



Real Cost of Analysis of INA CBGs Rates on Caesarean Section at Mother and Child Hospital Restu Ibu Sragen

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Abstract. This study aimed to analyze the difference between real cost and INA CBGs rates for caesarean section at Mother and Child Hospital Restu Ibu Sragen. This study applied a mixed method (quantitative and qualitative) with variables focusing on the INA CBGs rates and hospital real cost. The population in this study were all caesarean section patients in 2021, while the samples used in this study were 538 patients or the entire population included in the inclusion criteria, namely patients in 2021, patients using BPJS Health Insurance, and patients with complete medical record data. The real cost consisted of the cost of drugs or medical goods, medical treatment, medical services, and medical support. Qualitative data were collected by interviewing five research respondents, namely three from management, one from the case-mix team, and one from medical records. The results showed that the ratio of calculations in Class 3 patients so as not to experience losses could be done with a balance of mild to moderate patients, namely 1:1,75, while in patients overall type, a comparison of 1:3:8 or 1:3:9 could be made to improve hospital benefits. The statistical analysis showed a difference between real cost and INA CBGs rates for caesarean section at Mother and Child Hospital Restu Ibu Sragen. The determinants are the adherence of doctors and medical personnel to clinical pathways, the condition of medical personnel not too concerned about claim rates, the length of time for patient care, the form of action given to patients, and the presence of complications in patients. There are five strategies produced in this analysis: calculating unit costs for caesarean section in each class and level of severity, considering rates per patient based on the results of data analysis in 2021, monitoring and evaluating caesarean section, monitoring and evaluating clinical pathway compliance, and increase the promotion of the hospital. The results of this study produce strategies and compare patient ratios to minimize losses at RSIA Restu Ibu Sragen.

Keywords: Actual Rate · INA CBGs · Caesarean Section

1 Introduction

Health is a condition ranging from physical, mental, spiritual, and social providing a person's ability to live socially and economically (Kementerian Kesehatan RI, 2017). The urgency of health in human life makes health one of the primary needs in every society and one of the main sectors that the government pays attention to in maintaining community welfare. These conditions make health services the main focus in creating quality public health [1].

In creating universal health coverage, the government created a National Health Insurance program through the Health Social Security Administration Agency (BPJS Health Insurance). It aims to overcome various health problems, especially financing, as one of the main problems of the community to reach healthcare facilities.

To that end, health service providers collaborate with BPJS Health Insurance to build a comprehensive and optimal health service system. Thus, health facilities working with BPJS Health must adhere to the rules set by BPJS in various aspects, including financing.

Financing is related to the rates charged to patients or health insurance providers for each service based on the applicable regulations. BPJS Health Insurance uses a payment system with a package tariff, namely Casemix INA-CBG'S's defined as a payment system based on a predetermined rate by considering the average cost spent by patients when experiencing a specific diagnosis [2]. In addition, BPJS uses a prospective payment system, a payment system with a predetermined rate before providing health services in the form of a package with a predetermined diagnosis and type of disease.

Applying this payment method benefits the community so that the community can access various guaranteed health services without worrying about costs [3]. However, it also poses problems for health services to manage their services and operations properly so that the payments paid to health facilities are not below the costs to treat patients. Hence, the health facilities do not suffer losses.

As one of the health service providers, the hospital encounters several problems, especially in controlling costs due to the implementation of INA-CBG'S's, one of which is caesarean section services. Research conducted by Monica et al., (2021) shows that caesarean section provides a significant level of loss for hospitals by comparing the hospital's actual rates with claims obtained from the INA-CBG'S's system. This condition makes the hospital continuously evaluate and control costs to minimize potential losses while maintaining quality.

Mother and Child Hospital Restu Ibu Sragen is one of the hospitals located in Sragen Regency, Central Java providing obstetric and gynaecological services, including caesarean section. Mother and Child Hospital Restu Ibu Sragen also cooperates with BPJS Health in its services to implement INA-CBG's rates. Due to this circumstance, cost control is mandatory to avert hospital losses, particularly in surgical procedures like caesarean sections.

The difference between this study and previous studies is that this study focuses on maternal and child hospitals with limited services. In addition, this study raises the ratio of the number of patients to determine the right strategy to minimize potential losses.

Applying INA-CBGs poses a risk to surgical procedures such as caesarean section in experiencing losses in hospitals. Thus, it is necessary to analyze the condition of hospitals in performing cesarean section, whether they experience losses due to the difference in

real cost and hospital rates. Based on this background, this study aims to describe the difference between real cost and INA-CBG'S's rates and the factors influencing these differences at Mother and Child Hospital Restu Ibu Sragen.

2 Research Method

This study was structured with a quantitative and qualitative approach compiled with a sequential explanatory model, namely analyzing the quantitative data, qualitative data, and data as a whole to conclude the study. The population was all caesarean section patients at Mother and Child Hospital Restu Ibu Sragen in 2021. The samples were the entire population consisting of 538 people.

The variables used were real cost and INA CBGs rates. The real cost consists of the cost of drugs or medical goods, medical treatment, medical services, medical support, and room or accommodation. Data were collected using interview instruments and quantitative instruments. Interviews were conducted to the division of management, medical records, and casemix. Meanwhile, tariff data were obtained from medical and financial records.

The data were analyzed using the Mann-Whitney test to determine the difference between real cost and INA CBGs rates. The processing and analysis stage of qualitative data was carried out by checking all the data between the interview notes and the recorder (voice recorder) to prevent missing data that have not been recorded. The results were converted in the form of verbatim or transcripts by order of questions and answers given by the informants, including the probing questions and answers which had unique information or marks. The next researcher summarized the results of verbatim or transcripts in the form of a matrix through triangulation techniques, namely source and method triangulation.

Researchers used source triangulation by comparing the results of one respondent's answers with other respondents whose backgrounds were different. In contrast, method triangulation was carried out by comparing the results of in-depth interviews with the quantitative analysis (through multivariate analysis) and observations. Qualitative data were analyzed using qualitative analysis consisting of data reduction, data presentation, and conclusion drawing (Miles & Huberman, 2014).

3 Result

3.1 Overview of Real Cost and Rate for INA CBGs of Caesarean Section at Mother and Child Hospital Restu Ibu Sragen

Table 1 describes the comparison of real cost and INA CBGs rates obtained by Mother and Child Hospital Restu Ibu Sragen. Forty-six patients in Class 1 used BPJS in 2021, 11 patients with mild severity and 35 with moderate severity. The total number of days of treatment for patients in Class I is 136, three days per patient on average. The total real cost of patients in Class I is 308,817,350 rupiahs, 6,713,421 rupiahs per patient on average, in which the cost of drugs or medical goods is 35,371,650 rupiahs (768,949 rupiahs per patient on average), medical treatment is 181,363. 200 rupiah (3,942,678

rupiah per patient on average), medical service is 38,140,500 rupiah (829,141 rupiah per patient on average), medical support is 14,322,000 rupiah (311,348 rupiah per patient on average), and room accommodation is 39,620,000 rupiah (861,304 rupiah per patient on average). Meanwhile, the INA CBGs rate obtained by the patient was 388,138,100 rupiah with an average per patient of 8,437,421 rupiahs, so the difference obtained by the hospital was a surplus of 79,320,750 rupiahs with an average per patient of 1,724,364 rupiahs.

The patients in Class 2 using BPJS in 2021 were 123 patients, 52 patients with mild severity and 71 patients with moderate severity. The total number of days of treatment for Class 2 patients is 380, 3 days per patient on average. The total real cost of patients in Class 2 is 790,776,300 rupiahs with an average per patient of 6,429,076 rupiahs, drugs or medical goods cost 92,986,250 rupiahs (755,986 rupiahs per patient on average), medical treatment costs 472,436,500 rupiahs (3,840,947 rupiahs per patient on average), medical service costs 95,460,000 rupiahs (776,098 rupiahs per patient on average), medical support costs 35,498,550 rupiahs (288,606 rupiahs per patient on average), and room accommodation costs 94,425,000 rupiahs (767,683 rupiahs per patient on average). Meanwhile, the INA CBGs rate obtained by patients was 904,619,700 rupiah with an average per patient of 7,354,632 rupiahs, so the difference obtained by the hospital was a surplus of 113,843,400 rupiahs with an average per patient of 925,556 rupiahs.

The patients in Class 3 using BPJS in 2021 were 369 patients, 148 patients with mild severity and 221 patients with moderate severity. The total number of days of treatment for Class 3 patients is 1124, three days per patient on average. The total real cost of Class 3 patients is 2,154,882,000 rupiahs with an average per patient of 5,839,789 rupiahs. The cost of drugs or medical goods is 279,755,800 rupiahs (758,146 rupiahs per patient on average), medical treatment costs 1,414,084,500 rupiah (3,832,207 rupiahs per patient on average), medical services cost 270,010,000 rupiahs (731,734 rupiahs per patient on average), medical support costs 81,488,100 rupiahs (220,835 rupiahs per patient on average), and rooms accommodation costs 109,544,000 rupiahs (296,867 rupiahs per patient on average). Meanwhile, the INA CBGs rate obtained by patients was 2,139,148,200 rupiah with an average per patient of 5,797,150 rupiahs, so the difference obtained by the hospital was minus 15,733,800 rupiahs, minus 42,639 rupiahs per patient on average.

The overall figure shows that the total number of patients in 2021 was 538 patients, 46 patients from Class 1, 123 patients from Class 2, and 369 patients from Class 3. The total number of hospital days in 2021 for 538 respondents in this study was 1640, three days per patient on average. The total real cost for hospitals in 2021 was 3,254,589,000 rupiah, 6,049,212 rupiahs per patient on average. The cost of drugs or medical goods is 408,113,700 rupiahs (758,576 rupiahs per patient on average), medical treatment costs 2,067,884,200 rupiahs (3,843,651 rupiahs per patient on average), medical service costs 403,610,500 rupiahs (750,205 rupiahs per patient on average), medical support costs 131,278,650 rupiahs (244,012 rupiahs per patient on average), and accommodation rooms cost 243,589,000 rupiahs (452,768 rupiahs per patient on average). Meanwhile, the rate of INA CBGs obtained by patients is 3,431,906,000 rupiah, 6,379,007 rupiahs per patient on average. Therefore, the difference obtained by the hospital is a surplus of 177,429,950 rupiahs, 329,795 rupiahs per patient on average.

Table 1. Comparison of Real Cost with INA CBGs Rate for Caesaeen section in 2021

Class	Severity	Patient	LoS	Cost of Drug or Medical Goods	Medical Treatment Cost	Medical Services Cost	Medical Support Cost	Room Accommodation	Total Real Cost	INA CBGs Rate	Difference between INA CBGs and Real Cost	
1	Mild	11	33	Rp8.825.850	Rp42.201.500	Rp10.210.000	Rp2.550.000	Rp8.520.000	Rp72.307.350	Rp76.617.200	Rp4.309.850	
	Average	3		Rp802.350	Rp3.836.500	Rp928.182	Rp231.818	Rp774.54	Rp6.573.395	Rp6.965.200	Rp391.805	
	Mode rate	35	103	Rp26.545.800	Rp139.161.700	Rp27.930.500	Rp11.772.000	Rp31.100.000	Rp236.510.000	Rp311.520.900	Rp75.010.900	
	Average	3		Rp758.451	Rp3.976.049	Rp798.014	Rp336.343	Rp888.571	Rp6.757.429	Rp8.900.597	Rp2.143.169	
	Total Class 1	46	136	Rp35.371.650	Rp181.363.200	Rp38.140.500	Rp14.322.000	Rp39.620.000	Rp308.817.350	Rp388.138.100	Rp79.320.750	
2	Average Class 1	3		Rp768.949	Rp3.942.678	Rp829.141	Rp311.348	Rp861.304	Rp6.713.421	Rp8.437.785	Rp1.724.364	
	Mild	52	159	Rp38.733.150	Rp197.581.000	Rp39.935.000	Rp14.699.500	Rp35.650.000	Rp326.568.650	Rp325.585.500	-Rp983.150	
	Average	3		Rp744.868	Rp3.799.635	Rp767.981	Rp282.683	Rp685.577	Rp6.280.166	Rp6.261.260	-Rp18.907	
	Mode rate	71	221	Rp54.253.100	Rp274.855.500	Rp55.525.000	Rp20.799.050	Rp58.775.000	Rp464.207.650	Rp579.034.200	Rp114.826.550	
	Average	3		Rp764.128	Rp3.871.204	Rp782.042	Rp292.944	Rp827.817	Rp6.538.136	Rp8.155.411	Rp1.617.275	
3	Total Class 2	123	380	Rp92.986.250	Rp472.436.500	Rp95.460.000	Rp35.498.550	Rp94.425.000	Rp790.776.300	Rp904.619.700	Rp113.843.400	
	Average Class 2	3		Rp755.986	Rp3.840.947	Rp776.098	Rp288.606	Rp767.683	Rp6.429.076	Rp7.354.632	Rp925.556	
	Mild	148	455	Rp111.459.750	Rp564.778.000	Rp107.050.000	Rp29.154.000	Rp44.300.000	Rp856.721.750	Rp746.250.200	-Rp110.471.550	
	Average	3		Rp753.106	Rp3.816.068	Rp723.176	Rp196.986	Rp299.324	Rp5.788.660	Rp5.042.231	-Rp746.429	
	Mode rate	221	669	Rp168.296.050	Rp849.306.500	Rp162.980.000	Rp52.334.100	Rp65.244.000	Rp1.298.160.250	Rp1.392.898.000	Rp94.737.750	
4	Average	3		Rp761.521	Rp3.843.016	Rp737.466	Rp236.806	Rp295.222	Rp5.874.028	Rp6.302.706	Rp428.678	
	Total Class 3	369	112	Rp279.755.800	Rp1.414.084.500	Rp270.010.000	Rp81.488.100	Rp109.544.000	Rp2.154.882.000	Rp2.139.148.200	-Rp15.733.800	
	Average Class 3	3		Rp758.146	Rp3.832.207	Rp731.734	Rp220.835	Rp296.867	Rp5.839.789	Rp5.797.150	-Rp42.639	
	Total	538	164	Rp408.113.70	Rp2.067.884.20	Rp403.610.50	Rp13.12.78.65	Rp243.589.000	Rp3.254.476.05	0	Rp3.431.906.00	Rp177.429.950
	Average	3		Rp758.576	Rp3.843.651	Rp750.205	Rp244.012	Rp452.768	Rp6.049.212	Rp6.379.007	Rp329.795	

Mother and Child Hospital Restu Ibu Sragen showed a surplus in 2021 with a value of 177,429,950. It indicates that the hospital has been able to implement a strategy in maintaining hospital operations related to caesarean section for patients using BPJS Health Insurance. Even so, there was still a minus value in that the INA CBGs claim rates obtained by hospitals insufficiently covered the real cost incurred by hospitals to treat patients in several classes with varying severity levels.

Table 1 shows that the caesarean section procedure experienced a deficit or minus condition in BPJS Class 2 patients with a mild severity level of -983,150 rupiahs, in BPJS Class 3 patients with a mild severity level of -110,471,550 rupiahs, and in BPJS class 3 patients of -15,733,800 rupiahs in general. Overall, there was a surplus at the hospital indicating the urgency of evaluation for the group of patients experiencing a deficit to determine the causes.

The real cost consisted of the cost of drugs or medical goods, medical treatment, medical services, medical support, and the room or accommodation. Based on Table 1, the highest costs are medical procedures, drugs or medical goods, medical services, and rooms or accommodation, while the lowest cost is the cost of medical support.

3.2 The Difference Between Real Cost and INA CBGs Rate

The difference between real cost and INA CBGs rates for caesarean section at Mother and Child Hospital Restu Ibu Sragen was carried out in two stages. The first stage is to perform a normality test using Kolmogorov Smirnov to determine the normality of the data and then test the difference between real cost and INA CBGs rates using Mann Whitney (Table 2).

Based on the Kolmogorov-Smirnov test above, the significance value ($p < 0.05$) means that the data on real cost and INA-CBG's rates for caesarean section at Mother

Table 2. Normality Test Results using Kolmogorov Smirnov

One-Sample Kolmogorov-Smirnov Test			
		TOTAL REAL COST	TOTAL RATE
N		538	538
Normal Parameters ^{a,b}	Mean	6049211.9	6379007.43494423850
	Std. Deviation	88847583500	1859865.40089379180
	Absol	19042923000	0
Most Extreme Differences	Positive	.156	.281
	Negative	.141	.281
	Negative	-.156	-.225
Test Statistic		.156	.281
Asymp. Sig. (2-tailed)		.000 ^c	.000 ^c
a. Test distribution is Normal.			
b. Calculated from data.			
c. Lilliefors Significance Correction.			

Table 3. Difference Test Results using Mann Whitney

Ranks				
	JENIS	N	Mean Rank	Sum of Ranks
T	REAL	538	596.70	321025.00
ARIF	COST			
F	INACBGs	538	480.30	258401.00
	COST			
	Total	1076		

Table 4. Mann-Whitney test

Test Statistics ^a	
	TARIFF
Mann-Whitney U	113410.000
Wilcoxon W	258401.000
Z	-6.161
Asymp. Sig. (2-tailed)	.000

^a Grouping Variable: TYPES

and Child Hospital Restu Ibu Sragen in 2021 are not normally distributed. It shows that the differences can be analyzed using the Mann-Whitney test (Table 3).

Based on the Mann-Whitney test, the significance value ($p < 0.05$) means that there is a difference between the real cost and the INA-CBG's rate in 2021. This difference can explicitly explain that the average real and average INA-CBGs rates are statistically different.

3.3 Determinants of the Difference Between Real Cost and INA CBGs Rates

The determinants of the difference between real cost and INA CBGs rates were obtained through interviews with five respondents. Below are several factors causing the difference between real cost and INA CBGs rates:

1. Compliance of doctors or medical personnel with clinical pathways

Hospitals, in carrying out services through medical and supporting personnel, have rules in carrying out patient care, including treatment, drug administration, and care through clinical pathways. Nevertheless, based on the results of interviews, the implementation of the clinical pathway related to caesarean section was occasionally not carried out by doctors or other medical personnel. It is due to the patient's condition, which causes doctors or medical personnel to perform treatment outside the established clinical pathway. Besides, what causes discrepancies is the lack of attention from doctors

and medical personnel to the established clinical pathway so that treatments performed to patients were not based on a clinical pathway.

2. The condition of medical personnel, doctors and nurses, who are not too concerned about claim rates

Doctors and medical personnel are obliged to provide services to patients based on the patient's complaints and conditions. However, the implementation of hospital operations is related to services and finances, which in turn relates to claims obtained by hospitals from BPJS. Hospitals require good communication between management and services, including doctors and medical personnel, so that the services do not exceed the claim limit but still consider the quality of service to patients. The results of this study indicate that there are still doctors and other medical personnel who are less concerned about or care about the claim rates obtained by the hospital. Thus, in practice, they often perform treatments outside the established clinical pathways which have an impact on the hospital's real cost that exceeds the claims obtained.

3. Length of hospitalization

One factor influencing the difference between real cost and INA CBGs rates is the length of hospitalization. The INA CBGs system is a package in which the length of hospitalization has been previously recommended or determined. However, in some cases, patients exceeded the lengths of stay, thereby increasing the real hospital rates. The longer the patient is treated, the more treatments and facilities are given, hence an increase in real hospital rates. As a result, the hospital suffers a loss because the real rate is higher than the claims obtained from BPJS Health Insurance.

4. The form of treatment performed on the patient

The treatment performed on the patient is a factor determining the difference between real cost and INA CBGs rates. Treatments are related to medical treatments and medical support, including the provision of drugs to patients. Differences in the condition of patients, especially patients with health problems or complications, often impact the need for special treatments, causing an increase or high real rates compared to other patients. In addition, drugs are also one thing causing an increase in patient cost, which in this case is related to the established clinical pathway. Doctors occasionally provided drug recommendations outside the established clinical pathway even though they are not needed, hence an increase in hospital real costs.

5. Patients' complicated condition

The condition of patients who perform caesarean section sometimes differs. Patients have complicating factors, ranging from complications or genetic conditions that impact the emergence of particular treatments in patients. These then lead to an increase in the real cost issued by hospitals. The patient's pre-existing medical condition, however, is also an issue that the hospital finds challenging to manage because it occasionally only becomes apparent after the treatment is taken if there are insufficient or overlooked supporting examinations.

3.4 Strategies and Calculation of Patient Proportion in Minimizing Losses

The calculation ratio in Class 3 patients to avoid losses can be done with a ratio of mild to moderate patients, namely 1:1,75. In contrast, in patients overall, a class comparison of 1:3:8 or 1:3:9 can be made to increase hospital profits. The strategies produced in this analysis are calculating unit costs for caesarean section in each class and severity levels, considering rates per patient based on the results of data analysis in 2021, monitoring and evaluating caesarean section, monitoring and evaluating clinical pathway compliance, and increasing the promotion of the hospital. The complete results can be seen in Table 4 and Table 5.

4 Discussion

4.1 Overview of Real Cost and INA CBGs Rates for the caesarean section at Mother and Child Hospital Restu Ibu Sragen

The real cost is the rate set by the hospital in providing services, and this study focuses on caesarean section. The real cost is divided into the cost of drugs or medical goods, medical treatment, medical services, medical support, and room or accommodation. The highest real costs in this study are the cost of medical procedures, drugs or medical goods, medical services, and room or accommodation, while the lowest is medical support.

Medical procedures are the highest because caesarean section is an operative procedure utilizing various tools with a high investment value, hence high unit cost. In addition, the complexity of the operations performed is also one of the things causing the high cost of medical procedures, including the resources involved, from specialist doctors to nurses with special licenses by established standards.

Costs in other categories ranging from the cost of drugs or medical goods, medical services, and medical support have not much difference in classes and severity levels. Meanwhile, the difference lies in accommodation rooms due to differences in room facilities obtained by patients between Class 1, Class 2, and Class 3, causing differences in room or accommodation costs.

The real cost or cost set by the hospital is the agreed rate based on the calculations that have been made. Recalculating the unit cost to determine the real hospital rate, however, is required to be carried out in a few years by looking at the development of prices for drugs or medical goods, including the equipment used [5]. The investment costs used by the hospital are aimed to be the investment improvements when the service life or condition of the goods is no longer suitable for use.

Hospitals employ real cost as one of the bases when adopting every policy relating to services so that the hospital's cash flow can function and the targets established by the hospital may be reached. Errors in calculating real costs, controlling, monitoring, and evaluation impact the hospitals. To that end, these conditions must be prevented by developing services to increase hospital revenues and profits [6].

4.2 Difference Between Real Cost and INA CBGs Rate

The results of statistical tests using Mann Whitney showed a difference between the real cost and the claims for INA CBGs obtained by the hospital. This condition can also

be seen from the average real cost compared to the INA CBGs rate, where the average claim rate per patient is 6,379,007, while the real cost issued by the hospital is 6,049,212 rupiahs.

The findings of this study are consistent with research by [7] that there is a difference between real cost and INA CBGs rates. Another study by [4] also showed a difference between INA CBGs claims and the real cost issued by hospitals. Some hospitals experienced a deficit in caesarean section, so they had to cross-subsidize by increasing income from other services. The possibility of a deficit in hospitals when performing caesarean section causes hospitals to make referrals to government-owned hospitals or other hospitals to minimize the risk of a deficit. Although it positively impacts hospitals by reducing the deficit, it is also a “improper” act that should not be frequently done particularly by private hospitals [8].

The difference between real cost and claims obtained at Mother and Child Hospital Restu Ibu Sragen is positive, where hospitals generally have a surplus. It might be argued that they can arrange for treatment and reduce the likelihood of a deficit such that the activities done are in accordance with the established provisions. Nonetheless, certain classes and severity levels still experience a deficit compared to the claims obtained; therefore, evaluations must be continuously conducted to minimize the deficits.

4.3 Determinants of the Difference Between Real Cost and INA CBGs Rate

Determinants of the difference between real cost and INA CBGs rates for caesarean section at Mother and Child Hospital Restu Ibu Sragen in this study were the adherence of doctors and medical personnel to the clinical pathway, the condition of medical personnel who were not too concerned about claim rates, the length of time for patient care, the form of treatment performed on the patient, and the complications in patients.

The problem regarding the difference in rates, where sometimes there are patients whose real costs are above the claims obtained, can be controlled by the hospital through various strategies. However, it is, of course, based on the causes or determinants that lead to the tariff difference. The primary keys to maintaining stability are monitoring and evaluating services and establishing provisions or guidelines that must be followed by every medical and non-medical personnel [9]. Communication and coordination are vital to minimizing the possibility of hospital losses from the services provided [10].

This study's results align with research by (Nurwahyuni, 2018), which shows that the difference in rates is due to poor coordination and doctor compliance with clinical pathways. Some doctors sometimes perform treatments or prescriptions outside the established clinical pathway even though the patient does not require such treatment or change prescription form previously agreed upon. This condition is due to the lack of coordination and understanding of several medical personnel, so they ignore the agreed clinical pathway and do not consult with the control team first [11].

Another influencing factor is the lack of concern for medical personnel on rates, causing the implementation of actions causing losses to the hospital. This condition can be minimized by conducting good monitoring and evaluation by involving medical personnel and management through medical committees, quality control teams, and related teams.

The length of hospitalization, the form of treatments performed, and complicating factors are determined by the patients. These three factors are related to their condition who performs caesarean section. The length of hospitalization for some patients can be reduced, and some patients can be discharged within 1 day. However, providing socialization or understanding is necessarily conducted to avoid misunderstanding of why hospitals can send patients home quickly. treatments performed on patients are related to the patient's condition, including complicating factors where sometimes some patients have particular conditions detected during the examination. Thus, the doctors have to take specific treatments sometimes not based on the clinical pathway.

Hospitals must provide quality services to patients so that patients can recover well and have reasonable satisfaction with the hospital. On the other hand, hospitals must also be able to create good strategies to minimize deficit conditions, one of which is in operative actions such as caesarean section [12]. For this reason, coordination needs to be properly addressed to improve the quality of service while taking into account the rates the hospital receive and issue.

4.4 Strategies and Calculation of Patient Proportion in Minimizing Losses

Data analysis ranging from quantitative to qualitative, resulted in five strategic points to be implemented or as a basis for making decisions to improve service quality and hospital income: calculating unit costs for caesarean section in each class and level of severity, considering rates per patient based on the results of data analysis in 2021, monitoring and evaluating caesarean section, monitoring and evaluating clinical pathway compliance, and increase the promotion of the hospital.

Unit cost calculation is vital for hospitals because it becomes the basis for determining whether the hospital has a profit or a loss. The urgency of unit costs makes it necessary for hospitals to regularly carry out calculations based on hospital conditions in all service units so that real cost data depend on the prices of drugs, equipment, and other medical goods. Caesarean section needs to be calculated in each class and severity level so that it becomes the benchmark and basis for hospital strategy by comparing the claim rates obtained. The goal is that the hospital has good planning, including developing services from the investment generated for service improvement and regeneration of caesarean section equipment.

Calculating the average rate per patient can be a benchmark or basis for decision-making. Hospitals must have data on how many claims are obtained on average, so the further treatments are adjusted to minimize treatments not necessarily needed by the patients, including prescribing to patients. Then, it can be compared with the clinical pathway appropriately determined. Then the hospital can determine the right strategy for overcoming the deficit in a specific class or severity level by improving control. The average claim rates in Table 4 are the hospital's safe points in each class and severity level to be developed into various policies and strategies.

Further rate analysis in Table 6 shows that in class 3, patients still experience losses in general where there is a loss of mild severity. The mild severity level is evaluated to determine the errors that occur or the factors that cause the minus value. Meanwhile, the calculation of the proportion of patients so as not to experience losses in class 3 patients is 1:1,75 or 1:2, where 1 patient is mild compared to 2 moderate patients so that

the hospital can have a surplus. Meanwhile, the cross-subsidy system can be carried out with the proportion of the condition in 2021, namely 1:3:8 or 1:3:9, so that the hospital experiences a surplus in caesarean section. Hospitals must develop quality strategies to improve services and increase the number of patients who benefit from the treatments. This requires innovations that the hospital must carry out by considering various internal and external conditions.

The real cost received by the finance department based on reports from the room needs to be monitored and evaluated. In some hospitals, the services obtained are based on the number of treatments or nominal income from each room or treatments resulting in more treatments performed to the patient, and more nominal services obtained by the room or the executor of the treatments. This needs to be evaluated and monitored to prevent the treatments not performed but written on the patient's bill; for example,

Table 5. Hospital Strategy in Minimizing Losses

No	Strategy or Policy	Basic Consideration	Purpose	Target	Resources	Information
1	Performing unit cost calculations for caesarean section for each class and severity level	The hospital needs to know how much it costs for each treatment, from direct costs to indirect costs.	Finding the real cost at Mother and Child Hospital Restu Ibu Sragen and essential strategy development and service development	Caesarean section include direct costs and indirect costs.	Expert in health economics	Unit cost calculation is one of the basics to determine whether a hospital has a profit or a loss; some hospitals calculate rates by imitating other hospitals instead of doing calculations based on hospital conditions.
2	Using average rate per patient as the basis based on INA CBGs claim data in 2021 for caesarean section The average rates are listed below:	Hospitals need to know how many claims they get in each class and the level of severity so that it can be used as a basis for consideration in making decisions	To find out the average claim rate for INA CBGs	The results of the calculations are given to management and informed to medical and non-medical personnel related to treatments as well as financial and cost management.		Hospitals need to compare with real calculated costs and estimate the development of real cost based on the average inflation rate of 4%.

(continued)

Table 5. (continued)

No	Strategy or Policy	Basic Consideration	Purpose	Target	Resources	Information
	Claim INA CBGs					The nominal claim is a recommendation or a safe value basis so that the hospital does not suffer losses. However, it is necessary to compare it with the real rate to project the hospital's possible profit each year. The proportion of patients so as not experience losses is in Table 5.
	Class 1 (Mild) Rp 6.965.200					
	Class 1 (Moderate) Rp 8.900.597					
	Class 2 (Mild) Rp 6.261.260					
	Class 2 (Moderate) Rp 8.155.411					
	Class 3 (Mild) Rp 5.042.231					
	Class 3 (Moderate) Rp 6.302.706					
3	Monitoring and evaluation of Caesarean section	The real rate is the rate the room reports to the person in charge of finance for later recapitulation. An audit needs to be conducted to determine whether the treatments listed on the patient's bill are appropriate or if some treatments are not performed yet included in the patient's bill.	To minimize errors in calculating the real cost per patient	Medical records and bills of caesarean section patients	A team consisting of nursing, medical services, and finance, Internal Supervisory Assistance	

(continued)

Table 5. (continued)

No	Strategy or Policy	Basic Consideration	Purpose	Target	Resources	Information
4	Clinical Pathway Compliance Monitoring and Evaluation	The Clinical Pathway is a guideline that has been mutually agreed upon. It must be implemented even though, in some conditions, the patient must take action or administer drugs outside the agreed terms in the clinical pathway	To carry out monitoring and evaluation of the implementation To know the progress of treatment so that if there are conditions that allow changes, it can be immediately carried out to accommodate developments in the field of medicine and patient treatment	Doctors and nurses, and other medical personnel related to caesarean section	Service area, Cost Control Quality Control Team, Casemix, Finance, Medical Committee	
5	Hospital Promotion Upgrade	Hospitals need to improve branding through the promotion team to increase community visits or patients for treatment at Mother and Child Hospital Restu Ibu Sragen.	To increase patient visits	Hospital Community	Hospital Promotion Team	Hospital Promotion Team

the injection is only done 2 times but is written 3 to 4 times. The finance department's patient billing reports will increase as a result of this problem. Thus, monitoring and evaluation need to be conducted to minimize these events. The evaluation of real cost also includes the Hospital's Internal Supervisory Unit (SPI), which carries out supervisory duties ranging from services to management. The role of SPI in coordinating with other departments related to finance or claims must be done by the duties of SPI to carry out monitoring and evaluation [13]. The full implementation of money will impact the creation of a quality service climate or culture by considering the set rates.

Monitoring and evaluation of clinical pathway compliance must be routinely done by the team to determine whether patients receive extreme measures or prescriptions outside the stipulated provisions, including knowing the reason for performing the treatments

Table 6. Simulation of Patient Proportion in Minimizing Losses

Class	Severity	Patient	Total Real Cost	INA CBGs Rate	Difference between INA CBGs and Real Cost	Class 3 Simulation	Cross Subsidy Simulation
1	Mild	11	Rp72.307.350	Rp76.617.200	Rp4.309.850	Calculations are carried out in the following stages: 1. Dividing the difference in claim rates by the number of positive claims (medium level) 2. Adding the results in stage 1 to the number of patients in the moderate category 3. Calculating the proportion of patients (assuming the addition according to the number of stages 2) The calculation results are: 1. Rp 15.733.800 / Rp 428.678 = 36,7 = 37 2. 221 - 37 = 258 3. 258 / 148 = 1,75 These results indicate that to gain benefits (assuming the same conditions), the number of patients with moderate patients must be 1.75 times that of patients with mild severity.	A cross-subsidy system is a strategy in which the loss in one class is offset by the gain from another class or service. Assumption 1 is by the current condition where the hospital has an advantage in caesarean section, but there is a deficit in class 3, which is covered by other classes, and then assumption 1 is made based on the current number of patients The proportion of patients Class 1: Class 2: Class 3 = 46:123:369 = 1:2,67:8,02 = 1:3:8 Assumption 2 is based on the number of patients after adding the number of patients in Class 3 so that there is no deficit. = 46 : 123 : 406 = 1 : 2,67 : 8,8 = 1 : 3 : 9
Average			Rp6.573.395	Rp6.965.200	Rp391.805		
	Moderate	35	Rp236.510.000	Rp311.520.900	Rp75.010.900		
Average			Rp6.757.429	Rp8.900.597	Rp2.143.169		
Total Class 1		46	Rp308.817.350	Rp388.138.100	Rp79.320.750		
Average Class 1			Rp6.713.421	Rp8.437.785	Rp1.724.364		
2	Mild	52	Rp326.568.650	Rp325.585.500	-Rp983.150		
Average			Rp6.280.166	Rp6.261.260	-Rp18.907		
	Moderate	71	Rp464.207.650	Rp579.034.200	Rp114.826.550		
Average			Rp6.538.136	Rp8.155.411	Rp1.617.275		
Total Class 2		123	Rp790.776.300	Rp904.619.700	Rp113.843.400		
Average Class 2			Rp6.429.076	Rp7.354.632	Rp925.556		
3	Mild	148	Rp856.721.750	Rp746.250.200	-Rp110.471.550		
Average			Rp5.788.660	Rp5.042.231	-Rp746.429		
	Moderate	221	Rp1.298.160.250	Rp1.392.898.000	Rp94.737.750		
Average			Rp5.874.028	Rp6.302.706	Rp428.678		
Total Class 3		369	Rp2.154.882.000	Rp2.139.148.200	-Rp15.733.800		
Average Class 3			Rp5.839.789	Rp5.797.150	-Rp42.639		
Total		538	Rp3.254.476.05	Rp3.431.906.00	Rp177.429.95		
Average			Rp6.049.212	Rp6.379.007	Rp329.795		

or giving prescription for later evaluation [14]. Incompatibility with clinical pathways is a problem often found in various hospitals in Indonesia caused by factors ranging from medical and non-medical personnel to patient factors. The hospital must control that problem to overcome any harm to the hospital. Hospital can also control it by maximizing the quality and cost control team so that the actions, which are outside the established clinical pathway, are consulted first to minimize errors in decision-making.

Hospital promotion is pivotal to do both through social media and directly using various approaches. It aims to attract people’s interest to seek treatment at Mother and Child Hospital Restu Ibu Sragen both for caesarean section and other services. Promotions that can be actively done on social media are by spreading superior services they have, sharing hospital; activities, and providing health information which essentially can establish good communication with the community [15, 16]. In addition, offline promotion can be done by conducting social service activities or holding gymnastic classes on certain days, including health promotion. In addition, the hospital also cooperates with various groups or institutions with maternal and child service needs.

Occasionally missing promotion, hospitals fundamentally should have an analysis of conditions ranging from advantages, opportunities, weaknesses, and threats to determine the potential of the hospital that can be adequately maximized. Then, a promotion strategy is carried out so that the potential and planning for service development to increase income and community satisfaction can be adequately implemented.

Hospitals are not only health service but also a business that aims to make a profit by adjusting the internal and external conditions of the hospital. SWOT analysis is a step for the results of the analysis that can be the basis for innovations carried out by hospitals, especially those with limited services such as Mother and Child Hospital Restu Ibu Sragen. Promotion and service are inseparable in the business of both goods and services. Customer satisfaction will affect the promotions made by customers to other customers as well as making the customers highly consider the hospital in need for health services.

Innovation in hospitals can be done by maintaining social media, doing social services, doing activities with the community, especially mothers and children, such as exercising for pregnant women, or conducting competitions for children. In addition, hospitals can consider providing home care services for mothers and children to create services closer to the community. Furthermore, the hospitals can provide catering to pregnant women or children, including MP ASI, by making strategic plans to produce quality business plans that can increase hospital profits.

5 Conclusion

In conclusion, the average real cost per patient for caesarean section at Mother and Child Hospital Restu Ibu Sragen is 6,049,212 rupiah. The real cost is divided into the cost of drugs or medical goods, medical procedures, services, medical support, and accommodation rooms. The highest cost is medical action, while the lowest is medical support. The average rate of claims for INA CBGs for caesarean section is 6,379,007 rupiah. The higher the class and the higher the severity level, the higher the claims. The calculation ratio in class 3 patients so as not to experience losses can be done with a ratio of mild to moderate patients, namely 1:1,75. In contrast, for patients in the overall class, a comparison of 1:3:8 or 1:3:9 can be made to increase hospital profits. The statistical analysis results showed a difference between real rates and INA CBGs rates.

The determinants of the difference between real rates and INA CBGs rates were the adherence of doctors and medical personnel to the clinical pathway, the condition of medical personnel not too concerned about claim rates, the length of time for patient care, the form of treatments performed on the patient, and the complications in patients. There are five strategies to improve service quality and hospital income: calculating unit costs for caesarean section in each class and severity level, considering rates per patient based on the data analysis in 2021, monitoring and evaluating caesarean section, monitoring and evaluating clinical pathway compliance, and increasing the hospital promotion.

6 Suggestion and Limitation

The results of this study are expected to be carried out by hospitals to minimize losses in section Caesarea. The limitation of this study is that there are several categories of cost details that should be separated. In addition, this study did not compare with general patients and did not compare with data from the previous year.

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References

1. S. Solechan, "Badan Penyelenggara Jaminan Sosial (BPJS) Kesehatan Sebagai Pelayanan Publik," *Adm. Law Gov. J.*, vol. 2, no. 4, pp. 686–696, 2019, doi: <https://doi.org/10.14710/alj.v2i4.686-696>.
2. P. G. W. Swandayana and S. Sastrawan, "Analysis of the Difference between INA-CBG Rates and Hospital Rates for Outpatient and Inpatient Services at FKRTL Provider BPJS Kesehatan Mataram City," *Prism. Sains J. Pengkaj. Ilmu dan Pembelajaran Mat. dan IPA IKIP Mataram*, vol. 9, no. 2, p. 246, 2021, doi: <https://doi.org/10.33394/j-ps.v9i2.4350>.
3. C. Opitasari and A. Nurwahyuni, "The Completeness and accuracy of clinical coding for diagnosis and medical procedure on the INA-CBGs claim amounts at a hospital in South Jakarta," *Heal. Sci. J. Indones.*, vol. 9, no. 1, pp. 14–18, 2018, doi: <https://doi.org/10.22435/hsj.v9i1.464>.
4. A. M. Duarsa, W. Sulistiadi, and I. Sangadji, "Strategi Atasi Perbedaan Unit Cost Sectio Caesaria Dengan Klaim Berdasarkan Tarif INA-CBG's Pada Pasien BPJS di Rumah Sakit Khusus Ibu Dan Anak Bunda Liwa," *J. Manaj. Dan Adm. Rumah Sakit Indones.*, vol. 3, no. 2, pp. 142–154, 2019.
5. T. Begum et al., "Indications and determinants of caesarean section delivery: Evidence from a population-based study in Matlab, Bangladesh," *PLoS One*, vol. 12, no. 11, pp. 1–16, 2017, doi: <https://doi.org/10.1371/journal.pone.0188074>.
6. T. T. Tetriadi and A. Nurwahyuni, "Analisis Biaya Satuan Pelayanan Sectio Caesaria dan Upaya Efisiensinya di RSD Kol. Abundjani Bangko," *J. Ekon. Kesehat. Indones.*, vol. 5, no. 1, pp. 1–9, 2020, doi: <https://doi.org/10.7454/eki.v5i1.3340>.
7. J. S. Kismarahardja, A. Lorensia, and R. V. Suryadinata, "Analysis of Differences in RIIL Costs of Hospital with INA CBG's Rate in Sectio Caesarea," *Teikyo Med. J.*, 2021.
8. R. A. B. Pratiwi, R. F. Gunanegara, and J. Ivone, "Factors Affecting Caesarean Labor in RSUD Lembang in 2017," *J. Med. Heal.*, vol. 2, no. 3, pp. 838–846, 2019, doi: <https://doi.org/10.28932/jmh.v2i3.1223>.
9. P. Wulandari, R. P. Maharani, and A. Arifianto, "Faktor-Faktor Yang Berhubungan Tindakan Persalinan Sectio Caesarea Di Rumah Sakit Santa Elisabeth Semarang," *J. Holist. Nurs. Sci.*, vol. 5, no. 2, pp. 64–71, 2018, doi: <https://doi.org/10.31603/nursing.v5i2.2432>.
10. S. Patmawati and E. P. Saputro, "Strategi komunikasi pemasaran terpadu pada cv. bejo motor," *Naskah Publ. Univ. Muhammadiyah Surakarta*, 2022.
11. N. L. P. Juliathi, G. A. Marhaeni, and N. M. Dwi Mahayati, "Gambaran Persalinan dengan Sectio Caesarea di Instalasi Gawat Darurat Kebidanan Rumah Sakit Umum Pusat Sanglah Tahun 2020," *J. Ilm. Kebidanan (The J. Midwifery)*, vol. 9, no. 1, pp. 19–27, 2021.
12. N. K. Pulangan, M. Harahap, and E. Hasibuan, "Factors Affecting Sectio Caesarea Delivery at the Padangsidempuan City Regional General Hospital," *Int. J. Public Heal. Excell.*, vol. 1, no. 1, pp. 17–20, 2022, doi: <https://doi.org/10.55299/ijphe.v1i1.6>.
13. Mas'udah, M. Isa, and E. Sutrisno, "Analisis Faktor-Faktor Yang Mempengaruhi Kinerja Auditor Satuan Pemeriksaan Internal (SPI) Rumah Sakit," *Naskah Publ. Univ. Muhammadiyah Surakarta*, 2022, [Online]. Available: <http://eprints.ums.ac.id/id/eprint/101804%0A>. <http://eprints.ums.ac.id/101804/12/NaskahPublikasi.pdf>.

14. D. H. Prasetya, M. Isa, and E. M. Sutrisna, "Analisis Efisiensi Pengelolaan Obat Pada Rumah Sakit Tipe C Di Wilayah Surakarta," *Naskah Publ. Univ. Muhammadiyah Surakarta*, 2022, [Online]. Available: <http://eprints.ums.ac.id/id/eprint/98456>.
15. Y. S. Sultana and E. P. Saputro, "Strategi Marketing Campaign @ Ariefmuhammad Dalam Peningkatan Brand Awareness @Prepp Studio," *Naskah Publ. Univ. Muhammadiyah Surakarta*, 2022.
16. E. P. Saputro, N. Achmad, and S. Handayani, "Identifikasi Faktor Yang Mempengaruhi Sukses Wirausaha," *Benefit J. Manaj. dan Bisnis*, vol. 1, no. 1, p. 10, 2016, doi: <https://doi.org/10.23917/benefit.v1i1.2361>.

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