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Does Health Insurance Affect the Completeness of Antenatal Care?

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Abstract

The antenatal treatment has been ineffective in reducing maternal mortality. Therefore, this study aimed to examine health insurance effect on Indonesia's antenatal care quality. The 2017 Indonesian Demographic and Health Survey data were processed. Moreover, a sample size of 15,351 participants was selected using the analysis unit of study for women aged 15 to 49. In the final stage, Binary Logistic Regression was used, while other variables examined besides antenatal treatment included health insurance, residence, age, marital, education, parity, and wealth. Based on the complete category of antenatal care visits, women that did antenatal care visits were \geq four, occupied by both types of health insurance ownership. The multivariable analysis indicated that health insurance ownership affects antenatal care completeness as insured women were 1.394 times higher than uninsured women (OR= 1.394; 95% CI= 1.257-1.546). Result showed other determinant variables, namely age, education, parity, and wealth were also found. In conclusion, health insurance gives Indonesian women a better possibility of receiving complete antenatal care.

INTRODUCTION

The Indonesian government has chosen the universal health coverage (UHC) scheme as one of the social insurance instruments to increase public access to health services. The government carried out the UHC adaptation through the new National Health Insurance System (NHIS or *JKN/Jaminan Kesehatan Nasional*). In October 2018, as social insurance *JKN* had at least 203 million members (Agustina et al., 2019). The government obtained many positive things since the government implemented *JKN*, although the community in the field does not find a few problems. *JKN* has increased people's access to health services. On the other hand, transportation costs are still a problem in some areas (Aveling et al., 2017; Jabbar, 2020). But the health

financing policy must be continued so that positive momentum to increase community access to health services can be maintained.

The latest report states that the maternal mortality rate (MMR) has dropped from 346 maternal deaths to 305 maternal deaths per 100,000 live births in 2015. However, this achievement is still below the Millennium Development Goals (MDGs) target of 102 per 100,000 births live in 2015 (Data and Information Center Ministry of Health, 2014). Moreover, compare the MDG's mark to the Sustainable Development Goals (SDG's) target. The SDG's target is under 70 per 100,000 live births (Communication and Community Service Bureau Ministry of Health, 2019). In general, MMR owned by Indonesia is higher when compared to countries in the

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region. Indonesia has nine times the MMR compared to Malaysia, five times that of Vietnam, and almost two times that of Cambodia (World Health Organization, 2015; Achadi, 2019).

One of the Ministry of Health's main strategies to reduce MMR is Antenatal Care (ANC). ANC aims to keep track of the mother's and fetus' health and safety. In ANC services, pregnant women will get early detection of pregnancy complications, and if necessary, they take action. According to the Ministry of Health's recommendations, the frequency of complete ANC visits (at least 4 times) is crucial to detecting and preventing complications during pregnancy (Hijazi et al., 2018). The research results in several developing countries inform that there has been an increase in the use of ANC. However, geographic, demographic, financial, and sociocultural factors continue to cause inequalities (Chi et al., 2015; Bobo et al., 2017).

In 2018, the proportion of ANC visited increased throughout the country. In 2018, the first visit percentage was 96.1%, from the beginning of 2013 (95.2%). Moreover, in 2018 the percentage of fourth visits was 74.1%, from 2013 (70.0%). However, the achievement of the percentage of fourth visits still has not reached the target of 76%. The 2017 Strategic Planning (*Renstra*) stated this target (National Institute of Health Research and Development of The Indonesia Ministry of Health, 2019). Previous studies found that one of the barriers to achieving complete ANC is cost. Several studies that focus on overcoming these financing barriers are proven to increase a full ANC's achievement (Dixon et al., 2014; Sano-go & Yaya, 2020; Yaya et al., 2019) there is limited evidence on the effects of health insurance on use of maternal health care. In the present study our objective was to measure the prevalence of insurance ownership, types of services covered by the insurance and the association of insurance ownership with the utilization of respective maternal health services in Ghana. Methods This study was based on nationally representative Demographic and Health Survey in Ghana (GDHS 2014).

In the Indonesian context, the difficulty of increasing ANC coverage to health services also has challenges from health beliefs and traditions that encompass pregnancy and childbirth events. A Gayo woman in Aceh, for example, must hide her pregnancy until her stomach grows and they cannot hide anymore. They must be covered during pregnancy because evil spirits can not take it (Pratiwi et al., 2019). Muyu and Ngalum women in Papua must evacuate during menstruation and childbirth. They were living in a hut far from home. Local people believe that menstrual blood and delivery bring bad air that can affect health (Kurniawan et al., 2012; Lakso-

no et al., 2016). On the other hand, traditional birth attendants are also commonly found. The traditional birth attendants are still actively practicing checking for pregnancy and helping with childbirth (Laksono et al., 2014).

Based on the background description, we intended the research to analyze health insurance's effect on ANC's completeness in Indonesia. We hoped that the information provided as a result of this research could deliver clear and detailed guidance for maternal health policymakers. Moreover, the maternal health policy adopted can be following the needs outlined as a result of this study.

METHODS

Data Source

The study used 2017 Indonesian Demographic and Health Survey (IDHS) as the basis for analysis in this study. The IDHS was part of the global survey series Demographic and Health Survey (DHS) conducted by the Inner City Fund (ICF). In Indonesia, the 2017 IDHS was a national-scale survey. The study population was childbearing age women (15-49 years old) who had given birth in the last five years. The IDHS employed the stratification and multistage random sampling method; then, the study obtained 15,351 respondents.

Procedure

The National Ethics Committee gave the 2017 IDHS a clean bill of health. The author removed all names of the respondents from the database. Respondents have given their written consent to participate in the report. Via the website, the author has received permission to use the 2017 IDHS data for this report (<https://dhsprogram.com>).

Data Analysis

The study used ANC as a dependent variable. The Indonesia Ministry of Health recommended ANC visit at least four visits during pregnancy, consists of one visit during the first trimester, one visit during the second trimester, and two visits during the third trimester (National Population and Family Planning Board, Statistics Indonesia, Ministry of Health, & The DHS Program, 2018). Meanwhile, the study divided ANC into two categories, namely "<4" and "≥4".

The study employed health insurance as an independent variable. The respondent's recognition of life insurance ownership was health insurance. Health insurance ownership consists of two types: uninsured and insured. In addition to health insurance, other variables employed as independent variables were the type of residence, age group, marital status, education level, parity, and wealth status. Other variables were also analyzed to provide more detailed information for policymakers.

The type of place of residence consists of two categories: urban and rural. Age group consists of seven levels: "15-19", "20-24", "25-29", "30-34", "35-39", "40-44", and "45-49". Marital status consists of three types: "never in a union," "married/living with a partner," and "widowed/divorced." The respondent's education degree was determined by their acknowledgment of their most recent diploma.

Education level consists of four levels: "no education", "primary", "secondary", and "higher". The study referred to the number of living children as parity. Parity consists of two categories: "primiparous (≤ 1)" and "multiparous (≥ 2)".

The wealth quintile possessed by a household determined its wealth status. Households were graded on the number and types of things they owned,

Table 1. Statistics Descriptive of Respondents' Socio-Demographic (n=15,351)

Variables	Covered by health insurance				p
	Uninsured		Insured		
	n	%	n	%	
<u>ANC</u>					*** < 0.001
< 4	851	14.6%	969	10.2%	
≥ 4	4988	85.4%	8543	89.8%	
<u>Type of Residence</u>					*** < 0.001
Urban	2598	44.5%	4970	52.2%	
Rural	3241	55.5%	4542	47.8%	
<u>Age Group</u>					*** < 0.001
15-19	178	3.0%	238	2.5%	
20-24	1047	17.9%	1367	14.4%	
25-29	1577	27.0%	2270	23.9%	
30-34	1440	24.7%	2523	26.5%	
35-39	1056	18.1%	2000	21.0%	
40-44	443	7.6%	914	9.6%	
45-49	98	1.7%	200	2.1%	
<u>Marital Status</u>					*** < 0.001
Never in union	14	0.2%	14	0.1%	
Married/Living with partner	5587	95.7%	9256	97.3%	
Divorced/Widowed	238	4.1%	242	2.5%	
<u>Education Level</u>					*** < 0.001
No education	87	1.5%	117	1.2%	
Primary	1650	28.3%	2209	23.2%	
Secondary	3563	61.0%	5065	53.2%	
Higher	539	9.2%	2121	22.3%	
<u>Parity</u>					0.001
Primiparous	1899	32.5%	2856	30.0%	
Multiparous	3940	67.5%	6656	70.0%	
<u>Wealth Status</u>					*** < 0.001
Poorest	1677	28.7%	2396	25.2%	
Poorer	1292	22.1%	1739	18.3%	
Midle	1197	20.5%	1693	17.8%	
Richer	1018	17.4%	1742	18.3%	
Richest	655	11.2%	1942	20.4%	

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

ranging from televisions to motorcycles or vehicles and housing characteristics, including drinking water supplies, toilet facilities, and the house's surface's essential construction materials. The study used principal component analysis to measure this ranking. The IDHS created national wealth quintiles using household scores for each person in the household and then grouped them into the same five groups depending on the distribution, accounting for 20% of the population. Wealth status consists of five categories: the poorest, poorer, middle, richer, and the richest (Wulandari et al., 2019).

At the initial stage, the analysis carried out the Chi-square test to perform a bivariate analysis. In the final stage, the research applied Binary Logistic Regression to determine health insurance's effect on ANC's completeness. The author carried out the entire analysis process through SPSS 22 software.

RESULTS AND DISCUSSION

Table 1 displays descriptive statistics from the socio-demographic of childbearing age women born in Indonesia in the last five years. Based on the completeness category of ANC visits, women who make $ANC \geq 4$ visits occupied the two types of health insurance ownership. Based on the residence type, uninsured women predominantly live in rural areas, while insured women mostly live in urban areas.

Table 1 informs that uninsured are dominated by the age group 25-29 years old, while insured women are 30-34 years old. Based on marital status, married women or living with partners dominated

the two categories of health insurance ownership. Based on the education level, women who have secondary education control the two types of health insurance ownership. Meanwhile, based on parity, multiparous women tend to dominate the two categories of health insurance ownership. Finally, based on wealth status, the poorest women ruled the two types of health insurance ownership.

Figure 1 shows the interaction between three variables, namely ANC visits, health insurance ownership, and education level. The model found that the higher the type of education, the more significant the proportion of pregnant women who receive complete ANC visits (4). This condition applies to both categories of health insurance ownership, both uninsured pregnant women and insured pregnant women.

Table 2 shows the binary logistic regression results of ANC among childbearing age women who gave birth in Indonesia's last five years. It appears that ownership of health insurance affects the completeness of the ANC. Insured women were 1.394 times more likely than uninsured women to do $ANC \geq 4$ visits (OR 1.394; 95% CI 1.257-1.546).

Based on the results, The analysis informed that health insurance gives Indonesian women a better chance to complete $ANC \geq 4$ visits. This information shows that the ideals implicit in *JKN* to improve public access to health services are increasingly closer to reality. The implementation is on the right track, following what is the goal of universal health insurance (Agustina et al., 2019; Anindya et al., 2020; Johar et al., 2018).

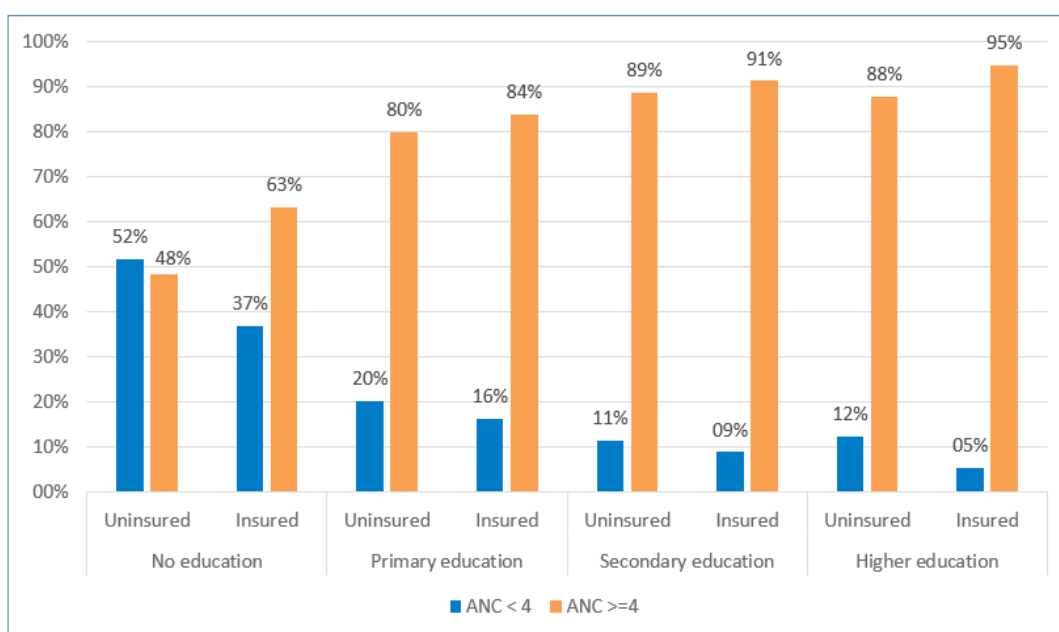


Figure 1. Interaction diagram of 3 variables (ANC visits, health insurance, and education level) (n=15,351)

Table 2. The Binary Logistic Regression Result of ANC Visits (n=15,351)

Predictor	ANC \geq 4 visits			
	P-values	OR	95% CI	
			Lower Bound	Upper Bound
Covered by health insurance: No (Ref.)	-	-	-	-
Covered by health insurance: Yes	***< 0.001	1.394	1.257	1.546
Place of Residence: Urban	0.257	1.071	0.951	1.206
Place of Residence: Rural (Ref.)	-	-	-	-
Age group: 15-19	***< 0.001	0.477	0.316	0.720
Age group: 20-24	0.819	1.041	0.736	1.474
Age group: 25-29	*0.033	1.435	1.030	1.999
Age group: 30-34	**0.008	1.554	1.120	2.157
Age group: 35-39	*0.027	1.452	1.044	2.019
Age group: 40-44	0.507	1.124	0.795	1.589
Age group: 45-49 (Ref.)	-	-	-	-
Marital status: Never in union (Ref.)	-	-	-	-
Marital status: Married/Living with partner	0.348	1.503	0.642	3.517
Marital status: Divorced/Widowed	0.495	0.737	0.307	1.770
Education Level: No education (Ref.)	-	-	-	-
Education Level: Primary	***< 0.001	2.677	1.989	3.604
Education Level: Secondary	***< 0.001	3.702	2.743	4.996
Education Level: Higher	***< 0.001	3.202	2.284	4.490
Parity: Primiparous (Ref.)	-	-	-	-
Parity: Multiparous	***< 0.001	0.618	0.533	0.717
Wealth status: Poorest (Ref.)	-	-	-	-
Wealth status: Poorer	***< 0.001	1.828	1.593	2.098
Wealth status: Midle	***< 0.001	2.399	2.048	2.811
Wealth status: Richer	***< 0.001	3.359	2.780	4.059
Wealth status: Richest	***< 0.001	4.819	3.808	6.100

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

The positive effects of health insurance in Indonesia which have a positive impact on increasing public access to health services, have also been reported in several previous studies in various countries (Sanogo & Yaya, 2020; Taylor et al., 2020; Wu et al., 2020) insurance coverage remains lower among women in Medicaid nonexpansion states. We compared health care use and adverse birth outcomes by insurance status among women giving birth in a large health system in a Medicaid nonexpansion state. Materials and Methods: We conducted a population-based retrospective cohort study using data for 9,613 women with deliveries during 2014-2015 at six hospitals associated with a large vertically integrated health care system in North Carolina. Adjusted logistic regression and zero-inflated negative

binomial models examined associations between insurance status at delivery (commercial, Medicaid, or uninsured). Exemplary health insurance implementation, especially social insurance, can overcome barriers to finance access to health services. Health insurance participants do not need to worry anymore about the high cost of services at health facilities because there is already a transfer of risk through an insurance mechanism (Szigeti et al., 2019; Alo et al., 2020; Laksono & Wulandari, 2020). The health financing policy issued by the Indonesian government through JKN is a step forward. However, we encountered many challenges in its implementation, especially to attract participants who do not have a steady income (Jabbar, 2020; Media, 2019). Moreover, a financing intervention policy is still needed

to reduce the transportation cost barrier to health service facilities (Laksono, 2016; Pratiwi et al., 2014; Rukmini et al., 2013). The central government needs to involve local governments to overcome transportation obstacles to health facilities. Local governments can guarantee the availability of means of transportation or provide special subsidies for transportation costs.

Table 2 informs that women in the 15-19 age group were 0.477 times more likely than women in the 45-49 age group to have ANC \geq 4 visits (OR 0.477; 95% CI 0.316-0.720). Women in the 25-29 age group are 1.435 times more likely than women in the 45-49 age group to have ANC \geq 4 visits (OR 1.435; 95% CI 1.030-1.999). Women in the 30-34 age group are 1.554 times more likely than women in the 45-49 age group to have ANC \geq 4 visits (OR 1.554; 95% CI 1.120-2.157). Women in the 35-39 age group are 1.542 times more likely than women in the 45-49 age group to have ANC \geq 4 visits (OR 1.542; 95% CI 1.044-2.019).

Several other studies also found the same results: age is one of the determinants of completeness of ANC \geq 4 visits. Often younger people are informed that they have a lower chance of completing ANC (Dey et al., 2018; Hattar-Pollara, 2019). This condition is likely due to a lack of experience, making it difficult to decide (Paul & Chouhan, 2019). In the Indonesian context, parents or older relatives also influenced pregnancy's decision-making process (Laksono et al., 2016; Pratiwi et al., 2019).

Table 2 reveals that women with primary education are 2.677 times more likely without schooling to have at least four ANC visits (OR 2.677; 95% CI 1.989-3.604). Women with secondary education are 3.702 times more likely without schooling to have at least four ANC visits (OR 3.702; 95% CI 2.743-4.996). Women with higher education have 3.202 times more than no education women for ANC \geq 4 visits (OR 3.202; 95% CI 2.284-4.490).

Based on the study results, the research informed that women who have education in any category are more likely to have complete ANC \geq 4 visits. Information obtained in other studies also found that education was one of the decisive factors influencing the completeness of ANC (Ba et al., 2019; Jafaralilou et al., 2019; Teye-Kwadjo, 2019). The level of education a person has a role in one's perception of the quality of services available or received (Mašlach et al., 2020; Hijazi et al., 2018).

Several prior studies have shown that higher levels of schooling lead to higher program success levels in the health sector. Better education makes it easier for someone to understand their needs and what is best for them (Ipa et al. 2020; Megatsari et al., 2020; Seran et al., 2020; Wulandari & Laksono,

2020). Meanwhile, poor education is related to the barrier to achieving higher quality health program performance (Laksono & Wulandari, 2020; Rohmah et al., 2020).

Table 2 shows that multiparous women have 0.618 times more likely than primiparous women to have ANC \geq 4 visits (OR 0.618; 95% CI 0.533-0.717). According to the findings of this report, primiparous women are more likely to attend ANC 4 visits. This result is in line with other studies in several countries that inform that the number of live children ever born is one of the variables of the ANC's completeness (Mumtaz et al., 2019; Tikmani et al., 2019). Women who give birth for the first time, or the second time, maybe more alert to look after their pregnancy. While multiparous women may be less alert because they feel they have experience (Jiwani et al., 2020; Laksono et al., 2020; You et al., 2019).

Table 2 informs that women with wealth status in the poorer category are 1.828 times more likely than the poorest women to have ANC \geq 4 visits (OR 1.828; 95% CI 1.593-2.098). Women with wealth status in the middle category are 2.399 times more likely than the poorest women to have ANC \geq 4 visits (OR 2.399; 95% CI 2.048-2.811). Women with wealth status in the richer category were 3.359 times more likely than the poorest women to have ANC \geq 4 visits (OR 3.359; 95% CI 2.780-4.059). Women with wealth status in the richest category were 4.819 times more likely than the poorest women to have ANC \geq 4 visits (OR 4.819; 95% CI 3.808-6.100).

The results show that the higher a woman's wealth status, the greater the possibility to conduct a complete ANC \geq 4 visits. Several researchers found similar results in studies conducted in Uganda, Nigeria, Pakistan, and Ethiopia (Mekonnen et al., 2019; Olaitan et al., 2017; Wilson et al., 2019; Zakar et al., 2017). In line with the level of education, wealth status positively influences ANC's completeness and positively affects one's access to other health services (Laksono et al., 2020; Wulandari et al., 2020; Wulandari et al., 2019).

CONCLUSION

Based on the results of this study concluded that health insurance affects the completeness of the ANC. Women who have health insurance more likely to make ANC \geq 4 visits. This study's results indicate that the aim of *JKN* to increase public access to health facilities is in a positive direction. It also found four other variables that could affect the completeness of the ANC. These four were age group, education level, parity, and wealth status.

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