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Research

Unit Cost Analysis of National Health Insurance in Inpatients during COVID-19 Pandemic at Pelengkap Medical Center Hospital, Jombang, East Java

Galuh Ayu Dyah Prameswari[1,2], Didik Gunawan Tamtomo[3], Bhisma Murti[1]

[1]Masters Program in Public Health, Universitas Sebelas Maret
[2]Study Program of Health Sciences, Polytechnics of Jember, East Java
[3]Faculty of Medicine, Universitas Sebelas Maret

ABSTRACT

Background: In the era of Universal Health Coverage (UHC) as it is now, it is no longer a strange thing. The Indonesian government is preparing for the fulfillment of Universal Health Coverage (UHC) through the National Health Insurance program. The challenge that occurs is that hospitals that work together with BPJS Health are required to be able to carry out quality and cost control. The purpose of this study was to analyze the factors that influence the gap between the BPJS Health Inpatient unit cost rates and the INA CBGs package rates at complementary medical center hospitals in the pandemic era.

Subjects and Method: The study was conducted with an analytical observational study design using a cross-sectional approach carried out at the Complementary Medical Center Hospital in February - March 2022. In a one year period, 204 billing for inpatients using BPJS Kesehatan were selected using a random sampling method. The dependent variable is the difference between the INA CBG package rates and the unit cost. The independent variables were readmission patients, surgery, extra doctors, intensive care, and special drugs. Data were collected by taking billing unit cost of patients at the hospital and analyzed using logistic regression.

Results: The results showed that readmission, surgery, and intensive action had an effect on reducing the difference between INA CBG payments and unit cost and was statistically significant. INA CBG payments for patients with readmission were on average Rp 1,142,409 lower than the unit cost (b= -1,142,409; 95% CI= -1,864,753 to -420,066; p= 0.002), while the average surgical procedure was Rp 343,067 lower than the unit cost (b=-343,067; 95% CI= -727,550 to 41,414; p = 0.80) and the average intensive action was Rp 1,226,861 lower than the unit cost and the effect was statistically significant (b= -1,226,861; 95% CI= -1,904,739 up to -538,984; p<0.001). Meanwhile, special drugs and extra doctors did not have a statistically significant effect, special drugs (b= -450,282; 95% CI= -1,662,453 to 761,889; p= 0.645) and extra doctors (b=-159,838; 95% CI= 537,507 to 253,507; p = 0.447).

Conclusion: Patient readmission and surgical procedures affect the difference in INA-CBGs package rates and unit costs.

Keywords: inpatient unit cost, health bpjs.

Correspondence:
Galuh Ayu Dyah Prameswari. Masters Program in Public Healrh, Universitas Sebelas Maret. Jl. Ir. Sutami 36A, Surakarta 57126, Central Java, Indonesia. Email: galuh.mahesa@gmail.com. Mobile: 0895358233743.

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BACKGROUND

This national health insurance or often known as JKN is no longer a foreign thing to the ears of the Indonesian people, especially in the era of Universal Health Coverage (UHC) as it is now. In (Tao et al., 2020) universal health coverage (UHC) has been identified as a priority for the global health agenda, including China. UHC or Universal Health Coverage means that everyone can access the health services they need, without fear of financial hardship, and this is an important part of the 2015 Sustainable Development Goals (SDGs) As of September 2019, all Member States of the United Nations has a strong commitment to achieving UHC by 2030, with global efforts to build a healthier world for all. Since the Chinese government launched a new round of health system reform in 2009, China has made tremendous efforts to achieve the long-term goal of UHC, providing affordable services and equitable basic healthcare during 2020.

Likewise with Indonesia, the government is preparing for efforts to fulfill Universal Health Coverage (UHC) through the National Health Insurance (JKN) program in the journal (Nugraheni et al., 2020).) which is managed by the Social Security Administering Body (BPJS) in order to provide easy access to health services for the entire population (with a focus on targeting and subsidizing care for the poor) and improving the management of the health system. JKN aims to cover all residents, and Presidential Regulation Number 82 of 2018 concerning health insurance requires Indonesian citizens and foreign nationals who stay 6 months or more in Indonesia to enroll in the scheme. Based on this law, JKN participants are entitled to receive services at health facilities.

Erlangga et al., (2019) found that JKN increased the likelihood of inpatient admission for contribution and subsidized groups by 8.2% (95% CI 5.9-10.5%) and 1.8% (95% CI 0.7-2.82%), respectively. The contributor group experienced an increase in the likelihood of outpatient visits by 7.9% (95% CI 4.3-11.4%). Thus the JKN program has increased the utilization of outpatient and inpatient services in the contribution group. With these challenges, hospitals and health care facilities that cooperate with BPJS Health are required to be able to carry out quality and cost control, in accordance with the regulation of the health social security administering body number 8 of 2016 concerning the implementation of quality control and cost control in the implementation of the national health insurance program. Article 2, namely, quality control and cost control of health services is carried out to ensure that health services to Participants are in accordance with the specified quality and are carried out efficiently.

The Complementary Medical Center Hospital is a type D private hospital that has collaborated with BPJS Health since 2016. However, the BPJS Health patients at this hospital are increasing every day with the support of increasingly complete service facilities. However, with the relatively small cost of the INA CBGs package for type D hospitals, complementary hospitals are required to be able to provide quality and efficient services. From 2016 there are still several diagnoses that still exceed the cost of the INA CBGs package tariffs, causing a tariff gap, which shows an inefficient service, if continued this will result in slow hospital development due to the segment of inpatient visits at complementary hospitals the current medical center is a BPJS Health patient.

SUBJECTS AND METHOD

1. Study Design

Research with an analytical observational

study design using a cross-sectional approach was conducted at the Supplementary Hospital Medical Center.

2. Population and sample

The population in this study is billing for inpatients using BPJS Health for a period of one year (2021), taken as many as 204 billing for inpatients BPJS Health selected using random sampling method.

3. Variable

The variables studied in this study were readmission, surgery, extra doctors, intensive care, and special drugs to the difference in rates for the INA CBG package and the unit cost.

4. Operational Definition

Readmission is a condition in which a patient is re-treated who previously received inpatient services in a hospital.

Surgery is an inpatient who gets surgery.

Extra doctors are patients who are treated with more than one doctor, or there are consuls during hospital services

Intensive action for inpatients who receive intensive care measures, either HCU or ICU.

Special drugs are inpatients who receive additional drugs that are classified as special drugs at BPJS Kesehatan, such as Streptokinase Special, Deferiprone, Deferoxamine, Deferasirox, Human Albumin for Septicaemia and Human Albumin for Burn.

The difference between the INA-CBG package rate and the unit cost is the INA-CBGs rate (the amount of claim payment by BPJS Kesehatan to Advanced Referral Health Facilities or hospitals) minus the unit cost of the hospital.

5. Instrument

The unit cost data for inpatients is obtained from BPJS Health data for a one-year period (January-December 2021).

6. Data Analysis

Data analysis was carried out using the Stata 13 application.

RESULTS

1. Sample Characteristics

Of the 204 research subjects, Table 1 shows, most of the research subjects were male patients (92.6%), while the rest were female patients (7.4%). Most of the research subjects were <45 years old (71.1%), while the remaining 28.9% of the research subjects were patients >45 years old. As seen from the type of BPJS used, most of the research subjects were BPJS Non PBI patients (83.3%), while the remaining 16.7% of the research subjects were BPJS PBI patients.

Table 1. Characteristics of Research Subjects

Characteristics	N	%
Gender		
Male	189	92.6%
Female	15	7.4%
Age		
< 45 years	145	71.1%
> 45 years	59	28.9%
Type of BPJS		
BPJS PBI	34	16.7%
BPJS Non PBI	170	83.3%

2. Univariate Analysis

The results of the analysis in Table 2 provide an overview of the presence or absence of readmission, surgery on patients, whether or not doctors pay, whether or not there is intensive care or special drugs given to patients. Based on surgery, most of the research subjects in this study were patients

who returned to the hospital or readmission as much as 7.3% and the remaining 92.3% of patients had no readmission. Patients who received surgery in their hospitalization (51.5%), while the remaining 48.5% of the research subjects were patients without surgery. Furthermore, in terms of the presence or absence of extra doctors, (67.65%), while the remaining 32.35% were extra doctors. In terms of the presence or absence of intensive care, the results of the analysis showed that most of the research subjects in this study did not receive intensive care (91.67%), while the remaining 8.33% of research subjects received intensive care. Furthermore, judging from the presence or absence of special drugs, the results of the analysis showed that of the 204 research subjects studied in this study, most of the research subjects were patients without special drugs (97.55%), while the remaining 2.45% were patients with special drugs, such as Streptokinase Special, Deferiprone, Deferoxamine, Deferasirox, Human Albumin for Septicemia and Human Albumin for Burn. Table 3 shows that the average payment rate at the Complementary Hospital Medical Center is Rp. 3,301,105 while the average tariff for INA CBDS is Rp. 3,262,868 Descriptively, it can be seen that the average INA CBGS rate is higher than the average hospital rate. INA CBDS rates paid by research subjects in this study ranged from Rp. 1,112,000 – Rp. 8,117,000 while hospital rates ranged from Rp. 922,671 – Rp. 8,365,940.

Table 2. Univariate Analysis Results

Variable	Category	Frequency	Persentase (%)
Readmission	No	189	92.3
	Yes	15	7.3
Surgery	No	99	48.5
	Yes	105	51.5
Extra doctor	No	138	67.65
	Yes	66	32.35
Intensive	No	187	91.67
	Yes	17	8.33
Special Drug	No	199	97.55
	Yes	5	2.45

Table 3. Description of hospital unit cost rates and INA CBGS

Variable	Obs	Mean	SD	Min	Max
INA_CBG	204	3301105	1517647	1112000	8117000
Rumah_Sakit	204	3262868	1563223	922671	8365940

Table 4 shows a bivariate analysis of the mean, SD of the difference between the INA CBG rate and the unit cost for the various independent variables studied in this study. Table 4.4 shows that INA CBG payments if there is readmission ($p = 0.002$), surgery is performed ($p = 0.080$), and intensive action is performed ($p < 0.001$), the average is lower if there is no readmission, no surgery, and no intensive action.

Table 4 also shows that the payment of the INA CBG rate if there is an extra doctor service ($p = 447$) and the provision of special drugs ($p = 0.465$) is on average lower than that without extra doctor services or special drugs, but the difference is statistically not significant.

Table 4. Results of bivariate analysis of the difference between BPJS INA-CBG rates and hospital unit costs

Independent Variable	n	%	Mean	SD	p
Readmission					0.002
Yes	15	7.3	-935,933	686412	
No	189	92.3	115,552	1438830	
Surgery					0.080
Yes	105	51.5	-143,502	136996	
No	99	48.5	188,769	146515	
Ekstra doctor					0.447
Yes	66	32.35	-16,894	1266632	
No	138	67.65	64,604	1495944	
Intensive					0.000
Yes	17	8.33	-1,102,378	1218576	
No	187	91.67	141,929	1397537	
Special Drug					0.465
Yes	5	2.45	-518,624	1347597	
No	199	97.55	52,229	1425439	

Table 5. Results of multiple logistic regression analysis of factors that affect the difference between INA CBG rates and unit cost

Independent Variable	Regression Coef (Rupiah)	CI 95%		p
		Lower Limit	Upper Limit	
Readmisi	-1,142,409	-1,864,753	-420,066	0.002
Bedah	-343,067	-727,549	41,414	0.080
Ekstra dokter	-159,837	-573,182	253,507	0.447
Intensif	-1,226,861	-1,904,739	-548,983	0.000
Spesial_Drug	-450,281	-1,662,453	761,889	0.465
_cons	446,806	139,922	753,689	0.005

Table 5 presents the results of multiple linear regression analysis on the effect of a number of independent variables on the difference between the cost of the INA CBG tariff and the unit cost, the explanation is as follows;

1) Readmission Effect

Readmisi reduces the difference between unit costs and INA CBG and is statistically significant. INA CBG payments for patients with readmission are on average Rp 1,142,409 lower than the unit cost. (b = -1,142,409; 95% CI= -1,864,753 to -420,066; p = 0.002)

2) The Effect of Surgery

Surgery reduces the difference between INA CBG payments and unit costs and is statistically close to significant. INA CBG payments for patients with surgery were on average IDR 343,067 lower than the unit cost (b=-343,067; 95% CI= -727,550 to 41,414; p = 0.80).

3) Extra doctor's influence

The existence of an extra doctor payment will reduce the INA CBG payment with a unit cost. INA CBG payment for patients who get extra services.

4) The Effect of Intensive Action

Payment of INA CBG with intensive action reduces payments between INA CBG and unit costs. INA CBG payments for patients with intensive care were on average Rp 1,226,861 lower than the unit cost and the effect was statistically significant (b= -

1,226,861; 95% CI = -1,904,739 to -538,984; p<0.001).

5) The effect of special drug

The effect of special drugs reduces the difference between the INA CBG rate and the unit cost. Payment of INA CBG rates for patients with special drugs is on average Rp 450,282 lower than the unit cost, but the effect is not significant (b = -450,282; 95% CI = -1,662,453 to 761,889; p = 0.645).

DISCUSSION

1. The effect of readmission on the difference between INA CBG fees and hospital unit costs

The results of the analysis in this study indicate that readmission has an effect on the gap in hospital rates with INA CBGS rates, indicated by a p value of 0.002. This means that the readmission will trigger a gap in hospital rates with INA CBG rates. Readmission is an incident where a patient is re-treated who previously received inpatient services in a hospital. The results of the different test of the difference in hospital rates and INA CBG rates showed that there was a significant difference in the gap between hospital rates and INA CBG rates in the group of patients with readmissions and groups of patients without readmissions. The average difference between INA CBG rates and hospital rates for patients with readmission is Rp. 935,932.8, while the average difference between INA CBGS rates and hospital rates for patients without readmission is quite small, Rp. 115.552.3.

The results of this study are in line with the results of research (Faik, 2020) who conducted research at the K.R.M.T Wongsonegoro Hospital, Semarang City. The results of this study indicate that hospital rates are influenced by length of stay, actions, and accompanying secondary diagnoses, but INA-CBG rates remain in accordance with the type of treatment class and severity level. Readmission itself is related to the length of patient care. The existence of readmissions causes patients to be re-treated after previously being declared outpatient, so that any revision can trigger a gap in hospital rates and INA CBG.

The results of this study are also in line with the results of research (Indriani, 2013) conducted at the Central General Hospital (RSUP) Dr. Sardjito. The results of the analysis show that the biggest causes of the tariff gap are drug services and inefficient use of laboratory resources. The existence of readmissions causes patients to be readmitted after previously being declared outpatient, so that revisions can trigger a gap in hospital rates and INA CBG. The longer a patient is treated and the presence of burdensome accompanying diagnoses, the hospital rates will be higher, this is due to costs. accommodation.

2. The effect of surgery on the difference between INA CBG fees and hospital unit costs.

The results of this study indicate that surgery has an effect on the gap in hospital rates with INA CBG rates, indicated by a p value of 0.080. This means that the presence or absence of surgery triggers a gap in hospital rates with INA CBG rates. This is probably because the surgery is not related to drugs, which is very likely to make hospital rates swell.

3. The effect of extra doctor services on the difference between INA CBG rates and hospital unit costs.

The results of this study indicate that extra doctor services have no effect on the gap in hospital rates with INA CBG rates, indicated by a p-value of 0.447. This means that the presence or absence of extra doctor services does not trigger the difference between the INA CBG fee and the hospital unit cost. This is probably because the doctor's payments are outside of the drug cost, so the average

hospital rates and the INA CBG rates for doctors' payments are not significantly different.

4. The effect of intensive services on the difference between INA CBG fees and hospital unit costs.

The results of this study indicate that intensive care has an effect on the gap in hospital rates with INA CBG rates, indicated by a p value of 0.000. This means that the existence of intensive services will trigger a gap in hospital rates with INA CBG rates. The more intensive the services provided, the higher the cost of hospital accommodation. Therefore, the class of care also affects hospital rates in addition to factors such as length of stay, secondary diagnosis, and treatment.

The results of this study are also in line with the results of research (Indriani, 2013) conducted at the Central General Hospital (RSUP) Dr. Sardjito. Analysis result

shows that the biggest causes of the tariff gap are drug services and inefficient use of laboratory resources. Meanwhile, readmission itself is related to the length of patient care. The existence of a readmission causes the patient to be re-treated after previously being declared outpatient, so the revision can trigger the difference between the INA CBG fee and the hospital unit cost.

5. The effect of special drugs on the difference between INA CBG fees and hospital unit costs.

The results of this study indicate that special drugs have no effect on the gap between hospital rates and INA CBG rates, indicated by a p value of 0.465. This means that whether there is a special drug that must be taken by the patient does not trigger a gap between hospital rates and INA CBG rates.

AUTHOR CONTRIBUTION

Galuh Ayu Dyah Prameswari select the topic, searches for and collects research data. Didik Tamtomo and Bhisma Murti analyzed data and reviewed research documents and provided input and suggestions in conducting research.

CONFLICT OF INTEREST

There is no conflict of interest in this study

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REFERENCE

Rensburg C, Berhanu R, Hirasen K, Evans D, Rosen S, Long L (2019). Cost outcome analysis of decentralized care for drug-Resistant tuberculosis in Johannesburg, South Africa. PloS One 14(6) 4-5. Doi: 10.1371/JOURNAL.PONE.0-217820.

Ekawati F, Claramita M (2021). Indonesian general practitioners' experience of practicing in primary care under the implementation of universal health coverage scheme (JKN). J. prim. care amp 12. 1-3. Doi: 10.1177/21501327-211023707.

Hsu JC, Lu CY (2015). The evolution of Taiwan's national health insurance drug reimbursement scheme. J. Fac. Pharm 23(1) 2-3. Doi: 10.1186/S40-199-014-0080-7.

Rensburg C, Berhanu R, Hirasen K, Evans D, Rosen S, Long L (2019). Cost outcome analysis of decentralized care for drug-Resistant tuberculosis in Johannesburg, South Africa. PloS One 14(6) 4-5. Doi: 10.1371/JOURNAL.P-ONE.0217820.

Ekawati F, Claramita M (2021). Indonesian

general practitioners' experience of practicing in primary care under the implementation of universal health coverage scheme (JKN). J. prim. care amp 12. 1-3. Doi: 10.1177/215013272-11023707.

Hsu JC, Lu CY (2015). The evolution of Taiwan's national health insurance drug reimbursement scheme. J. Fac. Pharm 23(1) 2-3. Doi: 10.1186/S40-199-014-0080-7.

Gallaher JR, Mjuweni S, Cairns BA, Charles AG (2015). Burn care delivery in a Sub-Saharan African Unit: A cost analysis study. Int. J. Surg. Open 19:116–20 117-118. Doi: 10.1016/J.IJ-SU.2015.05.015.

Munge K, Mulupi S, Barasa E, Chuma J (2019). A critical analysis of purchasing arrangements in Kenya: The case of micro health insurance. Bio-Med Central 19(1) 2-3. Doi: 10.11-86/S12913-018-3863-6.

Moses MW, Pedroza P, Baral R, Bloom S, Brown J, Chapin A, Compton K, et al. (2019). Funding and services needed to achieve universal health coverage: applications of global, regional, and national estimates of utilisation of outpatient visits and inpatient admissions from 1990 to 2016, and unit costs from 1995 to 2016. Lancet Glob Health 4(1):e49–73 49-50. Doi: 10.1016/S24682667(18)302135.

Budi S. (2018). Sistem Pembiayaan Kesehatan Health Financing System (Health Financing System Health Financing System).J 148:148–62 58-68. Doi:10.22219/sm.v11i2.42062614-476X

Tao W, Zeng Z, Dang H, Li P, Chuong L, Yue D, Wen J, Zhao R, Li W, Kominski G (2020). Towards universal health coverage: achievements and challenges of 10 Years of healthcare reform in China. BMJ Glob. Health 5(3) 1-2. Doi: 10.1136/BMJGH-2019-002087.

Nugraheni WP, Mubasyiroh R, Hartono RK (2020). The influence of jaminan kesehatan nasional (JKN) on the cost of delivery services in indonesia. PloS One 15(7) 1-4. Doi: 10.1371/JOUR-NAL.PONE.0235176.

Abdekhoda M, Ahmadi M, Gohari M, Noruzi A (2015). The effects of organizational contextual factors on physicians' attitude toward adoption of Electronic Medical Records. J Biomed Inform. 53: 174–179. Doi: 10.1016 /j.jbi.-2014.10.00.