The Impact of National Health Insurance (JKN) to Equity Formal Health Service in Indonesia

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Abstract
This article aims to estimate the impact of National Health Insurance (JKN) to the equity of formal health service in Indonesia. The component of formal health service analysed in this article includes the access to outpatient service, access of inpatient service and utilisation of inpatient service. Using the dataset of National Social and Economic Survey (Susenas) 2013 and 2015. This study using decomposition of concentration index method (adapted from Wagstaff et al., 2003), the expenditure per capita factor is the main contributor of concentration index or the inequity of formal health service utilisation.. These results were founded in most of the formal health facilities observed and the expenditure per capita factor is the main contributor of concentration index or the inequity of formal health service utilisation.
**Keywords:** equity, health insurance, utilisation, Indonesia

1. Introduction

Some empirical literatures have discussed the impact of health insurance membership to the demand or access to individual health services. Some of the literatures were developed in the context of developing countries, such as Manning et al. (1987) Kreider and Nicholson (1997), Holly et al. (1998), and Chiaporri et al. (1998).   Some other studies (Vera-Hernandez 1999, Waters 1999, Trujillo 2003) specifically discussed the relation between health insurance membership and health service demand using the probability approach. In Indonesian context, some study (Hidayat, Thabrany, Dong, & Sauerborn 2004; Hidayat & Pokhrel 2010) have examined the impact of health insurance membership to the access and equity of health service.

However, related study that done after the official launched of National Health Insurance (JKN) in 2014 is relatively limited. Although the membership of JKN is compulsory for every resident, the implementation of membership covering in JKN was done gradually. In the initiation phase in 2014, the executive body for social security – health component (BPJS Kesehatan) targeted two groups of member, including: (i) poor residents whom its contribution payment is covered by the government (payment's assistance beneficiaries or PBI) and (ii) non-PBI member. The main objective of JKN is to improve the access to formal health service. In this context, JKN is expected to give benefit in the form of health service that can be accessed by all members without discrimination based on the social and economic status. The benefit of insurance is provided by the health service facility that cooperate with BPJS-Kesehatan.

JKN is organised nationally and was implemented officially since 1 January 2014. This program is expected to give the members a guarantee in the fulfillment of basic health needs. JKN membership would be compulsory for Indonesian citizens because its basic principle as the social insurance. This principle of social insurance allows the mutual support in the financing scheme, which in this context, the upper-class membership payment can support lower-class insurance. When every resident does not find any barrier in accessing health services, the equity principle can be fulfilled. The equity principle means that similarity of the rights to received medical treatment based on the health conditions.

Integration of the previous health insurances to the JKN system is done as it is planned in the masterplan created by the national social security council (DJSN). BPJS-Kesehatan is chosen as the health insurance organiser. The previous member of health insurance schemes which consist of Askes (social/government official), Jamkesmas, JPK-Jamsostek, TNI/Polri (defence and police), and some of the Jamkesda, were integrated under the management of BPJS-Kesehatan. Besides the integration, BPJS-Kesehatan also open registration for any citizen, either as individual, corporate member, or through regional government as the regional PBI (PBI-APBD).
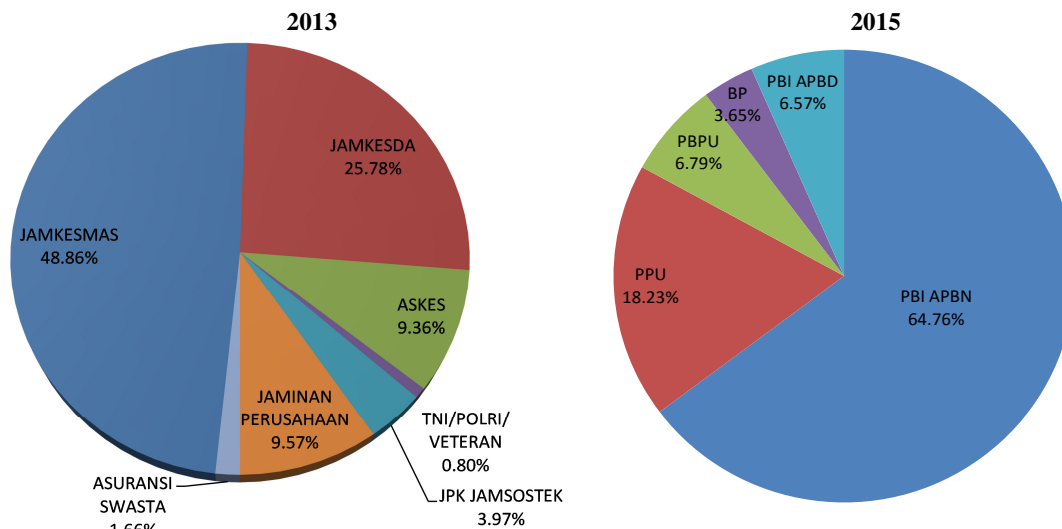
(Source: Ministry of Health and BPJS, processed)

Figure 1. The Proportion of Health Insurance Member Based on The Insurance Organisers (2013) and the Financing Source (2013).

As the graphic 1 described, Jamkesmas in June 2013 took the biggest coverage of health insurance (48.86%), which is followed by Jamkesda coverage (25.78%). At the end of 2014, JKN coverage reached 133.4 million, in which 8.7 million members are financed by the regional budget (APBD/Jamkesda). At the end of 2016, Jamkesda is targeted to be fully integrated with JKN with financing scheme that was agreed upon.

Empirical literatures have shown that health insurance can increase the access and utilisation of health service effectively. Wagstaff and Pradhan (2006), in the study of Vietnam in 1990 found empirical evidence about the ability of social insurance to reduce the cost of medical treatment and expenditure for catastrophic disease medication; increase utilisation of health care facility and overall health outcome. However, contradicting result shown in the study in China, in which health insurance increased the cost for treatment and expenditure for catastrophic disease; increasing utilisation of health service (Wagstaff et al., 2009). This might be caused by the partial coverage of the health insurance which give preference to the member to payed some part of the treatment cost.

However, the members of health insurance might not utilise the insurance because dissatisfaction of the health service quality served by the healthcare facility (Liu et al. 2012); availability of the facility; and the cost of access to the facility (factor of distance, transportation, etc.). If both 'the availability of facility' and 'the means to access the facility' have been controlled, the equity of the access and utility are influenced by the cost that bear by the patients. Therefore, the role of health insurance is huge to cover the all cost or half of the cost that need to be paid by the patients.

Access and proper utilisation of health service are the factor that are used to measure the equity level of health sector. According to O'Donell et al. (2007), the disparity of health service utilisation in Indonesia was relatively high considered with the other countries in Southeast Asia. This is suspected to be caused by the unequal distribution of health service facility which is controlled by the regional government. Variation of regional government income and leads to the disparity in the regional spending for public health (Kruse, Pradhan, & Sparrow 2009).

One of the main objective of national health insurance is to increase the access to health service by giving financial insurance when health conditions are occurred. The need for health insurance is higher in the low-income group who did not have the access to formal health insurance because prior to JKN, health insurance is still limited and segmented. Health concern are fundamental problem and every individual have rights to receive the same quality of service for their needs. Low-income group will have bigger problem if the expense for health treatment is big. This will worsen their economic status and welfare.

Andersen (1995) developed a healthcare utilisation model, in which the main group of variable that influence the decision-making process to utilise health service are, predisposing characteristic, enabling resource, and need. Predisposing characteristic includes demographic characteristic such as age and gender type; social factor, such as education and occupation; and mental factor about perceived health condition. Enabling resources include: financial factor, availability of service facility, means and time to access the health service. Lastly the factor of 'needs' is the ability of individual to decide whether they need to go to health facility or not. This factor is affected by individual judgment about the symptoms, disruption of daily activities, and the needs

for outpatient or inpatient care. Although the last one is also decided by the health professionals. Based on the three factors, individuals might have variation of behaviour in accessing health service and different frequency and duration in utilising health services based on their condition. However, health conditions are supposed to be examined by the health professionals objectively. Therefore, the first step that needed by the individuals with health condition is to access health services.

The impact of JKN program to access and equity of health service can be examined if the evaluation is done objectively and independently. Therefore, this study is aim to answer two main research questionsmHow JKN affects the equity of healthcare access? In this study, we investigate implication of JKN to equity of healthcare are derived from Social-Economic National Survey (Susenas) which covered 1.1 million Indonesian residents each year. Susenas data is considered as enough to analysed the net impact of JKN because individual behaviour can be captured based on health condition report and variable related to the healthcare of equity.

2. Data and Methodology
2.1 Data
This study use data from National Social Economic Survey (Susenas) organised by Statistics Indonesia (BPS) year 2013 and 2015. Data collection of Susenas is done on February every year. The question asked generally refer to the household condition in the one recent month. This means that social economic conditions captured in the survey described sample condition on January. While JKN was started to be implemented nationally per 1 January 2014. Therefore, 2013 data can be used to examine the condition of sample one year before the implementation, while the 2015 data is used to capture the condition one year after the implementation.

In Susenas, some questions individual and household characteristics are included, such as health condition, the duration of condition, access and utilisation of health service and health insurance membership. The three independent groups of factors, predisposing, enabling, and need, adapted some variable of Susenas. Economic condition is represented by the expenditure-level quintile group. Another question in Susenas questionnaire ask individual experience on inpatient care in one recent year. Inpatient care in this context includes the first level of Inpatient care (RITP) in Puskesmas (Public Health center) or health clinics that provide inpatient care, while the followed-up inpatient care (RITL) are given in the public or private hospitals.

For the variable of membership, there is a different definition before and after the implementation of JKN in 2014. In 2013, Susenas recorded number of individual in each household sample that had been a member of any types health insurances, such as Jamkesmas, Jamkesda, Jampersal, JPK PNS/Veteran/Pensioner and JPK Jamsostek. While in 2015, Susenas record changed to the individual membership of BPJS Kesehatan, BPJS Ketenagakerjaan (Employee social insurance), Askes/Asabri/Jamsostek, Jamkesmas/PBI dan Jamkesda dan private insurance and corporate health insurance. BPS purposefully mentioned type of insurance in the questionnaire to cover possible answer from the respondent and 'BPJS' as a terminology was not well-known when the survey was executed.

To make comparative analysis, the insurances are grouped into three categories. For 2013 data the three categories are: (1) 'JKN group' includes some types of insurance that become part of JKN after integration, such as Jamkesmas, Jamkesda, Jampersal, JPK PNS/Veteran/Pensioner and JPK Jamsostek; (2) Jamkesda (regional government-sponsored health insurance; (3) private insurance and; (4) no health insurance. For 2015 data, the category number (2), (3), (4) are similar, while the category (1) including the member of BPJS-Kesehatan, BPJS-Ketenagakerjaan, Askes/Asabri/Jamsostek, Jamkesmas/PBI.

Descriptive statistics for the main and supporting variable are depicted on the table 1. Overall, because the sample of Susenas Kor are independent between years of data collection, therefore, there is tendency of variation between demographic, social, and economic variables. There is not any systematic difference between sample 2013 and 2015.

Table 1. The variables

Variable	2013		2015	
	Mean	Std. Dev.	Mean	Std. Dev.
Expenditure Per capita	675773	753914	830104	919301
Quintile (Q1=baseline)				
Q2	0.20	0.40	0.17	0.38
Q3	0.20	0.40	0.20	0.40
Q4	0.19	0.39	0.23	0.42
Q5	0.18	0.38	0.26	0.44
Female	0.50	0.50	0.50	0.50
Married	0.47	0.50	0.47	0.50
Age	29.80	20.12	30.00	20.02
Live in the City	0.43	0.49	0.43	0.49
Number of Household member				
0 - 4	0.45	0.64	0.42	0.63
> 5	4.18	1.67	4.14	1.65
> 10	3.65	1.52	3.64	1.51
Household with fertile women	0.32	0.47	0.86	0.52
Numer of household member	4.62	1.84	4.57	1.80
Number of household in sensus block	1.24	0.57	1.26	0.63
Household member who is				
Working	0.57	0.49	0.57	0.50
Student	0.21	0.41	0.22	0.41
Manage the household	0.52	0.50	0.51	0.50
Have other activity	0.40	0.49	0.38	0.48
Not working	0.03	0.18	0.03	0.17
Primary school	0.09	0.19	0.09	0.17
Junior high school	0.06	0.17	0.11	0.27
Senior high school	0.05	0.17	0.03	0.15
Tertiary education	0.01	0.11	0.00	0.04
Number of Individu	1094179		1097719	
Number of household	284063		285908	

2.2 Decomposition Concentration Index

In this study, the calculation of JKN impact to the health service equity will utilise concentration index that has been discussed in the previous section. However, that concentration index only able to give information about disparity status in the access to healthcare based on individual income (welfare) level. In this study, concentration index analysis will be expanded to examine whether disparity in JKN coverage and other determinant variable also affect the disparity in access to healthcare. Wagstaff, van Doorslaer, and Watanabe (2003) showed that health concentration index can be decomposed to understand the contribution of individual factors of access disparity with respect to the income level. This approach elaborates the contribution of other variable to the relation of social economic status and healthcare access disparity. For instance, given that additive linier regression model with dependent variable y represent the access to healthcare:

$$y = \alpha + \sum_k \beta_k x_k + \varepsilon$$

y   :   outcome variable, access or utilisation of health service
x_k :   set of determinant variables k
ß   :   estimated parameter using OLS method

By combining OLS approach and the previous concentration index formulation, Wagstaff et al. (2003) formulate decomposite concentration index:

$$C = \sum_k \left(\beta_k \bar{x}_k / \mu \right) C_k + GC_\varepsilon / \mu$$

   μ   :   average of y
   x_k :   mean of xk
   C_k :   concentration index for xk
   GCε: generalized concentration index of error term ( )

However, sometimes dependent variable is categoric type such as healthcare access and the status. Basically, disparity estimation of categorical data can be done using the same approach that used for numeric data. In this

context van Doorslaer et al. (2004) use partial effect approach in which prediction value is formulated as:

$$y_i = \alpha^m + \sum_i \beta_j^m x_{ji} + \sum_k \gamma_k^m z_{ki} + \mu_i$$

β_j^m , γ_k^m : partial effect of each variable that is determined as fix parameter
μ_i : variance of error
Based on formula disparity formulation can be modified to:

$$C = \sum_i \left(\frac{\beta_j^m x_{ji}}{\mu}\right) C_j + \sum_k \left(\frac{\gamma_k^m z_{ki}}{\mu}\right) C_k + GC_\mu / \mu_i$$

3. The portrait of Formal health service health utilisation in Indonesia

In 2013, 76.18% of total population of Indonesia are covered by numerous type of health insurance, including Jamkesmas (36.3%), Askes PNS (6.91%), JPK Jamsostek (2.93%), Jamkesda (19.59%), private insurance (1.23%), Health insurance TNI/Polri (0.97%), and Corporate insurance (7.11%). While in 2015, after the implementation of JKN system and integration of several health insurance into BPJS, per 31 december 2015, 61.38% of population has become the member of BPJS. Those percentage exclude the other health insurance member that has not been integrated to BPJS.
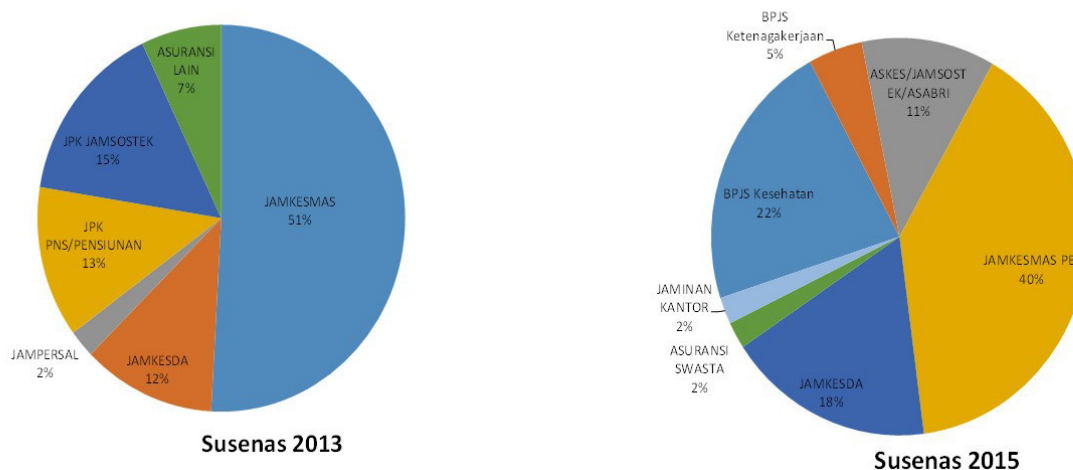

Figure 2. Percentage of health insurance member based on type of insurance (Susenas 2013) and organiser (Susenas 2015)

The result described in the graphic 2 cannot be compared with the previous data because the source and the approach of data collection is different. In graphic 3, membership of insurance is grouped into 3 categories. Different approach of data collection is suspected to be the cause of number gap between potentials of JKN in 2013 and membership of JKN in 2015. Besides, there are several regional government (kabupaten/kota) that has integrated its regional health insurance system (Jamkesda) to JKN, but not included in the questionnaire of Susenas 2015.
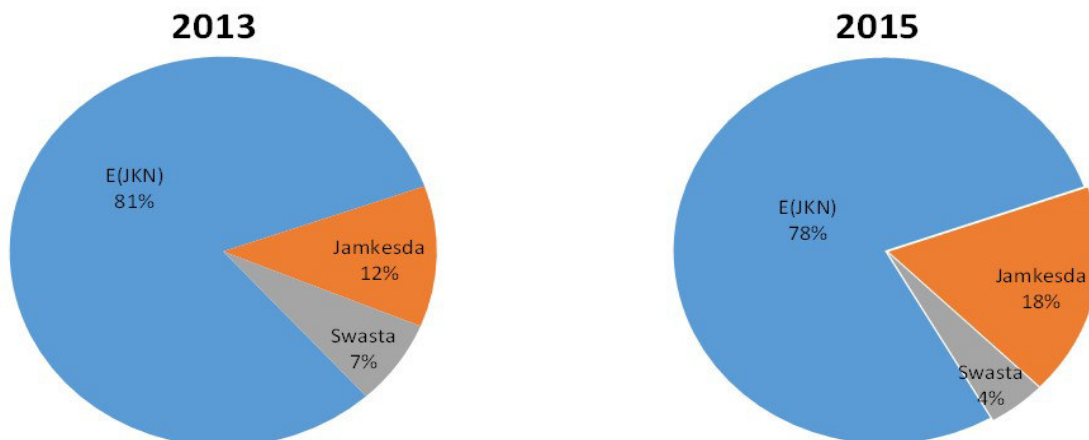

Figure 3. Membership of health insurance, potentials of JKN (2013) and JKN (2015)
The individual's decision to access outpatient or inpatient care usually affected by the consideration of

the cost. Become a member of health insurance will give the patient assurance for the cost that need to be paid. In some cases, the patient get free of charge, while the others only need to pay for the gap of cost that not covered by the insurance.

4. The contribution of JKN to the equity
4.1 The contribution of JKN to the equity of health service utilisation
This section specifically elaborate contribution of individual's JKN membership to the equity of formal health care utilisation, including the access to outpatient and inpatient care; and utilisation of inpatient care. To calculate contribution of JKN, approach from Wagstaff et al. (2003) is utilised. Basically, this approach decomposes the contribution of each covariates that used in linear regression model, with 'health income' as the dependent variable. In this study, that variable represents the utilisation of formal health care. Linear regression model was developed in the framework of concentration index proposed by Kakwani et al. (1997). Besides variable JKN as the main covariate, the analysis also involves demographic variable and individual social-economic condition as additional independent variable, including other insurance (represented by private insurance/JKS), expenditure per capita, age (and age^2), gender type, marital status, working status, education, urban-rural area, and western-eastern area. The aim of adding independent variable is to see other contribution beside JKN to the health service utilisation in formal health facilities.

Basically Wagstaff et al. (2003) approach is to decompose concentration index from formal healthcare facility that resulted from the previous section. Decomposition is aimed to elaborate the role or contribution each covariate that included in the regression model with healthcare utilisation as the dependent variable. Concentration index decomposition (Wagstaff et al. 2003) produce three components including elasticity, concentration index, and each covariate contribution. In here, elasticity (first column) is formulated as $(\beta_k \overline{x_k} / \mu)$ which represent elasticity from the equity of healthcare utilisation with respect to each covariate. While concentration index (second column) reflect the equity of each covariate and contribution (column 3) represent the role of each covariate to the concentration index or equity of healthcare utilisation. 'Contribution' is calculated by multiplying the elasticity and concentration index. The last row residue is obtained by calculating the difference between concentration index of each covariate and total contribution of every covariates used.

4.2 Contribution of JKN to the equity of outpatient care
Decomposition of concentration index of outpatient care access in public hospitals is presented in table 23. Contribution of each covariate is determined by its elasticity and concentration index. From table 2, the biggest contributor of outpatient care concentration index in public hospital is expenditure per capita and followed by rural-urban category, individual working status, and JKN membership. Relative contribution of expenditure per capita is 35.87% in 2013 and 37.68% in 2015. While relative contribution of JKN is -5.9% in 2013 and -1.14% in 2015.

In line with the finding that show expenditure per capita as the biggest contributor, Wagstaff et al. (2003) said that health outcome disparity between the upper-income group and lower-income group is caused by the income disparity. In other words, welfare level factor has a big role on explaining the inequity of outpatient service. Estimation result in table 2 also shows that the area where individual live, whether it is rural or urban, also have relatively have significant role in concentration index forming.

However, although JKN contribution is not as big as expenditure per capita or rural-urban area, JKN has a role on reducing concentration index or the inequity of access to outpatient care in public hospital, either in 2013 or 2015. This finding shows that Insurance membership help narrow the gap between group with different income level.

Table 2. Concentration Index Decomposition of Public Hospital Outpatient Access

	2013			2015		
	Elasticity	Concentration index	Contribution	Elasticity	Concentration index	Contribution
Jamkes Nasional	0.234	-0.061	-0.014	0.513	-0.004	-0.002
Jamkes Swasta	0.016	0.240	0.004	-0.002	0.654	-0.001
Pengeluaran per Kapita	0.223	0.386	0.086	0.185	0.405	0.075
Usia	1.495	0.012	0.017	1.322	0.007	0.010
Usia2	-0.541	0.000	0.000	-0.381	-0.008	0.003
Gender	-0.127	0.002	0.000	-0.116	-0.002	0.000
Status Pernikahan	0.089	0.018	0.002	0.058	0.018	0.001
Status Pekerjaan	-0.438	0.038	-0.017	-0.416	0.038	-0.016
Pendidikan	-0.161	-0.063	0.010	-0.147	-0.066	0.010
Wilayah (Desa-Kota)	0.223	0.160	0.036	0.202	0.138	0.028
Kawasan (Barat-Timur)	-0.243	0.023	-0.006	-0.213	0.017	-0.004
Residual			0.122			0.096
Total			0.240			0.199

Whereas, the result of concentration index decomposition of public hospital outpatient accessibility is presented in the table 3. It can be seen both in 2013 and 2015 that per capita expenditure, followed by rural – urban location and individual education level are the greatest contributors to determine concentration index of private hospital outpatient accessibility.Relative contribution, as contribution segmentation for each covariate for total concentration index resulted from per capita expenditure was amounted 55, 20% in 2013 and 44, 45% in 2015. Whilst, relative contribution from JKN covariate was relatively small in about 0, 03% in 2013 and – 0,17% in 2015.

Generally, the above findings in congruence with public hospital outpatient accessibility. In this case, the discrepancy of revenue (or expenditure) positioned as main variable that caused inequal access to private hospital outpatient services between high-income and low-income groups. In other words, individual social economic status takes crucial role in describing equity to access private hospital outpatient services during that period. The estimation resulted in table 3 illustrates that rural-urban areas variable contributes significantly for determining concentration index or private hospital outpatient access equity in 2013 and 2015. This result describes that individual or consumers location lead to the occurrence of inequity to access private hospital outpatient services.

Meanwhile, JKN contribution in accessibility of private hospital outpatient services is slight comparing to the contrition in public hospital outpatient services. However, JKN membership was taking part in reducing concentration index or inequity in 2015. This evidence emphasizes how insurance membership or national health insurance for individual could minimize access inequality in obtaining private hospital outpatient services among individuals with different income levels during that period.

Tabel 3. Concentration Index Decomposition of Private Hospital Outpatient Access

	2013			2015		
	Elasticity	Concentration index	Contribution	Elasticity	Concentration index	Contribution
Jamkes Nasional	-0.002	-0.061	0.0001	0.157	-0.004	-0.001
Jamkes Swasta	0.016	0.240	0.004	0.068	0.654	0.044
Pengeluaran per Kapita	0.593	0.386	0.229	0.453	0.405	0.184
Usia	0.039	0.012	0.0005	-0.095	0.007	-0.001
Usia2	0.070	0.000	0.0000	0.256	-0.008	-0.002
Gender	-0.063	0.002	-0.0001	-0.053	-0.002	0.0001
Status Pernikahan	0.158	0.018	0.003	0.186	0.018	0.003
Status Pekerjaan	-0.212	0.038	-0.008	-0.240	0.038	-0.009
Pendidikan	-0.212	-0.063	0.013	-0.200	-0.066	0.013
Wilayah (Desa-Kota)	0.295	0.160	0.047	0.292	0.138	0.040
Kawasan (Barat-Timur)	0.378	0.023	0.009	0.352	0.017	0.006
Residual			0.117			0.135
Total			0.414			0.413

The result of concentration index decomposition of outpatient access in GPs/ clinic is captured in table

25. It shows that in 2013 and 2015 the biggest contributors are; per capita expenditure, rural-urban areas, west-east areas (geographical location). Relative contribution as segmentation contribution for each covariate to the total of concentration index from per capita expenditure was in amount 29.13% in 2013 and 38.79% in 2015. Whereas the relative contribution from JKN covariate was insignificant proportion in about 0.26% in 2013 and 0.54 % in 2015. The similar findings as above are recorded in outpatient access both public and private hospitals. Income inequality (or expenditure) considered as main factor that lead inequality in access to GPs and clinic outpatient services among high-income and low-income groups.

Briefly, individual welfare is greatly influences the equity in accessing GPs and Clinic outpatient services. As estimated in table 5, rural-urban areas factor has large contribution for the formation of concentration index and equity to access outpatient services in GP and clinics. Similar to private hospital, JKN contribution to access GP/clinics was also in small number.

Tabel 4. Concentration Index Decomposition of GPs/Clinics Outpatient Services Access

	2013			2015		
	Elastic	Concentration index	Contribution	Elasticity	Concentration index	Contribution
Jamkes Nasional	-0.010	-0.061	0.001	-0.069	-0.004	0.0003
Jamkes Swasta	0.004	0.240	0.001	-0.001	0.654	-0.0003
Pengeluaran per Kapita	0.175	0.386	0.068	0.054	0.405	0.022
Usia	-0.292	0.012	-0.003	-0.791	0.007	-0.006
Usia2	0.199	0.000	-0.00002	0.450	-0.008	-0.004
Gender	-0.022	0.002	-0.00003	0.015	-0.002	-0.00003
Status Pernikahan	0.064	0.018	0.001	0.061	0.018	0.001
Status Pekerjaan	-0.028	0.038	-0.001	0.006	0.038	0.000
Pendidikan	-0.062	-0.063	0.004	-0.024	-0.066	0.002
Wilayah (Desa-Kota)	0.262	0.160	0.042	-0.043	0.138	-0.006
Kawasan (Barat-Timur)	0.349	0.023	0.008	0.456	0.017	0.008
Residual			0.112			0.039
Total			0.232			0.057

The following table 4 presents concentration index decomposition of public health center (Puskesmas)/ public health support center (Pustu). The result stated that per capita expenditures, rural-urban areas, and west-east geographical location are still as the largest contributors for determining concentration index of public health center outpatient service access in 2013 and 2015. Relative contribution as the segmentation contribution for each covariate of the total contribution index resulted from per capita expenditure was recorded 39.40% in 2013 and 44.05% in 2015. Whilst on the other hand, relative contribution of JKN covariate was insignificantly slight. It was -7.56% and -0.63% in 2013 and 2015 respectively.

The above result has similar findings with the previous formal health facilities outpatient access, where income discrepancy (or expenditure) is the primary factor to cause inequality access to obtain public health center outpatient services among difference groups of high-income and low-income. It has been said, that welfare level variability of individual takes great role in explaining access equity to public health center outpatient services. The result in table 4 also provides information regarding the crucial contribution of rural-urban areas component in the formation of concentration index or access equity for public health center outpatient services. It describes the role of individual location whether they are in urban or rural area could lead inequity to access public health center outpatient services.JKN contribution to public health center outpatient services access has similar result as the previous cases have slight impact.

4.3 JKN Contribution in Access Equity for Inpatient Services

The result of concentration index decomposition to access public hospital inpatient services is presented in table 5. It shows the biggest contributors to form concentration index public hospital inpatient services are per capita expenditure, occupation, age, JKN membership, rural-urban areas, and education level. Relative contribution as the contribution segmentation for each covariate to total concentration index was reported in amount 39.57% in 2013 and 32.81 in 2015. Again, JKN covariate relative contribution was small about -7.59% and 2.56% in 2013 and 2015 respectively.

This finding has the same results as that of the previous formal health facilities outpatient services access. Income discrepancy (or expenditure) is the main factor to influence inequality to access public hospital inpatient services between high-income and low-income group. Welfare status at individual level has the great impact in describing access equity to obtain inpatient services. The estimation resulted in table 27 captures

occupation status has great contribution in the formation of concentration index or access equity for public hospital inpatient services. Therefore, location variable and occupation status variable could lead to inequity to access public hospital inpatient services.

Even though, JKN contribution is smaller than per capita expenditure and occupation status variable. It is, however, JKN membership takes important role in downsizing concentration index or inequity in 2013 and 2015. This evidence explains that insurance membership and national health coverage at individual level would reduce unequal access of public hospital inpatient services among different income levels.

Tabel 5. Concentration Index Decomposition of Public Hospital Inpatient Services Access

	2013			2015		
	Elasticity	Concentration index	Contribution	Elasticity	Concentration index	Contribution
Jamkes Nasional	0.221	-0.060	-0.013	0.469	-0.007	-0.003
Jamkes Swasta	0.018	0.248	0.004	-0.004	0.567	-0.002
Pengeluaran per Kapita	0.168	0.391	0.066	0.099	0.410	0.041
Usia	1.824	0.015	0.028	1.047	0.001	0.001
Usia2	-0.772	0.005	-0.004	-0.542	-0.010	0.005
Gender	-0.150	0.002	0.000	-0.192	0.006	-0.001
Status Pernikahan	0.148	0.021	0.003	0.078	0.012	0.001
Status Pekerjaan	-0.525	0.039	-0.020	-0.206	0.035	-0.007
Pendidikan	-0.101	-0.064	0.006	-0.102	-0.050	0.005
Wilayah (Desa-Kota)	-0.084	-0.050	0.004	-0.221	-0.041	0.009
Kawasan (Barat-Timur)	-0.002	-0.095	0.0002	-0.110	0.020	-0.002
Residual			0.092			0.078
Total			0.166			0.124

Table 5 provides the result of concentration index decomposition of private hospital inpatient services access. In 2013 and 2015, some components such as per capita expenditure, rural-urban areas, and west-east geographical location are considered as the highest contributors for determining concentration index to access private hospital inpatient services.Relative contribution of per capita expenditure variable was recorded in amount 43.67% in 2013 and 53.80% in 2015. This contribution also takes position as contribution segmentation of each covariate to the total of concentration index resulted from per capita expenditure. Whilst, relative contribution from JKN covariate considered small, it was only 0.43% and 0/11 in 2013 and 2015 respectively.

The same result was reported in public hospital inpatient services access. Income inequality (or expenditure) is the primary component causes discrepancy access to obtain private hospital inpatient services between high-income and low-income groups. In other words, different level in social economic status greatly influences access equity to gain private hospital inpatient services.

4.4 JKN Contribution to the Equity of Inpatient Services Utilization

Table 6 presents concentration index decomposition of public hospital inpatient utilization that differs from outpatient services access. The access equity utilization of inpatient services is contributed by various components since 2013 and 2015. In 2013, the biggest contributor was age, while in 2015 the greater contributor was per capita expenditure. There was a change for JKN contribution from 2013 was in amount 30.22% then in 2015 the contribution was in amount 2.21%.

Table 7 provides concentration index decomposition result of private hospital inpatient services utilization. Similar to public hospital inpatient services utilization, contribution changing pattern among covariates in concentration index formatting of private hospital inpatient utilization is heterogenic. In 2013 the largest contributor was per capita expenditure, however at that time the estimation of per capita expenditure was 93.78%, whereas in 2015 was 40.11%. JKN contribution was changing from 6.232% in 2013 to 2.49% in 2015.

Tabel 6. Concentration Index Decomposition of Public Hospital Inpatient Utilization

	2013			2015		
	Elasticity	Concentration index	Contribution	Elasticity	Concentration index	Contribution
Jamkes Nasional	0.165	-0.054	-0.009	0.261	-0.020	-0.005
Jamkes Swasta	0.010	0.230	0.002	-0.011	0.574	-0.006
Pengeluaran per Kapita	0.001	0.431	0.000	-0.062	0.439	-0.027
Usia	1.575	0.013	0.020	0.811	0.014	0.011
Usia2	-0.683	0.012	-0.008	-0.330	0.012	-0.004
Gender	-0.242	0.005	-0.001	-0.156	0.010	-0.002
Status Pernikahan	-0.274	0.005	-0.001	-0.154	0.002	0.000
Status Pekerjaan	-0.146	0.037	-0.005	-0.081	0.050	-0.004
Pendidikan	0.042	-0.126	-0.005	0.054	-0.120	-0.006
Wilayah (Desa-Kota)	0.037	0.136	0.005	-0.090	0.114	-0.010
Kawasan (Barat-Timur)	-0.418	0.012	-0.005	-0.384	0.016	-0.006
Residual			-0.023			0.300

Tabel 7. Concentration Index Decomposition of Private Hospital Inpatient Utilization

	2013			2015		
	Elasticity	Concentration index	Contribution	Elasticity	Concentration index	Contribution
Jamkes Nasional	-0.108	-0.054	0.006	-0.233	-0.020	0.005
Jamkes Swasta	0.003	0.230	0.001	0.020	0.574	0.011
Pengeluaran per Kapita	0.206	0.431	0.089	0.173	0.439	0.076
Usia	0.511	0.013	0.007	0.211	0.014	0.003
Usia2	-0.130	0.012	-0.002	-0.032	0.012	0.000
Gender	-0.147	0.005	-0.001	-0.053	0.010	-0.001
Status Pernikahan	-0.077	0.005	0.000	0.008	0.002	0.000
Status Pekerjaan	-0.054	0.037	-0.002	-0.037	0.050	-0.002
Pendidikan	-0.096	-0.126	0.012	-0.023	-0.120	0.003
Wilayah (Desa-Kota)	0.194	0.136	0.026	0.091	0.114	0.010
Kawasan (Barat-Timur)	0.241	0.012	0.003	0.359	0.016	0.006
Residual			-0.233			0.078
Total			-0.095			0.189

5.Conclusion

This study aims to estimate the impact of National Health Insurance (JKN) that has been implemented since 2014 to the utilization of formal health facilities in Indonesia. The analysis of health facilities covers outpatient service access, inpatient services access and utilization of inpatient treatment. Different method was used to make estimation of JKN implementation impact, that is relies on dependent variables characteristics being used. For the dependent variables of outpatient services access and inpatient services access, considering that they are binary variables hence 3 different methods were used including of univariate and bivariate probit, propensity score matching, and difference in difference regression

For inpatient utilization variable, 2 approaches were used. First, negative binomial regression was used due to inpatient services utilization was count data and the event was rare. The second approach was propensity score matching.The estimation of JKN impact used Susenas dataset (National Survey) 2013 (the period prior JKN implementation) and Susenas 2015 (the period after JKN implementation). The purpose of this research was to make review the impact of JKN membership to formal health services beneficiaries at individual level during those periods.

Concentration index decomposition of beneficiaries (access and utilization) formal health facilities by using Wagstaff et al. (2003) approach, the result demonstrates that per capita expenditure as the primary contributor for concentration index or inequity both in 2013 and 015. This condition applies in almost formal health facilities beneficiaries. Per capita expenditure considered as dominant contributor for determining concentration index or inequity than other covariates to access outpatient and inpatient access in formal health

facilities.

The contribution from inpatient utilization is varied during observation periods. The evidence found that per capita expenditure as the greatest contributor to determine concentration index of formal health service beneficiaries can be understood in congruence with the opinion stated by Wagstaff et al. (2003) that income discrepancy (or expenditure) as the primary variable that could lead to inequality of health outcome between high-income and low-income. Another description stated that different socio-economic status significantly influence equity utilization of health services.

The result of decomposition demonstrates that rural-urban areas variable highly contributed the formation of concentration index and equity utilization health services in some cases. This result explains that geographical location (rural or urban) of individual taking role in the occurrence of individual inequity to access formal health services. In the meanwhile, even though JKN contribution is not as high as per capita expenditure and other covariates. It is, however, crucially impacted in downsizing concentration index or beneficiaries inequity. This fact, strengthening the statement that insurance ownership and national health insurance coverage at individual level would reduce the discrepancy of formal health services beneficiaries among individual with different income levels.

The improvement of access equity for outpatient, inpatient, and inpatient utilization from 2013 to 2015 is the indication that JKN implementation offers promising and positive results along the main purpose of this program. This result was convinced by estimation measurement of JKN impact by using several different methods that shows an increasing beneficiaries (including access and utilization) considerably in 2015 compared to 2013 prior JKN implementation.

According to the above evidences, it is suggested that government and policy decision makers to enlarge the distribution of infrastructure and health facilities in rural areas. Therefore, it would enhance individual access to health services to be easier. As the result, it would enhance the spreading opportunity to all citizens in Indonesia. In other hand, individual income level contributes significantly for the inequality of the health facilities services beneficiaries. From this finding, it is suggested that authority holders / the Government of Indonesia enhance job opportunity with equal earnings. Hence, households could increase their ability to fulfill their basic needs. For education sector, it is suggested that Government is required to enhance the current ongoing education programs. It is applied for formal and non-formal education for adolescent citizens, who have no opportunity to complete their high education. The importance of this program, aside from location factor (rural – urban) and income, different education level also contributes for the equity of health services beneficiaries.

It is acknowledged that, in the midst of JKN membership program improvement, there are some limitations on its implementation. Some concerns that are still being an issue to be discussed further including of outpatient services time limit, long waiting time to access health facilities, uneven distribution of health facilities and health professionals and scant of socialization. These conditions are strongly predicted would impede for JKN implementation to gain its mission in improving access and equity of health services. These issues are convincing message to the Government of Indonesia that increasing access and utilization requires improvement in health services quality to make it in balance.

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