Comparison Analysis of Real Costs with Ina-CBG Rate's Ischemic Stroke Disease in Installations in Regional Public Hospitals X in Banda Aceh 2019

Mulyanti[1], Irwan Saputra[2], Maimun Syukri[3], Nurjannah[4], Nova Dian Lestari[5]
[1,2,3,4,5]*Faculty of Medicine, Universitas Syiah Kuala, Indonesia*
mulyanti.rz@gmail.com, iwanbulba@unsyiah.ac.id, nurjannah_dr@unsyiah.ac.id, novadianlestari@unsyiah.ac.id

Abstract

The government health financing system paid for hospital using the INA-CBG's method. Stroke is the third most common cause of death after heart disease and cancer and stroke rank first as a cause of disability. Thus, the treatment of strokes due to disability and recurrent strokes requires a fairly high maintenance cost. Results: The total cost of ischemic stroke in 345 hospitalized cases with a total real cost was IDR 2.800.210.362 and a total cost of INA-CBG's of IDR 2.830.254.600.This has a significant difference, as well as severity levels and comorbidities. There is a difference between the real hospital rates and INA-CBG's rates with a value of P = 0,000. The cost of caring for ischemic stroke patients the most cost was accommodation (22%). Conclusion: There is a difference between the real hospital costs and the INA-CBG's rates for ischemic stroke patients at X Hospital, this is because there is still a negative difference associated with severity level, type of comorbid, length of stay and class of care.

I. Introduction

INA-CBG system is one of the applications of health financing by the government that is used for hospitals Case Base Groups (CBG's)is a method of paying for patient care based on relatively similar diagnoses or cases. The hospital will get payment by INA CBG's which is relatively the same and matches the average cost spent on treatment of a diagnosis. The initial purpose of this payment system is to carry out health service guarantees for the poor and underprivileged by using the principle of social health insurance (Nur Arif in Haslinur, 2020)

Since the establishment of the Health Insurance Administration Agency (BPJS) in 2014, it has significantly affected the funding and admissions system that occurs in hospitals. Before the era of BPJS Health with the INA-CBG method, the method of health financing to hospitals used the fee for service method. The fee for service method is a retrospective type of hospital payment method, where the payment is determined after health services are provided. With this tariff system, providers, or health service providers such as hospitals, can get unlimited income. This is because providers can offer all kinds of health services to patients (Kemenkes RI, 2016). However, with the implementation of INA-CBG, the hospital must certainly provide health services in accordance with the group of disease cases suffered by these patients. Consequently, health services that are deemed unnecessary are provided, so the hospital does not do it to reduce operational costs.

Changes in the payment system brought new problems at the Meuraxa Regional Hospital. There is a difference between hospital rates (which are regulated in the Banda Aceh Mayor Regulation Number 14 of 2015) and INA-CBG's, which are considered not

2479

comparable to medical and non-medical services, the price of drugs and current consumables. Therefore, the hospital directly has to cut operational costs by considering the quality of service factors that remain maximum to patients.

One of the operational costs that the hospital focuses on is catastrophic disease, because this disease is a high-cost and complicated disease that can threaten and endanger lives (Nugraheni & Hartono, 2017). Several diseases, including catastrophic diseases such as hypertension has the potential to become chronic and has complications of stroke or heart attack (Cummins & Mahul, 2008).

Stroke sufferers have increased every year. The main cause is an unhealthy lifestyle, such as lack of exercise, smoking, drinking alcohol or consuming fatty foods (Pinzon & Asanti, 2010). This disease has an effect on decreasing productivity of sufferers who become disabled, unable to earn a living, become dependent on others, and often become a burden on their families, that the family economy is disrupted. In addition, it can affect both psychologically and physically for both the patient and the family members. Stroke requires long treatment, which is expensive and requires patience and high support from the family (Goldstein et al., 2011).

Riskesdas 2018 data shows that the prevalence of stroke in Indonesia based on the diagnosis of health workers is 10.9 per 1000 population (Ministry of Health, Republic of Indonesia, 2018). With this figure, stroke is the third most common cause of death after heart disease and cancer and ranked first as a cause of disability (WHO, 2016). Of all strokes, about 80% are ischemic strokes. Ischemic stroke occurs when the arterial blood flow that supplies oxygen to the brain is blocked (Mozaffarian et al., 2015).

Stroke treatment due to disability and recurrent strokes requires a high cost. In 2007, the average total cost of therapy for ischemic stroke was IDR 4,340,000 and hemorrhagic IDR 5,300,000 (Purbaningsih, Wahyono, & Suparniati, 2015). Research by Firmansyah, Andayani, and Pinzon (2016) on the analysis of the cost of ischemic stroke concluded that the total cost of ischemic stroke at Bethesda Hospital Yogyakarta in 1 year using the Fee for Service payment method was IDR 1,528,343,158 which is the sum of the total real outpatient costs of IDR 51,562,900 with an average of IDR 621,240 and the total real cost of inpatients is IDR 1, 476, 78 0,258 with an average of IDR 10,184,691.

Data from the medical records section of the X Hospital in Banda Aceh City explains that cases of stroke in the last 5 years have continued to increase. In 2014, there were 230 patients, this number continued to increase to 551 patients in 2018(RSUD X, 2019). Thus, the financing burden for this disease is one of the largest. However, the revenue from BPJS claims through INA-CBG rates is often not in line with the costs incurred by the hospital in providing services. This is evident based on data in February 2018, there were 38 ischemic stroke patients who were treated at the Meuraxa Hospital. Of the total number of patients, the total cost of INA-CBG's claims was IDRIDR 287,873,600 while the total real hospital cost was IDRIDR 332,848,790. Based on the results of the difference in February 2018, it can be predicted that hospital losses in one year could reach IDR 539,702,280.

II. Review of Literatures

2.1 Indonesia Case Bases Groups (INA-CBG's)

Based on the Minister of Health Regulation Number 76 of 2016, which has been in effect since 26 October 2016 regarding the INA-CBG's Guidelines in the Implementation of National Health Insurance, is a reference for advanced level health facilities, BPJS Kesehatan, and other related parties regarding the INA-CBG's payment method in

implementing the Guarantee Health. INA-CBG's is one of the health financing methods in Indonesia. This payment method is known as the Casemix payment method (case based payment) and has been implemented since September 1, 2008 in 15 vertical hospitals. On January 1, 2009, cooperation was extended to all hospitals as a payment method for the Public Health Insurance (Jamkesmas) program. The Casemix system is currently widely used as the basis for health payment systems in developed countries and is being developed in developing countries (RI Ministry of Health, 2016).

The Casemix system is a grouping of diagnoses and procedures with reference to similar / the same clinical features and similar / same treatment costs. Rouping is done using a grouper (Ministry of Health RI, 2016). Meanwhile, according to Jacobs and Rapoport (2004) Casemix is an index or measurement tool for the average use of resources for a specific, similar group. The resulting values show the estimated resources used for each case. Setyawan (2018) defines Casemix as payment at a rate per diagnosis, not a tariff / unit price for the type of service in the context of healing illness. In casemix payments, the hospital and the payer no longer specify what service bills have been given to a patient, but the hospital only submits the patient's diagnosis on discharge and enters the code for the case.

Since the implementation of the Casemix system in Indonesia, there have been three changes in tariff rates, namely the INA-DRG tariff in 2008, INA-CBG tariff in 2013 and INA-CBG tariff in 2014. Diagnosis codes and procedures are grouped using the UNU grouper (UNU Grouper).). UNU-Grouper is a casemix Grouper developed by United Nations University (UNU). (Ministry of Health RI, 2016).

INA-CBGs Tariffs in the National Health Insurance The INA-CBGs rates used in the JKN program as of January 1, 2014 are enforced based on the Regulation of the Minister of Health of the Republic of Indonesia with several principles, one of which is that the rates are grouped according to the type and class of hospital, which consists of: hospital rates class A, class B hospital rates, class B education hospital rates, class C hospital rates, class D hospital rates, National referral special hospital rates, National referral general hospital rates. Tariff grouping is based on adjustments after seeing the amount of Hospital Base Rate (HBR) which is obtained from the calculation of the total hospital expenses. If there is more than one hospital in a group, the Mean Base Rate is used (Binsasi, 2016).

Hospital rates are divided into 5 (five) regions based on the Consumer Price Index (IHK) and have been mutually agreed between BPJS Kesehatan and the Association of Advanced Level Health Facilities (AFKTL). The regionalization of the INA-CBGs tariff includes: Regional I, namely: Banten, DKI Jakarta, West Java, Central Java, DI Yogyakarta, and East Java; Regional II, namely: West Sumatra, Riau, South Sumatra, Lampung Bali, and NTB; Regional III, namely: NAD, North Sumatra, Jambi, Bengkulu, Riau Islands, West Kalimantan, North Sulawesi, Central Sulawesi, Southeast Sulawesi, Gorontalo, South Sulawesi, West Sulawesi; Regional IV, namely: South Kalimantan and Central Kalimantan; Regional V, namely: Bangka Belitung, East Nusa Tenggara, North Kalimantan, Maluku, North Maluku, Papua, and West Papua (Binsasi, 2016).

2.2 Hospital Service Rates

The real rate or tariff for hospital services is the value of a service which is determined by the size of an amount of money based on the consideration that with this money value a hospital is willing to provide services to patients. Hospital rates are an aspect that is very concerned about by private hospitals as well as government-owned hospitals (Najah, Raharjo, & Andini, 2016). Kotler, Keller, Koshy, and Jha (2006) argue that price is one of the most adjustable income-generating elements of marketing. Price also communicates the company's intended value position to the market regarding its products and brands.

Pricing at the hospital must always be guided by the costs incurred to create its services, because if the hospital sets a rate below its cost, the hospital will suffer losses, that the survival of the hospital will not be guaranteed (Primandita, Marwati, & Solikhah, 2010). Tariff setting can be done by calculating the average variable cost budget plus a certain percentage and it can also be done by estimating the full cost plus the desired profit value (Sutomo, 2003). For government hospitals, rates are determined based on a Decree of the Minister of Health or Local Government. This shows the tight control of the government as the owner of the hospital (Trisnantoro, 2018).

Based on the Banda Aceh Mayor Regulation Number 14 of 2015, hospital rates, both medical and non-medical services, prices for drugs and consumables, all tariff guidelines for Meuraxa Hospital services can be seen in attachment 6 (six).

2.3 Stroke

Stroke is a disease of the brain in the form of local and / or global neurological dysfunction, which appears suddenly, progressive, and quickly. Nerve function disorders in stroke are caused by non-traumatic brain circulatory disorders.

These nervous disorders cause symptoms, including: paralysis of the face or limbs, speech is not fluent, speech is not clear (pelo), maybe changes in consciousness, visual disturbances, and others (Kemenkes RI, 2018). Stroke involves a sudden onset of focal neurological deficits that last at least 24 hours and are thought to originate in blood vessels (Anita, 2017).

Stroke is a focal and global acute brain functional disorder caused by obstruction of blood flow to the brain due to bleeding (hemorrhagic stroke) or obstruction (ischemic stroke) with symptoms and signs corresponding to the part of the brain affected, which can be completely healed, recovered with disability, or death. Circulatory disorders of the brain can form the blockage of brain blood vessels or rupture of blood vessels in the brain. The brain, which should be supplied with oxygen and nutrients, becomes disturbed. Lack of oxygen supply to the brain will lead to the death of nerve cells (neurons). This brain function disorder will cause stroke symptoms (Iskandar, 2011).

2.4 Clinical Pathway

Clinical pathway is an integrated service planning concept that summarizes each step given to patients based on service standards, nursing care standards, and other health worker service standards, which are evidence-based with measurable results and within a certain period while in the hospital. The clinical pathway is a multidisciplinary plan that requires collaborative practice with a team approach, through day to day activities, focusing on patients with activities that systematically incorporate standard outcomes (Adisasmito, 2008).

Based on Firmanda (2016), it also defines an integrated service planning concept that summarizes every step given to patients based on standard medical services and evidence-based nursing care with measurable results and within a certain period while in the hospital.

Meanwhile, according to Marelli (2000) Clinical pathway is a collaborative guideline for treating patients that focuses on diagnosis, clinical problems and stages of service. Clinical pathway combines the standard of care for each health worker in a systematic manner. The actions given are uniform in a standard of care, but still pay attention to the individual aspects of the patient. The goal of implementing a clinical pathway is to provide the best service when practice styles must be significantly differentiated and provide a framework for collecting and analyzing data on the care process, that providers understand how often and why patients do not follow the desired program during the hospitalization period (Cheah, 2000).

III. Research Method

This research was conducted by observational method using a cross sectional research design. Data was collected retrospectively by tracing the medical records of patients with ischemic stroke and tracing the insurance section of the Meuraxa Hospital, Banda Aceh City. The data of ischemic stroke in 2019 was used to calculate the real cost of each unit cost of ischemic stroke and find out the difference between the real cost of the hospital and the INA-CBG's rate for ischemic stroke in the inpatient installation of the x general hospital in Banda Aceh City in 2019.

In this study, the characteristics of the respondents were distinguished from gender, age, class of care, severity level, length of stay and ischemic stroke with comorbidities can be seen in the table below:

Table 1. Characteristics of Respondents

Variable	Frequency (n)	Percentage (%)
Gender		
Male	180	52,2
Female	165	47,8
Age		
<65 Year	207	60
≥65 Year	138	40
Class treatment		
I	77	22,3
II	31	9
III	237	68,7

Table 2. Data on Characteristics of Respondents (Continued)

Variable	Frequency (n)	Percentage (%)
Treatment period (LOS)		
LOS 1-3 hari	62	18,0
LOS 4-7 hari	227	65,8
LOS >7 hari	56	16,2
Severity level		
I	104	30,1
II	180	52,2
III	61	17,7
Comorbid Factor		
Diabetes	23	6,7
Hypertension	185	53,6
Hypertension+ Diabetes	39	11,3
Other Comorbids	98	28,4

Source: Secondary Data of X Hospital 2019

The table above displays data on the characteristics of respondents including gender, age, class of care, severity level, length of stay (LOS) and orbital factors. Based on the overall sample in this study, 52.2% were male, and 60% occurred at the age less than 65 years. Class III was dominated by class III, namely 68.7%, severity level was 52.2%, namely

severity level II, length of stay that was dominant based on criteria less than or equal to 7 days was 83.3% and comorbid factors were hypertensive is 53.6%.

IV. Result and Discussion

The analysis in this study is used to describe the total real hospital costs with INA-CBG's rates and unit costs used to treat ischemic stroke patients and to predict the number of cases and costs obtained for the coming years for stroke cases at the X Hospital. Banda Aceh in the period January to December 2019.

4.1 Total Hospital Real Rates and INA-CBG Rates

Table 3. Hospital Real Rates and INA-CBG Rates Based on 2019 *Severity Level*

Category Severity Level	Case (n)	Total Fare		Difference (INA-CBG's - Real Rate)	Percentage (%)
		Real Rates	INA-CBG's rates		
Level I	104	537,881,202	574,882,600	37,001,398	6.9
Level II	180	1,323,433,962	1,350,953,100	27,519,138	2.0
Level III	61	938,895,198	904,418,900	-34,476,298	-3.7

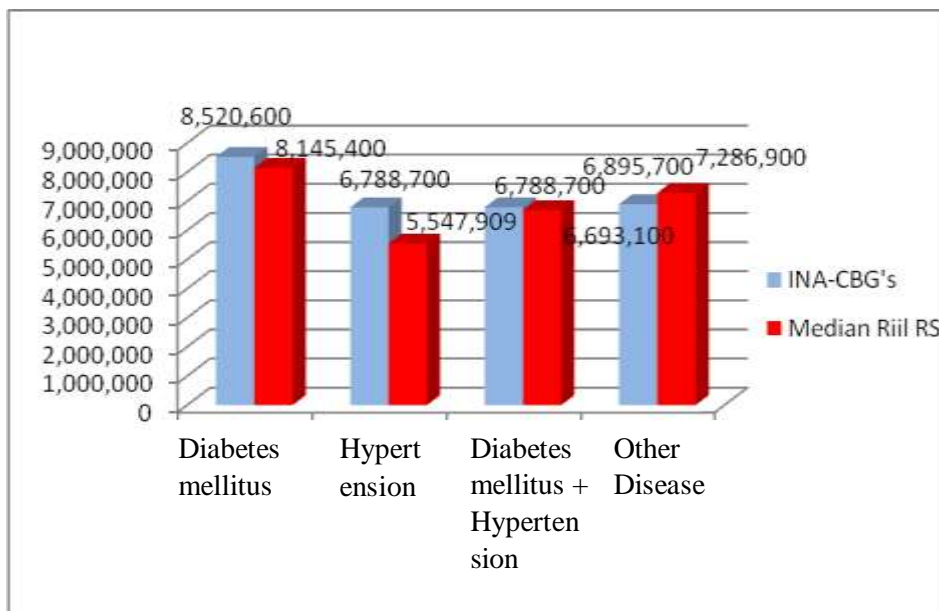*Source: Secondary Data of X Hospital 2019*
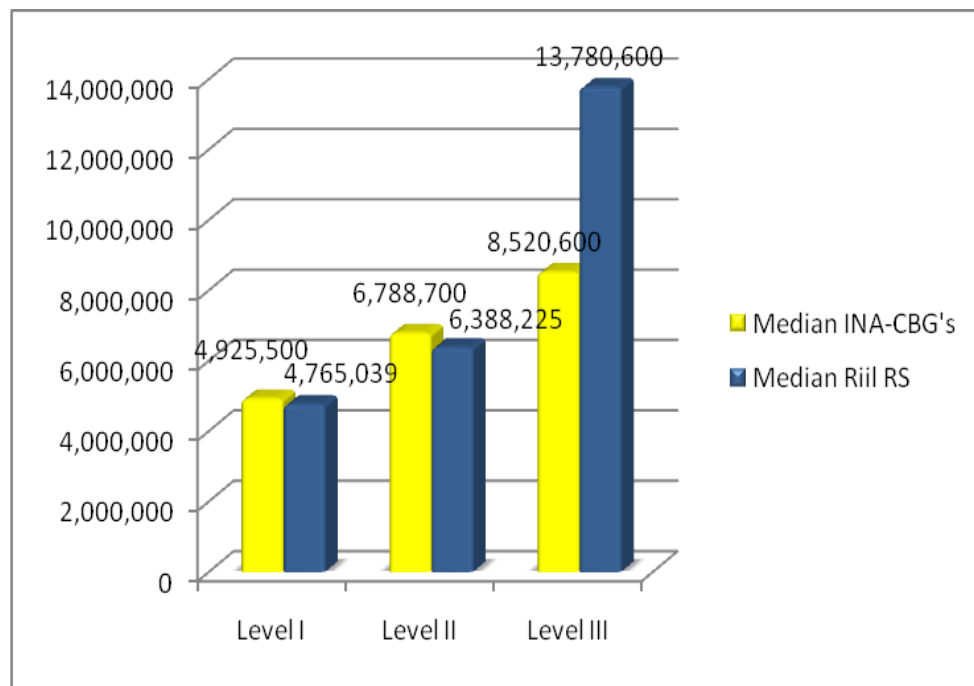
Figure 1. *Distribution of Average Real Hospital Rates and INA-CBG Rates Based on 2019 Severity Level*

Table 4. Total Real Hospital Rates and INA-CBG Rates Based on the Comorbit Factor in 2019

Category Comorbid Factors	Case (n)	Total Fare		Difference (INA-CBG's - Real Rate)	Percentage (%)
		Real Rates	INA-CBG's rates		
Diabetes mellitus	23	249,857,285	182,720,500	-67,136,785	26,9
Hypertension	185	1,239,586,367	1,285,625,800	46,039,433	3,7
Diabetes Mellitus + Hypertension	39	288,711,521	304,641,100	15,929,579	5,5
Other Diseases	98	1,022,055,189	1,057,267,200	35,212,011	3,4

*Source: Secondary Data of X Hospital 2019*

***Figure 2.** Distribution of Average Real Hospital Rates and INA-CBG Rates Based on Comorbid*

Figure 2 above shows the highest median value for comorbid diabetes mellitus, the real rate of IDR 8,145,400 and the Ina-cbg's rate of IDR 852,600 compared to other diseases with an average real rate of IDR 8,145,400 and INA-CBG's rate of IDRIDR 8,520,600, hypertension has a fairly large average difference from other orbits of IDR 1,240,791. And spent the cost per day on comorbid hypertension of Rp1, 225,913. All of the distribution of these median values can be seen in the graph above (figure 2).

Table 5. Total Hospital Real Rates and INA-CBG Rates Based on Class of Treatment in 2019

Category Class treatment	Case (n)	Total Fare		Difference (INA-CBG's - Real Rate)	Percentage (%)
		RS Real Rates	INA-CBG's rates		
Class 1	77	572,375,175	683,032,400	110,657,225	19,3
Class 2	31	262,616,034	266,937,000	4,320,966	1,6
Class 3	237	1,965,219,153	1,880,285,200	-84,933,953	4,3

Source: Secondary Data of X Hospital 2019
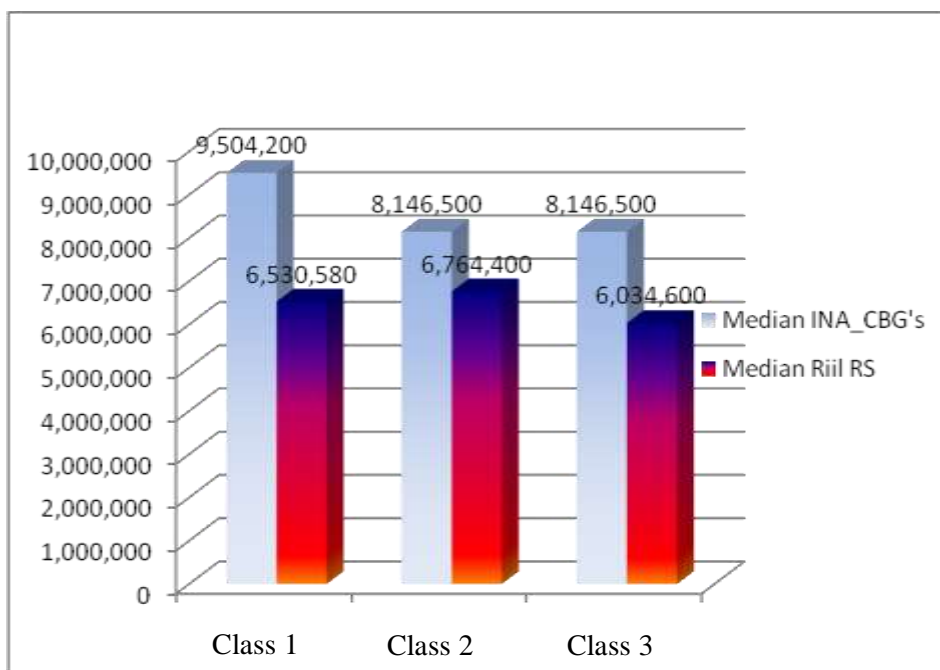
Figure 3. *Distribution of Median Real Hospital Rates and INA-CBG Rates Based on Class of Treatment in 2019*

Based on the Figure 3 above, there is a positive difference from the median mean value of the Ina-CBG's tariff which exceeds the hospital rate, this is different from the results of the total tariff in the treatment class, in the total tariff for class 3 there is a negative difference but different results for the median value in class 3 which get a positive difference on INA-CBG's rates. For the distribution of the median value can be seen in the graph above.
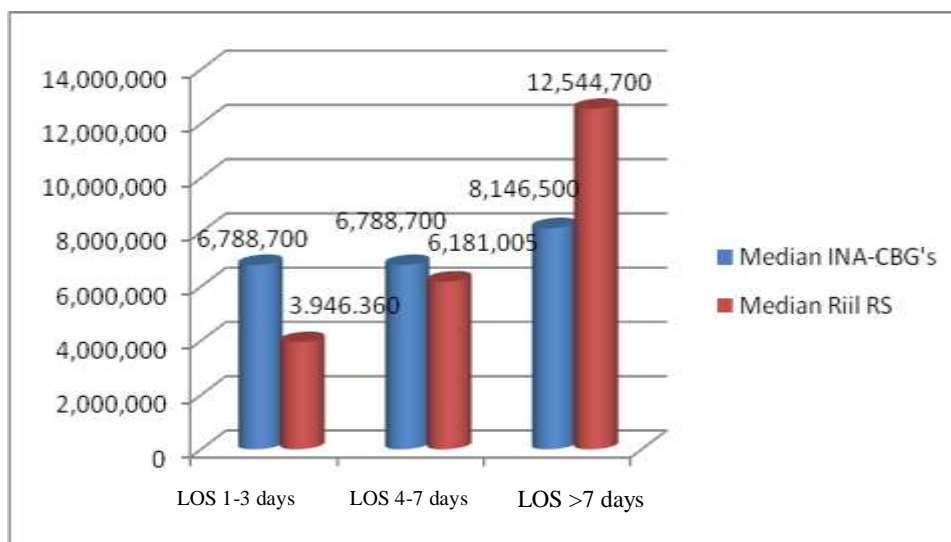
Table 6. Total Hospital Real Rates and INA-CBG Rates Based on Length of Stay (LOS) in 2019

Category Duration of treatment (LOS)	Case (n)	Total Fare		Difference (INA-CBG's - Real RS)	Percentage (%)
		RS Real Rates	INA-CBG's rates		
LOS 1-3 Days	62	291,490,049	492,485,400	200,995,351	68,9
LOS 4-7 Days	227	1,657,646,890	1,800,943,900	143,297,010	8,6
LOS >7 Days	56	851,073,423	536,825,300	314,248,132	36,9

Source: Secondary Data of X Hospital 2019

Table 6 above presents data on length of stay of 4-7 days, the total INA-CBG's tariff has the highest total value of IDR 1,800,943,900 compared to the real hospital rate of IDR 1,657,646,890 with a positive difference of IDR 143,297,010 and the cost per day of the length of stay 4-7 days the real rate was IDR 1,333,585, and the INA-CBG's tariff is IDR 1,448,868. Meanwhile, 1-3 days LOS there is a positive difference of IDR 200,995,351 from the total tariff. Whereas at LOS> 7 days the total real hospital rate was higher than the total INA-CBG rate of IDR 851,073,423. So that at LOS> 7 there is a negative difference of IDR 314,248,132. With the total cost per day of the hospital's real rate of IDR 5,995,474, it can be concluded that the longer the length of stay, the greater the hospital and will experience losses, and if the hospitalization period can be shortened, the hospital will get a greater profit like that. Expected for more details, see the distribution chart of the median value below.

Figure 4. *Distribution of Median Value Real Hospital Rates and INA-CBG Rates Based on Length of Stay (LOS) in 2019*

Figure 4 show that the highest median value is found in LOS> 7 days, the real hospital rate is IDR 12,544,700. On average, LOS 1-3 days and LOS 4-7 hospital days are still surplus. From these data, the longer the length of stay, the greater the average cost spent on ischemic stroke cases.

4.2 Unit Cost Issued in the Care of Ischemic Stroke Patients

This is to find out which unit cost is the most dominant in treating ischemic stroke cases at the X Hospital in 2019.

Table 7. Unit Cost Issued in Patient Care Ischemic Stroke in 2019

| *Unit Cost Name*	Cases (n)	Total Cost (IDR)	Cost per patient (IDR)		
			Median	**Min**	**Max**
Radiology	337	594,660,000	1,600,000	100,000	9,650,000
Laboratory	343	558,319,536	1,209,000	117,000	10,837,500
Medicine	343	482,675,125	969,500	163,100	20,338,947
Consultation	341	343,297,500	800,000	30,000	4,860,000
Intensive Care	50	260,800,000	4,800,000	600,000	10,800,000
Radiology	311	257,657,000	750,000	75,000	2,250,000
Laboratory	336	126,949,200	334,100	10,400	1,845,000
Equipment Rental	63	95,280,000	1,150,000	25,000	5,500,000
Support	187	3,497,500	75,000	75,000	1,675,000
BMHP	63	20,070,000	25,000	25,000	1,025,000
Blood Ministry	3	3,600,000	720,000	720,000	2,160,000
Rehabilitation	14	2,255,000	147,500	85,000	350,000
Experts	1	160,000	160,000	160,000	160,000

Source: Secondary Data of X Hospital 2019
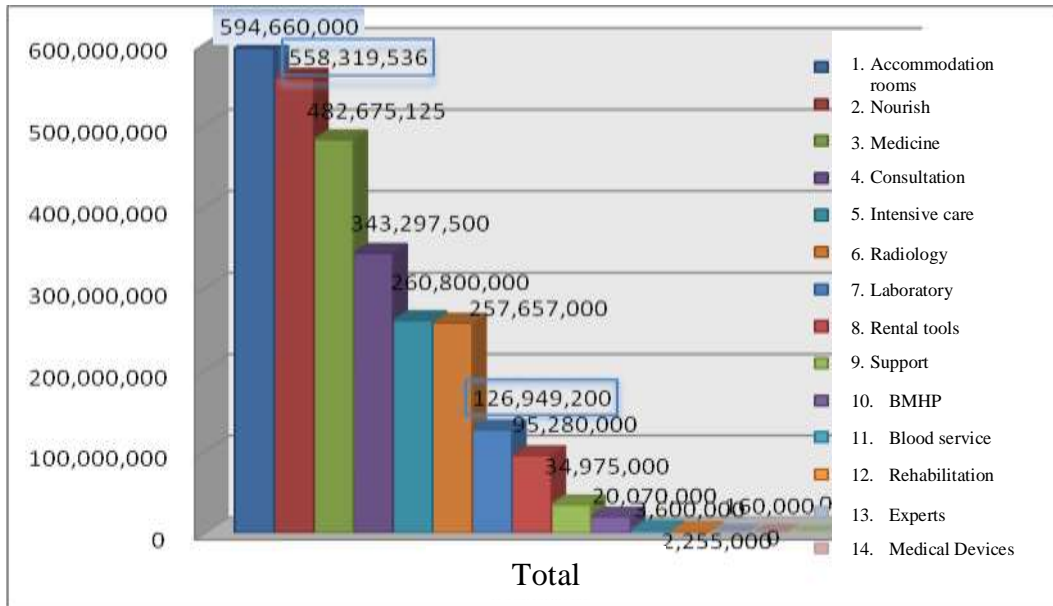
Figure 5. The Most Dominant Total Cost in RS

4.3 Predicting the Number of Ischemic Stroke Cases

Since the last 5 years, stroke cases at the X Hospital have continued to increase from 2014 to 2018 and in 2019, stroke cases have decreased. Based on the number of cases, the trend of ischemic stroke cases can be seen in the table below.

Table 8. Data on the Number of Ischemic Stroke Cases in X Hospital 2014 - 2019

Year	2014	2015	2016	2017	2018	2019
Number of Cases	224	389	391	496	523	345
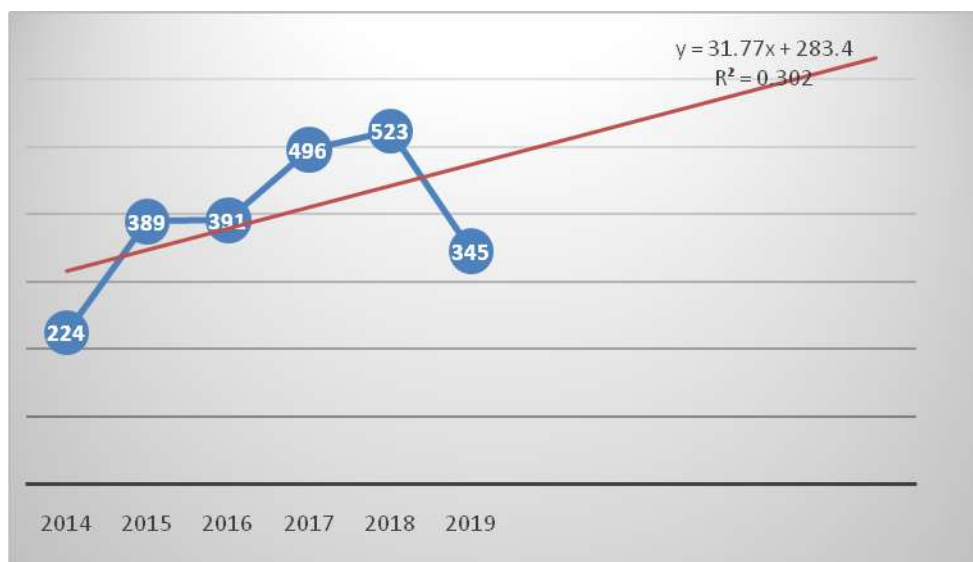
*Figure 6. Trends in Ischemic Stroke Cases in X Hospital, 2014 – 2019*

Table 8 above shows the data on the number of ischemic stroke cases for 6 years from 2014 to 2019 and predicts the number of cases for the next year, In the figure 6, it can be seen that the trend of the highest number of stroke cases was in 2018, namely 523 cases. In 2014

to 2018 the number of patients continued to increase, but in 2019 cases of ischemic stroke decreased by 34% from 2018, The prediction costs were calculated based on the average amount spent in treating one ischemic stroke patient in 2019, the real cost of IDR 8,116,552 and INA-CBG's fee of IDR 8,203,637, Meanwhile, from the trend, we obtained the formula of $y = 31,771x + 283,47$, With this equation, it can be seen in the table below for predictive data on the number of cases and the cost of ischemic stroke cases for 2020 to 2025.

Table 9. Prediction Data of Number of Cases and Cost of Cases Ischemic Stroke 2020 - 2025

Year	Number of Cases	Cost Prediction	
		Real cost	INA CBGS
2020	505	4,098,858,760	4,142,836,685
2021	537	4,358,588,424	4,405,353,069
2022	569	4,618,318,088	4,667,869,453
2023	600	4,869,931,200	4,922,182,200
2024	632	5,129,660,864	5,184,698,584
2025	664	5,389,390,528	5,447,214,968

Source: Secondary Data of X Hospital 2019
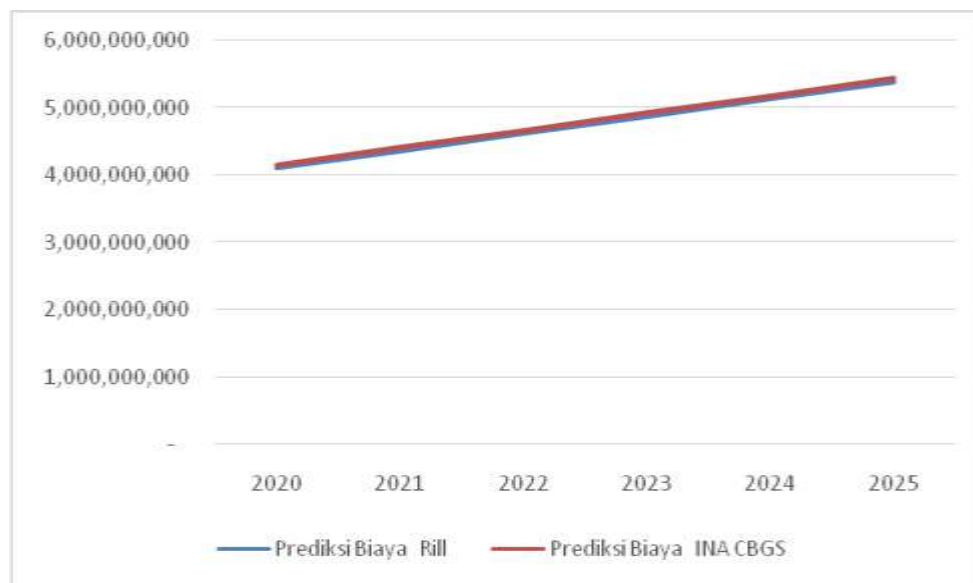
Figure 7. *Predictions of Real coast and INA-CBG's Real Tariff Costs*

Based on the predictive data for the number of ischemic stroke patients from 2020 to 2025 above, the researchers also predict the costs incurred during the patient's treatment period both in real hospital rates and based on INA-CBG's rates, assuming there is no change in tariff regulation either from the real cost and in terms of INA-CBG's, But from the prediction there must be an increase in the amount of health inflation for each year, Cost predictions are calculated based on the average amount spent in caring for one ischemic stroke patient in 2019 according to the data in table 9 above.

Based on the results of the data test using Shapiro-Wilk, it was found that the real hospital rates were sig, 000 <, 005, so the real hospital rates were not normally distributed and the test results on the INA-CBG's rates were sig, 000 <, 005 so that the rates INA-CBG's are also not normally distributed, Comorbid and ischemic stroke severity levels are also not normally distributed. Based on the data on the two variables, namely the real hospital rates

and INA-CBG rates, it shows that all data are not normally distributed, so because the data are not normally distributed, further data analysis for differences in hospital real rates and INA-CBG rates uses the Mann Whitney test.

4.4 Difference between hospital real rates and INA-CBG rates

The data to be tested is real hospital rate data and INA-CBG rate data for one year of treatment data at X Hospital, namely 2019.

Table 10. Differences in Real Rates and INA-CBG Rates for Ischemic Stroke Patients at X Hospital in 2019

Rates	Frequency (n)	Total Fare	Average	P Value
Real Rate	345	2,800,210,362	8,116,551,77	0,0001
INA-CBG's	345	2,830,254,600	8,203,636,52	

Source: Secondary Data of Meuraxa Hospital 2019

Table 10 above describes the difference between real hospital rates and INA-CBG's which were analyzed using the Mann Whitney test where the p value shows a value of 0.0001, which means rejecting the hypothesis H0 and accepting Ha with the conclusion that there is a significant difference between the real RS rates and the INA-CBG's rates on ischemic stroke patients at X Hospital in 2019.

Table 11. Differences in Real Rates and INA-CBG Rates for Ischemic Stroke Patients by Type of Comorbid at Meuraxa Hospital in 2019

Severity Level	Frequency (n)	Average		P Value
		Real Rates	INA-CBG's rates	
I	104	5,171,934,63	5,527,717,31	0,001
II	180	7,352,410,90	7,505,295,00	0,000
III	61	15,391,724,56	14,826,539,34	0,218

Source: Secondary Data of X Hospital 2019

In the table above shows the P-value at severity levels I and II of 0.001 and 0.000 (<0.05), it can be concluded that there were differences in real rates and INA-CBG rates according to Severity Levels I and II. In contrast to the results on severity level III with a P-value of 0.281> 0.05. It can be concluded that there was no significant difference between the real hospital rates and the INA-CBG rates at severity level III. It can be concluded that the results of the Man Whitney test show that there were differences in the cost of ischemic stroke based on the level of severity level I and II. Meanwhile, level III severity does not differ between real hospital rates and INA-CBG rates.

Table 12. Differences in Real Rates and INA-CBG Rates for Ischemic Stroke Patients by Type of Comorbid at X Hospital in 2019

Comorbid	Frequency (n)	Average		P Value
		Real Rates	INA-CBG's rates	
Diabetes	23	10,863,360,22	7,944,369,57	0,700
Hypertension	185	6,700,466,85	6,949,328,65	0,000
Diabetes + Hypertension	39	7,402,859,51	7,811,310,26	0,222

Another Comorbid	98	10,429,134,58	10,788,440,82	0,363

Source: Secondary Data of X Hospital 2019

Table 12 above explains the difference in the cost of real rates and INA-CBG rates according to the type of comorbid. The results of the Man Whitney test show that there is a significant difference in the Hypertension comorbid with a P-value of 0,000 on the real RS rate with the INA-CBG rate. Meanwhile, the comorbid DM, DM + hypertension and other comorbidities show that there is no difference in costs for each type of comorbid other than hypertension. These results are seen from the results of p value or sig> 0.05. with the conclusion that there is no difference in the average cost of ischemic stroke based on the type of comorbid DM, DM + hypertension and other comorbidities.

V. Conclusion

The study concluded that the overall INA-CBG's rate was significantly higher than the hospital real cost for ischemic stroke cases. It is consistent when examining by different severity level, except for severity level 3, which had the hospital real cost significantly higher than INA-CBG's rate. For ischemic stroke with comorbid, only patients with hypertension had hospital real cost significantly higher than INA-CBG's rate, all other comorbid indicates non-significant difference. The study suggested to revise the hospital cost regulation to minimize the different cost from INA-CBG's rate and prevent the increasing number of patients with comorbid by improving the preventive programs reducing complication among patients with ischemic stroke.

References

Adisasmito, W. (2008). Kebijakan standar pelayanan medik dan diagnosis related group (DRG), kelayakan penerapannya di Indonesia. Fakultas Kesehatan Masyarakat Univesitas Indonesia: Jakarta.

Anita. (2017). Studi Penggunaan Obat Golongan Statin Pada Pasien Stroke Iskemik (Penelitian Dilakukan Di Instalasi Rawat RSUD Sidoarjo). University of Muhammadiyah Malang.

Banda Aceh JUKEMA,:VOl 3(1): 198-205.

Batticaca, F. B. (2008). Asuhan keperawatan pada klien dengan gangguan sistem persarafan. Jakarta: Salemba Medika.

Binsasi, E. (2016). Model Besar Klaim (Severity) yang Diajukan Rumah Sakit Kepada BPJS Kesehatan. SAINTEKBU: 8(2).

Cheah, J. (2000). Clinical pathways-an evaluation of its impact on the quality care in an acute care general hospital in Singapore. Singapore medical journal. 41(7), 335-346.

Cummins, J, D. & Mahul, O. (2008). Catastrophe risk financing in developing countries: principles for public intervention: The World Bank.

Dahlan, S. (2011). Statistik untuk kedokteran dan kesehatan. Jakarta: Salemba Medika.

Dewanto, G. (2009). Panduan praktis Diagnosis dan tata laksana penyakit saraf. Jakarta: EGC.

Dumaris, H. (2018). Analisis Perbedaan Tarif Rumah Sakit dan Tarif INA-CBG's Pelayanan Rawat Jalan di RSUD Budhi Asih Jakarta Tahun 2015. Jurnal Administrasi Rumah Sakit Indonesia: 3(1).

Dwidayati, A., Andayani, T. M. & Wiedyaningsih, C. (2016). Analisis Kesesuaian Biaya Real Terhadap Tarif INA-CBGS Pada Pengobatan Stroke Non Hemoragik Pasien JKN Rawat Inap RSUD Dr. Soehadi Prijonegoro Sragen Tahun 2015. Jurnal Farmasi Indonesia. 13(2). 139-149.

Feuth, S., & Claes, L. (2008). Introducing clinical pathways as a strategy for improving care, Journal of integrated care pathways. 12(2). 56-60.

Firmanda, D, (2016), Clinical Pathways Kesehatan Anak, Sari Pediatri, 8(3), 195-208,

Firmansyah, F,, Andayani, T, M,, & Pinzon, R, T, (2016), Analisis biaya penyakit stroke iskemik, Jurnal Manajemen Dan Pelayanan Farmasi (Journal of Management and Pharmacy Practice), 6(1), 27-34,

Ginsberg, L, (2010), Lecture notes: neurology (Vol, 16): John Wiley & Sons,

Goldstein, L, B,, Bushnell, C, D,, Adams, R, J,, Appel, L, J,, Braun, L, T,, Chaturvedi, S,, , , , Hart, R, G, (2011), Guidelines for the primary prevention of stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association, Stroke, 42(2), 517-584,

Gomes, J,, & Wachsman, A, M, (2013), Types of strokes Handbook of clinical nutrition and stroke (pp, 15-31): Springer,

Haslinur, S,, et al, (2020), Analysis of Differences between INA CBG's Rates and Hospital Real Rates in Hemophilia Patients at RSUD Zainoel Abidin Banda Aceh, Budapest International Research and Critics Institute-Journal (BIRCI-Journal), P,1758-1763

Iskandar, J, (2011), Stroke waspadai ancamannya, Yogyakarta: Cv andi offset,

Jacobs, P,, & Rapoport, J, (2004), The economics of health and medical care: Jones & Bartlett Learning,

Kemenkes RI, (2016), Peraturan Menteri Kesehatan Republik Indonesia Nomor 27 Tahun 2014 Tentang Petunjuk Teknis Sistem Indonesian Case Base Groups (INA-CBGs), Jakarta,

Kemenkes RI, (2018), Hasil utama riskesdas 2018, Jakarta: Kemenkes RI,

Komaryani K,(2012) Kebijakan Penentuan Biaya INA-CBG's, Jakarta: Tim Teknis INA-CBG,

Kotler, P,, Keller, K, L,, Koshy, A,, & Jha, M, (2006), Defining Marketing for the 21st century, Kotler, Philip and Kevin Lane, Marketing Management 12e, New Jersey: Prentice Hall, 3-31,

Lili Suryani,2017, Perbedaan Biaya Real Rumah Sakit dan Tarif INA-CBG's Untuk Kasus Katastopikgengan Penyakit Jantung Koroner Pasien Rawat Inap Peserta Jaminan Kesehatan Nasional Di RSUDZA,

Mahendra, & Rachmawati, E, (2008), Pencegahan Stroke dengan Tanaman Obat, Jakarta: Penebar Swadaya

Munawaroh S, (2019) Perbedaan tarif INA-CBG's dengan tarif rumah sakit pada pasien BPJS kasus stroke iskemik Rawat Inap Kelas Idi RS PON tahun 2018, MARSI; VOL 3(2) 2018

Marelli, T, (2000), Nursing documentation book: St, Louis: Mosby Inc,

Mazidah, Z, (2019), Analisis Biaya penyakit stroke pasien jaminan kesehatan nasional di RSUD Blambangan Bayuwangi,

Mozaffarian, D,, Benjamin, E, J,, Go, A, S,, Arnett, D, K,, Blaha, M, J,, Cushman, M,, , , , Howard, V, J, (2015), Executive summary: heart disease and stroke statistics—2015 update: a report from the American Heart Association, Circulation, 131(4), 434-441,

Muslimah, M,, Andayani, T, M,, Pinzon, R,, & Endarti, D, (2017), Comparison of Real Costs against the Price of INA-CBG's Ischemic Stroke in Bethesda Hospital, Jurnal

Manajemen Dan Pelayanan Farmasi (Journal of Management and Pharmacy Practice), 7(2), 105-118,

Muttaqin, A. (2008). Buku ajar asuhan keperawatan klien dengan gangguan sistem persarafan. Jakarta: Salemba Medika. 41.

Najah, N., Raharjo, K., & Andini, R. (2016). Penerapan Metode Activity Based Costing System dalam Menentukan Tarif Jasa Rawat Inap (Studi Kasus pada Rumah Sakit Umum RA, Kartini Kabupaten Jepara). Journal Of Accounting, 2(2).

Nugraheni, W. P., & Hartono, R., K. (2017). Determinan Pengeluaran Kesehatan Katastropik Rumah Tangga Indonesia Pada Tahun Pertama Implementasi Program JKN, Indonesian Bulletin of Health Research, 45(1), 27-36.

Palmer, A., Williams, B., Yasmine, E., Astikawati, R., & Safitri, A. (2007). Tekanan Darah Tinggi. Jakarta: Erlangga.

Pinzon, R,, & Asanti, L, (2010), Awas stroke! pengertian, gejala, tindakan, perawatan dan pencegahan: Penerbit Andi.

Primandita, P., Marwati, T., & Solikhah, S. (2010). Analisa Cost Sharing Perhitungan Tarif Hemodialisis (HD) Masyarakat Miskin Di Rumah Sakit Umum PKU Muhammadiyah Unit I Yogyakarta, Kes Mas: Jurnal Fakultas Kesehatan Masyarakat Universitas Ahmad Daulan, 5(3).

Purbaningsih, S., Wahyono, D., & Suparniati, E. (2015). Cost of illness pasien stroke. Jurnal Manajemen dan Pelayanan Farmasi (Journal of Management and Pharmacy Practice). 5(2): 95-103.

RSUD Meuraxa. (2019). Laporan Tahunan Bagian Rekam Medik Tahun 2019. Banda Aceh: Tidak Dipublikasi.

Setyawan, F., E., B. (2018). Sistem Pembiayaan Kesehatan. Jurnal Berkala Ilmiah Kedokteran dan Kesehatan. 2(4).

Sulastomo, M., K. (2007). Jakarta: PT Gramedia Pustaka Utama.

Sutomo. (2003). Analisis Keputusan Investasi Rawat Inap Ruang Super VIP RSUD Pandan Arang Boyolali Tahun 2003 Program Pascasarjana Universitas Diponegoro.

Thabrani H, Sistem pembayaran Fasilitas kesehatan pedoman managemen informasi kesehatan di sarana pelayanan kesehatan,(ed) Jakarta: UI –Press; 2011.

Trisnantoro, L. (2018). Memahami penggunaan ilmu ekonomi dalam manajemen rumah sakit: UGM press.

WHO. (2016). World Health Statistics 2015, Geneva: World Health Organization; 2015, World health statistics, 2012.