3746 (41.4%)	
Yes	2071 (54.7%)	3229 (61.4%)	5300 (58.6%)	
Autonomy of family finances				0.261
No	1011 (26.7%)	1348 (25.6%)	2359 (26.1%)	
Yes	2777 (73.3%)	3910 (74.4%)	6687 (73.9%)	
Autonomy of health				0.049*
No (ref.)	575 (15.2%)	721 (13.7%)	1296 (14.3%)	
Yes	3213 (84.8%)	4537 (86.3%)	7750 (85.7%)	
Know the danger signs of pregnancy				0.000***
No (ref.)	2006 (53.0%)	1824 (34.7%)	3830 (42.3%)	
Yes	1782 (47.0%)	3434 (65.3%)	5216 (57.7%)	
ANC				0.000***
< 4 times (ref.)	1472 (38.9%)	985 (18.7%)	2457 (27.2%)	
≥ 4 times	2316 (61.1%)	4273 (81.3%)	6589 (72.8%)	

ref. = reference

Note: * *p* < 0.05; ** *p* < 0.01; *** *p* < 0.001

category, women who used healthcare facilities for delivery were predominantly women who knew the danger signs. In the ANC category, most women had had ANC ≥ 4 times regardless of their utilization of healthcare facilities for delivery.

Multivariate regression analysis

Table 3 shows an overview of the results of the binary logistic regression analysis to determine the barriers to the utilization of healthcare facilities for delivery. The category chosen as the reference was “non-healthcare facilities”.

Table 3 shows that compared to women with no education, women with a primary education level had 1.707 times the likelihood of utilizing healthcare facilities for delivery (OR 1.707; 95% CI 1.227–2.375). Women with secondary education were 2.155 times more likely to utilize healthcare facilities for delivery than women with no education (OR 2.155; 95% CI 1.547–3.002). Women with higher education levels were 2.288 times more likely to utilize healthcare facilities for delivery than women with no education (OR 2.288; 95% CI 1.559–3.276). This condition shows that the lower the level of education, the less healthcare facilities were used for delivery.

Table 3 shows that primiparous women were 2.116 times more likely to utilize healthcare facilities for delivery than grand multiparous women (OR 2.116; 95% 1.779–2.517). Multiparous women were 1.582 times more likely to utilize healthcare facilities for delivery than women with grand multiparity (OR 1.582; 95% CI 1.359–1.841). This condition indicates that the more women have children who have been born alive, the less they use health facilities for delivery.

Table 3 also shows that women with poorer wealth status are 2.047 times more likely to utilize healthcare facilities for delivery than the poorest women (OR 2.046; 95% CI 1.825–2.296). Women with middle wealth status are 2.737 times more likely to use healthcare facilities for delivery than the poorest women (OR 2.737; 95% CI 2.382–3.145). Women with wealth richer status are 2.836 times more likely to use healthcare facilities for delivery than the poorest women (OR 2.836; 95% CI 2.393–3.362). Women with the richest wealth status are 4.732 times more likely to use healthcare facilities for delivery than the poorest women (OR 4.732; 95% CI 3.659–6.120). This condition shows that the lower her wealth status, the less likely a woman is to use healthcare facilities for delivery.

Table 3 shows that women covered by health insurance were 1.363 times more likely to use healthcare facilities for delivery than women who did not have insurance (OR 1.363; 95% CI 1.242–1.496). This condition shows that not having health insurance is a barrier to the utilization of healthcare facilities for delivery.

Table 3 further shows that women who know the danger signs of pregnancy are 1.497 times more likely to use healthcare facilities for delivery than women who do not know the danger signs of pregnancy (OR 1.497; 95% CI 1.363–1.645). This condition shows that not knowing the danger signs of pregnancy is a barrier to the utilization of healthcare facilities for delivery.

Table 3 shows that women who had ANC ≥ 4 times had a 1.976 times greater chance of using healthcare facilities for delivery than women who had ANC < 4 times (OR 1.976; 95% CI 1.781–2.192). This condition shows that conducting

Table 3 Binary logistic regression of the use of healthcare facilities for maternity care in rural Indonesia ($n = 9046$)

Predictor	Healthcare facilities			
	P value	OR	Lower bound	Upper bound
Education level: primary	0.002**	1.707	1.227	2.375
Education level: secondary	0.000***	2.155	1.547	3.002
Education level: higher	0.000***	2.288	1.599	3.276
Parity: primipara	0.000***	2.116	1.779	2.517
Parity: multipara	0.000***	1.582	1.359	1.841
Wealth status: poorer	0.000***	2.047	1.825	2.296
Wealth status: middle	0.000***	2.737	2.382	3.145
Wealth status: richer	0.000***	2.836	2.393	3.362
Wealth status: richest	0.000***	4.732	3.659	6.120
Covered by health insurance: yes	0.000***	1.363	1.242	1.496
The autonomy of health: yes	0.783	0.982	0.862	1.118
Know the danger signs of pregnancy: yes	0.000***	1.497	1.363	1.645
ANC: ≥ 4 times	0.000***	1.976	1.781	2.192

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

ANC < 4 times is a barrier to the utilization of healthcare facilities for delivery.

Discussion

The results of the analysis indicate that the greater the parity, the less women use healthcare facilities for delivery. These results are consistent with a study in rural Tanzania that found that parity was an important determinant of the use of health facilities for childbirth. A large number of children combined with other barrier categories, for example not having health insurance, will further aggravate the possibility of not giving birth in a health facility (Ndao-Brumblay et al. 2013). In the context of different countries, for example in Congo, the findings with regard to conditions were not the same. Compared with women who have experienced two or three deliveries before, primiparous and grand multiparous women are twice as likely to not use ANC during their pregnancy (Abel Ntambue et al. 2012).

Poverty is a barrier to the utilization of health services. This also applies to women in rural Indonesia for childbirth. Poor people not only have limitations in paying for access to health services but also in paying for transportation costs. Transportation costs that must be borne by the poor tend to be greater than those borne by the rich, because they tend to live in rural areas with inadequate road access and far from public service facilities (Varela et al. 2019; Skarin et al. 2019).

It is known that not having health insurance is a barrier to the utilization of healthcare facilities for delivery. This condition is widely known in the world of health. This is what drives the implementation of universal health coverage throughout the world (Tirgil et al. 2018; El-Sayed et al. 2018), including in Indonesia (Agustina et al. 2019; Laksono et al. 2020). By implementing universal health coverage, it is expected that the financial barriers of the community for accessing healthcare facilities will be minimized.

Not knowing the danger signs of pregnancy can become a barrier to the utilization of healthcare facilities for delivery. Knowledge of the danger signs of pregnancy is very important. Several studies have found that extensive knowledge about this can be a key factor for improving birth outcome variables (Shimpuku et al. 2019; Eshete et al. 2019).

The analysis shows that ANC < 4 times is a barrier to the utilization of healthcare facilities for delivery. This condition indicates that the process of interaction during ANC becomes a determining factor in the subsequent utilization of maternal services. This relates to expectations and satisfaction with the health services that patients receive (Mocumbi et al. 2019), including their perspective on the services received (Megatsari et al. 2018; Leach et al. 2018).

This study has limitations because it does not include cultural factors in the analysis of factors that influence the

utilization of healthcare for delivery. A recent study found that cultural factors are one of the main factors that influence the utilization of healthcare facilities, especially in rural areas (Laksono et al. 2016; Sumankuuro et al. 2019; Pratiwi et al. 2019). Another limitation is the exclusion of husband or partner factors in the analysis. Research in Iran, Tanzania, and Ethiopia shows that a husband or partner plays a role in the selection of healthcare facilities for delivery (Forbes et al. 2018; Maluka and Peneza 2018; Nasiri et al. 2019).

Conclusions

Based on the results of this study, it can be concluded that there are six factors that are barriers to the utilization of healthcare facilities for delivery in rural areas of Indonesia. The six factors are low education, high parity, poverty, not having health insurance, not knowing the danger signs of pregnancy, and ANC < 4 times. This information is important for the Ministry of Health to use to conduct targeted focused interventions.

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Data availability The 2017 Indonesian Demographic Data Survey (IDHS) data used to support the findings of this study were supplied by the Inner City Fund (ICF) under license and thus cannot be made freely available. Request for access to these data should be made to ICF International through its website: <https://dhsprogram.com/data/new-user-registration.cfm>.

Compliance with ethical standards

Conflict of interest The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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