

Can a National Health Insurance Policy Increase Equity in the Utilization of Skilled Birth Attendants in Indonesia? A Secondary Analysis of the 2012 to 2016 National Socio-Economic Survey of Indonesia

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Siti Khadijah Nasution, SKM, MKes¹ , Yodi Mahendradhata, PhD²,
and Laksono Trisnantoro, MSc, PhD²

Abstract

The Indonesian government has been implementing the National Health Insurance (*Jaminan Kesehatan Nasional [JKN]*) policy since 2014. This study aimed to evaluate JKN based on equity indicators, especially in skilled birth attendants (SBAs) use. The data were obtained from National Socio-Economic Survey of Indonesia during 2012 to 2016. To analyze the data, χ^2 and logistic regression tests were applied. The respondents were married mothers from 15 to 49 years who had delivered a baby. Deliveries by SBAs increased at the national level, but this achievement showed significant variation according to geographical location. The coverage of deliveries by SBAs in the eastern areas of Indonesia was still much lower than those in the western areas. All factors determining SBAs utilization (health insurance ownership, education, household economic status, and geography factor) indicated the positive correlation ($P < .05$). The inequity of SBA use in differences in geographical location and socioeconomic status continues to occur after the implementation of JKN.

Keywords

equity, national health insurance, maternal health, delivery service, Indonesia

What We Already Know

The maternal mortality ratio (MMR) in Indonesia is still high. In 2015, the MMR was reported to be 305 per 100 000 live births. Ensuring access to use skilled birth attendants (SBAs) in delivery services is one of the strategies to decrease maternal mortality. One of the obstacles to access SBAs is finance, especially for the poor. The Indonesian government has been implementing the National Health Insurance (NHI) policy (*Jaminan Kesehatan Nasional [JKN]*) since 2014. One of the indicators used to assess the success of social health insurance is equity. Some studies have found a positive influence between health insurance and the utilization of maternal health services. The other studies on equity in maternal health services have shown a decline in inequity, but the gap was still wide. Evaluation is needed to measure the influence of JKN policy on utilization and equity progress in delivery service.

What This Article Adds

The inequity of SBAs use in different geographical location and socioeconomic status continues to occur after the implementation of JKN. Geography factors, particularly region and education, are indicated as dominant factors determining SBA utilization. The inequity of SBA utilization among regions, especially Java-Bali compared with the Nusa-Maluku-Papua region, was wider after the implementation of JKN. Strengthening the supply side and the demand side must

¹Universitas Sumatera Utara, Medan, Indonesia

²Universitas Gadjah Mada, Yogyakarta, Indonesia

Corresponding Author:

Siti Khadijah Nasution, Department of Administration and Health Policy,
Universitas Sumatera Utara, Jl. Universitas No. 21, USU Padang Bulan,
Medan 20155, Indonesia.

Email: Siti_Kd_Jah@yahoo.co.id

be the priority to decrease inequity. The quality and equitable distribution of the supply side must be prioritized before and during the implementation of a successful National Health Insurance plan.

Introduction

In southeastern Asia, the maternal mortality ratio (MMR) decreased 66% from 1990 to 2015, from 320 per 100 000 live births in 1990 to 110 per 100 000 live births in 2015. However, this decline was not experienced by all countries.¹ The MMR in Indonesia was estimated at 359 per 100 000 live births during 2008 to 2012.² In 2015, the MMR was reported to be 305 per 100 000 live births.³

Ensuring access to use skilled birth attendants (SBAs) in delivery services is one of the strategies to decrease maternal mortality.⁴ Maternal mortality could be reduced by 13% to 33% if all deliveries were attended by a skilled attendant.⁵ In general, the coverage of births by SBAs increased in the period of 2005 to 2014. In 2014, the national coverage of births by SBAs was 88.68%, but it had not yet reached the national target (90%). Although SBA coverage has increased, it has not been evenly distributed across provinces. SBA coverage in West Papua Province, Papua, and Maluku, is still less than 50%.⁶

One of the obstacles to accessing SBAs is finance, especially for the poor. To eliminate financial barriers, more comprehensive health insurance policies have been implemented in many countries. For example, the Indonesian government has been implementing the National Health Insurance (NHI) policy (*Jaminan Kesehatan Nasional* [JKN]) since 2014.⁷ JKN is a social health and a compulsory insurance that was implemented gradually to achieve universal coverage in 2019.

Some studies have found a positive influence between health insurance and the utilization of maternal health services. Earlier studies in Ghana, Tanzania, and Tibet indicated the importance of health insurance to increase use of maternal health service.⁸⁻¹⁰ The utilization of SBAs increased after the implementation of district health insurance in Aceh, one of the provinces in Indonesia.¹¹ The same research conducted in Philippines showed significant results.¹² A systematic review found a positive correlation between health insurance and the utilization of health services, but the impacts on health service quality and final results were still questionable.¹³ The results of the research conducted by Trihono et al¹⁴ during April to September 2015 in Banten Province in Indonesia revealed that there was no significant effect of JKN on maternal and child health programs.

One of the indicators used to assess the success of social health insurance is equity. Definition of equity by the World Health Organization (WHO) is the absence of avoidable, unfair, or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically, or by other means of

stratification.¹⁵ Some studies on equity in maternal health services had shown a decline in inequity, but the gap was still wide. A study in Bangladesh using DHS (Demographic and Health Survey) data in 2001 and 2010 presented an increasing percentage of antenatal care in urban (60% to 68%) and rural areas (37% to 49%). The research by Parmar and Banerjee¹⁶ in Senegal and De La Torre et al¹⁷ in Brazil and Colombia indicated that there was a gap in maternal health services utilization. A systematic review conducted by Çalışkan et al¹⁸ confirmed that the earlier studies were dominated by the discussions of health services utilization; yet, they ignored the equity problems.

Evaluation is needed to measure the influence of JKN policy on the utilization and equity progress. The National Socio-Economic Survey (*Survei Sosial Ekonomi Nasional* [SUSENAS]) data within a 5-year period (2012-2016) enabled the analysis of the progress of equity in maternal health services, especially delivery services to be carried out. We aimed to investigate and describe the progress and equity in SBA utilization before and after the implementation of the JKN through several factors determining SBA utilization. Findings from this study are expected to provide baseline information for Indonesian policymakers to improve JKN policy related to delivery services, especially equity in SBA utilization.

Methods

In this research, a cross-sectional study was performed based on the national secondary database provided by SUSENAS. SUSENAS is one of the regular surveys conducted annually by the government of Indonesia through the Central Bureau of Statistics (*Badan Pusat Statistik* [BPS]). SUSENAS surveys include in average 300 000 households every year, spread over 34 provinces and 511 districts/cities in Indonesia. The sample design of the SUSENAS, which uses probability sampling, allows for the estimation of district-level coverage. For more detailed information about the survey and the sampling design with census block allocation, see <http://microdata.bps.go.id/mikrodata/index.php> (in Bahasa).¹⁹

The study population included households with married mothers from 15 to 49 years of age who had delivered babies (<12 months). National representative samples of 18 060 (2012), 16 645 (2013), 16 360 (2014), 15 550 (2015), and 15 704 (2016) households were selected for this study.

The independent variables were health insurance ownership, education, household economic status, and geography factor (based on rural-urban and region). The dependent variable was the utilization of birth attendants. Dependent variables in this research were in dichotomous categorical form. In the utilization of birth attendants, 0 was used for delivering mothers attended by non-SBAs, while 1 was used for delivering mothers attended by SBAs. Non-SBAs are traditional birth attendants (TBAs), untrained family members, and mothers who deliver completely alone. The WHO has defined

TBAs as “traditional, independent (of the health system), non-formally trained and community-based providers of care during pregnancy, childbirth and the postnatal period.”²⁰ TBAs are not defined as skilled attendants by the WHO. The WHO has defined SBAs as a health provider who has at least the minimum knowledge and skills to manage normal childbirth and provide basic (first line) emergency obstetric care.²¹

In independent variables, based on health insurance ownership, no health insurance or not having health insurance was scored 1, subsidized health insurance was scored 2, and nonsubsidized health insurance was scored 3. Meanwhile, according to the geography factor (rural-urban), household location in a rural area was scored 1 and an urban area was scored 2. Based on geography factor (region), household location in Nusa-Maluku-Papua Region was scored 1, location in Sulawesi Region was scored 2, location in Kalimantan Region was scored 3, location in Sumatera Region was scored 4, and location in Java-Bali region was scored 5. For respondents' education, the categories were divided based on the ownership of the highest qualification. Low education (illiterate to elementary school) was scored 1, moderate education (junior high school and senior high school) was scored 2, and high education (above senior high school) was scored 3. Meanwhile, household socioeconomic status was measured by using per-capita household expenditures (household expenditures in a month divided by the number of the household member). The household economics status was divided into 5 quintiles, from 20% the poorest until 20% the richest. The poorest was scored 1, the poor was scored 2, the middle was scored 3, the rich was scored 4, and the richest was scored 5.

The analysis was performed by using Stata version 13.1. The bivariable analysis was performed with the χ^2 test for categorical variables. The association between dependent and independent variables was measured by using the odds ratio with 95% confidence interval. Furthermore, variables with significant association ($P < .25$) were analyzed at the multivariable level. The multivariable analysis was performed with logistic regression with the determinant/prediction model. In this model, all the independent variables were important and determinants.²² The change of percentage and odds ratio during 2012 to 2016 was used to analyze the progress of utilization and equity in delivery service.

The raw data of SUSENAS 2012-2016 were used in this study with permission from the Central Bureau of Statistics (BPS). Informed consent was obtained from all study participants by the BPS.

Results

Descriptive Statistics

Indonesia consists of five main islands and 13 677 small islands. Until 2014, there were 33 provinces in Indonesia. In 2015, Indonesia was divided into 34 provinces and 511

Table 1. Percentage of Births Attended by Skilled Birth Attendants.

Province	2012	2013	2014	2015	2016
Sumatera region					
Kepulauan Riau	94.67	95.43	92.96	95.34	98.82
Sumatera Barat	93.28	95.63	96.23	95.54	96.43
Bangka Belitung	91.73	94.37	96.41	97.84	98.88
Sumatera Utara	90.92	88.70	91.99	91.65	93.74
Aceh	90.80	92.92	94.37	94.28	96.22
Bengkulu	88.60	91.74	93.29	91.49	96.14
Riau	86.46	89.4	90.91	88.47	91.86
Jambi	85.15	86.65	82.60	87.32	91.64
Sumatera Selatan	85.03	88.93	91.32	92.45	93.66
Lampung	84.40	91.09	87.63	90.34	92.59
Java-Bali region					
DKI Jakarta	98.41	98.79	98.65	100.00	99.12
Bali	98.24	97.51	98.34	99.65	98.98
DI Yogyakarta	97.97	99.32	100.00	100.00	100.00
Java Timur	95.45	96.82	96.19	95.85	97.49
Java Tengah	94.30	95.55	97.51	99.31	99.08
Java Barat	84.39	84.26	85.76	90.42	92.29
Banten	77.49	80.99	80.24	83.18	88.62
Kalimantan region					
Kalimantan Timur	87.63	92.13	93.70	94.79	96.09
Kalimantan Selatan	85.05	90.64	91.10	93.92	94.95
Kalimantan Tengah	78.53	80.06	80.28	81.17	84.81
Kalimantan Barat	75.05	77.21	80.09	81.06	81.09
Sulawesi region					
Sulawesi Utara	81.21	87.78	88.14	89.10	89.87
Sulawesi Selatan	80.22	84.08	87.62	91.29	94.32
Sulawesi Tengah	70.58	75.79	77.25	80.00	82.81
Gorontalo	69.54	78.49	79.55	85.80	87.10
Sulawesi Barat	60.94	70.45	71.92	73.53	81.43
Sulawesi Tenggara	59.24	72.84	71.84	78.56	85.08
Nusa-Maluku-Papua region					
Nusa Tenggara Barat	87.20	89.61	89.07	96.94	97.05
Papua Barat	74.04	64.52	69.61	65.71	80.95
Nusa Tenggara Timur	63.45	69.70	73.70	74.56	79.10
Papua	61.47	63.38	66.31	68.29	68.93
Maluku Utara	53.36	59.62	63.50	62.85	69.68
Maluku	50.00	51.79	50.12	54.01	61.98
Indonesia	82.73	85.38	86.64	88.44	90.82

districts/cities. The five main islands in Indonesia are Sumatera, Java, Kalimantan, Sulawesi, and Papua. Sumatera, Java, and Kalimantan belong to the western area of Indonesia. In addition, Sulawesi, Papua, and some small islands (Nusa Tenggara Timur, Nusa Tenggara Barat, and Maluku) belong to the eastern areas of Indonesia.

The progress of SBA coverage in every province indicated an increase from 2012 to 2016, but the progress varied in every region and province. At the province level, the lowest progress in 5 years (2012-2016) was in Maluku and the highest progress was in DI Yogyakarta Province (see Table 1).

Table 2. Bivariable Analysis: Factors Determining SBAs Utilization in 2012-2016^a.

Variable	2012 (n = 18 060)		2013 (n = 16 645)		2014 (n = 16 360)		2015 (n = 15 550)		2016 (n = 15 704)	
	% SBAs	P ^a	% SBAs	P ^a	% SBAs	P ^a	% SBAs	P ^a	% SBAs	P ^a
Health insurance ownership										
No health insurance	81.01		84.55		86.12		86.36		88.94	
Subsidized health insurance	76.01	<.001	81.46	<.001	82	<.001	84.69	<.001	87.91	<.001
Nonsubsidized health insurance	93.13		94.90		96.04		96.75		95.77	
Education										
Low	75.34		79.07		80.91		77.44		82.66	
Moderate	88.74	<.001	90.94	<.001	91.50	<.001	92.75	<.001	94.65	<.001
High	96.69		97.35		97.07		98.77		98.80	
Household economic status										
Very poor (q1)	65.95		72.18		74.36		76.98		81.31	
Poor (q2)	78.46		81.41		82.30		83.89		88.03	
Middle (q3)	85.41	<.001	86.51	<.001	88.72	<.001	89.45	<.001	91.72	<.001
Rich (q4)	88.90		90.60		91.17		94.21		95.19	
Very rich (q5)	94.93		96.19		96.64		97.65		97.83	
Geography (rural-urban)										
Rural	74.87	<.001	78.2	<.001	80.71	<.001	82.67	<.001	86.16	<.001
Urban	93.71		95.28		95.18		96.45		97.17	
Geography (region)										
Nusa-Maluku-Papua region	64.70		67.29		69.50		71.40		76.87	
Sulawesi region	72.23		79.31		81.29		84.78		88.21	
Kalimantan region	81.57	<.001	84.8	<.001	86.31	<.001	87.81	<.001	88.97	<.001
Sumatera region	89.08		91.06		91.78		92.28		94.48	
Java-Bali region	91.54		92.55		93.25		94.99		96.31	

Abbreviations: SBA, skilled birth attendant; q, quantile.

^aSignificant ($P < .05$).

At the national level, patients' preferences for doctors as birth attendants increased after the implementation of JKN in 2014. In contrast, preferences for nurses and midwives decreased. Preferences for doctors increased significantly in the nonsubsidized health insurance group, mostly referred to the wealthy group. These preferences also increased in the subsidized group, commonly belong to the poor group, but this increase was not as significant as in the wealthy group (see Figures 1 and 2 in Supplemental Material; available online).

Factors Determining SBA Utilization

In the bivariable analysis, all the determinants of SBA utilization showed significance ($P < .25$). It means that all the determinants were then analyzed in the multivariable analysis (see Table 2).

The contribution of health insurance ownership to SBA utilization had increased after the implementation of JKN. Compared with no health insurance group, the likelihood of

SBA utilization in the nonsubsidized health insurance group was higher than in the subsidized health insurance group. After the implementation of JKN, this gap tends to be increased. For respondents' education, higher education resulted the greater the likelihood of SBA utilization. The likelihood of SBA utilization in high education groups increased more significantly than low education groups after the implementation of JKN. Meanwhile, based on household economic status, the higher the household economic status was, the greater the likelihood of SBA utilization. Moreover, after the implementation of JKN, the likelihood of SBA utilization in urban area group increased more significant than in rural area (2.63 times in 2012 to 2.85 times in 2016). For geography factor, particularly region, the result showed that the likelihood of SBA utilization tend to be more increased in Java-Bali region than in Nusa-Maluku-Papua region after the implementation of JKN (4.71 times in 2012 and 5.56 times in 2016). The gap has also been indicated before the implementation of JKN (see Table 3).

Table 3. Multivariable Analysis: Logistic Regression of Factors Determining SBA Utilization From 2012 to 2016.

Variables	2012		2013		2014		2015		2016	
	Coeff.	OR (CI 95%)	Coeff.	OR (CI 95%)	Coeff.	OR (CI 95%)	Coeff.	OR (95%CI 95%)	Coeff.	OR (CI 95%)
Health insurance ownership										
No health insurance (Ref)										
Subsidized health insurance	0.22	1.25 (1.13-1.37)	0.21	1.24 (1.12-1.37)	0.11	1.12 (1.01-1.24)	0.31	1.37 (1.21-1.53)	0.24	1.28 (1.12-1.46)
Nonsubsidized health insurance	0.55	1.73 (1.50-2.00)	0.62	1.85 (1.54-2.23)	0.76	2.14 (1.75-2.62)	0.86	2.38 (1.94-2.92)	0.6	1.83 (1.54-2.17)
Education										
Low (Ref)										
Moderate	0.52	1.68 (1.53-1.85)	0.53	1.70 (1.52-1.89)	0.49	1.63 (1.46-1.82)	0.84	2.32 (2.07-2.60)	0.86	2.38 (2.09-2.70)
High	1.22	3.40 (2.49-4.64)	1.24	3.45 (2.38-5.01)	0.85	2.35 (1.65-3.35)	2.17	8.80 (5.86-13.22)	1.91	6.77 (4.53-10.09)
Household economic status										
Very poor (q1; Ref)										
Poor (q2)	0.35	1.43 (1.27-1.60)	0.25	1.29 (1.14-1.46)	0.23	1.25 (1.10-1.43)	0.15	1.16 (1.01-1.34)	0.25	1.28 (1.10-1.49)
Middle (q3)	0.70	2.01 (1.77-2.28)	0.49	1.63 (1.42-1.87)	0.6	1.83 (1.58-2.12)	0.54	1.72 (1.47-2.00)	0.57	1.76 (1.49-2.09)
Rich (q4)	0.82	2.29 (1.99-2.63)	0.71	2.04 (1.75-2.38)	0.74	2.11 (1.80-2.47)	0.95	2.58 (2.14-3.12)	0.94	2.56 (2.09-3.13)
Very rich (q5)	1.28	3.62 (3.01-4.35)	1.28	3.60 (2.91-4.46)	1.34	3.82 (3.05-4.79)	1.37	3.94 (3.02-5.13)	1.25	3.50 (2.66-4.62)
Geography (rural-urban)										
Rural (Ref)										
Urban	0.96	2.63 (2.35-2.94)	1.14	3.12 (2.74-3.55)	0.95	2.60 (2.28-2.97)	1.03	2.81 (2.42-3.27)	1.04	2.85 (2.41-3.36)
Geography (region)										
Nusa-Maluku-Papua region (Ref)										
Sulawesi region	0.34	1.41 (1.25-1.60)	0.66	1.94 (1.69-2.22)	0.67	1.97 (1.71-2.27)	0.8	2.31 (1.98-2.70)	0.79	2.22 (1.88-2.62)
Kalimantan region	0.5	1.66 (1.41-1.94); <.001	0.71	2.04 (1.71-2.43); <.001	0.61	1.84 (1.53-2.20)	0.82	2.27 (1.86-2.76); <.001	0.61	1.84 (1.50-2.24)
Sumatera region	1.34	3.81 (3.38-4.31)	1.43	4.21 (3.68-4.81)	1.39	4.03 (3.51-4.62)	1.37	3.95 (3.40-4.60)	1.37	3.94 (3.34-4.66)
Java-Bali region	1.55	4.71 (4.13-5.39)	1.53	4.66 (4.04-5.37)	1.54	4.66 (4.02-5.41)	1.72	5.59 (4.70-6.64)	1.71	5.56 (4.59-6.73)

Abbreviations: Coeff., coefficient; CI, confidence interval; OR, odds ratio; q, quantile; Ref, reference.

Discussion

The utilization of SBAs increased after the implementation of JKN in 2014, but there were inequities in achievement among provinces both in the same and different regions. The progress of equity in different socioeconomic status and geographical location has not yet increased after the implementation of JKN. The influence of socioeconomic status, health insurance ownership, and geography factor (rural-urban and region) on SBA utilization continues to be significant.

This research had several limitations that needs to be considered when interpreting the results. First, not all required variables were included in the secondary data such as the availability of health facilities and the distance to the health facilities from the locality of residence. Second, this study only measured equity in the utilization of health services. Equity in health status and equity in health financing cannot be measured because of data limitation. Thus, it is recommended for the next equity study we compare the benefits packages of maternal health services in health insurance and the relation to the protection of financial risk.²³ Although our study has some limitations, data with large samples from 2012 to 2016 can be used to measure changes in equity and in determinants that influence SBA utilization every year.

Our study revealed that the JKN policy contributed to increase in SBA utilization ($P < .05$) in 2012 to 2016. The previous studies that evaluated the impact of health insurance on maternal health service utilization also supported this study's findings.^{11-13,24-26} This result is related to the *theory of change due to health insurance* by Rothschild and Stiglitz and to the variables that were used by Wagstaff and Cutler^{23,27} to measure the impact of insurance.

The JKN policy contributed to increase in SBA utilization, but the contribution was very small. In addition, the influence of health insurance on SBA utilization among provinces exhibited different results. Only a small number of provinces showed that health insurance contributed to SBA utilization. The achievement and progress of SBA coverage revealed the equity gap among provinces. Until 2016, the coverage of deliveries by SBAs and the number of deliveries in health facilities in the eastern areas of Indonesia was still much lower than those in the western areas of Indonesia. The gap between urban and rural areas continues to be wider. Deliveries by physicians increased (especially in urban areas, in the western areas of Indonesia, and among those with non-subsidized health insurance) after the implementation of JKN, while deliveries by midwives and non-SBAs decreased. Some studies noted the same results.^{24,28}

These phenomena occurred because of the inequality in access to health facilities and to SBAs among provinces in the western and eastern areas of Indonesia and between urban and rural areas. The number of health facilities and the number of SBAs were still concentrated in urban areas and provinces in the western areas. The availability of infrastructure and transportation facilitates make the access easier to health facilities and SBAs, especially in the Java-Bali region.

The gaps in infrastructure, health facilities, and health workers between the western and eastern areas of Indonesia have already been observed in the first year of the implementation of JKN. People in the western areas use more health services without limitation, while people in the eastern area have limitations in accessing health services. Until 2018, the supply side still remains the main problem. For example, the growth in the number of hospitals and medical specialists has been faster and greater in the western areas, especially in Java-Bali, than in the eastern areas of Indonesia. (see Tables 1-4 in the Supplemental Material; available online).^{29,30}

Too little too late is identified as a common condition in low- and middle-income countries, where there are scarcity of human resources, low standards, barriers to access health services, and lack of availability of health services. Socio-demographic disparities were found throughout Indonesia, and they influence the gaps of inequity in health care.³¹

To eliminate financial barriers, the Indonesian government subsidizes the poor. In fact, the gap in SBA utilization between the non-subsidized health insurance group and the subsidized health insurance group still exists. Preferences for doctors in the non-subsidized health insurance group increased more significantly than in the subsidized health insurance group after the implementation of JKN. Conversely, preferences for midwives/nurses decreased. This phenomenon occurred because the non-subsidized health insurance group has better access, supported by financial arrangements, compared with the subsidized health insurance group. Commonly, the wealthy people included in the non-subsidized health insurance group live in urban areas with many health facilities and adequate SBAs, especially doctors, in contrast to the poor people in rural areas.

The contribution of educational and household economic factors increased after the implementation of JKN. Theoretically, the positive and significant impacts of educational and household economic variables on SBA utilization are reasonable. However, the greater increase in significant results indicates a wider gap in SBA utilization. There should be no difference in the frequency in using health services based on socioeconomic status, and this statement belongs to the classic definition of equity. This view and this finding are also presented in a systematic review by Çalışkan et al.¹⁸

At the national level, even though health insurance correlates with SBA utilization, and JKN policy contributes to increase SBA utilization, inequity in SBA utilization is still a challenging problem that should be addressed and solved. Inequity in differences in geography, education, and household economic status must be reduced by the improvement in JKN policy and other policies that are related to the success of JKN implementation, especially the maternal health package.

Some additional specific policies need to be improved and implemented. Related to geography equity, the supply side and the demand side must be improved. Health facilities and SBAs should be equitable in distribution, specifically in rural areas and eastern areas of Indonesia. Partiality to the

poor group given subsidized health insurance must be increased. To date, premiums that the government has subsidized for the poor group, which is given subsidized health insurance, are only for direct costs, or costs that are directly related to medical services. The transportation availability and cost and indirect costs during the delivery process should be considered and included in a more comprehensive maternal health package to increase SBA utilization in this group. Even though the poor group received subsidized health insurance, the Indonesian government must generate household economic incentives with income-generating programs and support literacy initiatives with education promotion and socialization.

One of the successful indicators of the universal health coverage through the implementation of NHI is equity. The most prominent factor that will contribute to ensure the achievement of equity is the readiness of the supply side. The government should strengthen the supply side and the demand side. The quality and equitable distribution of the supply side must be prioritized before and during the implementation in order to result a successful NHI plan.

Conclusions

Although the use of SBAs has increased after the implementation of JKN, inequity in different geography, education, and household economic status continues to occur. People living in urban areas, with high education levels, and with greater wealth use more SBAs than do people living in rural areas, with low education levels, and with less wealth. The ownership of health insurance, geography, education, and household economic variables correlate with SBAs utilization. Those who have health insurance is the least contribution in SBAs utilization, while the geography factor and education has become the prominent factor.

One of the successful indicators of social health insurance is equity. This research describes changes in equity and in determinants that influence SBA utilization every year. The result can be used to develop an evidence-based policy for decision makers. To overcome this inequity, we recommend some solutions. First, strengthening the quality and equitable distribution of the supply side must be prioritized. Second, for the demand side, the government should include cost of transportation and indirect costs during the delivery process in a more comprehensive maternal health package and reassess subsidized health insurance. Third, increased work-skill programs should be developed to generate more household income. Fourth, educational programs for literacy need to be designed in order to increase education levels, particularly in poor areas of Indonesia.

Authors' Note

The data that support the findings of this study are available from the Central Bureau of Statistics (BPS), but restrictions apply to the availability of these data, which were used under license for the current study and therefore are not publicly available. Data are,

however, available from the authors on reasonable request and with permission of the Central Bureau of Statistics (BPS).

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Author Contributions

SKN and LT conceptualized the study. SKN prepared the first draft of the manuscript. SKN acquired the raw data for analysis. YM played a major role in structuring arguments and smoothing out the text. LT contributed to conceptualizing and conceiving the idea for the article. All authors read and approved the final manuscript.

Declaration of Conflicting Interests

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Ethics Approval and Consent to Participate

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ORCID iD

Siti Khadijah Nasution  <https://orcid.org/0000-0001-8775-3993>

Supplemental material

Supplemental material for this article is available online.

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