The Journal General Health and Pharmaceutical Sciences Research
Vol.1, No.4 Desember 2023
e-ISSN : 3026-6106; p-ISSN : 3026-6114, Hal 95-114
DOI : https://doi.org/10.57213/tjghpsr.v1i4.161

The Influence Of Clinical Pathway Compliance And Prescription Writing According To The National Formulary On Quality Control And Cost Control With The Indication Of Caesarean Section As An Intervening Variable At ST Theresia Hospital Jambi

Sriyani Sriyani [1]; **Agusdini Banun** [2]; **Kemala Rita Wahidi** [3]
Esa Unggul University, Jakarta
Email: sriyanigiziklinis@student.esaunggul.ac.id [1]; dini_banun_dini@yahoo.com [2]; kemalarita410@gmail.com [3]

Abstract: *The increasingly high cost claims for caesarean section cases in the National Health Insurance or Jaminan Kesehatan Nasional (JKN) era mean that hospitals are required to provide service efficiency, the BPJS Health payment system to hospitals is through the INACBG's (Indonesia Case Based Groups) rates. The purpose of this study is to analyze the influence of clinical pathway compliance and prescription writing according to the national formulary on cost control with caesarean section indication as an intervening variable at St Theresia Hospital. This type of research is confirmatory research using a quantitative approach. The sample in this study amounted to 80 samples from caesarean section cases in August-October 2023. The sampling technique used purposive sampling. Based on the results of testing the Path coefficients hypothesis, it was found that F count (63.047) > F Table (3.432) with a significance level of 0.05, the results of the t value> 1.96 and p < 0.05. The results of data analysis and hypothesis testing showed that there was an influence of clinical pathway compliance, writing prescriptions according to the national formulary and indications for caesarean section on cost control.*

Keywords*: Clinical Pathway Compliance, National Formulary, Caesarean Section, Cost Control*

INTRODUCTION

Indonesia is trying to improve national health by establishing the Social Security Administering Body or Badan Penyelenggara Jaminan Sosial (BPJS), a legal entity formed by the government to provide National Health Insurance or Jaminan Kesehatan Nasional (JKN). Regulation of the Health Social Security Administration Number 01 of 2014 explains that health services for BPJS health participants consist of first level health facilities and advanced health facilities, one of which is a hospital. JKN is a form of Indonesia's commitment as a member of the World Health Organization (WHO) for the sake of achieving Universal Health Coverage (UHC).

Development of the JKN program from BPJS data in 2023, participation reached 252.17 million people, representing 90.79% of the population as of March 1 2023. 2933 hospitals in Indonesia have collaborated with the JKN program, data up to February 2023. Development of Universal Health Coverage reaching 22 provinces with 334 districts/cities. Realized costs in 2014 amounted to 42.66 trillion and in 2022 amounted to 113.4 trillion. So from this data there is a need for urgency to improve the quality of JKN services. To achieve service quality transformation, there needs to be collaboration between the JKN ecosystem

Received Oktober 30, 2023; Accepted November 30, 2023; Published Desember 30, 2023
* Sriyani, sriyanigiziklinis@student.esaunggul.ac.id

together with health facilities including hospitals. Support from all stakeholders to participate in supporting and providing the best service to participants through implementing the JKN service promise commitment for hospitals. (BPJS Health, 2023).

Implementing quality and cost control, hospitals must implement clinical pathways as integrated health service planning by summarizing every step taken for patients from entering to leaving the hospital. Clinical pathway is a pathway that shows in detail the important stages of health services including the expected results from multidisciplinary knowledge. The parameters contained in the clinical pathway are length of stay, medication administration, therapy and Professional Care Provider education. In the implementation of clinical pathways, audits need to be carried out to see the effectiveness of use in terms of quality control and costs. (Ministry of Health, 2010).

In the era of National Health Insurance, drug management must implement quality control and cost control. The government has established the National Formulary (Fornas) as quality control and the drug e-catalogue as price control. Through Fornas, quality and cost effective medicines have been selected. Irrational drug use needs to be regulated by health facilities. Health facilities still encounter obstacles in drug management such as quality control and cost control, such as drug incompatibility at Fornas (Winda, 2018). The next obstacle is the non-compliance of the doctor in charge of the service in providing prescriptions to JKN patients outside Fornas. This causes an increase in patient financing in the drug cost component.

Caesarean section rates have increased beyond the WHO recommended level of 15% in many countries around the world and have doubled in the last decade. The high rate of Caesarean section does not only occur in high-income countries, but also in low-income countries, especially deliveries in private hospitals (Zhifei et al, 2016). Cesarean section cases in Indonesia are the most common cases with the highest costs. It is a common concern that the procedure is carried out in accordance with medical indications and with applicable coding provisions. Based on the results of Basic Health Research, the number of births using the caesarean section method in Indonesia is 17.6% of all births (Riskesdas, 2018). According to WHO, Indonesia has standard caesarean section rate criteria of between 15-20% for referral hospitals.

According to Paat, et al (2017), socialization of clinical pathways is generally carried out before the hospital accreditation process because clinical pathways are an element of improving quality and patient safety which is also a criterion for assessing hospital accreditation. Forms of patient outreach and safety are also criteria for evaluating hospital

accreditation. The form of clinical pathway socialization is carried out jointly between all parties called Professional Care Providers such as the doctor in charge of implementing it, room doctor, nurse, pharmacist and nutritionist.

1. Influence of Clinical Pathway Compliance on Indications for Caesarean Section

Clinical pathway is a care pathway concept, namely the concept of analysis, design, planning and control of services for patients (Vissers and Beech, 2005). Clinical pathway is to create a list of initial steps, the duration related to service activities from when the patient enters until they leave the hospital (Kelley, 1961). Clinical pathway is an answer to variations in clinical evidence, reliable and as a guide for patient-oriented health services. (Urizar, et al, 2018).

Caesarean section is a medical procedure given to help the process of giving birth to a baby that cannot be carried out through a normal birth process that occurs due to problems with the mother and fetus. Caesarean section is not only carried out because of medical considerations but also at the patient's own request. The results of the study reported that caesarean section had maternal indications of 25.2% and fetal indications of 54.1%. (Ali & Ray, 2020). The results of research by Dumilah et al (2018), the trend of caesarean section deliveries needs to be assessed for suitability with medical indications, there are maternal and baby factors that cause medical indications for caesarean section to be carried out. Other factors that may influence include the availability of health facilities, the patient's right to choose the medical treatment they wish to have, weak regulations controlling hospitals in offering caesarean section packages and regulations that are seen as damaging the existing medical service system, thereby encouraging moral hazard among doctors. to allow requests for delivery via caesarean section without adequate medical indications.

2. Effect of Clinical Pathway Compliance on Cost Control

Cost control is related to clinical pathways to improve the quality of service from start to finish to improve patient services related to patient safety and optimizing resource use (Vanhaect, 2007).

WHO HEAT (World Health Organization Health Equity Assessment Toolkit) uses five dimensions to measure inequality, namely socio-economic status, education, place of residence (urban vs rural) and gender and region. When Caesarea section is disaggregated based on population groups in a country, women with high incomes, high education and living in urban areas are more likely to use the Caesarean section procedure for childbirth than those living in rural areas. (Yaya et al, 2020).

Clinical Pathway is a common component of improvement initiatives implemented in various health care settings to maintain and support the concept of continuous quality improvement. The aim of clinical pathways is to organize and standardize care processes, thereby maximizing patient outcomes and increasing organizational efficiency. (Vanhaecht et al, 2012).

Clinical pathways are very important in the implementation of patients in hospitals, can be a link between research findings and daily practice based on evidence by taking important steps in patient management and can be implemented in hospitals. Clinical pathways focus on reducing examination variations and increasing the efficiency and effectiveness of health services which can have a negative impact on improving clinical outcomes and reducing length of stay. (Ibeziako et al, 2019).

The results of a systematic review of 301 studies related to cost analysis and clinical pathways by Rizky F & Ietje N (2023), from a financial perspective, there is a decrease in the amount of costs used by health service providers and which must be paid by patients in managing the disease suffered by the patient. These costs include administration costs, disease management costs, disease control costs, costs for complications that may occur. Apart from reducing the amount of costs incurred, the existence of a clinical pathway also increases the patient's willingness to pay for the treatment of their illness.

3. **The Effect of Writing Prescriptions According to the National Formulary on Cost Control**

The national formulary established by the government in the JKN era aims to be used as quality and cost control for JKN patients. Cases of caesarean section are given therapy in accordance with clinical service practices, one of which is administration of antibiotics. Antibiotics are given for prophylactic purposes. It is hoped that during surgery, antibiotics can prevent infection in the surgical wound. Antibiotics are one of the regimens that have been included in the national formulary. Based on research by Jimmy et al (2021), conducted at the "XY" Jember Mother and Child Hospital for the period January 2019-December 2019, the analysis related to real costs compared with INA-CBG's costs in caesarean section cases for JKN patients with the difference in total treatment.

Research by Atik N et al (2018) at a class A hospital in Jakarta, shows that the hospital has used a clinical pathway for Caesarean section operations since 2012, the drugs used in the clinical pathway are nine types of drugs consisting of IVFD (1500cc/24 hours), Oxytocin 1 vial IV, Ceftriaxone 2 gr, Methergine 1 vial, Pronalges Supp (3 Supp),

Amoxicillin 500mg, Mefenamic Acid 500mg, Sulfas Ferosus and Versite. This research was carried out on all patients with various payment systems including public insurance, the use of medicines was assessed over various time periods, such as the use of antimicrobials, antispasmodics, hypokalemia, mucolytics, sedatives and vitamins. Variations also occur in medical procedures such as spinal anesthesia, this results in the use of certain drugs being used not being recorded in their entirety. Variations that occur will cause difficulties in reimbursement of medical costs, since the implementation of INA-CBG's tariffs, where payment of service costs is a fixed amount in accordance with the case mix.

4. **Effect of Caesarean section Indication on Cost Control**

The statistical control process is a way to efficiently control costs and reduce costs (Reeve & Philpot, 1988). Cost control is the regulation of operational costs related to unit financing, performance measurement and correction (Lockey, 2002). Cost control aims to reduce costs and not to reduce the standard of services provided in terms of effectiveness or service performance (Lucey, 1996).

This includes services for Caesarean section cases whose coverage is not limited to the number of pregnancies, gestational age and is not limited to membership status. The Cost Control Quality Control Team (KMKB) is tasked with ensuring that the services provided to participants are of the expected quality through socializing the authority of health workers in carrying out professional practices in accordance with competency, carrying out utilization reviews, conducting quality audits and coaching professional ethics and discipline for health workers (Wulan et al, 2020). Apart from that, the KMKB Team is obliged to assess and provide recommendations regarding equitable distribution policies for all regions from the perspective of relevance, effectiveness, efficiency, quality safety and sustainability. (Bachtiar, 2020).

The results of research by Zhifei et al (2016) conducted at 3 hospitals in Chongqing from 2011-2013, showed that the rate of caesarean section was quite high, reaching 65%, the cost and length of stay for caesarean section were greater than normal delivery and there were factors that influenced caesarean section costs such as area, length of stay, age and health insurance. According to the official WHO report published by The Lancet, WHO's global survey of China was 46.2% during 2007-2008, which ranked first in Asia and second in the world. The Caesarea section procedure results in high resource consumption in terms of human and financial resources as well as increasing maternal and child health risks.

METHOD

The research was conducted at St Theresia Hospital Jambi, carried out in December 2023. The population of JKN Caesarean section patients for the period August-October 2023, with a sample of 80. This type of research is confirmatory causality research with a quantitative approach in the form of hypothetical causality users. The confirmatory research method is a research method that aims to confirm the position of the variables being studied and the influence between one variable and another variable. This study aims to determine the effect of clinical pathway compliance (X1), writing prescriptions according to the national formulary (X2) on quality control and costs (Y1) with indications for caesarean section (Z1) at St Theresia Hospital. This research is observational, namely a cross-sectional survey.

Data Analysis Method

The validity test is carried out by correlating the score obtained for each question item with the total score. An item is declared valid if a significance value is smaller than 0.05. The reliability test uses Cronbach Alpha, where the instrument is said to be reliable if the Cronbach Alpha value is more than 0.70 (Ghozali, 2011). This research uses path analysis with Partial Least Square (PLS).

RESULTS

Validity and Reliability Test

Hypothesis testing in this case is carried out using path analysis with Partial Least Square (PLS). Convergent validity measurement is carried out by looking at the loading factor value of each item on the latent variable. The loading factor value is said to meet the requirements if > 0.7. Validity and reliability measurements are also carried out by looking at the Average Variance Extracted (AVE) indicator which has a requirement of > 0.5.

Table 1. Reliability Test Result

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Indication Caesarean Section	0.737	0.851	0.656
Cost Control	1.000	1.000	1.000
Clinical Pathway Compliance	0.797	0.856	0.598
Writing Prescriptions According to the National Formulary	0.760	0.826	0.615

Descriptive Analysis

The Clinical Pathway Compliance variable is measured by four indicators, namely: Length of Stay, Initial and Final Diagnosis, Laboratory and Medication.

Table 2. Descriptive Analysis Clinical Pathway Compliance Variable

Indicator	Suitable		Unsuitable	
	N	%	N	%
Length of Stay	66	82.5	14	17.5
Initial and Final Diagnosis	65	81.3	15	18.8
Laboratory	61	76.3	19	23.8
Medication	44	55.0	36	45.0

Table 2 shows that the percentage value of the Clinical Pathway compliance variable data as a whole is generally in line with expectations. Compliance with the Length of Hospitalization indicator (82.5%) for caesarean section patients ranged from 3-5 days. A total of 66 cases out of 80 patients received treatment for 3 days, there were 14 patients who received treatment for 4-5 days, this is not in accordance with the clinical pathway that applies at St Theresia Hospital. Conformity of initial and final diagnosis indicators (81.3%), with there still being differences in the initial and final diagnosis of caesarean section patients. Conformity of laboratory indicators (76.3%), this result is still quite good, with a discrepancy of 23.8%, namely the presence of additional examinations such as urea, creatinine, electrolytes and complete urine. This laboratory examination is based on the recommendation of 1 (one) Anesthesiologist. Conformity of drug indicators (55.0%), in line with written results according to the national formulary.

The Prescription Writing Variable According to the National Formulary is measured by three indicators, namely: Antibiotics, Analgesics, Supplements. The following table displays a statistical description of the variable data for Prescription Writing According to the National Formulary:

Table 3. Descriptive Analysis The Prescription Writing Variable According to the National Formulary

Indicator	Suitable		Unsuitable	
	N	%	N	%
Antibiotics	30	37.5	50	62.5
Analgesics	53	66.3	27	33.8
Supplements	57	71.3	23	28.8

Table 3 shows that the percentage data value for the Prescription Writing variable according to the National Formulary is in accordance with the Analgetics indicator (66.3%), namely the drugs paracetamol, ketorolac and tramadol. The discrepancy in writing analgetics

prescriptions was 33.8%, namely Torfedek, Catramol, Parcedox, Mefinal and Pronalges. Supplement indicators (71.3%), that there is inappropriate prescribing of supplements such as Moloco. Meanwhile, there is a discrepancy in the Antibiotic indicator (62.5%), there are prescriptions for drugs that do not comply with the formulary, such as Cefat.

The Indication Variable for Caesaren Section is measured with three indicators, namely: History of Caesarean Section, Shoulder Dystocia, and Fetal Distress. The following table displays a statistical description of the caesarean section Indication variable data:

Table 4. Descriptive Analysis The Indication Variable for Caesarean Section

Indicator	Suitable		Unsuitable	
	N	%	N	%
History of Caesarea Section	19	23.8	61	76.3
Shoulder Dystocia	20	25	60	75
Fetal Distress	23	28.8	57	71.3

Table 4 shows that the percentage data value for the Caesarea Section Indication variable has more discrepancies in all indicators, namely History of SC (76.3%); Shoulder Dystocia indicator (75.0%) and Fetal Distress indicator (71.3%).

Cost Control variables are measured by indicators Cost difference. The following table displays a statistical description of Cost Control variable data:

Table 5. Descriptive Analysis Cost Control Variable

Indicator	Suitable		Unsuitable	
	N	%	N	%
Cost Difference	30	37.5	50	62.5

Table 5 shows that the percentage data values for the Cost Control variables have more discrepancies in indicator the Cost Difference indicator (62.5%). The cost difference indicator is a cost difference of >Rp 700,000 for 50 cases.

Three Box Method Analysis

1. Clinical Pathway Compliance Variable Index Value

The Clinical Pathway Compliance variable consists of four indicators, namely: Length of Stay (X1_1), Initial and final diagnosis (X1_2), Laboratory (X1_3) and Medication (X1_4). Descriptions of respondents' answers and the index values of respondents' answers for the Clinical Pathway Compliance variable are presented in the following table

Table 6. Clinical Pathway Compliance Variable Index Value

Indicator	Score		Total	Index Value	Category
	0	1			
Length of Stay	14	66	80	33.00	High
	0	66	66		
Initial and Final Diagnosis	15	65	80	32.50	High
	0	65	65		
Laboratory	19	61	80	30.50	High
	0	61	61		
Medication	36	44	80	22.00	Moderate
	0	44	44		
Score Index				118.00	High
Average Score Index				29.50	

Table 6 shows that the range of Clinical Pathway Compliance variable index values is known to be 29.50, which is included in the high category (interval 26.67 – 40.00). This shows that the Clinical Pathway Compliance carried out by nurses is good. In the table, it is known that the indicator with the highest index is Length of Stay (X1_1), which is 33.00, while the lowest is Medicine (X1_4) with an index of 22.00.

2. **Prescription Writing Variable Index Value According to the National Formulary**

The Prescription Writing Variable According to the National Formulary is measured by three indicators, namely: Antibiotics, Anti-pain, Supplements. Descriptions of respondents' answers and data index values for the Prescription Writing variable according to the National Formulary are presented in the following table

Table 7. Prescription Writing Variable Index Value According to the National Formulary

Indicator	Score		Total	Index Value	Category
	0	1			
Antibiotics	50	30	80	15.00	Moderate
	0	30	30		
Analgetics	27	53	80	26.50	Moderate
	0	53	53		
Supplement	23	57	80	28.50	High
	0	57	57		
Score Index				70.00	Moderate
Average Score Index				23.33	

Table 7 shows that the range of index values for the Prescription Writing variable according to the National Formulary is known to be 23.33, which is included in the medium category (interval 13.34 – 26.66). This shows that the nurse has written prescriptions according to the national formulary quite well. In the table, it is known that the indicator with the highest index is Supplements (X2_3), which is 28.50, while the

lowest is Antibiotics (X2_1) with an index of 15.00.

3. **Index Value of the Indicative Variable for Caesarean Section**

The Indication Variable for Caesarean Section is measured with three indicators, namely: History of CS, Shoulder Dystocia, and Fetal Distress. Descriptions of respondents' answers and data index values for the Caesarean Section Indication variable are presented in the following table:

Table 8. Index Value of the Indicative Variable for Caesarean Section

Indicator	Score		Total	Index Value	Category
	0	1			
History of Caesarean Section	61	19	80	9.50	Low
	0	19	19		
Shoulder Dystocia	60	20	80	10.00	Low
	0	20	20		
Fetal Distress	57	23	80	11.50	Low
	0	23	23		
Score Index				31.00	Low
Average Score Index				10.33	

Table 8 shows that the range of index values for the Caesarean Section Indication variable is known to be 10.33, which is included in the low category (interval 00.00 – 13.33). This shows that the indications for Caesarean Section are still not good. In the table, it is known that the indicator with the highest index is Fetal Distress (Z1_3), which is 11.50, while the lowest is History of SC (Z1_1) with an index of 9.50.

4. **Cost Control Variable Index Value**

Cost Control variables are measured by indicators Cost difference. Descriptions of respondents' answers and data index values for the Cost Control variables are presented in the following table:

Table 9. Cost Control Variable Index Value

Indicator	Score		Total	Index Value	Category
	0	1			
Cost Difference	50	30	80	15.00	Moderate
	0	30	30		
Index Score				15.00	Moderate
Average Index Score				15.00	

Table 9 shows that the range of index values for the Cost Control variable is known to be 15.00, which is included in the low category (interval 00.00 – 13.33). This shows that Cost Control is still not good.

Hypothesis Testing

The Goodness of Fit (GoF) criterion test is used to evaluate the structural model and measurement model. GoF testing is carried out to test the goodness of the structural model or inner model. Inner model assessment means evaluating the relationship between latent constructs by observing the results of the estimated path parameter coefficients and their significance levels (Ghozali, 2011). In this study, the goodness of fit test of the structural model was evaluated by considering R-square (R2) and Q2 (predictive relevance model). Q2 determines how well the model reproduces the observed values. The coefficient of determination (R2) of all endogenous variables determines Q2. The Q2 quantity has a value in the range from 0 to 1 and shows that the closer it is to the value of 1, the better the model formed. The table below shows the results of calculating the coefficient of determination (R2) for the two endogenous variables.

Table 10. The Coefficient of Determination (R-Square)

	R Square	***R Square Adjusted***
Indication of Caesarean Section	0.192	0.182
Cost Control	0.713	0.702

Table 10. above shows that the coefficient of determination (R-square) value that appears in the Cost Control (Y1) variable model is 0.713. This value can be interpreted as meaning that the Cost Control (Y1) variable can be explained by the Clinical Pathway Compliance and Caesarean Section Indication variables of 71.37%, while the remaining 28.7% is obtained from the influence of other variables not included in this research model.

The coefficient of determination (R-square) in the variable model for Indication of Sectio Caesarea (Z1) is 0.192, which can be explained by Clinical Pathway Compliance and Writing Prescriptions According to the National Formulary of 19.2% and the remaining 80.8% is obtained by the influence of other variables which are not present. in this research model.

Q-Square value (Q^2), the relevance of Q-Square predictions is one of the tests to see the goodness of the structural model, namely showing how good the observation values produced by the model and its parameter estimates are. $Q^2 > 0$ indicates that the model has predictive relevance and if $Q^2 < 0$ indicates that the model lacks predictive relevance. Q^2 value is 0.02; 0.15; and 0.35 indicates weak, moderate and strong (Ghozali and Latan, 2015: 81).

The Q-Square value for the structural model of this research can be calculated using the formula:

Q^2 = 1 – (1–R12) (1–R22)

= 1 – (1–0.713) (1–0.192)

= 1 – ((0.287)(0.808))

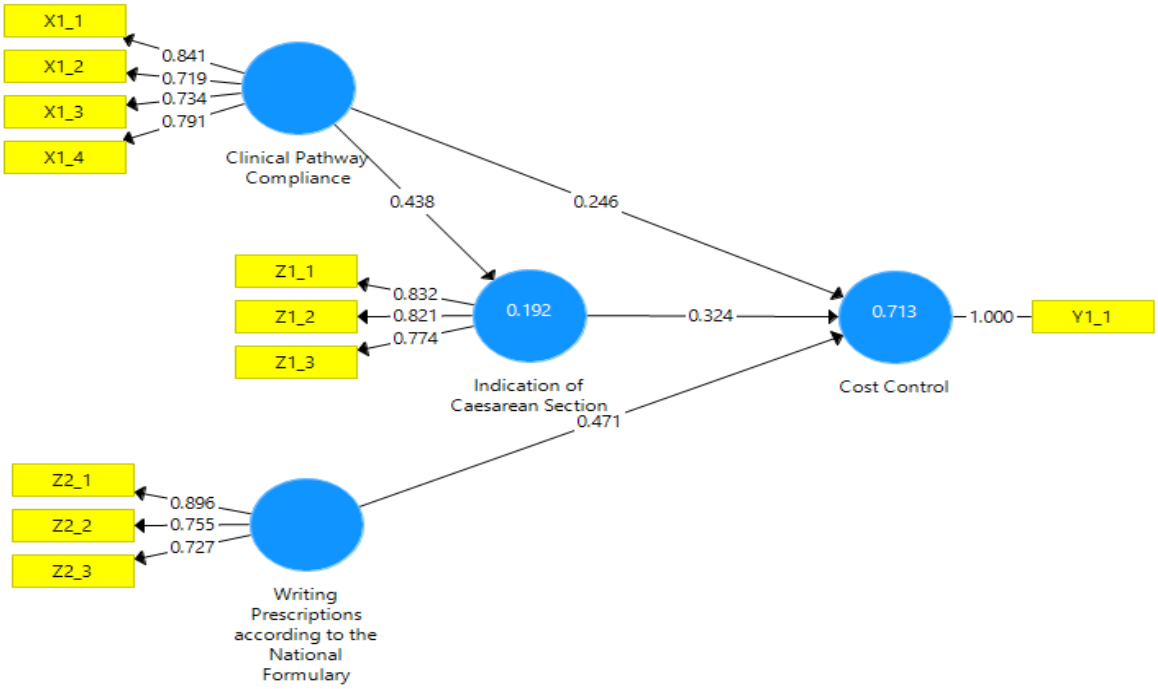
= 1 – 0.232

= 0.768

The Q-square (Q^2) calculation produces a value of 0.768 which is greater than zero, which means the model has good predictive relevance. This means that the estimated parameter values produced by the model are in accordance with the observed values. The Q^2 value is close to 1, indicating that the structural model has good suitability or fit to the data.

Simultaneous Influence Analysis

The calculated F value is then compared with the table F value. For the F table value (df=3;76) with a significance level of 5% or 0.05, the result is 3.432. Because the calculated F value (63.047) is greater than the F table value (3.432), it can be concluded that Clinical Pathway Compliance, Writing Prescriptions According to the National Formulary, and Caesarea Section Indications simultaneously have a significant effect on Cost Control. Thus, the first hypothesis which states that "There is an influence of clinical pathway compliance, writing prescriptions according to the national formulary and indication for caesarean section on cost control" can be accepted.



Picture 1. Full Model SEM-PLS with Mediation

Tabel 11. Path Coefficients Direct Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Indication of Caesarean section → Cost Control	0.324	0.316	0.096	3.382	0.001
Clinical Pathway Compliance → Indication of Caesarean Section	0.438	0.446	0.058	7.508	0.000
Clinical Pathway Compliance → Cost Control	0.246	0.236	0.060	4.117	0.000
Writing Prescriptions according to the National Formulary → Cost Control	0.471	0.489	0.093	5.046	0.000

Table 12. Result of Hypothesis Test

	Hypothesis	Conclusion
1	H1 = There is an influence of clinical pathway compliance, writing prescriptions according to the national formulary and indication of caesarean section on cost control	Accepted F value = 63,047 > F tabel = 3,432
2	H2 = There is an influence og clinical pathway compliance on indication of caesarean section	Accepted t = 7,508> 1,96, (p=0,001<0,05)
3	H3 = There is an influence clinical pathway compliance caesarean section on cost control	Accepted t = 4,117> 1,96 (p=0,004<0,05)
4	H4 = There is an influence writing prescription according to the national formulary on cost control	Accepted t = 5,046 > 1,96 (p=0,000<0,05
5	H5 = There is an influence indication of caesarean section on cost control	Accepted t = 3,382> 1,96 (p=0,000<0,05)

Table 13. Test Results of the Indirect Effect of Clinical Pathway Compliance on Cost Control Through the Mediation of Sectio Caesarea Indications

	Original Sample (O)	*T Statistics (|O/STDEV|)*	*P Values*
Clinical Pathway Compliance→ Indication of Caesarean Section→ Cost Control	0.142	2.678	0.008

DISCUSSION

1. **The influence of clinical pathway compliance, writing resp according to the national formulary and indications for caesarean section on cost control.**

The results of this study found that there was an influence of clinical pathways, writing prescriptions according to the national formulary and indications for caesarean section on cost control. These results are supported by several previous studies, the effect of using clinical pathways as a tool for controlling hospital costs for BPJS caesarean

section patients is in accordance with research by Anissa et al (2018) with the results of implementing clinical pathways can reduce length of stay and hospital costs thereby showing clinical pathways can produce more efficient services. Research on writing prescriptions according to the national formulary was carried out by Elly et al (2023) that in order to optimize the use of drugs according to the formulary to control costs with the result that there was 25.81% non-compliance with writing prescriptions, this figure shows that there is a need for drug selection in the hospital formulary. . Research by Lawal (2017) states that an organization needs to pay attention to cost control and cost reduction techniques related to organizational performance for the growth and survival of an organization in a highly competitive market. So that this can be achieved, there needs to be regular data collection, data analysis and control administration and regular supervision and review.

The increase in caesarean section cases is a common concern related to medical indications, according to WHO data, the caesarean section rate in Indonesia exceeds the recommended figure, namely >15%. Research by Atik et al (2018) shows that caesarean section cases are surgical cases with high volume, risk and cost, so there is a need for a tool to evaluate so that the service is effective, namely by implementing a clinical pathway. Wide variations in service delivery affect cost control. Clinical decisions in providing treatment to patients are a dynamic process, therefore there is a need to evaluate clinical pathways in hospitals.

2. **The influence of clinical pathway compliance on indications for caesarean section**

Clinical pathway compliance with indications for section, which is the basis for surgical procedures in maternal patients, has a significant influence in this research (table 4.13). In accordance with the results of previous research, clinical pathways are an answer to variations in clinical evidence, are reliable and serve as a guide for patient-oriented health services (Urizar, et al, 2018). Sectio caesarea is a medical procedure to help with childbirth but is influenced by the belief that has developed in society which links the fate of the child with the hope that if the child is born on a certain date and time he will receive good fortune and a better life. The results of the study reported that caesarean section had maternal indications of 25.2% and fetal indications of 54.1%. (Ali & Ray, 2020). The results of research by Dumilah et al (2018), the trend of caesarean section deliveries needs to be assessed for suitability with medical indications, there are maternal and baby factors that cause medical indications for caesarean section to be carried out.

3. **The influence of clinical pathway compliance on cost control for caesarean section cases**

The significant influence of caesarean section clinical pathway compliance on cost control is in accordance with the results of this research, that the aim of the clinical pathway is to organize and standardize the care process, thereby maximizing patient outcomes and increasing organizational efficiency. (Vanhaecht et al, 2012). Clinical pathways focus on reducing examination variations and increasing the efficiency and effectiveness of health services which can have a negative impact on improving clinical outcomes and reducing length of stay. (Ibeziako et al, 2019). The results of a systematic review of 301 studies related to cost analysis and clinical pathways by Rizky F & Ietje N (2023), apart from reducing the amount of costs incurred, the existence of a clinical pathway also increases the patient's willingness to pay for the treatment of their illness.

The implementation of clinical pathways in hospitals aims to control quality and control costs by reducing the use of advice, improving clinical outcomes, increasing patient and clinical practitioner satisfaction and reducing treatment costs. Cost control can also be seen by reducing length of stay and reducing unnecessary procedures as a means of minimizing hospital costs.

4. **The effect of writing prescriptions according to the national formulary on cost control for caesarean section cases**

The research results found that writing prescriptions according to the national formulary had a significant effect on cost control, in accordance with research by Jimmy et al (2021), conducted at the "XY" Jember Mother and Child Hospital for the period January 2019-December 2019, in an analysis related to real costs compared with the cost of INA-CBG's in cases of caesarean section for JKN patients with the difference in total treatment. Research by Atik N et al (2018) at a class A hospital in Jakarta, the variations that occur will cause difficulties in reimbursement of medical costs, since the implementation of the INA-CBG's tariff, where payment of service costs is a fixed amount according to the casemix. The variations that occur between types of drugs recommended in the clinical pathway with variations between brands are very large. Hospitals use various drugs based on the national formulary, the use of drugs at Hospital

5. **Significant influence of caesarean section indication on cost control**

Cost control is an output in health services in the BPJS era. According to the results of this study, it was found that there was an influence of caesarean section indications on cost control. The results of this study are supported by previous research

regarding caesarean section, the scope of which is unlimited on the number of pregnancies, gestational age and not limited to membership status. The Cost Control Quality Control Team (KMKB) is tasked with ensuring that the services provided to participants are of the expected quality through socializing the authority of health workers in carrying out professional practices in accordance with competency, carrying out utilization reviews, conducting quality audits and coaching professional ethics and discipline for health workers (Wulan et al, 2020). Apart from that, the KMKB Team is obliged to assess and provide recommendations regarding equitable distribution policies for all regions from the perspective of relevance, effectiveness, efficiency, quality safety and sustainability. (Bachtiar, 2020).

The results of research by Zhifei et al (2016) conducted at 3 hospitals in Chongqing from 2011-2013, showed that the caesarean section rate was quite high, reaching 65%, resulting in high resource consumption related to human and financial resources as well as increasing health risks. mother and child.

RESEARCH FINDINGS

The results of the research show that the influence of clinical pathway compliance on quality control and cost control is greater directly without the indication of caesarean section but still has a significant impact in mediating the influence of clinical pathway compliance on cost control.

RESEARCH LIMITATIONS

Data was obtained only based on medical record data and financial data. Limited literature from previous research results that researchers still lack in obtaining from both foreign and domestic scientific journals, so they are weak in searching for references. Limited researchers in terms of research time. It is hoped that the shortcomings and limitations in this research can be overcome reference for future researchers to improve this research.

MANAGERIAL IMPLICATIONS

Based on the results of research conducted at St Theresia Hospital, Jambi, there are several things that can be used as input for hospital management which is the object of research, including clinical pathway compliance which can be used as an indicator for controlling quality and costs in hospitals, so that a team can be formed. Supervisor with SPI to monitor the implementation of the clinical pathway. The Quality Committee along with the

Chair of the Medical Committee, Chair of the Functional Medical Staff and all other Professional Care Providers (PPA) should always be updated on the science of creating clinical pathways in hospitals and the results of clinical pathway formation will be regularly disseminated and evaluated.

BIBLIOGRAPHY

Akeem L.B. Effect of Cost Control and Cost Reduction Techniques in Organizational Performance. International Business and Management. Vol. 14.No. 3, pp. 19-26, 2017.

Assaolu & Nassar. Essentials of Management accounting and financial management (2nd ed). Ile-Ife, Nigeria: Cedar Productions Ltd, 2007.

Astuti, Y.D., Dewi, A & Arini, M. Evaluation of the Implementation of Clinical Pathway Sectio Caesarea at Panembahan Senopati Hospital, Bantul. Medicoeticolegal Journal And Hospital Management, 6(2), 97-111, 2017

Ayuningtyas D, Oktarina R, Misnaniarti. Health Ethics in Childbirth via Sectio Caesarea Without Medical Indications. MKMI Journal, Vol 14 No.1, 2018.

Bachtiar, A. Strategic RKMKB supports JKN. Jakarta, 2020.

Indonesian Ministry of Health Research and Development. Basic Health Research; RISKESDAS. Indonesian Ministry of Health Research and Development, Jakarta, 2018.

BPJS. Quality Control and Costs to Guarantee the Sustainability of JKN KIS, 2020.

BPJS Health. Program Management Report and Social Security Financial Report for 2017, 2018.

BPJS Health, Utilization Review of Health Services Service Month April-July 2023, Jambi, 2023.

BPJS Health. BPJS Health Regulation Number 1 of 2014 concerning the Implementation of Health Insurance. BPJS Health. 1-48, 2014.

Brent, R.J. Cost Benefit Analysis and Health care evaluations. Edward Edgard Publisher. United Kingdom, 2003.

Campbell H, Hotchkiss R, Bradshaw N, Porteous M. Integrated Care Pathways. British Medical Journal 316: 133-137, 1998.

Copper et al. The design of cost management systems. New York. Prentice Hall, Upper Saddle River, 2000.

Cunningham FG et al. William Obstetrics 23rd Ed. New York: McGraw publishers, 2011.

Currey and Harvey. Clinical Pathway in Hospital. Script. Jakarta, 1998.

Dury. C. Management and cost accounting. England, Venn Strand Reinhold (UK), 1985.

Fadli A, Fujiko M, Gayatri SW, Hamsah, M, Syamsu RM. Characteristics of pregnant women who underwent caesarean section at Siti Khadijah Hospital in Makasar for the 2019-2021 period. Fakumi medical Journal. Vol 3. No 4. 2023

Ferdinand, Augusty. 2014. Management Research Methods. Semarang: Body. Diponegoro

University Publishers.

Firdaus R & Nazaruddin I. Relationship Between Clinical Pathway and Cost-Effectiveness Research Using Vosviewer: A Bibliometric Study. United International Journal for Research & Technology, Volume 04, Issue 03, 2023.

Ghozali, Imam. Multivariate Analysis Applications with Programs. IBM SPSS 23 (8th Edition). Printing VIII. Semarang: Diponegoro University Publishing Agency, 2016.

Ghozali, Imam & Hengky Latan. Concepts, Techniques, Applications Using. Smart PLS 3.0 For Empirical Research. Semarang: Diponegoro University Publishing Agency, 2015.

Hani. Calculation of Unit Cost (UC) and Preparation of Hospital Tariffs using the Double Distribution Method. Deepublish Publisher. Sleman, 2019.

He Z, Cheng Z, Wu T, Zhou Y. The Costs and Their Determinants of Cesarean Section and Vaginal Delivery: An Exploratory Study in Chongqing Municipality, China. Biomed Research International. Vol 2016, Article ID 5685261, 2016.

Hellman LM & Pritchard JA. Williams Obstetrics. 14th Ed, Appleton-Century-Crofts Educational Division, Meridith Corporation, New York, 1971.

Howard JN, Harris I, Frank G, Kiptanui Z, Qian J, Hansen R. Influencers of generic drug utilization: A systematic review. Research in Social and Administrative Pharmacy. Volume 14, issue 7, 619-627. Elsevier. 2018.

Ibeziako P, Brahmbhatt K, Chapman Andrea, De Souza C. Developing a Clinical Pathway for Somatic Symptoms and Related Disorders in Pediatric Hospital Settings. Hospital Pediatrics Volume 9, Issue 3, March, 2019.

Kelley J. Critical Path Planning and Scheduling: Mathematical Basis. Operations Research 1961 May–June;9(3), 1961.

Kelman, H.C. Attitude Change as a Function of Response Restriction, Human Relations, VI, 185-214, 1953.

Ministry of Health. Minister of Health Regulation No. 3 of 2023 concerning Health Service Tariff Standards in the Implementation of the National Health Insurance Program. Jakarta, 2023.

Ministry of Health. Changes in Jamkesmas Claims Grouper with INA-CBGs, 2010.

Ministry of Health. Ministry of Health Strategic Plan. Jakarta, 2010.

Decision of the Director General of Health Services. Number HK.02.02/D/9737/2023 concerning the Implementation of Clinical Pathways in Hospitals. Jakarta, 2023.

Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07/MENKES/2197/2023 concerning National Formulary, 2023.

Kolk, M. Van Der, Boogaard, M. Van Den & Becking-verhaar, F. Implementation and Evaluation of a Clinical Pathway for Pancreaticoduodenectomy Procedures: a Prospective Cohort Study, 1428-1441, 2017.

Koontz, H & O'Donnell, C, Management: A System and contingency analysis of managerial functions. USA: Book World Promotions. 1976.

Krisman L, Rotter T, James E, Snow P, Willis J. What is clinical pathway? Development of a definition to inform the debate. BMC Med. 2010;(1):31, 2010.

Lockey, K. Factory and production (4th ed). London: Dp Publisher, 2002.

Lucey, T. Management accounting (4th ed). London: Contimium Publishers, 1996.

Lunenburg, F.C. Compliance Theory and Organizational Effectiveness. International Journal of Scholarly Academic Intellectual Diversity Volume 14 Number 1, 2012.

Mochtar, Rustam. Synopsis of Obstetrics. Jakarta: EGC, 2011.

Neuberger et al. More care, less pathway: a review of the Liverpool care pathway, 2013.

Nurwahyuni A, C. Sjaff A, Puspa Hapsari W, R. Nugraha R, Compliance with Clinical Pathway for Caesarean Section Before and After the Implementation of JKN in Hospital pages 29-40. D01 10.18502/kls.v4i9.3555, 2018.

Oxorn, Harry and William R. Forte. Obstetrics, Pathology and Childbirth Physiology. Yogyakarta: Esentia Medika Foundation, 2010.

Paat, C., Kristanto, E & Kalalo. Analysis of Clinical Pathway Implementation at RSUP Dr. R.D. Kandou Manado. Journal of Biomedicine (JBM), 9 (March), 662-67, 2017.

Pearson, et al. Integrated Clinical Pathways. Jakarta, 1995.

Pearson, S.D.M.M., Fisher,D.G.R. & Lee, T.H.M.M. Critical Pathways As A Strategy For Improving Care: Problems and Potential. Annals of Internal Medicine, 1995.

Republic of Indonesia Government Regulation Number 47 of 2021 concerning the Implementation of the Hospital Sector. President of the Republic of Indonesia. Jakarta, 2021.

Raharni. Supardi S. Sari ID. Independence and availability of medicines in the National Health Insurance (JKN) Era: Policy, Prices and Production of Medicines. Litbangkes Media. 2018;28(4):219-28, 2018.

Reeve, J.M. & Philpot, J.W. Applications of statistical process control for financial management. Journal of Cost Management (fall). Master of Accounting Program, 33-40, 1988.

RI KK. Riskesdas Main Results. J Chem Inf Model. 2018;53(9):1689-1699, 2018.

Sasmito T & Setiyowati H. BPJS Patients and INA-CBG Tariff Claimants int the Cost of Sectio Caesaria. Proceedings of the International Conference on Economic Business Management and Accounting (ICOEMA), 2022

Sikka, T.R. Fundamentals of cost accounting (5th ed). India Viva Books, Private Ltd, 2023.

Strong E.P. Records Management and Filing Operations. McGraw-Hill Book Company, INC., 1947.

Sugianto Kismarahardja J, Lorensia A, Virlando Suryadinata R. Analysis of Differences in Real Costs of Hospital with INA-CBG's Rate in Sectio Caesarea. Teikyo Medical Journal. Volume 44, Issue 06, 2021.

Sugiyono. Statistics for Research. CV Alfabeta, 2007.

Sugiyono. Quantitative, Qualitative and R&D Research Methods. CV Alfabeta, 2013.

Sugiyono. Quantitative, Qualitative and R&D Research Methods. CV Alfabeta, 2017.

Sugiyono. Statistics for Research, Bandung. Alpha Beta, 2019.

Sumiartini T, Laksmitawati DR, Ramadaniati HU, Irwanto R. Influence of Administration of Penicillin Prophylactic Antibiotics with Cephalosporins towards the Clinical Signs of Superficial IDO and LOS to SC Patients in Hospital “X”, Indonesian Journal of

Pharmaceutical Sciences. 2021.

Sungkar A, Basrowi RW. Rising trends and indications of Caesarean Section in Indonesia. World Nutrition Journal, 2020.

Tyler, T. R. Why people obey the law. Yale University Press, 1990.

Urizar, E. Nuno, R, Alvarez C. Barriers and Facilitators for the Implementation of Integrated Care Pathways ICPS: A Systemic Perspective. International Journal of Integrated Care, 18(2). 2018.

Vanhaecht K, Ovretveit J, Elliot MJ. Have we drawn the wrong conclusion about the value of care pathways? Are Cochrane reviews appropriate? Eval Health Professional;35(1):28-42, 2012.

Vanhaecht, K., Witte, K. D. & Sermeus, W. The Impact of Clinical Pathways On The Organization Of Care Processes. PhD dissertation, Katholieke Universiteit Leuve, 2007.

Vissers J, Beech R. Health operations management: patient flow statistics in health care. New York: Routledge, *Taylor & Francis Group Publishers*; p. 3, 2005.

Whittle C. ICPAT: Integrated Care Pathways Appraisal Tool. International Journal of Care Pathways. ;13(2):75-77. https://www.researchgate.net/publication/238337008 ICPAT Integrated care pathways appraisal tool, 2009.

Wildan, Moh dan Hidayat, A. Aziz Alimul. Dokumentasi Kebidanan. Jakarta: Salemba Medika, 2008.

Winda, S.W. (2018). Formularium nasional (FORNAS) dan e-Cataloque Obat Sebagai upaya Pencegahan Korupsi dalam Tata Kelela Obat Jaminan Kesehatan Nasional (JKN). Integritas: *Journal Antikorupsi*, 4(2), 177-206. https://doi.org/10.32697/integritas.v4i2.328, 2018.

Wright, J. & Hill, P. Clinical Governance. : Churchill Livingstone. 2003.

Wulan, S., Hasari, E.T., & Djasari, H. Evaluasi Kebijakan Kendali Mutu dan Kendali Biaya, Pencegahan Kecurangan dan Kapitasi Berbasis Komitmen dalam Era Jaminan Kesehatan Nasional di Provinsi Bengkulu Menggunakan Pendekatan Realist Evaluation. 1-14, 2020.

Yaya, S., Zegeya, B., Idriss-wheeler, D., & Shibre, G. Inequalities in caesarean section in Burundi: evidence from the Burundi Demographic and Health Surveys (2010-2016). 1-8, 2020.