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Analysis of Real Hospital Cost on Ina-Cbgs Rates for Cesarean Section Patients

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ABSTRACT

A caesarean section is an artificial birth that is carried out by making a small incision in the abdominal wall and uterine wall, but the uterus must be intact and the fetus weighs >500 grams. The high cost of a cesarean section has prompted the Indonesian government to launch the National Health Insurance (JKN) program as an implementation of the National Health Insurance (JKN) which has been regulated regarding to the payment patterns to advanced health facilities by applying Indonesian Case Based Groups (INA-CBG's). This study aims to determine the difference between real hospital cost rates and INA-CBGs rates for payment of claims by JKN participants for caesarean section inpatients at Dr. Soedomo Regional Hospital Trenggalek. The research method is analytical observation with a cross sectional approach which refers to the hospital's perspective by comparing the direct medical costs of BPJS (Social Security Agency on Health) participant patients and the INA-CBG's rates. The populations of this study were BPJS recipients of class I, II, III inpatients who received mild category of caesarean section at Dr. Soedomo Regional Hospital Trenggalek in 2020. The sample used in this study was medical record documents that met the inclusion and exclusion criteria. Purposive sampling method was used. In treatment of I, II, III classes, a significant difference was found between the average total direct medical costs of mild category of caesarean section patients (O-6-10-I) compared to the INA-CBG's rates. The treatment of class I had a difference of IDR 886,582. ($p<0.05$). The treatment of class II had a difference of IDR 754,881. ($p<0.05$) and the treatment of Class III, the difference obtained was IDR 1,109,368. ($p<0.05$).

Keywords: Analysis of Real Hospital Cost, Cesarean Section.

INTRODUCTION

All women wish their labor processes to run smoothly and to give birth normally and healthily. However, problems often arise during the labor process that require special cares, one of which is a caesarean section. In general, caesarean section is performed if vaginal delivery is not possible and is only carried out if there are problems that threaten the mothers and fetuses (Mildawati R & Faizah N,R, 2020). Caesarean section is an artificial birth which is carried out by making an incision in the abdominal wall and uterine wall, where the uterus must remain intact and the fetus must weigh >500 grams (Siti & Marthia, 2017). Based on data from Riskesdas in 2018, the birth rate was 79%, with details of 37% at state hospitals and 42% at private hospitals. For cases of delivery by

caesarean section, the number was quite a lot, say 57%. The Province of East Java showed that the number of births by caesarean section in 2019 was 124,586 out of 622,930 or around 20% of all birth processes (Ministry of Health of the Republic of Indonesia, 2020).

Considering the high costs required for a caesarean section, the government of Indonesia has launched National Health Insurance (JKN) program in which the system and the payment patterns for advanced health facilities have been regulated with reference to the Indonesian Case Based Groups (INA-CBG's). In reality, there is often a difference of costs between the real hospital costs and the standard INA-CBG package rates in the payment process. A positive difference occurs if the real costs spent are less than the standard INA-CBG tariff, while a negative difference occurs when the real costs spent are more than the package tariff. (Bunga and Bambang 2021).

Based on this study background, researchers are interested in conducting research regarding the analysis of real hospital costs on INA-CBGs rates for caesarean section patients at Dr. Soedomo Regional Hospital Trenggalek.

METHODS

The design of this research was analytical observation with a cross sectional approach based on the provider's perspective, the type of the hospital costs measured is the direct medical costs for patients who are the participants of BPJS. The data collection was carried out retrospectively, with the research data used was information from the data of caesarean section patients which was obtained from medical data (medical records) and financial administration data at Dr. Soedomo Regional Hospital Trenggalek.

The instruments used in this research were data collection sheets that met the inclusion, medical record data, and patient financial administration data criteria. The population in this study were inpatients of BPJS 123 classes who received caesarean section at Dr. Soedomo Hospital Trenggalek in January-July 2020. The BPJS Class I research sample consisted of 25 patients, BPJS Class II consisted of 43 patients and BPJS Class III consisted of 216 patients who met the inclusion and exclusion criteria.

Data collection procedure in this research was carried out by taking notes of what related to the criteria to be studied. The data collected was in the form of medical record data and patient financial administration data. The patient information which was collected from the data collection form including medical record numbers, patient ages, patient admission and discharge dates, patient cost data which was obtained from the finance department including the cost of prophylactic antibiotics used, the costs of supporting medicines, the cost of treatment and then they were presented in tabular forms.

Data Analysis calculated the average cost per patient by using Excel, whereas analyzing and comparing the difference in real hospital costs and INA-CBGs tariff costs by using the SPSS application. With the SPSS application, researchers used the independent t-test to see if the data was normally distributed, to find out whether the data was normal or not, the normality test was used, if the data was not normally distributed, the Wilcoxon test was used.

RESULTS

Based on the research results, it was found that the number of cesarean section patients during the January–July 2020 period who met the BPJS Class I inclusion criteria were 25 patients, for BPJS Class II were 43 patients and for BPJS Class III were 216 patients.

Table 1. Patient Characteristics Based on Age

Characteristics Age	Treatment class					
	I		II		III	
	n	Precentage (%)	n	Precentage (%)	n	Precentage (%)
< 20 years old	-	-	-	-	9	4,17%
20-35 years old	13	52%	38	88,37%	179	82,87%
>35 years old	12	48%	5	11,63%	28	12,96%
Total	25	100%	43	100%	216	100%

In table 1, it can be seen that there were 13 (52%) patients aged 20-35 years, 12 (48%) patients aged >35 years and no patients aged <20 years in class I treatment. There were 38 (88.37%) patients aged 20-35 years, 5 (11.63%) patients aged >35 years and no patients aged <20 years in class II treatment. There were 179 (82.87%) patients aged 20-35 years, 28 (12.96%) patients aged >35 years and 9 (4.17%) patients aged <20 years in class III treatment.

Patient Characteristics Based on Indication, The data showing the characteristics of cesarean section patients of INAPJS Class I, II, III at Dr. Soedomo Hospital Trenggalek in the period of January – July 2020 can be seen in table 2

Table 2. Patient Characteristics Based on Indication

Indication	Treatment class					
	I		II		III	
	n	Percentage (%)	n	Percentage (%)	n	Percentage (%)
Previous caesarian section	12	48%	17	39,53%	71	32,87%
Failed induction	5	20%	5	11,62%	38	17,60%
rupture of membranes	1	4%	2	4,65%	18	8,33%
Floating Head	1	-	5	11,62%	5	2,31%
Transverse lie	-	-	2	4,65%	3	1,39%
Breech	-	-	3	6,97%	21	9,72%
Prolonged labour	1	4%	2	4,65%	10	4,63%
Oligohidramnion	-	-	1	2,33%	5	2,32%
Long Labour	-	-	-	-	1	0,46%
Hypertension	-	-	1	2,33%	8	3,71%
Hepatitis	-	-	-	-	2	0,93%
Anemia	-	-	-	-	1	0,46%
IVF	1	4%	-	-	-	-
Polyhidramnios	1	4%	-	-	1	0,46%
Secondary Uterine Inertia	-	-	1	2,33%	-	-
Fetal distress	-	-	1	2,33%	1	0,46%
Postterm pregnancy	-	-	1	2,33%	1	0,46%
CPD (Cephalopelvic Disproportion)	-	-	-	-	12	5,56%
Intrauterine fetal death (IUFD)	-	-	-	-	1	0,46%
Prolonged second stage of labour	1	4%	-	-	6	2,78%
Placenta Pervia with haemorrhage	-	-	1	2,33%	-	-
Placenta Pervia Totalis	1	4%	-	-	5	2,32%
Big Baby/ Big fetus	-	-	1	2,33%	1	0,46%
Secondary Arrest	-	-	-	-	1	0,46%
Preeclampsia	1	4%	-	-	1	0,46%
G1PO (baby's head hasn't entered into the pelvis)	-	-	-	-	1	0,46%

Severe preeclampsia	-	-	-	-	2	0,93%
Total	25	100%	43	100%	216	100%

notes : n: number

Based on the indications of patient characteristics, the indication which had the highest percentage in class I, II, III treatment, was previous caesarian section indication, in class I treatment there were (48%), class II treatment were (39.53%) and class III treatment were (32.87%).

Length of Stay for Cesarean section Patients, The data showing the length of stay for cesarean section patients of BPJS Class I, II, III at Dr. Soedomo Hospital Trenggalek in the period January – July 2020, can be seen in table 3.

Table 3. the length of Stay for Cesarean section Patients

Length of Stay	**Treatment class**					
	I		II		III	
	n	Percentage (%)	n	Percentage (%)	n	Percentage (%)
2 days	-	-	-	-	1	0,46%
3 days	4	16%	6	13,95%	45	20,83%
4 days	16	64%	34	79,08%	135	62,5%
5 days	5	20%	2	4,65%	35	16,21%
6 days	12	48%	5	11,63%	28	12,96%
Total	25	100%	43	100%	216	100%
Average (days)	4,4		3,95		3,95	

notes : n: number

Based on the length of stay for caesarean section patients of BPJS class I, II, III (O-6-10-I) ,the highest percentage was 4 days, in the class I treatment (64%), class II treatment (79.08%), class III treatment (62.5%) and with an average of class I treatment was for 4.4 days, class II treatment was for 3.95 days and class III treatment was for 3.95 days.

Table 4. Distribution of Prophylactic Antibiotic Use

Prophylactic Antibiotics	Treatment class					
	I		II		III	
	n	Percentage (%)	n	Percentage (%)	n	Percentage (%)
Ceftriaxon	22	88%	33	76,74%	176	81,48%
Cefazolin	3	12%	9	20,93%	26	12,04%
Ampicilin	-	-	1	2,33%	14	6,48%
Total	25	100%	43	100%	216	100%

Based on the prophylactic antibiotics used in BPJS Class I, II, III, most patients used the ceftriaxon prophylactic antibiotic. In class I treatment, 22 (88%) patients used the ceftriaxon prophylactic antibiotic, in class II treatment there were 33 (76.74%) patients and class III treatment there were 176 (81.48%) patients. The second highest used of prophylactic antibiotics was cefazolin, in class I treatment there were 3 (12%) patients who used the cefazolin prophylactic antibiotic in class II treatment there were 9 (20.93%) patients and class III treatment there were 26 (12.04%) patients. . Apart from ceftriaxone and cefazolin, there was also ampicillin prophylactic antibiotic, where in class I treatment there was no patients who used the ampicillin prophylactic antibiotic in class II treatment there was 1 (2.33%) patient and in class III treatment there was 14 (6.48%) patients.

Cost Analysis, The data showing the components of direct medical costs for caesarean section patients at dr. Soedomo regional hospital Trenggalek for BPJS Class I, II, III in the period of January – July 2020, can be seen in table Table 5.

Table 5. Components of Medical Costs

Treatment Class	Components of Direct Medical Costs			
	Average Cost of Antibiotics Prophylactic	Average Cost of Other Medicines	Average Cost Of treatments	Average Supporting Examination cost Medical
I	Rp 18.229	Rp 595.702	Rp 5.743,160	Rp 1.293,040,92
II	Rp 17.729	Rp 566.293	Rp 4.729,746,512	Rp 1.237,654,372
III	Rp 15.194	Rp 491.350	Rp 4.251,454,551	Rp 1.181,624,634

The first cost component was the cost of prophylactic antibiotics, in class I treatment the average cost was IDR 18,229, in class II treatment the average cost was IDR 17,729 and in class III treatment the average cost was IDR 15,194. The second cost component was the cost of supporting medicines, in class I treatment the average cost was IDR 595,702, in class II treatment the average cost was IDR 566,293 and in class III treatment the average cost was IDR 491,350. The third cost component was treatment costs, in class I treatment the average cost was IDR 5,743,160, in class II treatment the average cost was IDR 4,729,746,512 and in class III treatment the average cost was IDR 4,251,454,551. And the fourth cost component was medical support costs, in class I treatment the average cost was IDR 1,293,040.92, in class II treatment the average cost was IDR 1,237,654,372 and in class III treatment the average cost was up to IDR 1,181,624,634.

The comparison between Real Hospital Costs and INA-CBG Rates for Cesarean Section Patients, The data showing the comparison between real hospital costs and INA-CBG rates for caesarean section patients on BPJS Class I, II, III at Dr. Soedomo Regional Hospital Trenggalek in the period of January – July 2020, can be seen on table 6.

Table 6. The comparison between the Real Hospital Costs and INA-CBG Rates for Cesarean Section Patients.

INA-CBGs code	Treatment Class	n	Average of total Real cost (Rp)	INA CBGs Tariff (Rp)	Difference (Rp)	*P Value*
	I	25	7.648.882	6.762.300	886.582	0,000 *
O-6-10-I	II	43	6.551.181	5.796.300	754.881	0,000**
	III	216	5.939.568	4.830.200	1.109.368	0,000 *

Based on the results of the comparison between the average total real hospital costs and INA-CBGs rates for caesarean section patients in classes I, II and III treatment with mild severity (O-6-10-I), the data was obtained and showed that the INA-CBGs claim rate was lower than the hospital's real costs. In class I treatment, there was a difference of Rp. 886,582 with an average real cost of IDR 7,648,882 and the INA-CBGs claim rate for mild caesarean section of class I was IDR 6,762,300 and with a p value = 0.000.

In class II treatment, the difference value was Rp. 754,881 with an average real cost of IDR 6,551,181 and if based on the standard INA-CBGs claim rate for class II mild caesarean section was IDR 5796,300 and with a p value = 0.000. In class III treatment, it was also found that there was a difference of IDR 1,109,368 with an average real cost of IDR 5,939,568 compared to the INA-CBGs claim rate for mild caesarean section class III of IDR 4,830,200 and with a p value = 0.000.

DISCUSSION

Based on the data, 5 people (17%) were said to be in healthy reproductive age state. A healthy reproductive age is when a woman experiences pregnancy between the ages of 20 and 35 years. This age range is the safe limit in terms of reproduction. At the age of 20 - 35 years, women can carry out a pregnancy program safely and healthily if they receive good care and it will be safe for their reproductive organs. This is because the mother's age during pregnancy is very influential and is related to the baby's weight at birth (Pinontoan VM & Tombokan SGJ, 2015).

The result of this research is in line with the research by Randy et al (2020) conducted at the Central Surgical Installation of XY Manado Hospital in 2019, in which profile data was obtained on the characteristics of patients who underwent cesarean sections with the most diagnoses due to a history of 23 (39.7%) patients with previous cesarean sections.

Based on the clinical pathway from the hospital, it is known that the length of stay (LOS) of treatment is 4 days. This has met the parameters set based on the 2005 Republic of Indonesia Minister of Health Regulation on the standard of average length of stay (AvLOS) of maximum of 6-9 days.
The administration of prophylactic antibiotics can minimize the risk of endometritis by 60-70% so that it can reduce the risk of SSI (surgical site infection) by 30-65% (Hardiyanti, 2020). The prophylactic antibiotic that is widely used in BPJS Class I, II, III is ceftriaxon the prophylactic antibiotic. This research is in line with the research conducted by Anggi et al 2017 which the result showing that the majority of respondents (60.6%) received the Ceftriaxone antibiotic, 20 people, and those who received the Ampicillin antibiotic were 13 people (39.4%) (Anggi et al., 2017).

The Ceftriaxone antibiotic is a 3rd generation cephalosporin antibiotic which has a broad spectrum of activity so that it can inhibit and eradicate bacteria, both gram-positive and negative bacteria, during the caesarean section until completion. (Ganiswara, 2017)

Based on the INA-CBG tariff standards, for each class with mild severity status (O -6-10), for class 1 it was 6,762,300, class II it was 5,796,300 and class III it was 4,830,200. The result of the comparison between the average real costs obtained from the hospital finance department and the INA-CBG's rates for caesarean section patients with classes I, II, and III treatment with mild (O-6-10-I) showed that the difference between real hospital costs with INA-CBGs claim rates of mild severity level. In class I treatment, there was a difference of IDR 886,582 with an average real cost of IDR 7,648,882 and the INA-CBGs claim rate for class I mild caesarean section of IDR 6,762,300 with a p value = 0.000 or <0.05, this can define that the two costs have meaningful differences. In class II treatment, a difference of IDR 754,881 was found with an average real cost of IDR 6,551,181 and the INA-CBGs claim rate for class II mild caesarean section was IDR 5,796,300 with a p value = 0.000 or <0.05, this can define that the two costs as having meaningful differences. In class III treatment there was also a difference of IDR 1,109,368 with the average real cost of IDR 5,939,568 and the INA-CBGs claim rate for class III mild caesarean section was IDR 4,830,200 with a p value = 0.000 or <0.05 p. This can define that the two costs as having meaningful differences.

Based on research conducted by Maulide et al in 2020 regarding the difference between hospital rates and Ina-CBG rates for Caesarian section patients at Idaman Regional Hospital Banjarbaru in 2019, it is known that there was a negative difference between hospital rates and INA-CBG rates, in Severity level I (mild) it was IDR 2,839,487,172, in severity level II it was IDR 978,086,890 and in severity level III it was IDR 90,764,930. The INA-CBG's rates for patients giving birth by caesarean section were not able to cover the hospital costs or there was a negative difference, which was based on the data that in every single episode of care there was always a negative result and there was no positive difference at all.

The hospitals will receive payments based on INA-CBG's rates, which are the average costs spent by a diagnostic group. The tariff which is referred is in the form of a package that covers all components of hospital costs, based on costing and disease coding data refers to International Classification of Diseases (ICD) compiled by the World Health Organization. (Wijaya and Ariawati, 2018).

The amount of cost determined is influenced by a number of aspects of the INA-CBG system, including the presence of a primary diagnosis, and the presence of secondary diagnoses in the form of comorbidities or complications, the level of severity, the form of intervention, and variations in patient age. Therefore, it is understood that the INA-CBG's tariff that has been determined and has

become the standard is the cost that must be paid in line with the fee or cost per episode of a health care in a series of patient care until the completion of the INA-CBG's package pattern. (Social Security Agency on Health (BPJS Kesehatan),2014).

Many factors can influence health costs, such as inflation in hospital costs, changes in government policies/hospital directors, third party payments (insurance) and the health workers themselves. (Thabrani, 2011). To be able to reduce costs for the package payment system (Cased Base Groups), one of the way is by reducing the prices paid for resources/inputs, reducing the length of stay of patients, reducing the intensity of services provided, and increasing production/service efficiency. (Cleverly, 1997). The difference between real hospital rates and INA-CBG rates for caesarean section patients is also supported by the patient's medication rates during treatment. The longer a patient is treated, the more of medication need.

Using patented medicines for patients makes real tariff costs higher. Meanwhile, the INA-CBGs package tariff for the first and advanced level services requires the use of generic medicines. (Ministry of Health, 2010). The use of antibiotics after surgery also influences the difference between real hospital rates and INA-CBG rates, because according to PERMENKES (Minister of Health Regulation) (2021) the use of antibiotics for caesarean section patients is only prophylactic antibiotics.

CONCLUSION

There was a significant difference between the average total real costs for mild severity category of caesarean section patients (O-6-10-I) in classes I, II, III treatments and the INA-CBGs rates at Dr. Soedomo regional hospital Trenggalek. The difference obtained in the comparison of INA-CBGs rates on the average total real cost of mild severity category of caesarean section patients in class I treatment was IDR 886,582. ($p<0.05$). In class II treatment, a difference of IDR 754,881 was obtained. ($p<0.05$) and class III treatment with a difference of Rp. 1,109,368. ($p<0.05$)

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