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Master's Thesis of Public Health

Impact of Indonesia Health
Insurance (JKN) policy on
outpatient utilization using IFLS
data

IFLS 데이터를 통한 인도네시아의 건강보험
정책이 외래환자의 이용에 미치는 영향

August 2021

Graduate School of Public Health
Seoul National University
Major in Health care Management and Policy

Anita Damayanti Putri

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Lee Tae Jin

Submitting a master's thesis of Health care
Management and Policy

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Graduate School of Public Health
Seoul National University
Major in Health care Management and Policy

Anita Damayanti Putri

Confirming the master's thesis written by

Anita Damayanti Putri

August 2021

Chair	<u>김창엽</u>
Vice Chair	<u>정완교</u>
Examiner	<u>이태진</u>

Abstract

Indonesia National Health Insurance (JKN) began in 2014. Having had health insurance, the Government of Indonesia has protected the financially insured who can access healthcare whenever they need it, especially for the poor and unhealthy group. Before JKN, health insurance had a different scheme based on the income profile. The impact of Askes and Jamkesda increased their access to outpatient care. However, in fact, the impact affected the third and fourth quintile income group instead of the poor. This study was aimed to find whether JKN insurance had an impact on outpatient care utilization.

The analysis used the Difference and Difference (DiD) methods with a linear probability model. This model was aimed to find the impact towards the introduction of the policy. Moreover, it also provided a sub-group analysis in different quintile income groups and in three islands. This study used panel data from IFLS 4 (2007) and 5 (2014), and the placebo test to define the trend from IFLS 3 (2000). The treatment group were respondents who became insured after The JKN introduction in 2014, while the control group were respondents who remained uninsured after the policy introduction.

The result showed a positive impact of JKN towards outpatient utilization that increased the utilization by 3.8%–21.8% as a result of JKN policy. It confirmed that the outpatient care utilization of the treatment group was more than the control group utilization. Under the income subgroup analysis, it showed a positive impact of JKN on outpatient care for all income groups which increased the utilization by 16–28% as a result of the policy not only in the highest income group but also at the lowest income group.

In the island subgroup analysis, we found that there was a positive impact on outpatient utilization which increased the utilization by 34% especially in Eastern Indonesia. The Regression analysis results after inclusion of covariates such as age, gender, income, private insurance ownership, residence, island, and health status also had a positive impact on the outpatient utilization.

Keyword : Health Insurance, outpatient utilization, income, islands

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Chapter 1. Introduction

1.1. Study Background

According to Indonesia National Health Act (Law No.39/2009), health is a right for all, and the Government is responsible for the equality and equity of health care services. As Indonesia has committed to achieve Universal Health Coverage (UHC) by 2030, the Government made some efforts by providing various health insurance (Wasir, 2020). Implementing health insurance provides financial protection and improves National healthcare services' equitability (Sommers, 2017). The probability of financial burden was lower through health insurance due to the risk and payment sharing from all the members. Therefore, the patients could seek treatment when they were sick while financially, they were protected from being impoverished (Wagstaff, 2013).

However, owning health insurance was assumed to induce access to healthcare since the member financial barrier was reduced. In low and middle-income countries, health insurance had a positive correlation with increasing access to care. It was also reported that health insurance was correlated with outpatient health care utilization in several countries (Comfort et al., 2013). Although insured patients might engage in ex-post moral hazard, they increased their frequency to use health care through insurance (McGuire, 2000).

Thus, expansion in health insurance coverage could lead to greater access to care, especially for outpatient care (Sommers, 2017). The neighbor country, Thailand, had achieved UHC with a high level of financial risk protection against catastrophic health spending and impoverishment from health payments. The result reaffirmed the negative correlation between public health insurance coverage and the incidence of catastrophic expenditure (Wagstaff, 2018).

The percentage of households in Thailand encountering catastrophic health spending and healthcare impoverishment (2%) was on par with several high-income countries in Europe, North America and Oceania; for instance, Austria, France and Germany (Cylus, 2018).

Before JKN, other insurance programs had been implemented but only based on income profile (Mulyanto, 2019). In JKN, the participant selection was only based on health status. Within six months, it had achieved broader member coverage. However, this did not guarantee Indonesians' equity of access to care.

In Finland, the decentralization study from 1970 to 2000 showed decentralization brought a variation of access and utilization (dental service) increased substantially (Korhonen, 2005). After the power shifting, Canadas' decentralization (which was known as regionalization) had a good health outcome. Still, it might have accentuated urban-rural differences in access to care (Larsen-Soles 2005). The decentralization case in Finland and Canada were different from Indonesia, where after decentralization in 2001, the care access gap was more significant (Anindya, 2018). There was an increase in health expenditure, but the utilization and overall health outcome was a mediocre performance (NHIRD, 2005).

Based on previous social insurance in Indonesia, the health cards program introduced in 2000 found that it did not increase outpatient utilization due to the inelastic demand amongst the recipients (Johar, 2009). The impact of the Askes and Jamsostek insurance program found a positive outpatient utilization effect, especially on private facilities (Hidayat and Pokhrel, 2010). An evaluation of the health insurance program for poor people (Askeskin) found positive utilization effects on outpatient care (Sparrow et al., 2013). Big coverage of JKN insurance, approximately 54% members in Indonesia, brought a good impact for the utilization (BPJS, 2016).

The impact of JKN insurance on outpatient utilization showed an increasing trend. Still, it was not sensitive because the data used from SUSENAS were not randomized and without a control group (Erlangga, 2019).

Therefore, this study aimed to find the impact of JKN insurance on outpatient utilization using IFLS panel data by comparing their access from before and after the policy introduction. The subgroup analysis would explore the income sub-group and residential area (island), which could explain further patterns of their health-seeking behavior.

1.2. Purpose of Research

After the JKN introduction in 2014 as the integration of previous insurances, the member coverage was 52.4%. With this new scheme of JKN, we would find the policy impact on outpatient utilization and how it affected different income groups and different islands.

1.3. Hypothesis

1. The JKN policy introduction in 2014 impacted outpatient utilization.

2. The JKN policy affected different income groups, especially for the low-income group (quintile 1 and quintile 2) and increased their outpatient utilization.

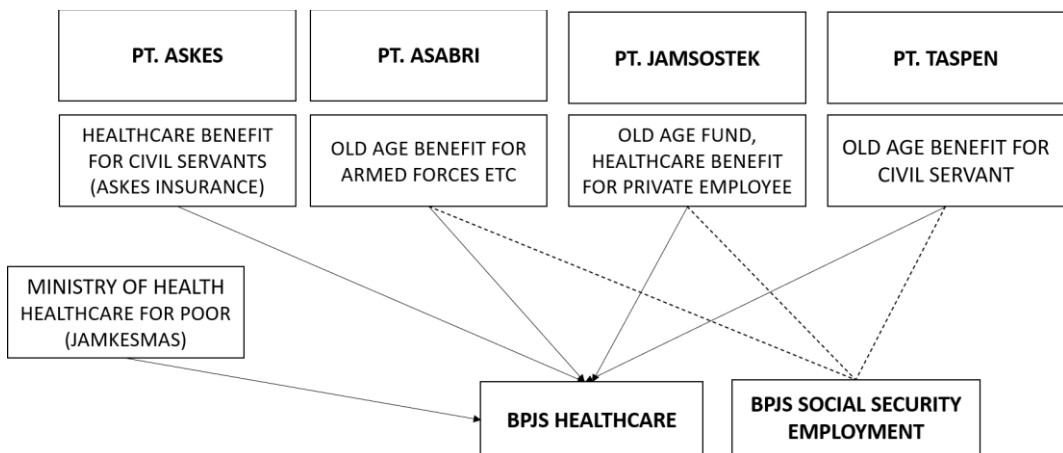
3. The JKN policy affected different regions and islands (Sumatra, Java, Kalimantan, and Eastern Indonesia) and increased their outpatient utilization especially in outside Java Island.

Chapter 2. Literature Review

2.1. Indonesian Health Insurance (JKN)

In 2014, Indonesia Government officially launched the JKN and committed to achieve universal health coverage by implementing social health insurance to provide equity health access and equal treatment for equal need. JKN was the integration of ASKES for civil servants and family, ASABRI for police and military workforce, ASKESKIN for the financial protection for the under-poverty group and JAMKESDA for the poor group that was not covered by other insurance (as the figure below).

Fig. 1 BPJS Transformation scheme in 2014

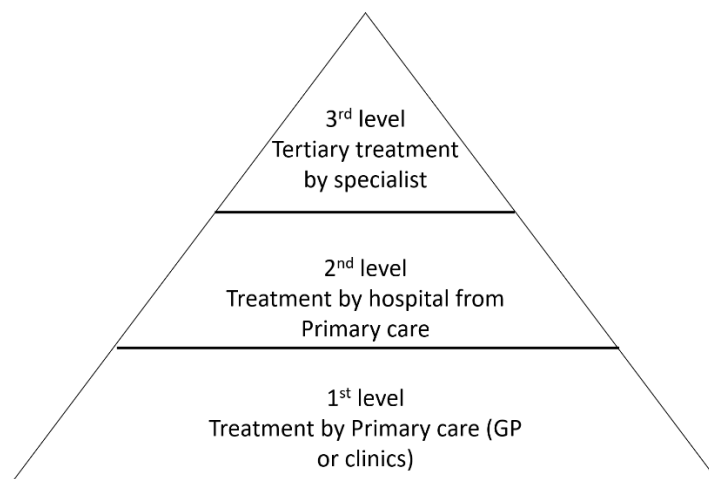


The Government reformed the insurance mechanism by combining all government schemes into JKN under BPJS, Health care and Social security Agency (Ministry of Health, 2015). As part of the reform, The BPJS Health agency replaced a state-owned health insurance corporation (Askes). BPJS also merged with other government-based insurance companies.

The Health BPJS began implementing the JKN officially on January 1, 2014, with 121.6 million participants, 96.4 million of whom were participants (poor and near-poor) whose premium paid by the government (PBI), and the remainder were ex-participants of government-based insurance.

Before the integration, 63.5% of the total population was covered by tax-based insurance and private insurance (Sumartono,2017). According to the analysis using the SUSENAS Data in 2011, Jamkesmas coverage itself was only around 33% from the target, and the leakage to non-eligible beneficiaries is more than half of the participant (53%). Unfortunately, the insurance beneficiaries were overlapped, scattered and not organized (Nafsiah, 2015). This was due to the easy registration for the health fund, which only required a certificate of disadvantage (SKTM) from the Head of Village (IBP, 2012).

Fig. 2 Referral treatment under JKN scheme



The insurance reformation aims for equity of access and equal quality of care. The new scheme implements primary health as the gatekeeper role for effective and efficient treatment. The primary health care and the general practitioner must treat 144 diseases before referring them to the hospital.

The referral mechanism (refer to fig.2) will start from primary healthcare to hospital type D (the smallest) until tertiary healthcare hospital type A (the specialist hospital). Only under exceptional circumstances are referred directly to the hospital type A (such as cancer, cardiovascular diseases, stroke etc.) Therefore, insured patients will be most likely to go to outpatient care. Thus, insured patients in outpatient care utilization will be easier to track rather than inpatient care.

2.2. Theoretical Framework

Andersen Behavioral Model was used to analyze the possible influence factor on primary health care utilization. The Andersen model was the behavior health model which divides the influencing variables into the components predisposing characteristics, enabling resources, and need factors (Andersen, 2012).

The predisposing factors, such as demographic, socio-economic characteristics, and other psychological factors (e.g., belief, attitude, and value), referred to an individual's propensity to seek care that could predispose the use of health care. The Enabling factors were resources that served as facilitators in seeking care, including community resources (availability of healthcare and transportation access), geographical access (travel time), and personal resources (having health insurance, ability to pay for health care). The Need factors described how an individual perceives his/her health status and determined the need for health care. Health providers' evaluation of health status and related medical care also included in need factors.

For this study, we used the age, sex, education background, marital status, residence, income level that generated from household spending, health status and health insurance availability variable to analyze the outpatient care utilization. These variables were also widely used in healthcare utilization research (see Table 1) and significantly associated with primary care utilization.

Fig 3. Andersen Behavioral Model for Health utilization determinants.

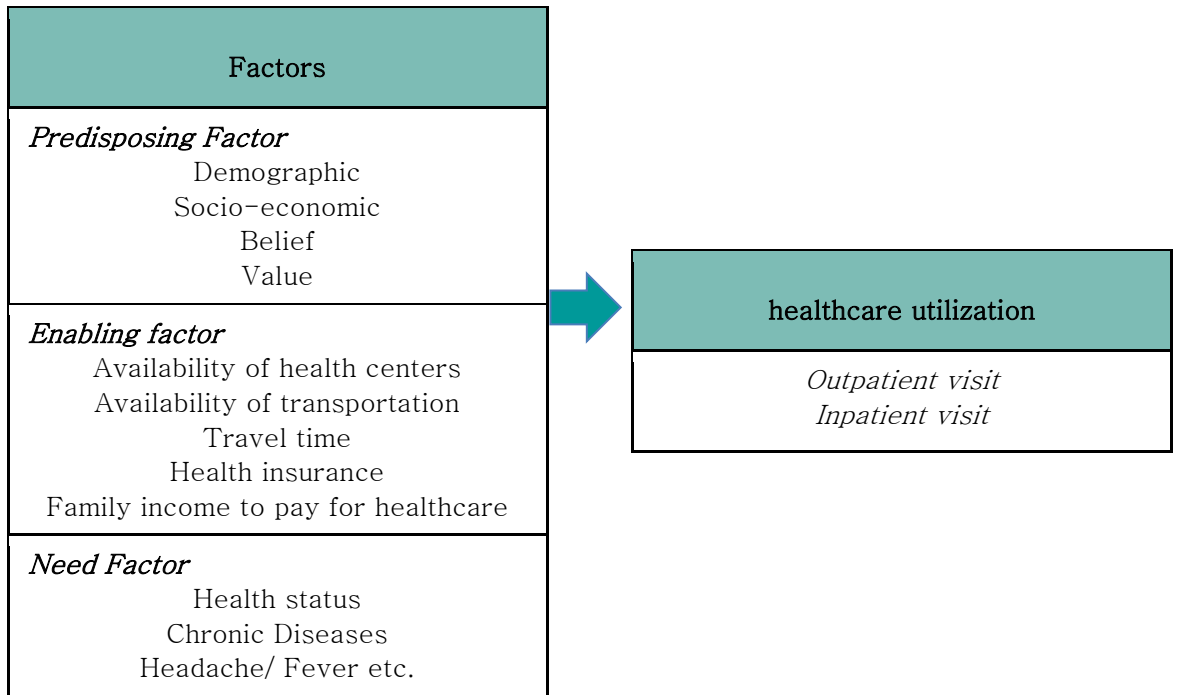
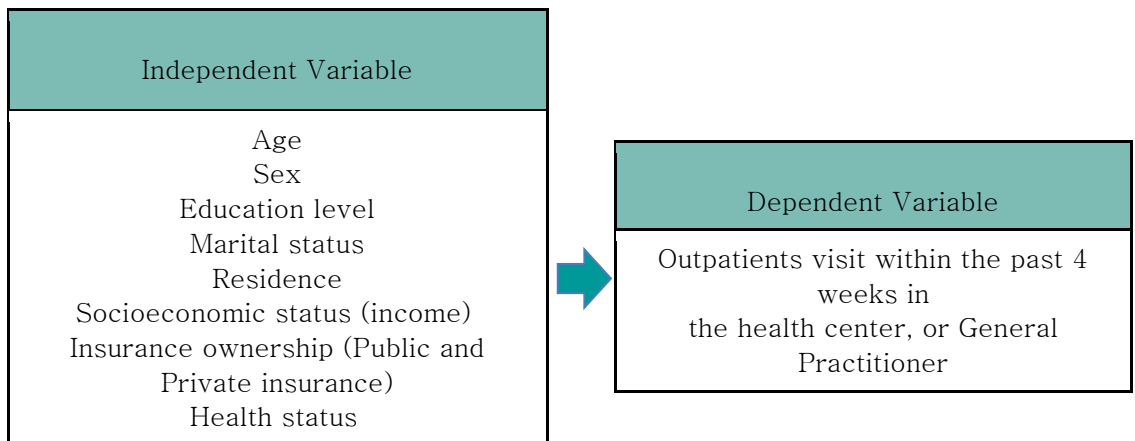


Fig 4. Theoretical Framework based on the Andersen Model.



2.3. Health utilization literature review

Andersen Model showed that the demand of health care utilization was influenced by many factors, including insurance ownership. Ghana, Rwanda, and China proved that having health insurance increased the health care utilization (Wang, 2017). In Jordan, health insurance ownership showed an extent of utilization but only specific for those who enrolled in the Civil Insurance program (Ekman, 2007).

Many studies had observed Indonesia health insurance JKN policy impact with different approaches. After the implementation, many journals discussed the insurance impact on financial protection and the utilization (Aji,2013) (Marzoeki,2014) (Royasia, 2017) (Anindya, 2020) (Nugraheni, 2020).

Another finding (Madyaningrum,2018) showed the effect of JKN which increased elderly outpatient utilization. Even though most studies showed the utilization gap of residents in rural-urban still existed (Djunawan, 2018). Table 1 below are some previous studies about health utilization factors and their impact on health insurances.

Table 1. The literature studies healthcare utilization.

Title	Author	Independent Variable	Dependent Variable	Result
The impact of health insurance on maternal health care utilization: evidence from Ghana, Indonesia and Rwanda	Wenjuan Wang, Gheda Temsah, Lindsay Mallick	health insurance coverage	Outpatient utilization (four outcomes of maternal health care utilization)	Assessing the impact of health insurance on the use of outpatient care (facility-based delivery care) shows there is strong evidence of positive effects of health insurance in Rwanda, Indonesia and Ghana. These findings are consistent with other prior studies.
Social health insurance, healthcare utilization, and costs in middle-aged and elderly community-dwelling adults in China	Zhonghua Wang, Xiangjun Li, Mingsheng Chen & Lei Si	demography, family, health status and functioning, health care and insurance, work, retirement and pension, income, expenditures and assets	healthcare utilization, monthly outpatient consultation, yearly hospitalization and dental visits	It confirmed that people with social health insurance are less likely to report underutilization and are significantly associated with higher healthcare utilization. People with social health insurance spend more on total healthcare costs than people not covered by social health insurance. Demographic or socioeconomic factors associated with healthcare utilization and costs include age, gender, marital status, health status, living standards, and urban residence.
The impact of health insurance on outpatient utilization and expenditure: evidence from one middle-income country using national household survey data	Björn Ekman	Insurance ownership, SES, age, gender, education, marital status, labor status, health status, region, and asset	Health care utilization, health spending	The impact of insurance varies significantly over the different programs. Insurance is found to extend healthcare utilization and diminish OOP spending, whereas, in Jordan, the significant effect only lies on specific Civil Insurance programs. The best-performing programs are those to which the, to some degree, way better off bunches to get.
The impact of National Health Insurance towards healthcare center utilization in urban area	Djunawan, A.	Health insurance Socio-economic status	Outpatient utilization	The insurance ownership affected the primary care utilization. Even though JKN insurance has an impact, the gap between urban and rural life still exists. The public facilities should emphasize more towards the service for the poor and near-poor group and improve the quality of the services.

Title	Author	Independent Variable	Dependent Variable	Result
Factors associated with the use of outpatient services among the elderly in Indonesia.	Madyanin grum, E., Chuang, Y. C., et al.	Socio-demographic Insurance ownership Residence & Region Chronic disease	Outpatient utilization	JKN insurance, in addition to increasing access to outpatient services, appeared to moderate the influence of economic factors in this research. The outpatient utilization in Sumatra Kalimantan and Sulawesi are less likely than Java
The effects of mandatory health insurance on equity in access to outpatient care in Indonesia.	Hidayat, B. Thabrany, H. et al.	Health insurance Health status Socio-demographic Travel time and cost Region	Healthcare utilization	Public and private outpatient utilization are differ based on their insurance type but expanding health insurance will increase the public outpatient care. By providing health insurance (JKN) will increase the utilization among the poor which reduces the inequity. Health insurance programs have a positive impact on outpatient access even if the utilization for insured people is higher than uninsured people.

Chapter 3. Method

3.1. Data Collection

This research used The Indonesian Family Life Survey (IFLS), an ongoing longitudinal survey in Indonesia. Data IFLS provided data at the individual and household level, including consumption, income, assets, education, migration, labor market outcomes, marriage, fertility, contraceptive use, health status, use of health care and health insurance, relationships among co-resident and non-resident family members, processes underlying household decision-making, transfers among family members and participation in community activities.

The IFLS sample represented 83% of Indonesia's population that lived in 13 out of 27 provinces. IFLS conducted by RAND Corporation and collaborated with UCLA and Lembaga Demografi and some University research center provided household and individual information (RAND, 2015). The IFLS wave started with IFLS 1 conducted in 1993-1994, followed up with the same sample in 1997-1998 documented in IFLS 2. IFLS 2+ held in 1998 with 25% of the sample explaining the impact of the economic and political crisis. Full sample was collected in 2000 for IFLS 3. The fourth wave was conducted in 2007-2008 (IFLS 4) and IFLS 5 in 2014-2015.

The total observations of IFLS 4 were the same as the observation from IFLS 1. At the same time, IFLS 5 interviewed 50,148 individuals, with other 2,662 respondents who died since IFLS4 and had an exit interview from the proxy who knew them well. The total sample in this study was 13,946 respondents divided by treatment and control group. The selection of treatment and control groups were based on their insurance ownership. In 2007, both respondents in treatment and control groups should not have any insurance.

The treatment group in this study (N=6,817) were the respondents that were uninsured in 2007 (IFLS 4) and became insured with JKN insurance in 2014(IFLS 5). The control group (N=7,129) was respondent that remained uninsured after the introduction in 2014 (IFLS 4 and 5).

3.2. Variables

According to the Andersen model, the factor that led to healthcare utilization both inpatient and outpatient care were distinguished into predisposing (age, sex, marital status), enabling factor (education level, income level), and need factor (self-rated health status and insurance).

We included all the predisposing factors that were available in the IFLS data. For the enabling factors, education level variables were based on their current individual education background. Meanwhile, the income variables were generated from all of household-member spending. Unlike the developed country, developing countries had a more significant proportion of informal workers, leading to an indefinite amount of salary. Therefore, in this research, the household income was generated from food and non-food household monthly spending and categorized into a quintile.

The dependent variable that was used was outpatient care utilization. To reduce the bias, the outpatient visit that counted in the study was a recall visit within four weeks. Last month's visit was the least information that could be easily recalled.

The variables from IFLS were coded into some categories (refer to Table 2). The dependent variable in this research was outpatient visits recalled in the past four weeks. It recorded as 1: if there was an outpatient visit, and 0: when there was no visit to the outpatient care within a month.

The Independent variables consisted of insurance ownership and socio-demographic. The socio-demographic variables that were used consisted of age, marital status, health status, residence, education, income and island. The analysis included the age squared variable that would be helpful to inform the effect of age on the outpatient utilization possibility.

For sex was coded 0: if male and 1: female. The marital status was coded into value 1: if the respondent was living with a spouse and 0: without a spouse. Variable health status also included as one of the indicators for someone seeking healthcare utilization. However, the health status was the self-rated health condition by the respondent. The health status variable in IFLS data was divided into 1: very healthy, 2: healthy, 3: sick and 4: very sick. In this research, it would be coded into only two categories: 0: sick with the value of and 1: for feeling well.

The residence included in the analysis was due to the different facilities in urban and rural areas. More than that, residency was also essential to measure healthcare utilization and health access. Education levels based on the graduation level were coded into three categories: without and primary school, junior and senior high school and higher degrees (bachelor, master, PhD).

Besides education variables, the socioeconomic status that was also included from IFLS was income status. The income status was derived from household spending and presented as a quintile. Quintile 1 was a group with 20% of the lowest income, and Quintile 5 was the highest 20% of revenue in the study population.

As Indonesia has many islands, to inform the pattern of health utilization across the island after JKN, the island variable would be included in the subgroup analysis. The province information in IFLS was coded based on The Ministry of Home Affairs. The individuals that reside in Sumatra Island was coded from 11 to 21, Java Island was coded 31 to 31, Bali and Nusa Tenggara were coded 51-53, Kalimantan Island was coded 61-65, Sulawesi Maluku and Papua Island was coded from 71 to 91. As the density of population was dominated in Java, Bali and Sumatra, in this research province variable would be categorized into three different islands, 1: individuals that reside in Sumatra Island(coded 11-21) , 2: residing in Java and Bali Island(coded 31-53), 3: residing in Eastern Indonesia (61-91).

Table 2. Variable definition of all variables that used in the study.

Variable		Definition
Outpatient	Recalled visit for the outpatient care in the past 4 weeks	0 = Did not Visit 1 = Visit
Health insurance ownership	2007 & 2014 enrolled in the public health insurance and other types except private insurance	0 = did not enroll to National Health Insurance 1 = enrolled to National Health Insurance
	Private insurance	0 = unenrolled in Private Insurance 1 = enrolled in Private Insurance
Predisposing factor	Age	Age of the respondent that classified (at least 14 years old)
	Marital status	0 = Living without spouse (unmarried and divorced) 1 = Living with spouse (married and cohabitate)
	sex	0 = Male 1 = Female
Enabling factor	Education	0 = without education (no formal education and graduated from primary school) 1 = Junior and Senior high school 2 = College and higher degree
	Income Derived from the household monthly spending (food and non-food)	1 = Income in Quintile 1 (The lowest) 2 = Income in Quintile 2 3 = Income in Quintile 3 4 = Income in Quintile 4 5 = Income in Quintile 5 (The highest)
	Health status	0 = Feeling Sick 1 = Feeling healthy
	Residence	0 = Rural Area 1 = Urban Area
	Island	1 = Sumatra Island 2 = Java and Bali Island 3 = Eastern Indonesia

3.3. Statistical Analysis

3.3.1 Descriptive Analysis

The descriptive analysis was performed to describe each variable with the frequency and percentage distribution in using outpatient care. Moreover, through the descriptive statistical result, the respondent distribution and pattern of health access would be easier to understand. The result would be presented in the table. All the analysis would be conducted by the STATA Software Version 16 package.

3.3.2 Difference-in-Difference Estimation

We used linear regression (linear probability model) and performed using the Difference in Difference (DiD) approach to answer the objective of study. The DiD method was performed to evaluate the policy impact before and after the implementation that controlled the changes over time trends as well as the unobserved individual characteristics. As the DID accounted for any time-fixed effect of unobserved factors, the assumption that needed to be emphasized in the DiD analysis was parallel trend assumption (Angrist and Pischke 2008).

To improve the accuracy of our DiD estimate, we included two pre-treatments to the panel data (outpatient trend in 2000 and 2007) as a placebo and should not have any statistically significant effect. This was to verify the parallel trend assumption that (treatment and control group) were similar before the NHI policy.

The first analysis was conducted to compare the effect of insurance before (2007) and after JKN implementation (2014). The second analysis was to examine the impact of the insurance by different income and islands. The expected values were obtained from the interaction of the estimated coefficients.

Table 3. Difference in Difference analysis

	Before NHI ($year=0$)	After NHI ($year=1$)	Difference
Treatment (enrolled after NHI) $treat=1$	$\beta_0 + \beta_2$	$\beta_0 + \beta_1 + \beta_2 + \beta_3$	$\beta_1 + \beta_3$
Control (remain unenrolled) $treat=0$	β_0	$\beta_0 + \beta_1$	β_1
Difference in Difference			β_3

$$y_{it} = \beta_0 + \beta_1 year_t + \beta_2 treat_{ij} + \beta_3 year_t * treat_{ij} + \beta_4 Cov_{ij} + e_{it} \quad (i)$$

i: individual, t: time(0,1), j:..., year: the year of NHI introduction, treat: the group of people that became insured after the introduction of NHI, Cov : the other variables (age, marital status, sex, education, income, health status, residence, island).

In this model setting, the period($year_t$) was a binary variable taking the value of 0 in the baseline 2007 and 1 in the follow-up periods 2014–2015; and treated($treat_{ij}$) was a binary variable indicating the treatment group which in this research were those who became enrolled in insurance after the JKN introduction in 2014, with the value 0 if the individual remained uninsured and 1 in the follow-up periods became insured. The β_1 represents the difference in outpatient utilization before and after the implementation of NHI for the control group. The $(\beta_1 + \beta_3)$ represented the difference of outpatient utilization between treatment groups. The β_3 interaction between period ($year_t$) and treated ($treat_{ij}$) resulted in the difference in difference (DD) estimator which also showed the JKN policy implementation effect on the outpatient utilization.

Chapter 4. Result

4.1. Descriptive Statistics

Table 4 represents the individual's characteristics on the treatment and control group in 2007 and 2014. In 2007, the outpatient visit of the treatment group was 20.1%, and the non-visit was 79.9%. It was similar with the control group, where the outpatient visit was 15.32%, smaller than no outpatient visit member with 84.68%. In 2014, the treatment groups' outpatient visits increased up to 33.05%, as well as the control group outpatient visits increased up to 28%.

The treatment group respondent age characteristic in 2007 had an average of 48 years old. The average age of the treatment group in 2014 was 55 years old. The male proportion and the females in the treatment group were 42.98% and 57.02%. While in the control group, 42.98% of them were male and the rest were female.

Based on their marital status, in the treatment group, the people who lived with a spouse was 78.72%, while those living alone or without spouse was 21.28%. The proportion of respondents who lived with and without spouse in the control group had the same pattern where 24.37% of them were living without spouses and 75.63% the rest were living with their spouse. Based on the educational background, 13.43% of the respondents in the treatment group graduated from primary school in 2007. The rest of the group graduated from high school and college with 25.50% and 61.07% respectively. The proportion of people in the treatment group in 2014 had a similar pattern with 2007. 11.08% of the control group education background in 2007 were graduated from primary school, while 30.07% of them were graduated from high school. 58% of the rest members graduated with higher degrees. The proportion was slightly different from 2014, where 10.8% of the control group graduated from primary school, 30% from high school and 59% graduated from college.

The income descriptive analysis of the treatment group in 2007 showed that 20.82% of them were in the highest income group (Q5), 22.31% were in the lowest income group (Q1) and 21.4% were in the Q3. Meanwhile in the control group, 20.99% of them were in the Q1 income group, 18.76% were from the highest income and 25% of the member were in the middle-income level, Q3.

People with disease tended to use health insurance to seek treatment. Based on the respondent's self-rated health status in 2007, it was found that 32.19% of the treatment group were sick while the rest were healthy. In 2014, 67.68% of the treatment group were from the healthy group and 32.32% of the rest were considered sick. In the control group, the proportion in 2007 and 2014 were similar where 32% of them were sick and the rest were healthy.

Private insurance ownership was not mandatory in Indonesia. In 2007, 82.95% of the treatment group were not enrolled in private insurance. while in 2014, the proportion became smaller, where 64% of them enrolled.

The treatment group respondents mostly resided in urban areas with 63.51%, while 36.49% the rest lived in rural areas. Meanwhile, in the control group, the proportion of respondents who lived in rural and urban areas were similar with 53% and 47%.

Lastly, the Island residency categories in 2007 showed that 74.2% of people in the treatment group lived in Java and Bali Island. The rest of the group were people who lived in Eastern Indonesia with 8.4% and Sumatra Island residents with 17.4%. These data were slightly different compared to the control group. 68.9% of them were Java residents, 20.8% were Sumatra residents and 10.3% were Eastern Indonesia residents.

Table 4. Descriptive characteristics of treatment and control groups.

Variable	2007		2014	
	Treatment	Control	Treatment	Control
	number(%)	number (%)	number(%)	number (%)
Outpatient				
1.No Visit	3,177(79.90)	2,537(84.68)	2,662(66.95)	2,157(72.00)
2.Visit	799(20.10)	459 (15.32)	1,314(33.05)	839(28.00)
Age				
Mean \pm SD	48 \pm 11.95	50 \pm 11.58	55 \pm 11.95	57 \pm 11.58
Median (1Q,3Q)	43, 56	44, 57	50, 63	51, 64
Sex				
1.Male	1,709(42.98)	1,271(42.42)	1,709(42.98)	1,271(42.42)
2.Female	2,267(57.02)	1,725(57.58)	2,267(57.02)	1,725(57.58)
Marital Status				
1.living without spouse	846(21.28)	730(24.37)	846(21.28)	730(24.37)
2.living with spouse	3,130(78.72)	2,266(75.63)	3,130(78.72)	2,266(75.63)
Education				
1.no school- Elementary	534(13.43)	332(11.08)	534 (13.43)	324(10.81)
2.Junior - senior high	1,014(25.50)	901(30.07)	1,007(25.33)	899(30.01)
3.College and Higher	2,428(61.07)	1,763(58.85)	2,435(61.24)	1,773(59.18)
Income				
1.Q1(lowest)	887(22.31)	629 (20.99)	887(22.31)	629 (20.99)
2.Q2	769(19.34)	532(17.76)	769(19.34)	532(17.76)
3.Q3	851(21.40)	757(25.27)	851(21.40)	757(25.27)
4.Q4	641(16.12)	516 (17.22)	641(16.12)	516 (17.22)
5.Q5(highest)	828(20.82)	562(18.76)	828(20.82)	562(18.76)
Health status				
1.Sick	1,280(32.19)	972(32.44)	1,285(32.32)	970(32.38)
2.Healthy	2,696(67.81)	2,024(67.56)	2,691(67.68)	2,026(67.62)
Private insurance				
1.No	3,298(82.95)	2,996(100)	2,573(64.71)	2,996(100)
2.Yes	678(17.05)	0 (0.00)	1,403(35.29)	0 (0.00)
Residence				
1.Rural	1,451(36.49)	1,601(53.44)	1,451(36.49)	1,601(53.44)
2.Urban	2,525(63.51)	1,395(46.56)	2,525(63.51)	1,395(46.56)
Island				
1.Sumatra Island	691(17.38)	623(20.79)	691(17.38)	623(20.79)
2.Java and Bali Island	2,950(74.20)	2,066(68.96)	2,950(74.20)	2,066(68.96)
3.Eastern Indonesia	335(8.42)	307(10.25)	335(8.42)	307(10.25)

Fig 5. Outpatient utilization trend (2000-2007 and 2007-2014)

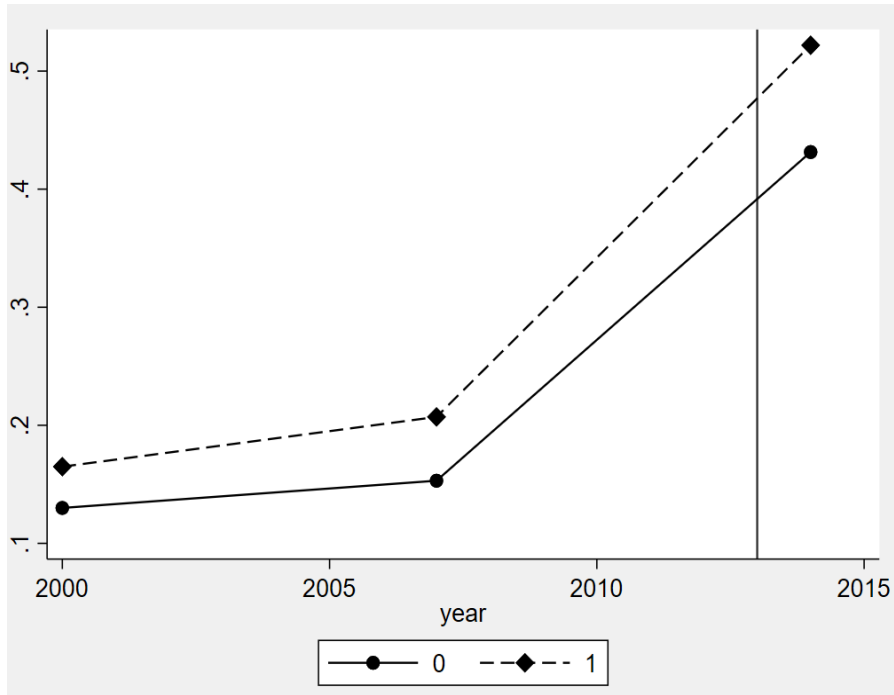


Table 5. Difference in Difference post-treatment 2007-2014

	Before NHI (year=0)	After NHI (year=1)	Difference
Treatment (enrolled after NHI) treat=1	0.206	0.457	0.251***
Control (stay unenrolled) treat=0	0.148	0.361	0.213***
Difference in Difference R-squared			0.038**(0.017) 0.06

4.2. Inferential Analysis

We analyzed the effect of policy implementation on outpatient utilization. Table 6 presents the regression results with and without covariates analysis. The result is as follows:

Figure 1 presents the utilization trend through linear probability model regression analysis in two years of pre-treatment and post-treatment. The impact of insurance ownership on outpatient utilization increased in 2000-2007 and in 2007-2014, which showed a parallel trend. It supported the identifying assumption for health insurance that two pre-treatments should be parallel.

In the pre-treatment regression between 2000-2007 results showed that there was no impact of insurance towards outpatient utilization where the percentage utilization decreased by 6-10% and was statistically insignificant. The outpatient utilization in 2007 was increased by 1%-2.4% compared to utilization in 2000. While the outpatient utilization of the treatment group was 4.7%-6.3% more than the control group.

Meanwhile the result from post-treatment regression in 2007-2014 showed that there was a positive impact and increased the utilization by 3.8% - 21.8% as a result of the JKN policy. The outpatient utilization in 2014 increased by 21%-22% compared to 2007. The utilization of the treatment group was 5.8%-10% compared to the control group.

The evidence on the analysis that included covariates showed that females tend to have 7.9% more outpatient utilization than males ($p=0.000$). For the age variables, the probability of using outpatient care implementation decreased by 2.1% until 53 years old, and the probability increased by 0.04% ($p=0.000$) every additional year.

Based on their socioeconomic status, we divided respondent income into five quintiles and the result showed that all income group had more probability than Q1 member to have outpatient utilization. Especially the highest income group (Q5) had 3.4% more probability of using outpatient care than the lowest income groups with statistically significant ($p=0.045$).

This study also showed that the healthier group had 7.9% less possibility to access outpatient care compared to the sick group ($p=0.000$). Having private insurance could provide additional benefits for the insured. Thus, the two-tier insured group had 24.2% probability to access more outpatient care than a group of people who did not have private insurance.

The urban residents had a 2.6% more probability of using outpatient care compared to the respondent who lived in the rural area and was proven statistically significant ($p=0.000$). As Indonesia's urban and rural situation were different between islands, the result showed that, the probability of those who resided in Eastern Indonesia using outpatient care was 1.4% smaller than the residents who lived in Sumatra Island ($p=0.021$).

Table 6. The impact of policy implementation in placebo (2000–2007) and post-treatment (2007–2014).

Variable (Ref.)	2000 – 2007		2007 – 2014	
	Simple	Adjusted	Simple	Adjusted
	β (SE)	β (SE)	β (SE)	β (SE)
Year*Insurance	-0.006(0.013)	-0.010(0.013)	0.038**(0.018)	0.218***(0.016)
Year	0.024**(0.008)	0.010(0.009)	0.214***(0.012)	0.229***(0.011)
Insurance (treatment group)	0.047***(0.009)	0.063***(0.010)	0.058***(0.008)	0.102***(0.009)
Sex (Ref. male)	-	0.062***(0.007)	-	0.076***(0.007)
Age	-	-0.003**(0.001)	-	-0.021***(0.002)
Age2	-	0.00004**(0.008)	-	0.0002***(0.000)
Education (Ref: no-primary edu) Junior-Senior high College and higher	-	(Ref.) 0.017(0.029) 0.032(0.028)	-	(Ref.) -0.018(0.015) 0.019(0.014)
Marital Status (Ref: without spouse)	-	(Ref.) -0.00004(0.008)	-	(Ref.) -0.012(0.009)
Income (Ref.Q1) Q2 Q3 Q4 Q5	-	(Ref.) 0.016(0.09) 0.006(0.08) 0.010(0.12) 0.034*(0.22)	-	(Ref.) 0.025**(0.013) -0.007(0.012) 0.006(0.013) 0.022*(0.013)
Health Status (Ref. sick)	-	-0.043***(0.007)	-	-0.079***(0.008)
Private insurance (Ref. uninsured)	-	-0.053***(0.10)	-	-0.242***(0.007)
Residence (Ref. rural)	-	0.027***(0.007)	-	0.026***(0.007)
Island (Ref.Sumatra) Java Eastern Indonesia	-	(Ref.) -0.022***(0.008) -0.019 (0.013)	-	(Ref.) -0.003(0.009) -0.014***(0.014)
Intercept (Beta) N R-Squared	0.147***(0.007) 13,946 0.005	0.187***(0.043) 13,946 0.0212	0.147***(0.006) 13,946 0.0619	0.808***(0.047) 13,946 0.1290

*p-value<0.1, **p-value<0.05, ***p-value<0.01

Ref., Reference; SE, Standard Error.

4.2.1 Subgroup analysis by income

Our model showed that JKN insurance had a positive impact on all income quintile levels which increased the utilization by 16–28% as a result of the JKN policy (Table 7). Especially in Q2, as the result of policy, the impact had increased the utilization by 28%. The outpatient utilization in 2014 overall increased by 21% and 25% compared to the outpatient utilization in 2007. The outpatient care of the treatment group increased by 8%–13% compared to the control group and was proven statistically significant. Q5 group had the highest probability to access the outpatient utilization in 2014 compared to 2007. Also, the lowest group income (Q1) had a relatively high outpatient utilization probability of 24% compared to their utilization in 2007.

Even under subgroup analysis by income, the female group still had a higher probability of having outpatient utilization than males by 8–11%. The health status variable result showed that the probability of the healthy group using outpatient care was 6–10% less than the sick group across all income groups ($p=0.000$). By enrolling in private insurance, the possibility to access outpatient care was less than without private insurance by 20–27%.

The exceptional result was that we had no evidence on marital status in the primary regression, but in the subgroup analysis in the income group, Q2 income showed that married or respondents who lived with a spouse had less possibility to access outpatient care than a group living without a spouse by 5%. Also, we only had an evidence in income Q1 that higher education backgrounds (college and higher) had 3.2% more possibility than elementary graduates to access outpatient care. Other quintile group results showed an increasing possibility of outpatient utilization in the highest education background compared to the lowest education but not statistically significant.

The residential area also affected outpatient utilization after policy introduction. The respondent who lived in the urban area had more possibility of using outpatient care than those in the rural area with 3% and proven statistically significant ($p=0.001$) except in Q2 and Q4. In this model, another covariate that indicated residential was the island variable. In the Q2 group, residents living in Eastern Indonesia had less likelihood of accessing outpatient care after JKN by 6% than the Sumatra Island residents.

Table 7. The impact of policy implementation in post-treatment (2007–2014) in different income groups.

Variable (Ref.)	Q1	Q2	Q3	Q4	Q5
	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
Year*Insurance	0.23***(0.04)	0.28***(0.04)	0.16**(0.04)	0.20***(0.05)	0.23***(0.04)
Year	0.24***(0.03)	0.21***(0.03)	0.22***(0.02)	0.23***(0.03)	0.25***(0.03)
Insurance (treatment)	0.09***(0.02)	0.08***(0.02)	0.09***(0.02)	0.12***(0.02)	0.13***(0.02)
Sex	0.08***(0.02)	0.11***(0.02)	0.08***(0.01)	0.08***(0.02)	0.08***(0.02)
Age	-0.02***(0.003)	-0.02***(0.04)	-0.02***(0.004)	-0.02***(0.01)	-0.03***(0.004)
Age2	0.0001***(0.00)	0.0001***(0.00)	0.0002***(0.00)	0.0001***(0.00)	0.0002***(0.00)
Education (Ref:no-primary)	(Ref)	(Ref)	(Ref)	(Ref)	(Ref)
Junior and Senior high	-0.01(0.02)	0.01(0.09)	-0.10(0.09)	0.54(0.12)	-0.06(0.10)
College and higher	0.032*(0.02)	0.09(0.09)	0.11(0.09)	0.08(0.12)	0.08(0.10)
Marital status (Ref:without spouse)	-0.03(0.02)	-0.01(0.02)	-0.05**(0.02)	0.03(0.03)	0.004(0.02)
Health Status (Ref.sick)	-0.06***(0.02)	-0.09***(0.02)	-0.07***(0.02)	-0.07***(0.02)	-0.10***(0.02)
Private insur (Ref.uninsured)	-0.20***(0.03)	-0.26***(0.03)	-0.22***(0.03)	-0.27***(0.03)	-0.26***(0.02)
Residence (Ref.rural)	0.03*(0.02)	0.02 (0.02)	0.03*(0.02)	0.02(0.02)	0.03*(0.02)
Island (Ref.Sumatra)	(Ref)	(Ref)	(Ref)	(Ref)	(Ref)
Java and Bali	0.012(0.02)	-0.04(0.02)	0.005(0.02)	-0.21(0.02)	-0.02(0.02)
Eastern Indonesia	-0.02(0.03)	-0.06**(0.03)	-0.009(0.03)	0.01(0.03)	-0.007(0.03)
Intercept (Beta)	0.72***(0.96)	0.72***(0.14)	0.75***(0.14)	0.75***(0.16)	0.97***(0.14)
N	3,032	2,602	3,218	2,314	2,780
R-Squared	0.1453	0.1375	0.1096	0.1186	0.1473

*p-value<0.1, **p-value<0.05, ***p-value<0.01

Ref., Reference; SE, Standard Error.

4.2.2 Subgroup analysis by island

Table 8 presents the impact of policy introduction in improving outpatient utilization in all different island groups.

JKN policy had a positive impact and increased the utilization of respondents in Sumatra island by 24%, Java and Bali island by 19% and Eastern Indonesia by 34%, as a result of the JKN policy. The utilization of outpatient care among treatment group utilization between Sumatra, Java and Eastern Indonesia overall increased by 9–11% compared to the control group. In addition, in 2014, outpatient utilization increased overall from 11–26% ($p < 0.001$) compared to the utilization in 2007.

In three different islands, the female group had 7–9% more possibility of using outpatient care than the male group, but only the probability in Eastern Indonesia, we found statistically insignificant. This result contrasted with the marital status variable, where those who lived with a spouse had less probability of having outpatient utilization by 5% ($p = 0.047$) than those who lived without a spouse. The finding was statistically significant only in Eastern Indonesia.

We found evidence that groups who had private insurance or in a healthy condition had less possibility to use outpatient care than without private insurance. All the results were proven by statistically significant. The residential areas in Java islands showed that residents in the urban area were more likely to use outpatient utilization by 3% ($p < 0.001$) more than in rural areas. Both Sumatra (0.8%) and Eastern Indonesia (2%) also had a similar trend, but the result was statistically insignificant. An interesting finding of the higher income groups (Q4 and Q5) in Eastern Indonesia had proven that they had more possibility of outpatient utilization than lower-income groups by 8% ($p = 0.06$) and 9% ($p = 0.047$), respectively.

Table 8. The impact of policy implementation in post-treatment (2007–2014) in different island

Variable (Ref.)	Sumatra	Java and Bali	Eastern Indonesia
	β (S.E)	β (S.E)	β (S.E)
Year*Insurance	0.24***(0.05)	0.19***(0.02)	0.34**(0.06)
Year	0.19***(0.03)	0.26***(0.01)	0.11**(0.03)
Insurance (treatment group)	0.11***(0.02)	0.10***(0.010)	0.09**(0.03)
Sex	0.09***(0.02)	0.08***(0.009)	0.07(0.02)
Age	-0.01**(0.004)	-0.02***(0.002)	-0.02***(0.006)
age2	0.00007*(0.00)	0.0002***(0.00)	0.0002**(0.00)
Education (Ref: without-primary) Junior and Senior high College and higher	(Ref) -0.02(0.04) -0.03(0.03)	(Ref) -0.01(0.02) -0.01(0.02)	(Ref) -0.05(0.5) -0.05(0.05)
Marital Status (Ref: without spouse)	-0.03(0.02)	-0.003(0.01)	-0.05**(0.03)
Private insurance (Ref. Uninsured)	-0.26***(0.03)	-0.24***(0.01)	-0.25***(0.04)
Health Status (Ref. Sick)	-0.09***(0.02)	-0.08***(0.009)	-0.07**(0.02)
Residence (Ref. Rural)	0.008(0.02)	0.03***(0.008)	0.02(0.02)
Income (Ref.Q1) Q2 Q3 Q4 Q5	(Ref) 0.05(0.03) 0.004(0.02) 0.03(0.03) 0.05(0.03)	(Ref) 0.02(0.01) -0.01(0.01) -0.01(0.01) 0.008(0.01)	(Ref) 0.01(0.04) 0.04(0.04) 0.08*(0.04) 0.09**(0.04)
Intercept (Beta) N Pseudo R-Squared	0.64***(0.10) 2,628 0.1122	0.83***(0.05) 10,034 0.1398	0.90***(0.17) 1,284 0.1160

*p-value<0.1, **p-value<0.05, ***p-value<0.01

Ref., Reference; SE, Standard Error.

Chapter 5. Discussion and Conclusion

5.1. Discussion

This study used the panel data to observe the JKN policy impact on treatment groups that had enrolled after the policy introduction. The data captured 6,973 individuals and followed them from 2000–2014. This study compared the outpatient utilization trend before and after the JKN introduction, and we mainly discussed healthcare behavior through sociodemographic variables.

Our findings showed that before the JKN policy, insurance ownership did not affect outpatient utilization (Table 6). The result showed that there was a positive impact and increased the utilization by 3.8% – 21.8% as a result of the JKN policy. In 2014, the treatment group healthcare utilization increased by 5.8%–10.2% compared to the control group. The group who became enrolled in insurance had more utilization than those who remained uninsured.

The result showed that health insurance is one of the alternatives to improve access to care. By bringing down the health service price, people start to seek health treatment when sick and increase consumption. It also leads to moral hazard and adverse selection (Feldstein, 2012). According to the Andersen Model, insurance ownership is one factor for the demand for healthcare (Andersen, 2012). Insurance ownership strongly impacted access to outpatient care (Hidayat, 2004), which was also consistent with other studies (Kreider and Nicholson 1997, Vera-Hernandez 1999; Waters 1999; Trujillo 2003).

Some countries showed similar results. For example, in Ghana and Rwanda, it also showed there was strong evidence of positive effects of health insurance on outpatient utilization (Wang, W, 2017). Also, in China, people with social health insurance were less likely to report underutilization and were significantly associated with higher healthcare utilization (Wang, Z, 2018).

The implementation of JKN started in 2014, and in this scheme, outpatient care services covered diagnosis, counselling, preventive care and promotion, obstetric and neonatal services, birth delivery and services for family planning programs, and healthcare facilities, when patients sought treatment and got referral papers for a hospital visit. As a result, the outpatient utilization in 2014 were increased 21–23% compared to the utilization 2007.

The regulation under the JKN system assigns each JKN participant to one first-level facility (FKTP) based on the recommendation of the District Health Office. After the first three months, the participant has the right to select their FKTP preference. The participant must obtain services at the FKTP where he or she is registered unless a referral is made (Presidential Regulation No. 12 of 2013 article 29 clauses 1 and 2).

BPJS has developed a computer application (p-care) to help JKN participants find the nearest health facilities according to their registered home location (Worldbank, 2018) to increase access to care and reduce insured transportation cost and time. Another evidence showed that the JKN program increased the probability of individuals seeking outpatient and inpatient care (Erlangga, 2019). The result was in line with the findings in this study about the impact of JKN introduction on utilization.

To emphasize our finding, according to previous research, insurance ownership in 2000 did not increase patient utilization due to inelastic demand amongst the recipients (Johar, 2009). The Jamkesda insurance program in 2010 showed an increase in outpatient utilization only for a district population than the provincial and national level (Sparrow, 2016).

The outpatient care covered all preventive care, including antenatal and neonatal care, birth delivery and family planning. In Taiwan, the female rate of outpatient visits was lower than male (Hsu, 2016). The Situation was similar with Indonesia, where the Female outpatient rate was relatively low. In line with this study result, in 2014, the utilization possibility increased (7.9%) compared to male. This higher utilization might reduce maternal health inequalities and reduced maternal mortality (Anindya, 2020).

The age variables, the possibility of using outpatient care in 2014 decreased until 53 years old, and the likelihood increased by 0.2% ($p < 0.001$). Based on the studies of the elderly (Madyaningrum, 2018), the elderly insurance coverage was still considerably low, whereas the total insurance coverage was nearly half of them. Therefore, broadening health insurance coverage, especially for the elderly, is essential.

The socioeconomic factor would be associated with the demand for healthcare utilization (Andersen, 2014) and health insurance demand (Feldstein, 2012). Family income or the individual income affected the ability to pay for the health treatment. Therefore, the higher-income group had a higher ability to pay when seeking treatment and proved in other researchers related to healthcare utilization. The findings in this study aligned with the previous studies, where the highest income (Q5) had a probability of 22% more than Q1. So did the Q2 with a slightly higher income level than Q1, with 25% more likely to access outpatient care after JKN introduction.

The poor and near-poor group had qualified to get a government subsidy to pay the insurance. In short, Q1 and Q2 were 'free' from the insurance premium. However, health insurance did not cover the travel cost from the insured house to the healthcare facility. Thus, variables may be explained. Q2 had 25% more possibility to access outpatient care than Q1.

We had no evidence that the education background variable impacted outpatient utilization after the JKN introduction, although much previous research provided the information. The possible explanation was that education level did not necessarily have any association with the outpatient care after JKN introduction, once wealth or income level was accounted for (Dewinta, 2019).

Another factor associated with the demand for healthcare is the health state or condition of the patient. The worse condition would seek more treatment than the healthier. Therefore, the sick probability of occurring were higher in the unhealthy group (Feldstein, 2012). The regression result proved that the healthier group had less likelihood of accessing outpatient care by 7.9% ($p < 0.001$). Even though the healthy group could visit for counselling and check-up, the possibility was still lesser than the sick group.

The finding showed that the people who insured with private insurance had less probability 24.2% (0.007) to access outpatient care compared to those who did not enroll. Furthermore, privately insured patients were treated more intensely, so that fewer doctor visits were necessary (Lungen et al., 2008; Jurges, 2009). It was sensible because, under a private insurance scheme, doctors were paid based on the number of treatments, not on the number of frequent visits. Moreover, doctors would receive a higher compensation when treating privately insured patients. This would make doctors choose to treat the privately insured patient due to their time-constrain (Lungen et al., 2008; Jurges, 2009) (Deveugele et al., 2002).

Private insurance schemes implement the fee for service payment systems. Meanwhile, JKN insurance implements the capitation, the fixed amount of payment paid in advance to the physician to deliver health care services for a maximum of ten visits (MoH, 2014).

The regression covariates on demography situation and residency showed that urban residents were more likely to use outpatient care than rural residents by 2.6%($p<0.001$). As many of the studies found a similar result, Government Indonesia has designed many policies to reduce primary healthcare gaps. Currently, the Government emphasized the effort to increase the infrastructure in the very rural area.

Subgroup analysis showed that JKN insurance had a positive impact on all income quintile levels which increased the utilization by 16–28% as a result of JKN policy. Especially in Q2, as the result of policy, the impact had increased utilization by 28%. The outpatient utilization increased by 11–26% in 2014 compared to 2007.

The result aligned with other studies, which showed an increase in utilization among the low-income group especially the subsidized group PBI (Erlangga, 2019). Like other evidence, healthcare use among the poor increased due to insurance coverage (Dewinta, 2017). After the JKN implementation, the concentration curves moved closer to equality, indicating that the JKN insurance shifted care access to more pro-poor than before (Prastuti, 2016). It implied that after the introduction of JKN, the utilization increased for the low-income group.

The outpatient utilization under JKN insurance's finding proved that this policy increased outpatient care utilization in high-income and low-income groups. This was unlike the insurance before JKN (Askes, Jamkesmas, Jamkesda), which showed that insurance affected the better-off. Especially, under the Jamkesda scheme, the outpatient utilization impact concentrated in the third and fourth quintiles (Q3-Q4) which was interesting because Jamkesda insurance should aim at the population with a low and middle-income group (Sparrow, 2013).

Our model also found that among Q2 income groups, the resident who lived in Eastern Indonesia had less probability of accessing outpatient care than those in Sumatra Island by 6% and was statistically significant. The finding in other group incomes, especially in Eastern Indonesia, had a similar pattern but was statistically insignificant. This possible explanation was that Eastern Indonesia had less insurance literacy, and the insurance coverage was still low. Moreover, in Q2 income, the magnitude of loss when they got sick was the treatment fee and the transport cost higher. Thus, even if their treatment fee was covered by insurance, they could not afford their transport cost. If their magnitude of loss was bigger, it might affect their decision to visit outpatient care.

To strengthen the information of policy impact on different islands, we run another subgroup analysis to measure the impact of JKN insurance on outpatient care utilization in different Islands. JKN policy had a positive impact and increased the utilization of respondents in Sumatra island by 24%, Java and Bali island by 19% and Eastern Indonesia by 34%, as a result of the JKN policy. The outpatient utilization of Java Bali island residents in 2014 was increased up to 26% compared to the outpatient in 2007. While in Sumatra Island, the outpatient utilization in 2014 was increased by 19% in comparison with 2007. Lastly, in Eastern Indonesia, the outpatient utilization in 2014 was increased by 11% compared to 2007.

The difference of outpatient utilization in between three different islands was explained by the MoH data which showed that the outpatient utilization inequality was considerably high in Eastern Indonesia compared to Sumatra and Java island due to their availability of healthcare facilities (Ministry of Health, 2017).

According to the Public Health Development Index (PHDI) measurement that assesses the health service across the nation and accounts for their population access, Sumatra, Java, and Bali achieved higher scores compared to Eastern Indonesia (Suparmi, 2018). Topographically, Sumatra, Java and Bali island have better infrastructure, transportation access and a higher number of facilities. It was enough to provide for the health needs of the population and considered very accessible. The enabling factor in the Andersen Model served the availability of health care and travel time associated with the demand for healthcare.

The Government had launched a Nusantara Sehat (NS) program to provide additional health workers in rural and remote areas to cope with their health problem, especially in Eastern Indonesia. The NS program was significantly impactful for increasing the quality of healthcare services. The program also increased patient knowledge for the preventive health program and JKN insurance literacy (TNP2K, 2019). The program had contributed to improve their utilization. Yet, it still found that less than the utilization in others Island.

On the top of that, compared to Sumatra and Java, Eastern Indonesia is less developed, and had less healthcare facilities. Therefore, resident had to travel more to visit health facilities. These variables were supposed to be accountable as well to measure the access health services as an additional financial burden (Royasia, 2018).

5.2. Limitaton

The analysis data were taken from IFLS 2014 conducted from late October 2014 until April 2015. Therefore, the result was only able to capture the situation where the coverage in 2014 was still 52.4%. Meanwhile, the insurance coverage in 2020 was around 80%. As the health status and healthcare utilization might change, the result could not present the current situation. However, it still could prove that JKN insurance had successfully increased the population outpatient care utilization.

Considering IFLS provinces are more developed than the non-IFLS provinces, our findings might show the upper limit of the actual impact. However, this research result defined the accessibility for JKN and outpatient care in Indonesia. In the future, it will be better to analyze the impact of JKN introduction on inpatient care utilization and compare it with outpatient care utilization.

This study attempted to measure the impact of JKN on outpatient utilization. However, the availability of healthcare and travel time variables not included in the analysis, such as the distance of health facilities, quality of health workers and density of healthcare facilities.

5.3. Conclusion

This study reported the positive impact of the JKN policy on the outpatient care utilization of respondents and the utilization in 2014 increased by 21.4% ($p < 0.001$). The covariates that improved the utilization after JKN introduction and statistically significant were sex, ages, income, health status, private insurance ownership, residence status and island of resident.

Under the placebo test, it was found out that the result showed the parallel trend assumption on outpatient utilization. The JKN policy impact increased in all income level groups. After implementing JKN, the positive effect on the outpatient utilization affected especially in the lower-income group (Q2-Q1). Even though the targeted members were similar with previous insurance (Jamkesda), the JKN impact was better due to the health facility referred treatment. The impact of JKN insurance on outpatient care utilization in different Island subgroups showed a positive effect on three islands residents' outpatient utilization. Significantly, under JKN policy, residents in Eastern Indonesia outpatient utilization had improved more than under previous insurance. The Ministry of Health program (NS) to increase insurance literacy especially in Eastern Indonesia has been proven to be successful.

Glossary

1. JKN: is Indonesia social health insurance
2. BPJS: is a Health care and Social security Agency.
3. Askes: is tax-based insurance for civil servants and dependent families.
4. Jamkesmas: is tax-based insurance funded by the central Government for the poor (under the poverty line).
5. Jamkesda: is tax-based insurance funded by the regional Government for the poor (under poverty line).
6. Jamsostek: is a Social health insurance for formal workers.
7. Askeskin: is an insurance for poor-group that was not covered by Jamkesmas and Jamkesda, funded by Askes
8. Asabri: is tax-based insurance for Police and military officers and their dependent families.
9. SUSENAS: is a cross-sectional health survey conducted by the Ministry of Demographic held once in five years.
10. SKTM: is a certificate from head village that proof the family are under a disadvantage situation (poverty)
11. OOP: Out of pocket health spending
12. PBI: Health insurance subsidies paid by the government for the poor and near-poor

Bibliography

- Aji, B. De Allegri M, Souares A, Sauerborn R. The impact of health insurance programs on out-of-pocket expenditures in Indonesia: An increase or a decrease. *International Journal of Environmental Research and Public Health*. 2013;10(7)
- Angrist JD, Pischke J-S., (2008)., *Mostly harmless econometrics: an Empiricist's Companion*. Princeton University Press, Princeton
- Anindya, K., Lee, J. T., McPake, B., Wilopo, S. A., Millett, C., & Carvalho, N. (2020). Impact of Indonesia's national health insurance scheme on inequality in access to maternal health services: A propensity score matched analysis. *Journal of global health, 10*(1), 010429. <https://doi.org/10.7189/jogh.10.010429>
- Babitsch, B., Gohl, D., & von Lengerke, T. (2012). Re-revisiting Andersen's Behavioral Model of Health Services Use: a systematic review of studies from 1998–2011. *Psycho-social medicine, 9*, Doc11. <https://doi.org/10.3205/psm000089>
- Bertakis KD, Azari R, Helms LJ, Callahan EJ, Robbins JA. (2000). Gender differences in the utilization of health care services. *J Fam Pract*. 2000 Feb;49(2):147–52. PMID: 10718692.
- Comfort, A. B., Peterson, L. A., & Hatt, L. E. (2013). Effect of health insurance on the use and provision of maternal health services and maternal and neonatal health outcomes: A systematic review. *Journal of Health, Population, and Nutrition, 31*, 81–105.
- Commission on Social Determinants of Health WHO (2008). *Closing the Gap in a Generation: Health Equity through Action on the Social Determinants of Health*.
- Cylus, J., S. Thomson and T. Evetovits (2018), *Catastrophic health*

spending in Europe: Equity and policy implications of different calculation methods, *Bulletin of WHO*.

Dartanto T, Rezki JF, Pramono W, Chairina H, Siregar U, Bintara H. (2016). Participation of informal sector workers in Indonesia's national health insurance system. *J Southeast Asian Econ*. 2016;33(3):317-42.

Egami, Naoki, & Yamauchi, Soichiro. (2021). Using Multiple Pre-treatment Periods to Improve Difference-in-Differences and Staggered Adoption Design. Retrieved from: <https://arxiv.org/abs/2102.09948>

Ekman, B. The impact of health insurance on outpatient utilization and expenditure: evidence from one middle-income country using national household survey data. *Health Res Policy Sys* 5, 6 (2007). <https://doi.org/10.1186/1478-4505-5-6>

Erlangga, Darius., Ali, Shehzad., Bloor, Karen., (2019). The Impact of Public Health Insurance on Healthcare Utilization in Indonesia: Evidence from Panel Data. *International Journal of Public Health* (2019) 64: 603-613. <https://doi.org/10.1007/s00038-019-01215-2>

Farrell, C. M., & Gottlieb, A. (2020). The Effect of Health Insurance on Health Care Utilization in the Justice-Involved Population: United States, 2014-2016. *American journal of public health*, 110(S1), S78-S84. <https://doi.org/10.2105/AJPH.2019.305399>

Guindon, G. (2014). The impact of health insurance on health services utilization and health outcomes in Vietnam. *Health Economics, Policy and Law*, 9(4), 359-382. doi:10.1017/S174413311400005X

Hansen, A.H., Halvorsen, P.A., Ringberg, U. et al. (2012) Socio-economic inequalities in health care utilization in Norway: a population based cross-sectional survey. *BMC Health Serv Res* 12,

336 (2012). <https://doi.org/10.1186/1472-6963-12-336>

Han-Kyoul, Kim., & Munjae Lee. (2016). Factors associated with health services utilization between the years 2010 and 2012 in Korea: using Andersen's Behavioural Model. *Osong Public Health and Research Perspectives*, Volume 7, Issue 1, pages 18-25, ISSN 2210-9099,

<https://doi.org/10.1016/j.phrp.2015.11.007>.(<https://www.sciencedirect.com/science/article/pii/S2210909915300813>)

Heywood, P., Choi, Y. (2010). Health system performance at the district level in Indonesia after decentralization. *BMC Int Health Hum Rights* 10, 3. <https://doi.org/10.1186/1472-698X-10-3>

Hidayat, B. Thabrany, H. Dong, H. Sauerborn, R. (2004). The effects of mandatory health insurance on equity in access to outpatient care in Indonesia. Oxford University Press, 2004. *HEALTH POLICY AND PLANNING*; 19(5): 322-335

Indonesia NIHRD. (2005). Indonesia: sub-national health system performance assessment. National Institute of Health Research and Development, Ministry of Health. Republic of Indonesia 2005

International Budget Partnership (IBP). (2012). *JAMKESMAS and District Health Care Insurance Schemes: Assessment Reports from 8 Districts/Municipalities and 2 Provinces*. Perkumpulan INISIATIF, 2012.

Johar, Meliyanni., Soewondo, Prastito., Pujisubekti Retno., et al. (2018). Inequality in access to health care, health insurance and the role of supply factors. *Social Science & Medicine* Volume 213, September 2018, Pages 134-145

Laksono, AD. Wulandari, RD. (2021) *The Border-Non-Border Areas Disparities in Hospital Utilization in Kalimantan Island, Indonesia*.

- Laksono, AD. Wulandari, RD. Seodirman, O. (2019). Urban and Rural Disparities in Hospital Utilization among Indonesian Adults. *Iran J Public Health* 2019;4(2):247-55. Retrieved from: <http://ijph.tums.ac.ir/index.php/ijph/article/view/16143>
- Madyaningrum, E., Chuang, Y. C., & Chuang, K. Y. (2018). Factors associated with the use of outpatient services among the elderly in Indonesia. *BMC health services research*, 18(1), 707. <https://doi.org/10.1186/s12913-018-3512-0>
- Mboi, Nafsiah. (2015). Indonesia: on the way to universal health care. *Health Systems & Reform* 2015.
- Ministry of Health of Republic Indonesia. (2015). *Indonesia Health Profile 2014*. Retrieved from: <https://www.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/profil-kesehatan-indonesia-2014.pdf>
- Mulyanto, J., Kringos, D. S., & Kunst, A. E. (2019). Socioeconomic inequalities in healthcare utilization in Indonesia: a comprehensive survey-based overview. *BMJ open*, 9(7), e026164. <https://doi.org/10.1136/bmjopen-2018-026164>
- Mulyanto, J., Kringos, D. S., & Kunst, A. E. (2019). Geographical inequalities in healthcare utilisation and the contribution of compositional factors: A multilevel analysis of 497 districts in Indonesia. *Health & Place* (60), 102236, ISSN 1353-8292. <https://doi.org/10.1016/j.healthplace.2019.102236>.
- ODPHP (US Department of Health and Human Services, Office of Disease Prevention and Health Promotion) Foundation., (2017)., *Health measures: Determinants of health*. Washington, DC: US Department of Health and Human Services; 2017a.

Ramadani, V.R.(2018) Does universal health insurance program against the burden of catastrophic health expenditure in Indonesia? Markov modeling with a lifespan perspective using IFLS 2007 and 2014.

RAND Social and Well-being. (2015). A longitudinal survey of Indonesian Family Live Survey. [Data file and codebook]. Retrieved from: <https://www.rand.org/well-being/social-and-behavioral-policy/data/FLS/IFLS/download.html>

Shippee, N. D., Shippee, T. P., Hess, E. P., & Beebe, T. J. (2014). An observational study of emergency department utilization among enrollees of Minnesota Health Care Programs: financial and non-financial barriers have different associations. *BMC health services research*, 14, 62. <https://doi.org/10.1186/1472-6963-14-62>

Sommers, B. D., Gawande, A. A., & Baicker, K. (2017). Health insurance coverage and health — what the recent evidence tells us. *The New England Journal of Medicine*, 377(6), 586-593. doi: <http://dx.doi.org.libproxy.snu.ac.kr/10.1056/NEJMs1706645>

Sparrow R, Suryahadi A, Widyanti W.(2013). Social health insurance for the poor: Targeting and impact of Indonesia & Askeskin program. *Social Science&Medicine*.2013;96:264-71

Sufrian, Iman., Simanjuntak, R.A., et al. (2020). Health-care Inequity in Indonesia. Retrieved from: https://www.researchgate.net/publication/340196911_Health-Care_Equity_in_Indonesia

Sumartono, D., Illinia. (2017). Effects of universal health coverage on health care inequality in Indonesia. Retrieved from: <https://thesis.eur.nl/pub/39203/Sumartono-DW-448200-MA-thesis.pdf>

Suparmi., Kusumawardani, Nunik., Nambiar, Devaki., et al. (2018). Subnational regional inequality in the public health development index in Indonesia. *Global Health Action*, 11: sup1, 41–53. <https://doi.org/10.1080/16549716.2018.1500133>

Toshiaki Aizawa (2019) The impact of health insurance on out-of-pocket expenditure on delivery in Indonesia, *Health Care for Women International*, 40:12, 1374–1395, DOI:10.1080/07399332.2019.1578778

The development of the implementation of the Healthy Indonesia National Card–Health Insurance Program (JKN–KIS) managed by BPJS. Retrieved from: <https://bpjs-kesehatan.go.id/bpjs/unduh/index/1092>

Wagstaff, A., & van Doorslaer, E. (2003). Catastrophe and impoverishment in paying for health care: With applications to Vietnam 1993–1998. *Health Economics*, 12(11), 921–933. Doi:10.1002/hec.776

Wagstaff A, Flores G, Hsu J, Smitz MF, Chepynoga K, Buisman LR, et al. (2018). Progress on catastrophic health spending in 133 countries: a retrospective observational study. *Lancet Glob Health*;6(2):e169–e79.

Wang, W., Temsah, G., & Mallick, L. (2017). The impact of health insurance on maternal health care utilization: evidence from Ghana, Indonesia and Rwanda. *Health policy and planning*, 32(3), 366–375. <https://doi.org/10.1093/heapol/czw135>

Wang, Z., Li, X., Chen, M. et al. (2018). Social health insurance, healthcare utilization, and costs in middle-aged and elderly community-dwelling adults in China. *Int J Equity Health* 17, 17 (2018). <https://doi.org/10.1186/s12939-018-0733-0>

Wasir, R. (2020). Moving forward to achieve universal health coverage in Indonesia. University of Groningen. <https://doi.org/10.33612/diss.124431881>

Wen-Chin Hsu, Yi-Ping Hsu., (2016). Patterns of outpatient care utilization by seniors under the National Health Insurance in Taiwan, *Journal of the Formosan Medical Association*, Volume 115, Issue 5, 325-334, ISSN 0929-6646. <https://doi.org/10.1016/j.jfma.2015.12.001>.

Wenjuan Wang, Gheda Temsah, Lindsay Mallick., (2017). The impact of health insurance on maternal health care utilization: evidence from Ghana, Indonesia and Rwanda, *Health Policy and Planning*, Volume 32, Issue 3, April 2017, Pages 366-375, <https://doi.org/10.1093/heapol/czw135>

World Health Organization. (2010) *Health Systems Financing: The path to universal coverage*. World Health Report. Geneva: World Health Organization.

Zweifel, P., & Manning, W. G. (2000). Moral hazard and consumer incentives in health care. In A. J. Culyer and J. P. Newhouse (Eds.), *Handbook of health economics* (Vol. 1A, pp. 409-459). Amsterdam, The Netherlands: Elsevier.

Abstract

Anita Damayanti Putri

Major in Health care Management and Policy

Graduate School of Public Health

Seoul National University

인도네시아 국민건강보험(JKN)은 2014년에 설립되었다. 건강보험에 가입하는 것은 피보험자를 경제적으로 보호하고 그들이 필요할 때, 특히 가난하고 건강하지 못한 사람들을 위해 의료 서비스를 제공하고 있다. JKN보험전에는 건강보험이 소득 프로파일에 따라 다르게 적용 됐다. Askes와 Jamkesda의 영향은 외래환자 진료에 대한 접근성을 높였다. 그러나 저소득 계층보다는 3, 4분위 소득 집단에 영향이 집중되었다. 원래 목적은 가난하고 빈곤한 것으로 간주되는 1분위와 2분위 소득집단을 보호하고 접근성을 높이는 것이었다. 본 연구는 JKN 보험이 외래환자 진료 이용에 영향을 미치는지 여부를 알아내는 것을 목표로 한다.

분석은 선형 확률 모형과 함께 Difference-in-differences(DiD) 방법을 사용했다. 이 모델은 정책 도입 후 세 개의 섬으로 구분되는 다양한 5분위 소득 집단과 주거 지역에서 하위 그룹의 영향에 대한 분석을 제공하는 것을 목표로 한다. 이 연구는 IFLS 4(2007)와 5(2014)의 패널 데이터를 사용했고 추세를 정의하기 위한 위약 테스트는 IFLS 3(2000)의 것이었다. 치료 그룹은 2014년 JKN 도입 후 보험에 가입한 응답자였고, 대조군은 보험에 가입하지 않은 응답자였다.

그 결과 JKN이 외래환자 활용에 긍정적인 영향을 미쳤으며 JKN 정책 결과 활용률이 3.8%~21.8% 증가했다. 치료 그룹의 외래 환자 진료 활용도가 대조군 활용도 이상임을 확인하였다. 소득 하위그룹 분석에서, JKN은 모든 소득집단에 대한 외래환자 치료에 긍정적인 영향을 미쳤으며, 이는 최고소득 집단뿐만 아니라 최저소득 집단에서도 정책 활용도를 16-28% 높였다. 섬 하위그룹 분석에서 외래환자 활용에 긍정적인 영향을 미쳤으며, 특히 동인도네시아에서 활용률이 34% 증가했다. 연령, 성별, 소득, 개인 보험 소유권, 거주지, 섬 및 건강 상태와 같은 공변량 포함 후 회귀 분석 결과도 외래 환자 이용에 긍정적인 영향을 주었다.

Keyword : Health Insurance, outpatient utilization, income, islands

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