

The Effects of Health Insurance on Maternity Care in Health Services in Indonesia

Ratna Dwi Wulandari^{a*}, Agung Dwi Laksono^b, Ratu Matahari^c, ^aFaculty of Public Health, Universitas Airlangga, Surabaya, Indonesia. Universitas Airlangga Campus C Mulyorejo, Surabaya, Indonesia 60115, ^bNational Institute of Health Research and Development, Indonesia Ministry of Health. Percetakan Negara 29, Jakarta, Indonesia 10560, ^cFaculty of Public Health, Ahmad Dahlan University Jogjakarta, Indonesia. Jl. Prof. DR. Soepomo Sh, Warungboto, Umbulharjo, Yogyakarta, Indonesia 55164, Email: ^{a*}ratna-d-w@fkm.unair.ac.id

Economic conditions are a factor that causes low access to maternal services, so strategic efforts are needed to help minimise the economic burden based on comprehensive health insurance. The purpose of the study was to analyse the effect of health insurance on maternity care in health services in Indonesia. The samples used were women in childbearing age who had given birth in the last 5 years. The sample size was 36,548 women. The variables analysed included health insurance, childbirth healthcare, type of place of residence, age, education, employment, marital status, parity, wealth, knowing the danger signs of pregnancy, and antenatal care. Determination of the influence of the binary logistic regression. The results of the analysis found that health insurance ownership affects maternity care in health services in Indonesia. Women of childbearing age who gave birth in the last five years in Indonesia, who were covered by health insurance, are 1.138 times more likely to deliver in healthcare facilities than women who are not covered by health insurance. Other variables found to influence the health of childbirth are type of place of residence, age group, education level, employment status, parity, wealth status, and knowing the danger signs of pregnancy. It could be concluded that health insurance was a predictor of maternity care in health services in Indonesia.

Key words: *Health Insurance, Maternity Care, Maternal Health, Health Services, Childbirth.*

Introduction

In 2016 WHO estimated that 303,000 women died from complications of pregnancy and childbirth (WHO, 2016). Every day in 2017, around 808 women in poor and developing countries died from complications of pregnancy and childbirth. The main causes of death include haemorrhage, high blood pressure, infections, and other indirect causes. Other facts explain that women in poor countries are 130 times more likely to experience complications of pregnancy and childbirth than women in developed countries (WHO, 2017).

The maternal health situation in Indonesia shows that the Maternal Mortality Rate (MMR) has decreased during the 1991-2015 period from 390 to 305 per 100,000 live births. Even though this figure shows a decline, it has not yet reached the global target of 102 per 100,000 live births in 2015. The situation also shows that MMR in Indonesia is still far from the target of SDGs in 2030, namely MMR of less than 70 cases per 100,000 live births (Central Bureau of Statistics, 2018). Infant Mortality Rate (IMR) still shows a high number, around 19 per 100,000 live births. The high MMR and IMR are caused by the lack of skilled labour and the lack of access to care for health services (Endang L.Achadi, Anhari Achadi, Eko Pambudi, 2014).

These conditions can be prevented if during pregnancy and childbirth the mother is well prepared. WHO explains that the number of maternal and infant deaths can be reduced by conducting regular antenatal care (ANC) checks and delivery in professional health services (WHO, 2019). Efforts to accelerate the reduction of MMR in Indonesia have been carried out, namely: improving maternal health services, deliveries assisted by trained health workers, delivering health services, providing postnatal care for mothers and infants including complications care, and postpartum Family Planning services (Central Bureau of Statistics, 2018; Efendi et al., 2019).

Economic conditions are a factor that causes low access to maternal services so that strategic efforts are needed to help minimise the economic burden based on comprehensive health insurance. Some countries have implemented health insurance programs for health care utilisation. For example, Ghana has managed to cover 95% of maternal health services. The maternal health services referred to are prenatal visits, delivery care, and one postnatal visit, and services for infants up to 3 months of age free of charge (Dixon, Tenkorang, Luginaah, Kuuire, & Boateng, 2014). A study in Rwanda explained that health insurance also covers all prenatal and postnatal care costs in the minimum package (Lu et al., 2012). The Government of Indonesia itself has implemented maternity insurance (Jampersal) in 2011. The program includes ANC, delivery, postnatal care (PNC), and postpartum family planning services at no charge (Suparmi, Iram Barida Maisya, 2019). However, in 2014 the maternity insurance program (Jampersal) merged to become the National Health Insurance (NHI) or *Jaminan Kesehatan Nasional* (JKN) (Nasution, Mahendradhata, & Trisnantoro, 2020). JKN covers

maternal services but does not cover the cost of travel from the patient's residence to the health service so that it is a challenge for mothers in rural areas (Mahendradhata et al., 2017).

An interesting point in the study is that child health care is minimally associated with the culture of childbirth in Indonesia. The value of childbirth in Indonesia is perceived as a life bet "between life and death". Women from several ethnic groups in Indonesia who live in rural areas prefer to give birth at home because the home is considered a "sacred" place to begin stage one of the life cycle (Agus, Horiuchi, & Iida, 2018; Ipa, Prasetyo, Arifin, & Kasnodihardjo, 2014). While other women from several other tribes in Indonesia must get out of the house. Women must be exiled because the blood of their labour is considered to have a bad influence (Kurniawan & Laksono, 2013).

Studies on the impact of health insurance on access to maternal health services in Indonesia are still limited (Aizawa, 2019). However, several studies explain that health insurance has a positive impact on access to maternal health services (health services during pregnancy and childbirth) (Wang, Temsah, & Mallick, 2017; Sanni Yaya, Da, Wang, Tang, & Ghose, 2019). Based on this background, this article was prepared to analyse the effect of health insurance on maternity care in health services in Indonesia. The results of this study are needed as clear and directed guidance for policymakers to evaluate the impact of health insurance on increasing public access to healthcare. The results of the study also provide detailed information on maternal health policy targets that must be targeted so that the policies taken can have a more effective impact.

Methods

Data Source

The study was conducted using raw data from the 2017 Indonesian Demographic Data Survey (IDHS). The IDHS is part of an international survey which is part of the series Demographic and Health Survey (DHS) program run by the Inner City Fund (ICF). This survey uses stratification and multistage random sampling to select the required sample. The unit of analysis in this study is women of childbearing age (15-49 years), who have delivered in the last 5 years in Indonesia. The sample size used was 36,548 women.

Data Analysis

Maternity care in health services was the respondent's acknowledgment of the place of delivery in the past five years. Deliveries performed in health services facilities include healthcare centres, clinics or maternity hospitals, practices of health workers and hospitals (Ministry of Health of the Republic of Indonesia, 2015).

In addition to ownership of health insurance, other independent variables involved in the analysis of this study include the type of place of residence, age groups, education level,

employment status, marital status, parity, wealth status, knowledge of the danger of pregnancy, and completeness of ANC. The number of independent variables were analysed to give policymakers a more detailed target.

Health insurance ownership was the respondent's acknowledgment of insurance that covers their health risks, including for maternity care. Health insurance ownership was divided into 2 categories, namely not covered and covered by health insurance. The type of place of residence was divided into 2 categories, urban and rural. The age group was divided into 5-year intervals. Education level consists of 4 categories, namely no education, primary, secondary and higher. Employment status was divided into 2 categories, namely no employment and employment. Parity was divided into 2 categories, namely primiparous (≤ 1) and multiparous (> 1).

Wealth status was determined based on the wealth index calculation. The wealth index was a composite measure of a household's cumulative living standard. The wealth index was calculated using easy-to-collect data on household ownership of selected assets, such as televisions and bicycles; materials used for housing construction; and types of water access and sanitation facilities. Wealth index was divided into 5 categories, namely the poorest, poorer, middle, richer, and richest.

Know the danger of pregnancy was respondent knowledge of the dangers of prolonged labour, vaginal bleeding, fever, convulsions, baby in the wrong position, swollen limbs, faintness, breathlessness, tiredness, and others. Know the danger of pregnancy was divided into 2 categories, namely not knowing and knowing. ANC was a respondent's visit to get antenatal care during pregnancy at a healthcare facility. The ANC completeness variable was divided into 2 categories, namely < 4 visits and ≥ 4 times visits.

In the initial stage of the analysis, all variables were tested with a collinearity test to ensure there was no collinearity between variables. All variables involved in the analysis of this study were dichotomous variables, therefore the chi-square test was used to determine whether there were significant differences in the utilisation of health services facilities for delivery. In the final stage, binary logistic regression was used because of the nature of the dependent variable. All statistical analyses were carried out using SPSS 22 software.

Results

Table 1 displays the results of the collinearity test of all variables involved in the effect analysis of health insurance on maternity care in health services in Indonesia. Collinearity test results show that there is no co-linearity between the dependent and independent variables. Table 1 shows that the tolerance value of all variables is greater than 0.10. While the VIF value for all variables is less than 10.00. Then referring to the basis of decision making in the

multicollinearity test it can be concluded that there were no symptoms of multicollinearity in the regression model.

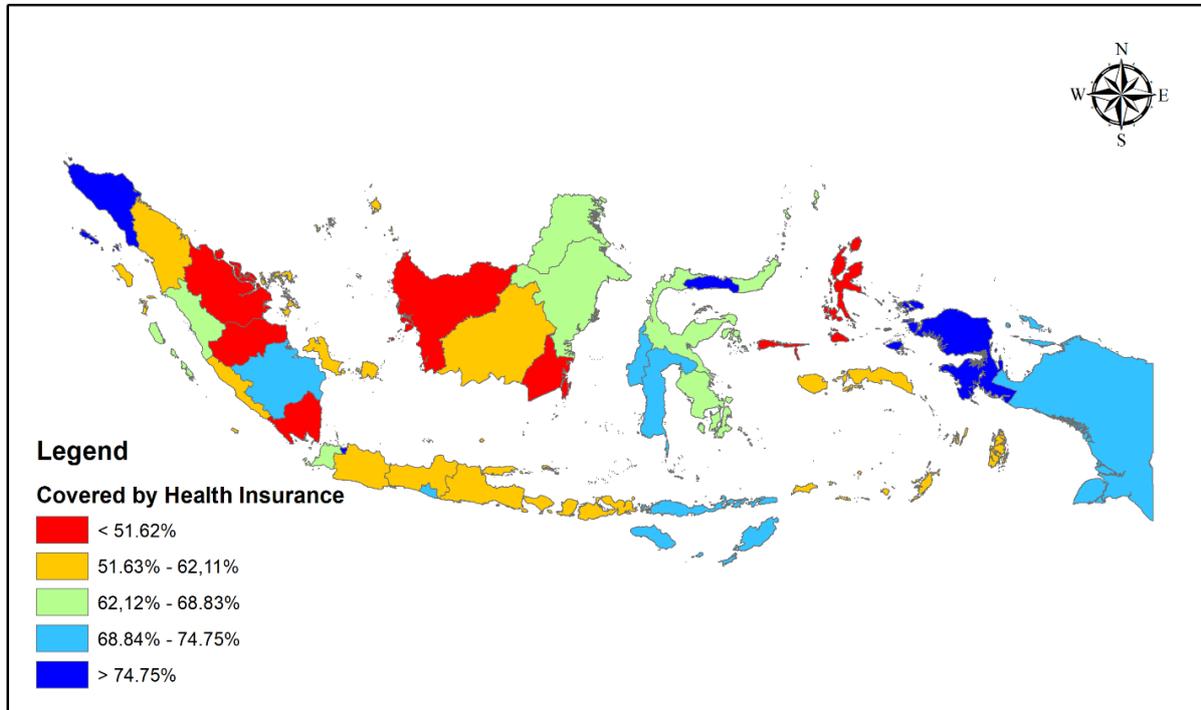
Table 1: Results for the co-linearity test of maternity care in health services in Indonesia (n=36,548)

Variables	Collinearity Statistics	
	Tolerance	VIF
Health insurance	0.977	1.024
Type of place of residence	0.767	1.303
Age groups	0.744	1.345
Education level	0.725	1.380
Employment status	0.953	1.050
Marital status	0.984	1.016
Parity	0.690	1.449
Wealth status	0.627	1.595
Know the dangers of pregnancy	0.902	1.109
ANC visits	0.792	1.262

Dependent Variable: The Use of Healthcare Facilities for Delivery

Figure 1 is a description of the distribution of health insurance coverage by province for women of childbearing age who gave birth in the last five years in Indonesia. All provinces in the region of Papua (Papua and West Papua) and Nusa Tenggara (West Nusa Tenggara and East Nusa Tenggara) have high insurance coverage. Provinces in other regions appear more random.

Figure 1. Distribution of health insurance coverage by province of childbearing age women who gave birth in the last five years in Indonesia (n=36,548).



Descriptive Results

Table 2 is a descriptive statistic of health insurance coverage and other related variables included in the analysis. Table 2 informs that women of childbearing age who gave birth in the last five years in Indonesia predominantly gave birth in non-health services facilities, both those covered by insurance or not. Women of childbearing age who gave birth in the last five years in Indonesia are also dominated by those who live in rural areas.

Table 2: Descriptive Statistic of Health Insurance and Related Variable in Indonesia (n=36,548)

Characteristics	Covered by Health Insurance				P
	No		Yes		
	n	%	n	%	
Place of childbirth					
- Nonhealthcare Facilities	8694	65.5%	14719	63.3%	
- Healthcare Facilities	4584	34.5%	8551	36.7%	
Type of place of residence					***< 0.001
- Urban	5880	44.3%	11385	48.9%	
- Rural (ref.)	7398	55.7%	11885	51.1%	
Age groups					***< 0.001

- 15-19 (ref.)	188	1.4%	255	1.1%	
- 20-24	1371	10.3%	1734	7.5%	
- 25-29	2804	21.1%	3972	17.1%	
- 30-34	3521	26.5%	6225	26.8%	
- 35-39	3276	24.7%	6475	27.8%	
- 40-44	1700	12.8%	3654	15.7%	
- 45-49	418	3.1%	955	4.1%	
Education level					***< 0.001
- No education (ref.)	310	2.3%	518	2.2%	
- Primary	4374	32.9%	6948	29.9%	
- Secondary	7616	57.4%	11593	49.8%	
- Higher	978	7.4%	4211	18.1%	
Employment status					***< 0.001
- Not Employed	7235	54.5%	11252	48.4%	
- Employed	6043	45.5%	12018	51.6%	
Marital status					***< 0.001
- Never in union	15	0.1%	17	0.1%	
- Married/Living with partner	12742	96.0%	22755	97.8%	
- Divorced/Widowed	521	3.9%	498	2.1%	
Parity					***< 0.001
- Primiparous	1900	14.3%	2856	12.3%	
- Multiparous (ref.)	11378	85.7%	20414	87.7%	
Wealth status					***< 0.001
- Poorest (ref.)	4162	31.3%	7130	30.6%	
- Poorer	2894	21.8%	4221	18.1%	
- Middle	2523	19.0%	3897	16.7%	
- Richer	2216	16.7%	3750	16.1%	
- Richest	1483	11.2%	4272	18.4%	
Know the danger signs of pregnancy					***< 0.001
- No (ref.)	5569	41.9%	8619	37.0%	
- Yes	7708	58.1%	14649	63.0%	
ANC visits					0.104
- < 4 times (ref.)	8290	62.4%	14727	63.3%	
- ≥ 4 times	4988	37.6%	8543	36.7%	

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

Table 2 informs that women of childbearing age giving birth in the last five years in Indonesia that are not covered by health insurance are dominated by the 30-34 year age group. While those covered by health insurance are dominated by the age group of 35-39 years.

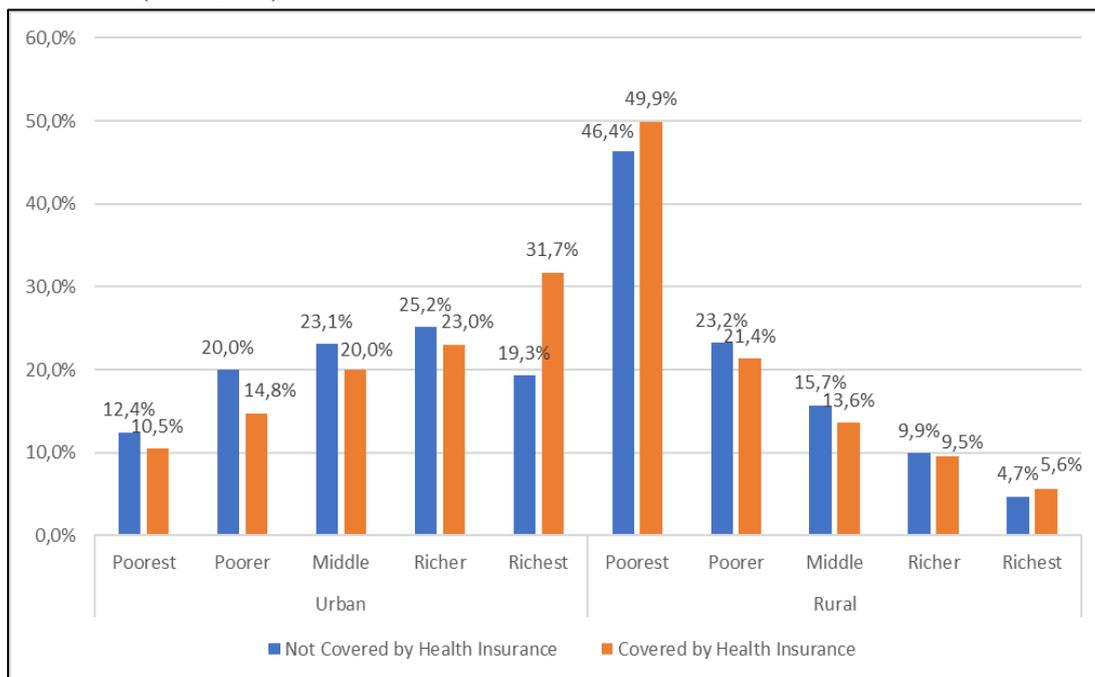
Table 2 shows that at the educational level category, both categories were dominated by women with secondary education. While in the employment status category, those not covered by health insurance are dominated by women who are not employed, while those covered by insurance are dominated by employed women.

Table 2 shows that in the marital status category, both categories were dominated by women who were married/living with partners. While in the parity category, both categories are dominated by multiparous women.

Table 2 informs that in the wealth status category, both categories are dominated by the poorest women. While in the category of know the danger signs of pregnancy, both categories are dominated by women who know the danger signs of pregnancy. In the ANC visits category, both categories were dominated by women who did ANC < 4 times.

Figure 2 informs the distribution of health insurance coverage based on wealth status and type of place of residence. It is seen that in an urban area, health insurance coverage is more dominant in the richest women. While in rural areas health insurance coverage is more dominant in the poorest women. This condition informs that poor women in urban areas have lower access to health financing compared to other groups.

Figure 2. Distribution of health insurance coverage by wealth status and urban-rural (the type of place of residence) of childbearing age women who gave birth in the last five years in Indonesia (n=36,548).



Multivariate Regression Analysis

Table 3 is the result of a binary logistic regression test on maternity care in health services of childbearing age women who gave birth in the last five years in Indonesia. Statistical analysis at this final stage is to determine the predictors of maternity care in health services in Indonesia. As a reference, the chosen category was "non-health services facilities".

Table 3: Result of Binary Logistic Regression of maternity care in health services in Indonesia (n=36,548)

Predictors	Maternity Care in Health Services			
	Sig.	OR	Lower Bound	Upper Bound
Covered by Health Insurance: No (ref.)	-	-	-	-
Covered by Health Insurance: Yes	*** < 0.001	1.138	1.081	1.198
Type of place of residence: Urban	*** < 0.001	1.446	1.369	1.526
Type of place of residence: Rural (ref.)	-	-	-	-
Age groups: 15-19 (ref.)	-	-	-	-
Age groups: 20-24	*** < 0.001	1.641	1.302	2.069
Age groups: 25-29	** 0.003	1.421	1.130	1.788
Age groups: 30-34	0.980	1.003	0.796	1.264
Age groups: 35-39	** 0.004	0.707	0.560	0.893
Age groups: 40-44	*** < 0.001	0.530	0.418	0.673
Age groups: 45-49	*** < 0.001	0.403	0.306	0.531
Education level: No education (ref.)	-	-	-	-
Education level: Primary	** 0.001	1.502	1.187	1.901
Education level: Secondary	*** < 0.001	1.886	1.491	2.387
Education level: Higher	*** < 0.001	2.504	1.963	3.195
Employment status: Not Employed (ref.)	-	-	-	-
Employment status: Employed	** 0.001	0.916	0.871	0.963
Marital status: Never in union (ref.)	-	-	-	-

Marital status: Married/Living with partner	0.610	0.814	0.368	1.798
Marital status: Divorced/Widowed	0.581	0.797	0.356	1.784
Parity: Primiparous (ref.)	-	-	-	-
Parity: Multiparous	*** < 0.001	0.153	0.140	0.168
Wealth status: Poorest (ref.)	-	-	-	-
Wealth status: Poorer	*** < 0.001	1.758	1.631	1.895
Wealth status: Middle	*** < 0.001	2.080	1.922	2.250
Wealth status: Richer	*** < 0.001	2.238	2.060	2.432
Wealth status: Richest	*** < 0.001	2.442	2.232	2.673
Know the danger signs of pregnancy: No (ref.)	-	-	-	-
Know the danger signs of pregnancy: Yes	*** < 0.001	1.328	1.260	1.400

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

Table 3 informs that women of childbearing age who gave birth in the last five years in Indonesia who are covered by health insurance are 1.138 times more likely to deliver in health services facilities than women who are not covered by health insurance (OR 1.138; 95% CI 1.081-1.198). Women of childbearing age who gave birth in the last five years in Indonesia, living in urban areas, were 1.446 times more likely to deliver in health services facilities than women in rural areas (OR 1.446; 95% CI 1.369-1.526).

Table 3 shows that women of childbearing age who gave birth the in last five years in Indonesia in the 20-24 age group were 1.641 times more likely to deliver in health services facilities than women in the 15-19 age group (OR 1.641; 95% CI 1.302-2.069). Women of childbearing age who gave birth in the last five years in Indonesia in the 45-49 age group were 0.403 times more likely to deliver in health services facilities than women in the 15-19 age group (OR 0.403; 95% CI 0.306-0.531).

Table 3 informs that women of childbearing age who gave birth in the last five years in Indonesia, who have primary educational status, are 1.502 times more likely to deliver in health services facilities than no education women (OR 1.502; 95% CI 1.187-1.901). Women of childbearing age who gave birth in the last five years in Indonesia, who have secondary educational status, are 1.886 times more likely to deliver in health services facilities than no

education women (OR 1.886; 95% CI 1.491-2.387). Women of childbearing age who gave birth in the last five years in Indonesia, who have higher educational status, are 2.504 times more likely to deliver in health services facilities than no education women (OR 2.504; 95% CI 1.963-3.195). This informs that the higher the education level of women, the higher the likelihood of giving birth in health services facilities.

Table 3 shows that women of childbearing age who had given birth in the last five years in Indonesia, who were employed, were 0.916 times more likely to deliver in health services facilities than not-employed women (OR 0.916; 95% CI 0.871-0.963). While multiparous women have the possibility of 0.153 times to give birth in health services facilities compared to primiparous women (OR 0.153; 95% CI 0.140-0.168).

Table 3 shows that women of childbearing age who gave birth in the last five years in Indonesia with wealth status in the poorer category were 1.758 times more likely to deliver in health services facilities than the poorest women (OR 1.758; 95% CI 1.631-1.895). Women of childbearing age who gave birth in the last five years in Indonesia with wealth status in the middle category are 2.080 times more likely to deliver in health services facilities than the poorest women (OR 2.080; 95% CI 1.922-2.250). Women of childbearing age who gave birth in the last five years in Indonesia with wealth status in the richer category were 2.238 times more likely to deliver in health services facilities than poorest women (OR 2.238; 95% CI 2.060-2.432). Women of childbearing age who gave birth in the last five years in Indonesia with wealth status in the richest category were 2.442 times more likely to deliver in health services facilities than the poorest women (OR 2.442; 95% CI 2.232-2.673). This informs us that the greater the wealth status of a woman, the higher the chance of giving birth in a health services facility.

Table 3 informs that women of childbearing age who gave birth in the last five years in Indonesia, who knew the danger signs of pregnancy, were 1.328 times more likely to give birth in a health services facility than women who did not know the danger signs of pregnancy (OR 1.328; 95% CI 1.260-1.400).

Discussion

The analysis found that ownership of health insurance is one of the determinants of maternity care in health services in Indonesia. Indonesian women covered by health insurance have a better chance of undertaking childbirth in health services. This information shows that health insurance is one of the protection variables for Indonesian women to encourage the delivery of healthcare. This result is in line with several other studies that inform that health insurance is effective in increasing public access to health services, including in Ghana (Sheff et al., 2020),

United State (Kayle et al., 2020), China (Wu, Li, & Ercia, 2020), and sub-Saharan Africa (Müllerschön et al., 2019).

The Indonesian government has released the National Health Insurance (NHI or JKN/*Jaminan Kesehatan Nasional*) as an intervention policy to improve public access to healthcare. The information generated in this study is an indication that JKN is on the right track. Nevertheless, the government still has to work harder to be able to increase the effectiveness of health insurance on the occurrence of childbirth healthcare. Although influential, the odds ratio for Indonesian women who have health insurance is only 1.138 times compared to those not covered by health insurance for delivery in health services. The results of previous studies inform that health insurance can have a greater impact on encouraging increased maternity care to health services (Brals et al., 2017, 2019; Sanni Yaya et al., 2019).

The results of the study found that Indonesian women living in urban areas were more likely to undertake childbirth in health services than Indonesian women living in rural areas. In the context of Indonesia, this condition can be explained. Development between urban and rural areas is still happening and inequality remains. This pertains not only for development in general, but also includes health development, which causes community access to health services to be far better in urban areas (Laksono, Wulandari, & Soedirham, 2019b; Wulandari & Laksono, 2019). This fact is further strengthened by better public access to health services in regions that have more urban areas (Laksono, Rukmini, & Wulandari, 2020; Laksono, Wulandari, & Soedirham, 2019a).

The results found that age is one of the determinants of maternity care in health services in Indonesia. Consistent information was also obtained in previous studies (Woldeyes, Asefa, & Muleta, 2018; Zhang et al., 2019). There is a tendency that the older a woman is, the less likely she is to access maternity care in health services.

Analysis of the results of the study found a tendency that the better the level of education of a woman in Indonesia, the more likely she is to take maternity care into health services. In various studies that focus on public access to health services, education has always been found to be a strong determinant capable of encouraging access to better health services (Izudi, Akwang, McCoy, Bajunirwe, & Kadengye, 2019; Luy et al., 2019; Ozumba, Onyeneho, Chalupowski, & Subramanian, 2019). The better level of education attained by the woman has made her more aware of what she needs, including the choice of place of delivery she will go through (Laksono & Wulandari, 2020; Tille et al., 2019; Wulandari & Laksono, 2020b).

The results of the study inform that employed women have a lower likelihood of taking maternity care from health services. These results are in line with the results of other studies that inform that employment status is one of the determinants of maternity care in health

services (Efendi et al., 2019; Makandwa & Vearey, 2017). In the Indonesian context, the employment status of a woman is related to the availability of time she has to care for the family, including the time to take care of herself. In general, Indonesian people consider women to be responsible for domestic affairs. Working, or earning a living, is a man's responsibility (Nugrahayuningtyas & Wahyuni, 2018; Zahara, 2017).

The results of the analysis found that multiparous women had a lower probability than primiparous women to access maternity care in health services. This information is consistent with the results of previous studies that inform that parity is one of the determinants of maternity care in health services. The choice of place of delivery for multiparous women is often related to previous birthing experiences (Ndao-Brumblay, Mbaruku, & Kruk, 2013; Zhang et al., 2019).

Analysis of the results of the study informs us that the better the wealth status of a woman in Indonesia, the better her chance to accept maternity care in health services. This information is in line with several studies in various countries that inform that wealth status is one of the strong determinants that influence access to health services (Laksono, Wulandari, & Efendi, 2020; S. Yaya, Bishwajit, & Gunawardena, 2019). The better wealth status one has, the more it gives wider opportunities to choose health services facilities that you want to access (Wulandari, Qomarrudin, Supriyanto, & Laksono, 2019).

The analysis found that Indonesian women who knew the danger signs of pregnancy had a better chance of accepting maternity care in health services. Better knowledge makes women more aware and more able to prepare for the labour process (Vijay, Kumare, & Yerlekar, 2015; Wassihun et al., 2020; Woldeamanuel, Lemma, & Zegeye, 2019). Efforts to increase knowledge about the danger signs of pregnancy like this must be sought if the Indonesian government is to be able to reduce maternal mortality, which is still very high in Indonesia. Increasing knowledge about the danger signs of pregnancy is an effective factor to prevent maternal deaths (Ogu & Ngozi, 2017; Wulandari & Laksono, 2020a) – not only in women but increasing knowledge about the danger signs of pregnancy by involving and informing the husband would also be effective to encourage childbirth into healthcare and prevent maternal death (Zaman et al., 2018).

Conclusions

Based on the results of the analysis it can be concluded that women covered by health insurance have a higher likelihood of availing themselves of maternity care in health services than women who are not covered by health insurance. Health insurance is a predictor of maternity care in health services in Indonesia. Besides, other variables also found as predictors are the type of



place of residence, age group, education level, employment status, parity, wealth status, and know the danger signs of pregnancy.

Based on the results of the analysis, policymakers must target women who live in rural areas, are from older age groups, uneducated, poor, and do not know the danger signs of pregnancy. These target groups that are less likely to access maternity care in health services.

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Ethic and Consent

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

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