

RESEARCH ARTICLE

# National Health Insurance in Indonesia and Its Impact on Health-Seeking Behavior

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**Abstract:** The purpose of this study was to assess the impact of Indonesia's National Health Insurance (NHI) on health care utilization. Specifically, by performing logistic regressions with the national socioeconomic data of 2018, we analyzed health-seeking behavior between insured and uninsured people together with selected socioeconomic factors. The results revealed that insured people were more likely to utilize the NHI services than uninsured people. Additionally, the utilization pattern was more significant in socially vulnerable groups, particularly lower-income, lower-educated, unemployed, and rural beneficiaries. Assuming that one of the ultimate goals of social health insurance is to enhance the equity of health care utilization by lowering the financial burden of health care for the marginalized population, the results indicate that the NHI adequately accomplished the equity goal. However, we also noticed a considerable policy gap between the need for and availability of the NHI services. That is, although the NHI offered almost free services, a large proportion of beneficiaries still relied heavily on self-medication and private facility care, which required out-of-pocket costs. To reduce the gap, the government should continue its efforts to improve the current inadequacy of health care financing and infrastructure in the public sector, accompanied by more empirical investigations.

**Keywords:** National Health Insurance, social health insurance, health care utilization, health-seeking behavior, Indonesia

Indonesia launched the National Health Insurance (NHI) in 2014 to achieve universal health coverage. Due to the country's large population and the difficulties of income assessment in the informal employment sector, the government planned to cover the entire population by the end of 2019. However, up until June 2020, approximately only 82% were covered by the NHI, with the remaining 18% (informal sector employees) being uninsured (Mahendradata et al., 2017; National Social Security Council [NSSC], 2020).

Before the NHI, there were four public health insurance programs: (a) Community Health Insurance

(CHI), (b) Regional Health Insurance (RHI), (c) Civil Servant Social Security (CSSS), and (d) Workforce Social Security (WSS). Specifically, the CHI and RHI were free insurance programs for the poor and near-poor. Approximately 32% and 13% of the entire population were covered by the programs, respectively. The CSSS and WSS programs were for people in the formal employment sector. The CSSS was a compulsory program for public sector employees, and approximately 9% of the entire population was covered by the program. The WSS was a voluntary program for private-sector employees. Due to the

nature of voluntary insurance, among the 9% private-sector employees in the population, only 2% had WSS insurance, whereas the other 7% had private insurance (Mboi, 2015; NSSC, 2012).

Among the four programs, there was no program for people in the informal employment sector. As a result, approximately 37% of the population, who were informal sector employees, did not have any insurance before the NHI (NSSC, 2012). In fact, the CHI and RHI were expected to cover the poor and near-poor. In this sense, the 37% uninsured people might have a certain level of income; thus, affordability of health care utilization might not be an issue.

However, the CHI and RHI programs encountered a “mis-target” issue. Due to the inaccuracy of income assessment in the informal sector, insurance cards tended to be distributed to higher-income people rather than lower-income people (Lutfiah et al., 2015; Marzoeqi et al., 2014). For instance, a previous study indicated that approximately 54.6% and 41.1% of the entire population, who were eligible for the CHI and RHI, respectively, were uninsured (Lutfiah et al., 2015). This means that some of the 37% uninsured people might be poor or near-poor, and they might encounter an affordability issue of health care utilization.

Subsequently, in 2014, the government launched the NHI by integrating the four insurance programs and extending the coverage to informal sector employees. The NHI is composed of two specific programs, which are the NHI-Subsidized Recipient (NHI-SR) and the NHI-Non-Subsidized Recipient (NHI-NSR) programs. The NHI-SR program is for the poor and near-poor who were previously covered by the CHI and RHI. The NHI-NSR program is for formal sector employees (i.e., previously CSSS and WSS beneficiaries) and informal sector employees (i.e., previously uninsured people; Mahendradata et al., 2017; Mboi, 2015). Table 1 presents the changes in population coverage before and after the NHI.

The NHI requires a monthly insurance premium which differs by employment status of beneficiaries. Specifically, for the formal sector employees, the premium is 1% of their monthly income. For the informal sector employees, the premium is a fixed amount, generally 25,500–150,000 Indonesian Rupiah (IDR, equivalent to approximately US\$ 1.73–10.20). For the poor and near-poor, they are exempt from premiums. For copayment, the NHI had already established a specific policy that also differs by employment status of beneficiaries. The policy was supposed to come into effect in December 2018, but

**Table 1**

*Changes in Population Coverage Before and After NHI Implementation (%)*

Program implementation	Categories	Insurance program	Coverage	
Before NHI (2012) <sup>a</sup>	Poor	CHI	32	
	Near-poor	RHI	13	
	Public sector employees	CSSS	9	63
	Private sector employees	WSS	9	
	Informal sector employees	–	–	
	Uninsured	–	37	37
After NHI (2020) <sup>b</sup>	Poor and near-poor	NHI-SR	48	82
	Public and private sector employees	NHI-NSR	20	
	Informal sector employees	NHI-NSR	14	
	Uninsured	–	18	18

Note: <sup>a</sup> and <sup>b</sup> = sources from the study conducted by NSSC (2012) and NSSC (2020), respectively; due to the changes in population and socioeconomic status, the proportions before and after the NHI are slightly different.

it has yet to be implemented. Thus, the NHI services are currently free of charge (Prabhakaran et al., 2019; Social Security Administrative Body for Health [SSABH], 2020).

For health care delivery, the NHI does not designate health care providers, so beneficiaries are free to choose any provider, whether public or private, contracted under the NHI. In 2017, the total number of public primary care centers and hospitals were 11,304 and 1,009 (with 179,330 beds), respectively. Moreover, the total number of private primary care centers and hospitals were 14,068 and 1,767 (with 159,173 beds), respectively. Approximately 98% and 72% of the total public and private providers, respectively, are contracted under the NHI (Table 2; Gani & Budiharsa, 2018; SSABH, 2020).

Lastly, the NHI provides a comprehensive benefits package that includes essential curative and rehabilitative care services. Health promotion and disease prevention services are also included in the package. However, annual medical check-ups are not covered by the NHI (Mahendradata et al., 2017).

### ***Significance of the Problem***

Previous studies examined the impact of the NHI on health care utilization. As previously mentioned, because the NHI services are offered by both public and private providers, some studies analyzing the total amount of health care utilization in both public and private providers before and after the NHI consistently revealed that the NHI has significantly increased both outpatient and inpatient care utilization (Erlangga et al., 2019; Shihab et al., 2017; Sumartono, 2017). However, unlike our expectation, the increase was more significant in higher-socioeconomic groups (Erlangga et al., 2019; Sumartono, 2017).

Particularly, Sumartono (2017) found that the NHI significantly increased both outpatient and inpatient care utilization, and the increase was relatively more among higher-income, higher-educated, and older people. Erlangga et al. (2019), comparing insured and uninsured people, showed that both outpatient and inpatient care utilization significantly increased for both groups after the NHI, and the increase was relatively more among the insured people compared to uninsured people. They also found that the NHI positively influenced the utilization more significantly for higher-income, married, and older adults.

In addition, another study conducted by Rolindrawan (2015), unlike the previous studies above, which analyzed the utilization of facility-based care, examined utilization of different types of health care services (i.e., health-seeking behavior) before and after the NHI among the poor and near-poor. The study indicated that overall health care utilization in both private and public providers increased, and simultaneously, self-medication (e.g., over-the-counter [OTC] and traditional medicines) decreased significantly after the NHI. Specifically, for the utilization of public providers, the increase was more significant among insured and urban people, whereas for private providers, it was more significant in uninsured and older people.

These previous studies focused mostly on analyzing the utilization of facility-based care to evaluate the policy impact. However, the utilization of self-medication such as OTC and traditional medicines is widespread in Indonesia. For instance, a national survey in 2018 indicated that among all NHI beneficiaries, only 52% utilized the NHI services (Statistics Indonesia, 2018). For the remaining 48%, this study expects that some of them might

**Table 2**

*Number of Public and Private Health Care Providers*

	Category	Total Number	Affiliated to NHI	Not Affiliated to NHI
Public	Primary care	11,304	12,068 (98%)	245 (2%)
	Hospital	1,009		
Private	Primary care	14,068	11,385 (72%)	4,450 (28%)
	Hospital	1,767		

utilize care in private providers (e.g., private clinics or hospitals), possibly due to the long waiting times in public providers. Although a large proportion of private providers are contracted under the NHI, they tend to prefer the provision of non-covered services to the NHI services because of the insufficient profit margin. Moreover, others might utilize self-medication such as OTC medicines because of convenience matters or health care infrastructure inadequacy, particularly in rural or remote areas.

Besides, unlike our expectation, most of the previous studies showed that the NHI increased health care utilization significantly in higher socioeconomic groups (e.g., higher-income people). However, because the studies did not consider other types of health care services, there may be a possibility that some people with higher socioeconomic status, who previously utilized private services before the NHI, may have changed to the NHI services after the program was implemented. If so, the NHI might have been able to significantly increase health care utilization for such higher-socioeconomic groups. Nevertheless, because the increased utilization of the NHI services was not considered with the utilization of other types of health care services, it is still difficult to conclude whether the NHI could have a positive impact on health care utilization for higher socioeconomic groups rather than lower socioeconomic groups.

The importance of studying health-seeking behavior instead of studying only facility-based care has also been identified in other relevant studies conducted in Thailand (Meemon & Paek, 2018, 2020a, 2020b; Paek et al., 2016). In 2002, Thailand launched the Universal Coverage Scheme (UCS), which is the largest social health insurance in the country. After the UCS, people with relatively higher incomes, who previously utilized self-medication or non-covered services before the UCS, changed to the UCS services. Thus, it could be concluded that the UCS, like the NHI situation, increased health care utilization more significantly for higher-income people.

However, because these studies also analyzed the utilization of the UCS services together with other types of services, they were able to identify further that among the higher-income people, only relatively lower-income people changed to the UCS, whereas relatively higher-income people still utilized self-medication or non-covered services after the UCS. Consequently, in the studies, it was concluded that UCS

could have a positive impact on health care utilization more significantly for lower-income people.

Therefore, this study, incorporating these points with the previous studies, attempted to add to the body of knowledge on how the NHI increases health care utilization. Specifically, using the National Socio-Economic Survey (NSES) data for 2018, this study investigated the impact of NHI on health-seeking behavior together with socioeconomic factors and examined whether the behavior is consistent with or divergent from the previous studies in order to assess the policy impact.

In particular, this study focused primarily on insurance status and income in assessing the policy impact. As for the insurance status, because the NHI still does not cover approximately 18% of the entire population, the policy impact was assessed by comparing health-seeking behavior between insured and uninsured people. For income, one of the major goals of social health insurance is to increase the equity of health care utilization by reducing the financial burden of health care, particularly in socially vulnerable groups (Hsiao & Shaw, 2007; Meemon & Paek, 2018). Thus, the NHI impact was also evaluated by examining health-seeking behavior between lower and higher-income people.

## Methods

### *Data and Study Sample*

This study employed a cross-sectional design with the NSES of 2018 as the primary data. The NSES is a nationwide survey data, periodically conducted in March and September every year by Statistics Indonesia. The data utilized in this study were taken from the NSES conducted in March 2018. The NSES contains nationally representative demographic (e.g., age and sex) and socioeconomic (e.g., income and education) characteristics of the entire Indonesian population. Additionally, information on health care utilization (e.g., health insurance status and type of health care services utilized) are also available in the data (Statistics Indonesia, 2020).

For the study sample, the purpose of this study was to examine utilization of different types of health care services (i.e., health-seeking behavior); thus, we chose people who reported illness experiences during a certain period of time as a study sample and

investigated health-seeking behavior of the sample. Specifically, the NSES data contained two questions regarding illness experience and health-seeking behavior. For outpatient care, the questions were (1) “Have you had any health problems (i.e., sickness or illness) during the last one month before the survey date?” and (2) “If yes, what type of health care services did you utilize?” For inpatient care, the questions were (1) “Have you been hospitalized during the last one year before the survey date?” and (2) “If yes, what type of health care providers did you utilize?” This study chose people who answered “yes” to questions (1), as the study samples for outpatient and inpatient care analyses.

Then, the study sample was again limited to the adult population (i.e., people aged 18 years or over) to mitigate the impact of potential bias because health care utilization of the juvenile population (i.e., people aged 18 years or under) depends significantly on the socioeconomic situations of their parents (Gokhale & Nuvvula, 2016; Isong et al., 2010; Meemon & Paek, 2018; Zhang et al., 2017).

In addition, when the study sample is not limited to the adult population, it may lead to the misreading of analysis results for some variables. For example, marital status was utilized as one of the independent variables in this study. The juvenile population is most likely to be single; thus, if we do not limit the sample to the adult population, the analysis can over or underestimate the impact of marital status, and accordingly, the results can potentially be misinterpreted (Meemon & Paek, 2020a). Thus, this study ultimately scoped down the sample to people aged 18 years or over.

### ***Variable Selection and Measurement***

This study employed Andersen’s health care utilization model as a theoretical model for variable selection. According to Andersen’s model, health care utilization is predicted by three groups of factors: predisposing, enabling, and need-for-care factors (Aday & Andersen, 1974; Andersen, 1995; Andersen et al., 2002; Kim & Lee, 2016; Li et al., 2016). The predisposing factor refers to an individual’s demographic characteristics (e.g., age and sex), which can previously occur before the onset of disease. The enabling factor refers to the individual’s (e.g., income and education) and community’s resources (e.g., region and transportation availability) that can allow individuals to utilize health care. Last, the need-for-

care factor refers to the degree of demand for health care. Actual or perceived health status (e.g., disability level and chronic disease status) are general examples of the need-for-care factor (Aday & Andersen, 1974; Andersen, 1995).

By considering Andersen’s model as well as the variable availability in NSES data, we finally chose three demographic variables (age, sex, and marital status) as predisposing factors, and four individual’s (income, education, insurance status, and employment) and one community’s socioeconomic-resource variable (area) as enabling factors in this analysis. This study could not include any need-for-care factors in the analysis due to the unavailability of relevant variables in the data.

For variable measurement, health-seeking behavior, which is a dependent variable in this study, was measured as a categorical variable. Specifically, for outpatient care analysis, health-seeking behavior was classified into four categories, which are (a) forgone care, (b) self-medication, (c) public facility care, and (d) private facility care. For inpatient care analysis, it was classified into two categories, which are (a) public facility care and (b) private facility care.

Forgone care referred to a situation in which people did not utilize any health care services although they needed the services. Self-medication referred to a situation in which people utilized self-medication when they needed health care. Utilization of OTC or traditional medicines was specifically included in the self-medication category. Public facility care referred to a situation in which people utilized health care services in public health care providers, and private facility care referred to a situation where people utilized health care services in private health care providers.

For the independent variables, income and age were measured as continuous variables, and the other variables were measured as either binary or categorical variables. Particularly for income, although this study’s unit analysis was on the individual level, the NSES of 2018 contained monthly family-level income. To match the difference in unit of analysis, we ultimately utilized “equivalent income.” The equivalent income, which is normalized income for a one-person family, was specifically acquired from dividing the family income by the square-rooted total number of family members (Organisation for Economic Co-operation and Development [OECD], 2009).

### **Statistical Analysis**

Descriptive analysis was first conducted to provide summary statistics of the study sample and variables. In the descriptive analysis, chi-squared test for categorical variables, and analysis of variance and t-test for continuous variables were performed to explore the socioeconomic differences of people according to health-seeking behavior. Then, because the dependent variables (health-seeking behavior) were categorical variables, this study performed multinomial and binary logistic regressions for outpatient and inpatient care analyses, respectively (Hosmer & Lemeshow, 2000). A *p*-value lower than 0.05 was applied for statistical significance, and all statistical analyses were conducted using IBM SPSS Statistics 20.

## **Results**

### **Results of Descriptive Analysis**

Table 3 presents descriptive statistics for outpatient care. For health-seeking behavior (dependent variable), among the study sample (i.e., people who reported illnesses within the last one month), utilization of self-medication was the highest at 53.49%, followed by public facility care (23.99%), and private facility care (17.87%). Approximately 4.65% did not receive any health care services though they reported illnesses.

For socioeconomic factors (independent variables), the results overall indicated that lower socioeconomic groups tended to have higher utilization of public facility care, whereas higher socioeconomic groups tended to have higher utilization of self-medication or private facility care. Specifically, the utilization of public facility care was significantly higher among people who were insured, lower-income, older, lower-educated, single or widowed/divorced/separated, and living in rural areas.

Particularly for insurance status and income which are the main focus of this study, the results showed that insured and lower-income people had significantly higher utilization of public facility care than uninsured and higher-income people. For insurance status, insured people (both NHI-SR and NHI-NSR beneficiaries) had significantly higher utilization of public facility care and lower utilization of self-medication compared to uninsured people. Specifically, approximately 27% and 14% of the insured and uninsured people utilized

public facility care, whereas approximately 50% and 60% of them utilized self-medication, respectively. However, private facility care and forgone care did not show a clear utilization pattern between the insured and uninsured people.

For income, people with lower income tended to utilize public facility care, whereas those with higher income tended to utilize self-medication or private facility care. Additionally, among the higher-income people, those who utilized private facility care had a relatively higher income than those who utilized self-medication. Specifically, the average income of people utilizing public facility care was 1,875,614.05 IDR, and that of people utilizing self-medication and private facility care was 2,039,829.70 and 2,256,054.85 IDR, respectively. For forgone care, unlike our expectation, the average income of people encountering forgone care (2,059,351.17 IDR) was higher than those utilizing public facility care (1,875,614.05 IDR).

Table 4 presents descriptive statistics for inpatient care. For health-seeking behavior, among the study sample (i.e., people who have been hospitalized within the last year), approximately 64.61% and 35.39% utilized public and private facility care, respectively. For socioeconomic factors, like the descriptive statistics for outpatient care, lower socioeconomic groups were more likely to have higher utilization of public facility care, whereas higher socioeconomic groups were more likely to have higher utilization of private facility care. Specifically, the utilization of public facility care was significantly higher among people who were insured, lower-income, older, lower-educated, single or widowed/divorced/separated, and living in rural areas.

In particular, for insurance status, insured people (particularly NHI-SR beneficiaries) had significantly higher utilization of public facility care than uninsured people. Approximately 73.78% and 55.09% of NHI-SR and NHI-NSR beneficiaries utilized public facility care, whereas approximately 54.61% of uninsured people utilized public facility care. For income, lower-income people tended to utilize public facility care more significantly than higher-income people. The average income of people utilizing public and private facility care was 2,191,595.26 and 2,913,478.59 IDR, respectively.

In sum, the study results overall indicated that the NHI has significantly increased the utilization of public facility care and decreased the utilization

**Table 3***Summary Statistics of the Study Variables for Outpatient Care (n = 212,669)*

Variables	Health-Seeking Behavior				
	Overall	Public Facility Care (23.99%)	Private Facility Care (17.87%)	Self-Medication (53.48%)	Forgone Care (4.65%)
	M or %	M or %	M or %	M or %	M or %
Income*	2,039,986.62	1,875,614.05	2,256,054.85	2,039,829.70	2,059,351.17
Age*	47.52	49.58	49.70	45.96	46.55
Sex*					
Male	45.23	21.48	17.09	56.68	4.75
Female	54.77	26.07	18.52	50.85	4.57
Marital status*					
Single	10.22	19.24	13.10	61.52	6.14
Married	74.00	23.94	18.05	53.54	4.47
Widowed/divorced/ separated	15.78	27.32	20.14	48.03	4.51
Education*					
Primary school or lower	56.87	25.51	17.96	52.07	4.46
Secondary school	35.91	22.38	17.13	55.71	4.78
University or higher	7.22	20.03	20.83	53.56	5.58
Employment*					
Employed	66.31	21.93	17.54	56.03	4.50
Unemployed	33.69	28.05	18.52	48.47	4.96
Insurance status*					
NHI-SR	50.40	30.14	14.75	50.64	4.47
NHI-NSR	19.39	23.28	22.39	49.67	4.66
Uninsured	30.21	14.18	20.17	60.68	4.97
Area*					
Urban	42.32	22.37	18.17	55.02	4.44
Rural	57.68	25.18	17.65	52.35	4.82

Note: M and % = mean and percentage; \* = p-value &lt; 0.05 of chi-square analysis or analysis of variance.

**Table 4***Summary Statistics of the Study Variables for Inpatient Care (n = 36,212)*

Variables	Health-Seeking Behavior		
	Overall	Public Facility Care (64.61%)	Private Facility Care (35.39%)
	M or %	M or %	M or %
Income*	2,447,081.20	2,191,595.26	2,913,478.59
Age*	45.38	45.94	44.37
Sex*			
Male	36.32	68.08	31.92
Female	63.68	62.63	37.37
Marital status*			
Single	7.49	69.20	30.74
Married	79.71	63.09	36.31
Widowed/divorced/separated	12.79	67.62	32.38
Education*			
Primary school or lower	46.35	70.73	29.27
Secondary school	41.60	61.15	38.85
University or higher	12.04	53.02	46.98
Employment*			
Employed	52.36	64.31	35.69
Unemployed	47.64	64.94	35.06
Insurance status*			
NHI-SR	51.35	73.78	26.22
NHI-NSR	32.80	55.09	44.91
Uninsured	15.85	54.61	45.39
Area*			
Urban	47.64	56.53	43.47
Rural	52.36	71.96	28.04

Note: M and % = mean and percentage; \* = p-value &lt; 0.05 of chi-square analysis or t-test.



of self-medication (for outpatient care) and private facility care (for inpatient care). Furthermore, the degree of the increase was more significant in lower socioeconomic groups (particularly lower-income people). Nevertheless, the overall utilization of public facility care appeared to be substantially low. For outpatient care in particular, although the NHI provides almost free services, more than 50% of people who needed health care still depended on self-medication, which required out-of-pocket cost.

In addition, although a large proportion of private providers are contracted under the NHI, private facility care was still utilized only by higher-income people. It suggests that private providers tended to prefer the provision of non-covered services to the NHI services, probably because of the low profit margin. Lastly, approximately 5% of the study sample reported forgone care regardless of insurance status. Interestingly, their income levels were relatively higher than those who utilized public facility care. It may imply that this forgone care group might have other health care access problems rather than cost.

### ***Results of Health-Seeking Behavior Analysis***

Table 5 reveals the results of the multinomial logistic regression model for outpatient care. In the model for private facility care (vs. public facility care), a significant relationship was found in all independent variables. Specifically, for insurance status, the results indicated that insured people tended to utilize public facility care, whereas uninsured people tended to utilize private facility care. The odds ratios (0.35 and 0.58) specifically mean that NHI-SR and NHI-NSR beneficiaries were 2.86 and 1.72 times more likely to utilize public facility care than uninsured people, respectively, compared to private facility care.

Income was positively related to private facility care with an odds ratio equal to 1.11. This means that lower-income people (or higher-income people) were 1.11 times more likely to receive care from public providers (or private providers). For age and sex, younger people and females tended to utilize public facility care, whereas older people and males tended to utilize private facility care. Marital status was shown to be negatively related to private facility care with an odds ratio equal to 0.87 for single people and 0.95 for married people. This means that single and married people were 1.15 and 1.05 times more likely to utilize public facility care, respectively, than

the widowed/divorced/separated people compared to private facility care.

For education, it was partially related to the utilization of public facility care. Specifically, people with a secondary-level education were more likely to utilize public facility care than those with a university-level education or higher. Likewise, those with a primary-level education or lower were also more likely to utilize public facility care than those with a university-level education or higher, but it was not statistically significant. Finally, for employment and area, unemployed and rural people tended to receive care from public providers, whereas employed and urban people tended to receive care from private providers.

In the model for self-medication (vs. public facility care), a significant relationship was also found in all independent variables, and the relationship was similar to the previous model for private facility care (vs. public facility care). Specifically, the results indicated that people who were insured, lower-income, female, married, unemployed, and those living in rural areas were more likely to utilize public facility care, whereas their counterparts preferred self-medication. Particularly for insurance status and income, NHI-SR and NHI-NSR beneficiaries were 2.50 and 2.17 times more likely to utilize public facility care, respectively, than uninsured people. Lower-income (or higher-income) people were 1.06 times more likely to utilize public facility care (or self-medication).

Finally, in the model for forgone care (vs. public facility care), a significant relationship was found in a total of six variables, which are insurance status, income, age, sex, marital status, and education. For insurance status, insured people (both NHI-SR and NHI-NSR beneficiaries) tended to receive care from public providers, whereas uninsured people tended to forgo care. For income, higher-income people were more likely to forgo care than lower-income people. For the remaining independent variables, forgone care tended to occur more frequently among younger, male, single, widowed/divorced/separated, and higher-educated people.

Table 6 presents the results of the binary logistic regression model for inpatient care. In the model, a significant relationship was found with all independent variables except employment. For insurance status, NHI-SR and NHI-NSR beneficiaries were 2.33 and 1.41 times more likely to utilize public facility care than uninsured people, respectively. For income, lower-

**Table 5***Results of Multinomial Logistic Regression Analysis in Relation to Outpatient Care*

Variables	Private Facility Care		Self-Medication		Forgone Care	
	OR	95% CI	OR	95% CI	OR	95% CI
Income	1.11	(1.10, 1.12)*	1.06	(1.05, 1.07)*	1.06	(1.05, 1.08)*
Age	1.13	(1.01, 1.26)*	0.27	(0.24, 0.29)*	0.42	(0.35, 0.50)*
Sex						
Male	1.06	(1.03, 1.10)*	1.26	(1.23, 1.29)*	1.25	(1.19, 1.31)*
Female	1.00		1.00		1.00	
Marital status						
Single	0.87	(0.81, 0.93)*	1.01	(0.96, 1.07)	1.24	(1.12, 1.38)*
Married	0.95	(0.94, 0.99)*	0.93	(0.90, 0.96)*	0.90	(0.84, 0.96)*
Widowed/divorced/ separated	1.00		1.00		1.00	
Education						
Primary school or lower	0.97	(0.91, 1.03)	1.05	(1.00, 1.11)*	0.79	(0.72, 0.87)*
Secondary school	0.94	(0.88, 0.99)*	0.97	(0.92, 1.02)	0.78	(0.71, 0.85)*
University or higher	1.00		1.00		1.00	
Employment						
Employed	1.20	(1.16, 1.24)*	1.31	(1.28, 1.35)*	1.04	(0.99, 1.09)
Unemployed	1.00		1.00		1.00	
Insurance status						
NHI-SR	0.35	(0.34, 0.36)*	0.40	(0.39, 0.41)*	0.43	(0.41, 0.45)*
NHI-NSR	0.58	(0.55, 0.60)*	0.46	(0.44, 0.47)*	0.52	(0.48, 0.55)*
Uninsured	1.00		1.00		1.00	
Area						
Urban	1.05	(1.02, 1.08)*	1.20	(1.17, 1.22)*	0.98	(0.93, 1.02)
Rural	1.00		1.00		1.00	

Note: reference = public facility care; OR = odds ratio; 95% CI = 95% confidence interval; \* = p-value &lt; 0.05

income people were more likely to receive care from public providers than higher-income people. For the remaining independent variables, the results showed that older, male, single, lower-educated (particularly people with primary-level education or lower), and rural people were more likely to utilize public facility care.

In sum, the results of health-seeking behavior analyses, like the results of descriptive statistics,

also showed that the NHI significantly increased the utilization of public facility care for lower socioeconomic groups compared to higher socioeconomic groups, particularly insured and lower-income people. For forgone care, as the descriptive analysis showed, it also tended to occur more frequently among higher-socioeconomic groups such as higher-income and higher-educated people.

**Table 6**

*Results of Binary Logistic Regression Analysis in Relation to Inpatient Care*

Variables	Private Facility Care	
	OR	95% CI
Income	1.11	(1.10, 1.13)*
Age	0.75	(0.63, 0.90)*
Sex		
Male	0.81	(0.77, 0.86)*
Female	1.00	
Marital status		
Single	0.72	(0.63, 0.82)*
Married	1.06	(0.98, 1.15)
Widowed/divorced/separated	1.00	
Education		
Primary school or lower	0.82	(0.76, 0.89)*
Secondary school	1.00	(0.93, 1.08)
University or higher	1.00	
Employment		
Employed	1.03	(0.98, 1.08)
Unemployed	1.00	
Insurance status		
NHI-SR	0.43	(0.41, 0.46)*
NHI-NSR	0.71	(0.66, 0.76)*
Uninsured	1.00	
Area		
Urban	1.66	(1.58, 1.74)*
Rural	1.00	

Note: reference = public facility care; OR = odd ratio; 95% CI = 95% confidence interval; \* = p-value < 0.05

## Discussion

This study attempted to evaluate the impact of Indonesia's NHI on health care utilization by examining health-seeking behavior with the NSES data of 2018. Specifically, the NHI impact was assessed by two criteria. First, because the NHI currently covers approximately 82% of the population, with the remaining 18% being uninsured, this study assessed whether the NHI increased health care utilization for beneficiaries by comparing health-seeking behavior between insured and uninsured people. Second, because one of the major fundamental goals of social health insurance is to improve the equity of health care utilization by decreasing the financial burden, particularly for socially vulnerable groups, this study assessed whether the NHI accomplished this equity goal by examining health-seeking behavior between lower and higher-income people. Additionally, by including other proposed socioeconomic factors by Andersen's model, we also assessed the NHI impact by analyzing the health-seeking behavior of people with different socioeconomic statuses.

Overall, the study results indicated that the NHI significantly increased the utilization of public facility care and decreased that of self-medication and private facility care. The increased utilization of public facility care was more significant among insured and lower-income people and lower socioeconomic groups. Although there was a slight variation between the inpatient and outpatient results, it was commonly shown that the increased utilization occurred more significantly among lower-educated, unemployed, and rural people.

These results may imply that the NHI could have a positive impact in two respects, which are equity and safety of health care utilization. From an equity perspective, the NHI could adequately accomplish the equity goal by increasing the utilization of free public facility care for its beneficiaries, particularly those of lower socioeconomic status. In many previous studies, the cost burden of health care has been identified as a critical barrier to health care utilization (Hsiao & Shaw, 2007; Meemon & Paek, 2018; OECD, 2013; World Health Organization [WHO], 2013). If a health care system depends heavily on such costs, which should be paid out of pocket, it can restrict health care accessibility, which would ultimately lead to adverse health consequences for people.

More importantly, such heavy dependence has been found to relate to catastrophic health care expenditure, whereby people cannot afford basic living necessities due to the excessive burden of health care costs. Such catastrophic health care expenditure can cause people, particularly those with lower socioeconomic status, to not only suffer the burden of disease but also ultimately encounter impoverishment. Thus, equity of health care utilization has been utilized as an important criterion for assessing the impact of health care systems (OECD, 2013; WHO, 2013). Thus, by the results, it can be concluded that the NHI brought a positive impact from the equity perspective.

From a safety perspective, the study results showed that the NHI had decreased the utilization of self-medication, which may be regarded as an improvement in the safety of health care utilization. Self-medication practices have been identified as a risk factor for health because their practices are often performed without the supervision and prescription of medical doctors, generally resulting in misdiagnosis, over-dosage, and the selection of incorrect medication (Hughes et al., 2001; Ruiz, 2010). Thus, by the results, it could be concluded that the NHI could bring a positive impact from a safety aspect.

In spite of the positive impacts, we also noticed that universal access to the NHI services still remains a challenge for future policy improvement. That is, although the NHI provides almost free health care services, a large proportion of beneficiaries still relied on self-medication and private facility care, which required out-of-pocket expense. Additionally, those who utilized self-medication and private facility care had a relatively higher socioeconomic status (e.g., higher income).

Such high reliance on private services (or low utilization of public facility care) may indicate a policy gap between supply and demand for NHI services (or the need for and availability of the NHI services), especially for relatively higher-socioeconomic groups. For self-medication users, they might be minor illnesses patients who demanded prompt medication. However, long queues in or long distance to public providers, probably due to inadequacy of health care infrastructure, might finally force the patient to utilize self-medication. For private facility care users, they might be patients who demanded greater support from medical services rather than simply receiving medication due to the severity of their illnesses.

However, the perceived low quality and inconvenience of public providers, in addition to long queues and travel distances involved, might finally force such patients to receive care from private providers.

In fact, similar results and issues have also been discussed in other previous studies conducted in Thailand. Such studies consistently identified inadequate financing and infrastructure in the public sector as the main cause of low insurance service utilization and high reliance on private services (Meemon & Paek, 2018, 2020a, 2020b; Paek et al., 2016). For instance, a study by Meemon and Paek (2020a) found that although the UCS (the national health insurance program in Thailand) offers affordable services, a large proportion of higher-income people still relied on private services. This was mainly because of the long queues in public providers and perceived low quality of UCS services derived from the inadequacy of UCS financing and infrastructure.

More specifically, in that study, health care utilization was defined as a multi-dimensional concept consisting of accessibility (e.g., health care cost), availability (e.g., health care providers and personnel), and acceptability (e.g., perceived quality of health care) components. According to the definition, that study viewed the UCS as a policy intervention to decrease the health care cost burden (or increase the accessibility component). However, the UCS did not succeed in improving the other two (availability and acceptability) components. As a result, a policy gap between the UCS services' supply and demand (i.e., low utilization of the UCS services and high reliance on private services) ultimately occurred among relatively higher-socioeconomic groups because they preferred the private services for better quality and convenience reasons.

We expect that the NHI's low utilization issue may not be different from the UCS's case mentioned above. Accordingly, this study recommends that the government expand the NHI's service boundary to enhance universal access to the NHI services. Particularly, the development of health care infrastructure and human resources in the public sector as well as adequate policy financing should be the first step for that. Nevertheless, to our knowledge, no empirical studies on this issue have yet been carried out in Indonesia. Thus, expanding the NHI service boundary recommended in this study should

be accompanied by more empirical investigations and evidence.

Finally, the limitations of this study must be addressed in future studies. First, approximately 5% of the study sample encountered forgone care regardless of not only insurance status but also socioeconomic status. Like the self-medication and private-facility-care users, those encountering forgone care also tended to have a higher socioeconomic status (particularly, higher income). This may indicate that they might have other healthcare utilization barriers rather than merely the cost. However, because of the unavailability of the relevant information in the NSES data, this study could not explore reasons for the forgone care. This limitation suggests that future studies should involve qualitative analysis for a better understanding of the reasons for forgone care. Additionally, such a qualitative analysis would also offer an in-depth understanding of the reasons for the low utilization of public facility care.

Second, health-seeking behavior is generally dependent on the type of illness and its severity. However, the NSES, which is a survey data, does not contain such clinical factors. This issue should be taken into consideration for future study to provide a more precise assessment of the NHI impact. Data merging between the NSES and hospital administration data (e.g., medical records) would be a potential methodological solution for addressing this issue.

Last, the study results were found to be consistent with previous studies, in which the NHI significantly increased the utilization of public facility care and decreased that of self-medication and private facility care (Erlangga et al., 2019; Rolindrawan, 2015; Shihab et al., 2017; Sumartono, 2017). Most of the previous studies analyzing facility-based care showed that the NHI increased the utilization of public facility care more significantly for higher socioeconomic groups. Meanwhile, this study, analyzing not only facility-based care but also other types of health care services, could further identify that public facility care was utilized more significantly among lower socioeconomic groups because self-medication and private facility care were utilized significantly among relatively higher socioeconomic groups. However, there is a considerable variation in data and methodologies utilized across the studies. Thus, a systematic assessment of the different impacts of the NHI found in the studies is essential for a more accurate understanding of the policy impact. Additionally,

longitudinal analysis is greatly recommended for future studies for evaluating and monitoring the long-term effect of the NHI.

## Conclusion

This study found that the NHI significantly increased the utilization of free public facility care and decreased that of private services requiring an out-of-pocket expense. Moreover, the utilization pattern was more significant among lower-socioeconomic groups. This could be considered that the NHI could enhance equity and safety of health care utilization.

Nevertheless, we also noticed a considerable policy gap between the need for and availability of the NHI services. That is, although the NHI provides almost free services, a large proportion of beneficiaries still relied on self-medication and private facility care, which require an out-of-pocket expense. Such high reliance on private services (or low utilization of public facility care) provides an important lesson in that universal health coverage cannot be accomplished merely by decreasing or eliminating the barrier of health care cost (or enhancing its accessibility only). If the cost decrease or its elimination is not accompanied by the strengthening of other factors relating to health care utilization such as availability (e.g., the NHI's service infrastructure) and acceptability (e.g., quality of the NHI services), the success of universal coverage would not be guaranteed.

Therefore, the government should continue its effort to increase the adequacy of health care financing and infrastructure in the public sector as the first step to success. Also, the effort should be accompanied by more empirical investigations and evidence. We believe that the results of this study could potentially provide a useful example for other countries considering universal health coverage.

## Declaration of ownership:

This report is our original work.

## Conflict of interest:

None.

## Ethical clearance:

This study was approved by our institution.

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