

Path Analysis on the Equity of Hemodialysis Utilization in the National Health Insurance Program in Jember, East Java

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ABSTRACT

Background: Since 2014, Indonesia has implemented a National Health Insurance to cover public health costs. The existence of health insurance managed by the government is expected to help all levels of society to obtain health services. This is very helpful for the community, especially for patients with chronic diseases who need continuous treatment. This study aims to analyze the fairness and determinants of the use of hemodialysis patients with chronic kidney failure in National Health Insurance participants in Jember Regency.

Subjects and Method: This was observational analytic study with cross sectional approach, conducted at Dr. Soebandi Hospital and Kaliwates General Hospital, Jember, East Java. A total Study subjects of 200 patients with chronic kidney failure undergoing hemodialysis with JKN membership were selected for this study by purposive sampling. The dependent variable was the use of hemodialysis. The independent variables were JKN membership status, length of time since diagnosis, disease severity, age, education, family income, access to health facilities and residence. Data collection used questionnaires and medical record documents and then analyzed using path analysis.

Results: The possibility of using hemodialysis was increased by the Non PBI status (b= 0.81; 95% CI= 0.16 to 1.47; p= 0.015), high disease severity (b=2.48; 95% CI=0.36 to 4.59; p= 0.022), age \geq 50 years old (b=0.65; 95% CI = 0.33 to 1.26; p= 0.039), family income \geq MW (b= 0.59; 95% CI= -0.07 to 1.24; p= 0.080) and good access to health facility (b= 0.92; 95% CI= -0.19 to 1.66; p= 0.013). The possibility of using hemodialysis was indirectly affected by the length of time since diagnosis, education and residence.

Conclusion: The possibility of using hemodialysis was increased by Non PBI status, disease severity, age, family income, and access to health facilities. The possibility of using hemodialysis was indirectly affected by the length of time since diagnosis, education, and residence.

Keywords: National Health Insurance, justice, hemodialysis, path analysis

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BACKGROUND

The Alma Ata Declaration, Commission on Social Determinants of Health and the Rio Political Declaration on Social Determinants of Health underline the very important policies and efforts of social health determinants in promoting health justice. In 2012,

the United Nations stated that in the future, Universal Health Coverage is the key to improve health, social cohesion, sustainable development of human resources and the economy (De Andrade et al., 2015). Equity is a goal of Universal Health Coverage where everyone can access adequate quality health

services (De Andrade et al., 2015). Norris & Nissenson (2008) found injustice in the incidence, prevalence and treatment of chronic kidney failure in the United States. Some factors that influence this include the environment, sociocultural, and health care systems.

In 2014, Indonesia launched a Universal Health Coverage (UHC) program called the National Health Insurance System (NHIS) or National Health Insurance (Agustina et al., 2019). National Health Insurance through the Social Security Organizing Agency (BPJS) Health is a social insurance that has been running for five years. Since its implementation in 2014, the number of Health BPJS participants has continued to increase from 121.6 million participants (49% of the population) to 171.9 million participants in 2016 (BPJS Health, 2017). In October 2018, the number of JKN participants had reached 203 million. Indonesia is the country with the largest single payment system in the world (Agustina et al., 2019).

The era of National Health Insurance raises questions about the fairness of health services that are the focus of UHC. Study by Nugroho et al. (2019) stated that there is a gap in the utilization of health services. According to Whitehead (1991), the existence of different health profiles in the same group is not always described as injustice. The term injustice has its own moral values and ethical dimensions. Braveman & Gruskin (2003) stated that justice in health can be defined as the absence of disparities in health between groups of people who have different social status. Kim (2016) states that health equity is the value of social justice and an important task for sustainable community development. Health policy focuses on equity which has a strong theoretical and practical basis. More information is needed to increase recognition and awareness to improve interventions. Lack of decision making and action due to

lack of information regarding determinants and pathways of health injustice.

From various previous studies, socio-economics is one of the factors in the utilization of health services including hemodialysis services (Ardian et al., 2017). Data from the Health Insurance Administering Agency (BPJS) in 2017 stated that due to chronic kidney disease, 3,657,691 dialysis procedures were recorded with a total cost of Rp. 3.1 trillion. Care for kidney disease is in the third rank in the largest funding from health BPJS after heart disease and cancer (Idn Times, 2019.). Information is still needed about the determinants in the use of hemodialysis.

SUBJECTS AND METHOD

1. Study Design

The design of this study used an analytic observational model with a cross sectional approach. This study was conducted at the Dr. Soebandi Hosital and Kaliwates General Hospital, Jember, East Java from May to June 2019.

2. Population and Sample

The target population in this study was all hemodialysis patients in Jember Regency. The population was of all hemodialysis patients in Dr. Soebandi Hospital and Kaliwates General Hospital, Jember, East Java. A total Study subjects of 200 patients with chronic kidney failure undergoing hemodialysis with JKN membership were selected for this study by purposive sampling. The inclusion criteria: CRF patients, undergoing hemodialysis, JKN participants, and willing to become respondents.

3. Study Variables

The dependent variable was the utilization of hemodialysis. While the independent variables were membership status, length of time since diagnosis, disease severity, age, education, family income, access to health facilities and residence.

4. Operational Definition of Variables

Utilization of hemodialysis was the frequency of the use of hemodialysis services received by patients with chronic kidney failure in 1 year. The data were measured by a questionnaire. Continuous data scales for the purpose of data analysis were changed to dichotomies.

Membership status was the status of PBI and Non PBI National Health Insurance membership. The data were measured by questionnaire. Categorical data scale.

The length of time since diagnosis was the time when the patient is first diagnosed with chronic kidney failure until hemodialysis. The data were measured by questionnaire. Continuous data scales for the purpose of data analysis were changed to dichotomies.

Severity of disease was a stage of chronic kidney failure. The data were measured by pathological diagnoses. Continuous data scales for the purpose of data analysis were changed to dichotomy.

Age was the patient's current age. The data were measured by questionnaire. Continuous data scales for data analysis were changed to dichotomies.

Education was the highest level of formal education ever completed. The data were measured by questionnaire. Categorical data scale.

Family income was the amount of income received by the core family (husband/wife/-children who are already working) generated every month, both fixed and non-permanent, stated in Rupiah. The data were measured by questionnaire. Continuous data scales for the purpose of data analysis were changed to dichotomy.

Access to health facilities was the same resources, the same acceptance and the same access for the same needs. The data were measured by questionnaire. Continuous data scales for the purpose of data analysis were changed to dichotomy.

Residence was the residence or residence of patients with chronic kidney failure who do hemodialysis. The data were measured by questionnaire. Categorical data scale.

5. Data Analysis

Univariate analysis described the characteristics of study variables results. Bivariate analysis determined the effect of independent variables with the dependent variable using the chi-square test. Multivariate analysis used path analysis to determine the effect directly or indirectly on a variable.

6. Research Ethic

Research ethics included consent sheets, anonymity, confidentiality, and ethical eligibility. Ethical eligibility in this study originated from the Health Study Ethics Committee of Dr. Moewardi Hospital Surakarta with number: 639/V/ HREC/ 2019.

RESULTS

1. Sample Characteristics

Table 1 shows the Study subjects characteristics using categorical data.

2. Bivariate analysis

Table 2 showed that the possibility to use hemodialysis was greater in patients with Non PBI status (OR= 2.00; p= 0.034), long time since diagnosis (OR= 17.47; p<0.001), disease severity (OR= 12.24; p= 0.005), age (OR= 1.62; p= 0.119), education (OR= 1.55; p= 0.185), family income (OR= 1.63; p= 0.165), access to health services (OR= 2.67; p= 0.007), and residence (OR= 1.43; p= 0.258).

3. The result of path analysis

a. Model Specifications

The specification of the model illustrated the influence between the variables to be examined. In this study, there were 9 measured variables, namely the utilization of hemodialysis, membership status, length of time since diagnosis, disease severity, age, education, family income, access to health facilities and residence.

b. Model Identification

1) Number of measurable variables : 9

2) Endogenous variables : 6

3) Exogenous variables : 3

4) Number of Parameter : 8

The degree of freedom (df) formula is the number of measured variables x (number of measured variables + 1) / 2 - (endogenous variables + exogenous variables + number of parameters)

$df = 9 \times (9 + 1) / 2 - (6 + 3 + 8) = 28$

The result of degree of freedom (df) is 28 which mean that over identified or path analysis can be done.

Table 1. Characteristics of Study Subjects

Characteristics	Frequency (n)	Percentage (%)
Frequency of hemodialysis utilization		
Low	100	50.0
High	100	50.0
JKN membership status		
PBI	65	32.5
Non PBI	135	67.5
Long time since diagnosed		
New	16	8.0
Long time	184	92.0
Disease severity		
Low	12	6.0
High	188	94.0
Age		
<50 years old	94	47.0
≥50 years old	106	53.0
Education		
Low (<HS)	128	64.0
High (≥HS)	72	36.0
Family income		
Low (< MW)	60	30.0
High (≥MW)	140	70.0
Access to health facility		
Poor	47	23.5
Good	153	76.5
Residence		
Village	97	48.5
Town	103	51.5

Table 2. The results of the bivariate analysis of the determinants of the use of hemodialysis

Study Variable	The Utilization of Hemodialysis						OR	p
	High		Low		Total			
	N	%	N	%	N	%		
Membership Status								
PBI	25	38.5	40	61.5	65	100	2.00	0.034
Non PBI	75	55.6	60	44.4	135	100		
Length of suffering from the disease								
New	1	6.3	15	93.8	16	100	17.47	<0.001
Long	99	53.8	85	46.2	184	100		
Disease severity								
Low	1	8.3	11	91.7	12	100	12.24	0.005
High	99	52.7	89	47.3	188	100		
Age								
<50 years old	41	43.6	53	56.4	94	100	1.62	0.119
≥50 years old	59	55.7	47	44.3	106	100		
Education								
Low (<HS)	59	46.1	69	53.9	128	100	1.55	0.185
High (≥HS)	41	56.9	31	43.1	72	100		
Family income								
Low (< MW)	25	41.7	35	58.3	60	100	1.63	0.165
High (≥MW)	75	53.6	65	46.4	140	100		
Access to health facility								
Poor	15	31.9	32	68.1	47	100	2.67	0.007
Good	85	55.6	68	44.4	153	100		
Residence								
Village	44	45.4	53	54.6	97	100	1.43	0.258
City	56	54.4	47	45.6	103	100		

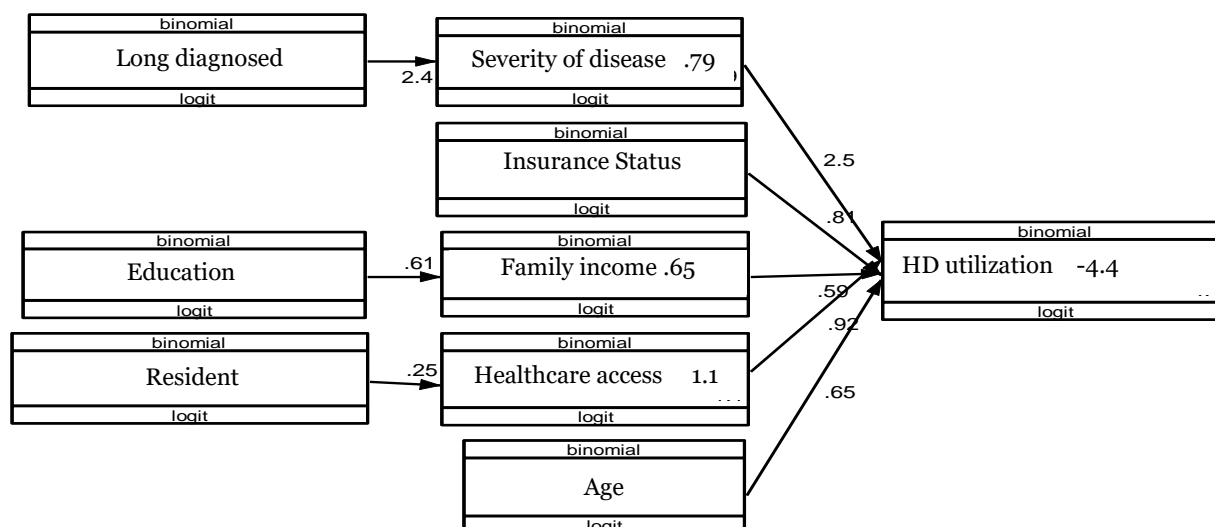


Figure 1. Structural model of path analysis with estimation

Table 3. Results of path analysis of the use of hemodialysis determinant

Variable		b	CI (95%)		p
			Lower Limit	Upper Limit	
Direct Effect					
Utilization of hemodialysis	← Non PBI	0.81	0.16	1.47	0.015
	← High severity (stage ≥ 3)	2.48	0.36	4.59	0.022
	← Age ≥ 50 years old	0.65	0.33	1.26	0.039
	← Family income (≥MW)	0.59	-0.07	1.24	0.080
	← Good access	0.92	0.19	1.66	0.013
Indirect Effect					
High severity (stage ≥ 3)	← Length of time since diagnosed (≥1.5 months)	2.44	1.14	3.74	<0.001
Family income (≥MW)	← Education (≥HS)	0.61	-0.06	1.27	0.074
Good access	← Residence (city)	0.25	-0.41	0.90	0.462
N observation = 200					
Log likelihood = -393.19					

Patients with chronic kidney failure who were non PBI were more likely to do hemodialysis than PBI participants. Patients with chronic non-PBI kidney failure have a logodd (probability) of 0.81 units higher to utilize hemodialysis than PBI participants (b= 0.81; 95% CI= 0.16 to 1.47; p= 0.015).

Patients with chronic kidney failure with high disease severity were more likely to take advantage of hemodialysis than patients with chronic kidney failure with low severity. Patients with chronic kidney failure with high severity have logodd (possibly) by 2.48 units higher to utilize hemodialysis than patients with chronic kidney failure with low severity (b=2.48; 95% CI=0.36 to 4.59; p= 0.022).

Patients with chronic kidney failure aged ≥ 50 years old were more likely to take advantage of hemodialysis than patients with chronic kidney failure <50 years old. Patients with chronic renal failure who were ≥ 50 years old have a logodd (probability) of 0.65 unit higher to utilize hemodialysis than patients with chronic kidney failure <50 years old (b=0.65; 95% CI = 0.33 to 1.26; p= 0.039). Patients with chronic kidney failure who have a high family income were more likely to use hemodialysis than low family income. Patients with chronic kidney failure

who have family income ≥ MW has a logodd (possibility) of 0.59 units higher for utilizing hemodialysis than those with family income <MW (b= 0.59; 95% CI= -0.07 to 1.24; p= 0.080).

Patients with chronic kidney failure who have good access to health facilities were more likely to take advantage of hemodialysis than poor access to health facilities. Patients with chronic kidney failure with good access to health facilities have a logodd (probability) of 0.92 units higher for utilizing hemodialysis than poor access to health facilities (b= 0.92; 95% CI= -0.19 to 1.66; p= 0.013).

Patients with chronic renal failure undergoing hemodialysis for longer time than being diagnosed have a logodd for disease severity by 2.44 units higher than newly diagnosed (b= 2.44; 95% CI= -1.14 to 3.74; p= 0.000). Patients with chronic renal failure with education ≥ HS has a logodd (possibility) for family income ≥ MW by 0.61 units higher than <HS (b= 0.61; 95% CI= -0.06 to 1.27; p= 0.074).

Patients with chronic kidney failure both living in cities and villages have logodd (possibly) for access to health facilities by 0.25 units (b= 0.25; 95% CI= -0.41 to 0.90; p= 0.462).

DISCUSSION

1. Direct Effect of Membership Status on Utilization of Hemodialysis

The results showed that there was a positive relationship between membership status with the use of hemodialysis. Patients with chronic renal failure with Non PBI status were more likely to use hemodialysis by 2.00 times compared to PBI participants. This relationship showed the high utilization of hemodialysis by patients with chronic kidney failure of National Health Insurance participants with Non PBI status. Of the 200 Study subjects studied, there were 135 Non PBI patients. This was in line with the 2016 Indonesian Renal Registry data which showed that the hemodialysis patient payment system of 90% used the National Health Insurance with details of 77% non-PBI and 13% of PBI.

The results of this study were not in line with the Study of Ardian et al. (2017) which stated that there was a negative influence on membership status on the frequency of hemodialysis use. Study by Nugroho et al. (2019) also stated that insurance membership status reduced the level of utilization of health services. From this Study, it was known that first class patients with the highest premium payment in JKN were more often to use health services compared to patients with lower classes. Evidence showed that patients with low economic status tend to be fewer in utilizing health services. Whereas patients with high economic status use health services more often. Djunawan (2018) in his Study stated that the utilization of primary health care was influenced by health insurance.

From the 2016 Indonesian Renal Registry data, it can be seen that the financing of most hemodialysis patients used the National Health Insurance. Given the hemodialysis in patients with chronic kidney failure must be done continuously, of course it would be very

burdensome if the patient must pay a fee for service. National Health Insurance is very helpful for patients with chronic kidney failure in getting hemodialysis services.

2. Direct Effect of Disease Severity on Utilization of Hemodialysis

The results showed that there was a positive relationship between the severity of the disease and the use of hemodialysis. That patients with chronic kidney failure with high severity were more likely to use hemodialysis by 12.24 times higher than patients with low severity.

This was consistent with the Study of Ardian et al. (2017) which showed that there was a direct and positive effect on the severity of the frequency of hemodialysis use. Study by Oktaviana (2015) showed that there was a relationship between the perception of the seriousness of the disease by screening for VIA, high severity of an illness would make someone to take efforts to prevent it. Bakhtari et al. in Oktaviana (2015) predicted that an individual would take action to protect him/herself if he/she considered that a condition can cause serious problems. The Behavioral Model of Health Service Use from Andersen (1995) stated that people's behavior in utilizing health services was determined by the level or severity of the disease experienced and the need for health services (perceived need). Perceived need is a subjective requirement, where the higher the individual's needs, the higher the level of utilization of health services.

Wang et al. (2019) in his study mentioned that patients with high severity of chronic kidney failure were prone to depression and this can affect treatment for the disease. The author believes that the severity of the disease is very influential on the use of hemodialysis. Patients with serious disease severity would make more use of a health service for healing or improve their health condition.

3. Direct Effect of Age on Utilization of Hemodialysis

The results showed that there was a positive relationship between age and the use of hemodialysis. Patients with chronic kidney failure ≥ 50 years old were more likely to utilize hemodialysis by 1.62 times than those who were < 50 years old.

This was in line with Study done by Kizilcik et al. (2013) which stated that elderly patients were more likely to have a worse quality of life. Study showed a significant relationship between age and CKD patient compliance in undergoing hemodialysis. Nugroho et al. (2019) stated that there was a positive relationship between patient age and frequency of utilization of health services. Health service theory stated that age was one of the factors that influence a person to utilize health services. The older a person, the immune system would also decrease and increasingly require health services to cure the illness. Demand for health services can increase along with the aging of a population (Doi et al., 2017)

However, this result was in contrary to the Study by Erawatyningsih et al. (20-09) which stated that age was not a determinant factor for patient non-compliance with treatment because all age groups have the motivation to live healthy. Likewise, Study by Agustini (2012) showed that there was no significant relationship between age and medication adherence. Authors believed that age greatly influenced the utilization of health facilities. Older age tend to have poorer quality health. Various chronic diseases tend to appear in older age. This resulted in increased utilization of health facilities.

4. Direct Effect of Family Income on Utilization of Hemodialysis

The results showed that there was a positive relationship between family income and the use of hemodialysis. Patients with chronic renal failure with family income $\geq MW$ were

more likely to use hemodialysis by 1.63 times compared to patients with family income $< MW$.

Income is an enabling factor that enables an individual to obtain health services (Andersen, 1995). Study by Napirah et al. (2016) stated that 72% of respondents with low family income did not utilize health services, respondents with low income who utilized health services by 28%. It mean that there was a relationship between family income and the utilization of health services.

There was a significant influence between family income on medication adherence (Erawatyningsih et al., 2009). The socioeconomic factor of the patient acts as a risk factor for the patient's low willingness to seek health services. Socioeconomic also affected the ability of financing in health services. On the other hand, socioeconomic also affected the ability of funding in health care because it was still focused on basic needs.

Based on demand theory, one of the factors that influence demand was household income or the average income of the community. People who have high incomes have a high purchasing power of goods or services. Similarly, in terms of obtaining health services. Patients who have high family incomes tend to use health facilities more.

5. Direct Effect of Access to Health Facility on Utilization of Hemodialysis

The results showed that there was a positive relationship between access to health facilities with the use of hemodialysis. Patients with chronic kidney failure with good access to health facilities were more likely to use hemodialysis by 2.67 times than patients with poor access to health facilities.

Health equity is fairness and equity for health services that focuses on easy access and equitable distribution of health services and obtaining services with established quality standards (Yandrizal et al., 2014). Naing-golan et al. (2016) stated that without easy

and inexpensive access to reach, it would certainly make it difficult for the community especially the low-income people. Injustice in accessing and utilizing health services would cause health disparities (Permatasari et al., 2013).

Based on Study by Rumengan et al. (2015), it showed that there was a meaningful relationship between access to services and utilization of health services in Public Health Center. Respondents with easy access to services were more likely to use health services.

Authors believe that access was very influential in getting health services. In this case, access included the availability of transportation, the quality of health services and access to information about the illness suffered and its development from medical personnel. Such access was needed by patients to be able to continue to undergo a medical treatment, especially in hemodialysis services. Patients must conduct hemodialysis routinely and continuously so that easy access was needed for the continuation of health care.

6. Indirect Effects of Length of Time Since Diagnosed on Hemodialysis Utilization

The results showed that there was a positive relationship between the length of time since chronic kidney failure was diagnosed with the use of hemodialysis. Patients with chronic kidney failure who have been diagnosed for a long time were more likely to use hemodialysis by 17.47 times than patients who have just been diagnosed.

Study by Erawatyningsih et al. (20-09) stated that there was a significant influence between duration of illness on non-compliance with treatment. The results showed a significant negative relationship which mean the longer the complaints suffered, the more disobedient to come for treatment. Soeroso and Judajana (2014) stated that prolonged

illness can indicate higher disease activity. Nord et al. (2005) mentioned that cancer patients who have been diagnosed were more often to use health services.

Authors believe the possibility of boredom and stress in patients who have to do routine treatment. Especially in patients with chronic kidney failure who must intensely do hemodialysis.

7. Indirect Effects of Education on Hemodialysis Utilization

The results showed that there was a positive relationship between education and the use of hemodialysis. Patients with chronic renal failure who were \geq HS were more likely to use hemodialysis by 1.55 times than patients with <high school education.

Erawatyningsih et al. (2009) concluded that there was a significant effect of education on non-compliance with treatment. Patients with low education levels have low medication adherence. The level of education affected the absorption of a person in receiving information so that it can affect the understanding in the treatment of disease.

Study by Paraskevi (2011) showed that ESRD patients with high level of education (more than nine years) were able to prepare themselves for the environment, utilize health services better, finance and other aspects. Whereas patients with low education were more prone to experience mental health disorders such as anxiety/insomnia and severe depression. In line with the study, Napirah et al. (2016) stated that there was a relationship between the level of education and the utilization of health services. There were 73.9% of respondents with low education who did not utilize health services while respondents with higher education level mostly utilized health services by 82.6%.

Authors argued that the possibility of education can affect someone's knowledge. The higher a person's knowledge, the higher the awareness in maintaining health and he-

alth care. Patients with low levels of education tend not to understand the importance of health care.

8. Indirect Effects of Residence on Hemodialysis Utilization

The results showed that there was a positive relationship between residence and the utilization of hemodialysis. Patients with chronic kidney failure who live in cities have the possibility to use hemodialysis by 1.43 times higher compared to those living in villages.

This was in line with Study by Erawaty-ningsih et al. (2009) which showed that there was no significant influence between the distance of the residence to non-compliance with treatment. The distance of the house to reach health facilities was not a determining factor in adherence of sufferers in undergoing treatment. Study done by Agustini (2012) showed that there was no relationship between distance of residence and significant adherence to treatment.

Nugroho et al. (2019) mentioned a significant difference between the location of residence and the frequency of utilization of health services. Patients who live in cities have better access than those who live in villages. So that the level of utilization of urban public health services was higher.

Authors believed that there was a possibility that the distance of residence was too far and difficult access to reach the location of treatment can affect the willingness of patients to conduct the treatment. So that someone was reluctant to utilize health service.

AUTHOR CONTRIBUTION

Siti Nafi'atus Salamah as the main Author played a role in collecting and analyzing the data. Didik Gunawan Tamtomo examined the conceptual framework and Study methodology. Endang Sutisna Sulaeman examined data analysis and interpretation of the results of the analysis.

CONFLICT OF INTEREST

There was no conflict of interest in this study.

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REFERENCE

- Agustina R, Dartanto T, Sitompul R, et al. (2019). Universal health coverage in Indonesia: concept, progress, and challenges. *The Lancet*. 393 (10166): 75–102. [https://doi.org/10.1016/S0140-6736\(18\)31647-7](https://doi.org/10.1016/S0140-6736(18)31647-7)
- Agustini C (2012). Hubungan cara bayar, jarak tempat tinggal dan dukungan keluarga dengan kepatuhan berobat rawat jalan pasien skizofrenia di RSJD Surakarta (The relationship of payment methods, distance of residence and family support with adherence to outpatient treatment of schizophrenics patients in Surakarta Central Hospital). Tesis. Universitas Muhammadiyah Surakarta. Retrieved from <https://docplayer.info/64715112-Hubungan-cara-bayar-jarak-tempat-tinggal-dan-dukkungan-keluarga-dengan-kepatuhan-berobat-rawat-jalan-pasien-skizofrenia-di-rsjd-surakarta-tesis.html>
- Andersen RM (1995). Revisiting the behavioral model and access to medical care: does it matter?. *J Health Soc Behav*. 36 (1): 1–10. <https://doi.org/10.2307/2137284>
- Ardian K, Sulaeman ES, Suryono A (2017). Social economic equity in the utilization of hemodialysis among patients with chronic renal failure under national

- health insurance plan at Dr. Moewardi Hospital, Surakarta. *J Health Policy Manage.* 02 (01): 28–41. <https://doi.org/10.26911/thejhpm.2017.01.02.03>
- BPJS Kesehatan. (2017). Ringkasan Eksekutif Pengelolaan Program dan Laporan Keuangan Jaminan Sosial Kesehatan (Executive Summary of Program Management and Financial Report of Social Health Insurance). Retrieved from <https://www.bpjs-kesehatan.go.id/bpjs/-dmdocuments/b39df9ae7a30a5c7d4bdof54d763b447.pdf>
- Braveman P, Gruskin S (2003). Defining equity in health. *J Epidemiol Community Health.* 57 (4): 254–258. <https://doi.org/10.1136/jech.57.4.254>
- De Andrade LOM, Filho AP, Solar O, et al. (2015). Social determinants of health, universal health coverage, and sustainable development: Case studies from Latin American countries. *The Lancet.* 385 (9975): 1343–1351. [https://doi.org/10.1016/S0140-6736\(14\)61494-X](https://doi.org/10.1016/S0140-6736(14)61494-X)
- Djunawan A (2018). Pengaruh jaminan kesehatan terhadap pemanfaatan pelayanan kesehatan primer di perkotaan Indonesia: adilkah bagi masyarakat miskin? (The effect of health insurance on the utilization of primary health services in Indonesian cities: is it fair for the poor?). *Berita Kedokteran Masyarakat.* 5 (12): 5. <https://doi.org/10.22146/bkm.-37474>
- Doi S, Ide H, Takeuchi K, Fujita S, Takabayashi K (2017). Estimation and evaluation of future demand and supply of health-care services based on a patient access area model. *Int J Environ Res Public Health.* 14 (11): 1367. <https://doi.org/10.3390/ijerph14111367>
- Erawatyingsih E, Purwanta, Subekti H (2009). Faktor-faktor yang mempengaruhi ketidakpatuhan berobat pada penderita tuberkulosis paru (Factors that influence non-compliance with treatment in patients with pulmonary tuberculosis). *Berita Kedokteran Masyarakat.* 25 (3): 117–124. <https://doi.org/10.22146/bkm.3558>
- Idn Times (2019). BPJS: Biaya penyakit gagal ginjal termahal kedua di JKN (BPJS: The second most expensive cost of kidney failure in JKN). Retrieved from <https://www.idntimes.com/news/indonesia/indianamalia/bpjs-biaya-penyakit-gagal-ginjal-termahal-kedua-di-jkn/full>
- Indonesian Renal Registry (2016). 9th Report of Indonesian Renal Registry. Tim Indonesian Renal Registry. Jakarta.
- Kim C (2016). Public health policy. *Health Policy and Management.* 26 (4): 256–264. <https://doi.org/10.4332/KJHPA.2016.26.4.256>
- Kizilcik Z, Sayiner FD, Unsal A, Ayranci U, Kosgeroglu N, Tozun M (2012). Prevalence of depression in patients on hemodialysis and its impact on quality of life. *Pak J Med Sci.* 28 (4): 695–699. Retrieved from http://applications.emro.who.int/imemrf/Pak_J_Med_Sci/Pak_J_Med_Sci_2012_28_4_695_699.pdf
- Manurung AM (2008). Hubungan perceived dan evaluated need perawatan karies gigi dengan pemanfaatan pelayanan kesehatan gigi pada masyarakat di Kota Pematang Siantar (Correlation between perceived and evaluated need of dental caries treatment with the utilization of dental health services in the community in Pematang Siantar City). Tesis. Universitas Sumatera Utara. Retrieved from <https://docplayer.info/storage/54/344-20925/34420925.pdf>
- Nainggolan O, Hapsari D, Indrawati L (2016). Pengaruh akses ke fasilitas kesehatan terhadap kelengkapan imunisasi baduta (analisis Riskesdas 2013) (Effect of access to health facilities on the completeness of immunization in under two

- years old (Basic Health Study 2013 analysis)). *Media Penelitian Dan Pengembangan Kesehatan*. 26 (1): 15–28. <https://doi.org/10.22435/mpk.v26i1.4900.15-28>
- Napirah MR, Rahman A, Tony A (2016). Faktor-faktor yang berhubungan dengan pemanfaatan pelayanan kesehatan di wilayah kerja Puskesmas Tambarana Kecamatan Poso Pesisir Utara Kabupaten Poso (Factors related to the utilization of health services in the working area of Tambarana Health Center, Poso Pesisir Utara District, Poso District). *Jurnal Pengembangan Kota*. 4 (1): 29-39. <https://doi.org/10.14710/jpk.4.1.29-39>
- Nord C, Mykletun A, Thorsen L, Bjørø T, Fosså SD (2005). Self-reported health and use of health care services in long-term cancer survivors. *Int J Cancer*. 114 (2): 307–316. <https://doi.org/10.1002/ijc.20713>
- Norris K, Nissenson AR (2008). Race, gender, and socioeconomic disparities in CKD in the United States. *J Am Soc Nephrol*. 19 (7): 1261–1270. <https://doi.org/10.1681/ASN.2008030276>
- Nugroho RH, Murti B, Suryono A (2019). Disparity in health care utilization by income level and insurance status at Gamping Muhammadiyah Hospital, Yogyakarta, Indonesia. *J Health Policy Manage*. 4 (3): 195-203. <https://doi.org/10.26911/thejhp.2019.04.03.07>
- Oktaviana MN (2015). Hubungan antara persepsi kerentanan individu, keseriusan penyakit, manfaat dan hambatan dengan penggunaan skrining inspeksi visual asam asetat pada wanita usia subur (Relationship between perception of individual vulnerability, seriousness of disease, benefits and barriers to the use of visual inspection of acetic acid screening in women of childbearing age). *Te*
- sis*. Universitas Sebelas Maret. Retrieved from <https://digilib.uns.ac.id/dokumen/detail/48508/Hubungan-Antara-Persepsi-Kerentanan-Individu-Keseriusan-Penyakit-Manfaat-dan-Hambatan-dengan-Penggunaan-Skrining-Inspeksi-Visual-Asam-Asetat-pada-Wanita-Usia-Subur>
- Permatasari NT, Rochmah TN (2013). Analisis vertical equity pada pemanfaatan pelayanan kesehatan (Analysis of vertical equity in the utilization of health services). *Jurnal Administrasi Kesehatan Indonesia*. 1 (1): 83-90. Retrieved from <https://media.neliti.com/media/publications/3843-ID-vertical-equity-analysis-on-healthcare-utilization.pdf>
- Rumengan DSS, Umboh JML, Kandou GD (2015). Faktor-faktor yang berhubungan dengan pemanfaatan pelayanan kesehatan pada peserta BPJS Kesehatan di Puskesmas Paniki Bawah Kecamatan Mapanget Kota Manado (Factors related to the utilization of health services in Health BPJS participants in the Paniki Bawah Health Center in the Mapanget subdistrict of Manado City). *Jikmu Suplemen*. 05 (1): 88–100. <https://doi.org/10.1016/j.psychres.2014.11.019>
- Soeroso J, Judajana FM (2014). Hubungan antara umur, umur mulai sakit, lama sakit dengan LED, CRP, DAS28-LED di artritis rheumatoid (Relationship between age, age of illness, duration of illness with LED, CRP, DAS28-LED in rheumatoid arthritis). *Indonesian Journal of Clinical Pathology and Medical Laboratory*. 20 (2): 85-92. Retrieved from <https://indonesianjournalofclinicalpathology.org/index.php/patologi/article/download/1072/793>
- Syamsiah N (2011). Faktor-faktor yang berhubungan dengan kepatuhan pasien CKD yang menjalani hemodialisis di RS-PAU Dr. Esnawan Antariksa Halim Per-

dana Kusuma Jakarta (Factors related to adherence of CKD patients undergoing hemodialysis at RSPAU Dr. Esnawan Antariksa Halim Perdana Kusuma Jakarta). Tesis. Universitas Indonesia. Retrieved from <http://lib.ui.ac.id/file?file=digital/20281994-T%20Nita%20S-yamsiah.pdf>

Wang WL, Liang S, Zhu FL, Liu JQ, et al. (2019). The prevalence of depression and the association between depression and kidney function and health-related quality of life in elderly patients with chronic kidney disease: A multicenter cross-sectional study. *Clin Interv Aging*. 14: 905–913. <https://doi.org/10.2147/CIA.S203186>

Whitehead M (1992). The concepts and principles of equity and health. *Int J Health Serv*. 22 (3): 429–445. <https://doi.org/10.2190/986L-LHQ6-2VTE-YRRN>

Yandrizal, Suryani D, Anita B, Febriawati H (2014). Analisis ketersediaan fasilitas kesehatan dan pemerataan pelayanan pada pelaksanaan jaminan kesehatan nasional di Kota Bengkulu, Kabupaten Seluma dan Kabupaten Kaur (Analysis of the availability of health facilities and even distribution of services in the implementation of national health insurance in Bengkulu City, Seluma Regency and Kaur Regency). *Jurnal Kebijakan Kesehatan Indonesia*. 3 (2): 103-112. <https://doi.org/10.22146/jkki.36383>