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EFFECTIVENESS OF CAESAREAN SECTION CLINICAL PATHWAY TOWARDS HOSPITAL LENGTH OF STAY: A SYSTEMATIC REVIEW

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ABSTRACT

Background: *Improving quality and efficiency in hospital services can be done by using Clinical Pathway (CP). CP can decrease the hospital length of stay and cost. In indonsia, the increasing number of Caesarean Section (SC) affects to the Length of Stay (LOS) in hospital. This study aims to examine the effectiveness of clinical pathway in caesaren section to length of stay in the hospital.*
Methods: *This study was a systematic review used PRISMA guidelines. Data obtained from Electronic journal databases Pubmed and ProQuest that published between 2014 until 2019 and used English language. By using keywords such as clinical pathway, childbirth labor, and length of stay to find the relevant journal.*
Results: *The search found out 4,937, studies from 2 journal databases. The articles that not suitable with the criteria inclusion must be exclude. Totally, 6 studies were analyzed in this study. 1 study explained the affect of increasing length of stay in the National Health Insurance, 2 studies mentioned that CP was not affected to the length of stay in hospital and 3 studies mentioned that CP was reduced the length of stay in hospital.*
Conclusion: *Clinical pathway in Caesarean section can reduced the length of stay in hospital. The hospital should implement the clinical pathway in caesarean section to increase the quality of hospital service and reduce the cost.*

Keywords*: Clinical Pathway, Childbirth Labor, Length of Stay, Casearean Section*

INTRODUCTION

Childbirth method with Caesarean Section (CS) in Indonesia has exceeded the limits between 10% - 15% set by the World Health Organization (WHO). In the previous study, CS in healthcare facilities reached 15.3% of 20,591 women who gave birth within 5 years in 33 provinces in Indonesia. Jakarta has the most significant CS number in 2013, namely 19.9% [1].

As well as with all surgical procedures, CS associated with Surgical Site Infections, (SSI) including wound infections and endometritis, as well as being associated with higher maternal morbidity and mortality with future pregnancies. Postpartum infections are a major cause of prolonged hospital stay and comprise a large burden to our health care system [2]. The longer a patient stays in a hospital, the higher the probability of acquiring an infection; and an increase in probability of an infection increases Length of Stay (LoS). A rise in LoS by one day increases the probability of acquiring an infection [3]. In cost aspect, specialty hospitals were associated with a higher cost of delivery compared with other hospitals, likely due to greater incidences of intensive procedures performed to improve the quality of care and reduce the frequency of post-delivery complications and readmission. Thus, high levels of intensive care for patients increase medical cost in delivery but should be considered in context with the

average patient LOS. Regarding LOS, specialty hospitals exhibited lower LOS for vaginal deliveries and increased LOS for CS deliveries compared with other hospitals [4]. Long lengths of stay can increase exposure to adverse facility environments, with increased risk of nasocomial infections, sleep disturbance, or poor infantfeeding support, decrease maternal confidence, paternal involvement, or family bonding. They can also increase sibling rivalry, breastfeeding problems, or maternal dissatisfaction and leading to re-admission are inefficient and increase financial costs to families and health system [5].

Ways to improve hospital quality and efficiency systems are constantly sought. There are various processes introduced as effort to spur improvement, including the Clinical Pathway (CP). CP also known as Critical Pathway, a care map or integrated care pathway, is a multidisciplinary care plan based on best clinical practice for a group of patients with a specific diagnosis, designed to minimize delay, optimize resource utilization, maximize care quality, and clinical outcomes[6]. A Cochrane review from Anisa et al in 2016 recently found that CP was associated with a reduction in hospital complications and increased documentation without increasing hospital stay and costs. Most of the studies reviewed show that the development of CP and its implementation has resulted in an increase in the process of providing care. As evidence of its success, CP is increasingly being used in hospitals and various healthcare organizations in many parts of the world, including Asia [6].

METHODS

Search Strategy

Systematic Review performed with PRISMA Protocol, and searched from the Pubmed and Proquest databases to to retrieve peer-reviewed publications of relevant empirical publications from 2014 to 2019. The keywords terms include Clinical Pathway, Caesaria Section, and Length of Stay. The inclusion criterias are type of document article of scholarly journal, English language, topic of Caesarean Section, limitation of 5 years publication. Exclusion criterias are not scholarly journals, not in English, publicated over 5 years. After the review process, there *found 6* eligible journals.

Eligibility Criteria

The first time, the researcher conducted titles screening and studied the research abstract that would be used as a reference. If the reference search is considered irrelevant and incomplete or not in accordance with the material, it would not included in the group. The researchers confirmed the required study regarding the LoS in CS patients, which described high in the Indonesian population. The researcher limited the taken articles were those using English, and criteria for using CP in hospitals. The inclusion criteria in this study are the publication period from 2014 to 2019. The exclusion criteria for the study were those that did not meet the inclusion criterias.

Data Extraction

The electronic database was searched for 7 days on 14-21 April 2019 independently by one author. Titles, abstracts, and discussions screened to identify studies that include relevance for reference. Researcher also looked at the contents of all reference studies to easily obtain information and sources regarding the influence of CP on LoS. This will lead to conclusions and the researcher makes the data into a structured table, and in conclusion the researcher uses based on references analysis.

Quantity of Systematic Reviews

A total of 4937 journals were identified from 2 databases and 60 unequal citations were manually scanned for possible inclusion. After filtering 60 records, 34 journals were issued. The remaining 26 journals were assessed for eligibility. The review examined effectiveness of CP for CS towards LoS of patients in hospital and only 6 journals studied that met the objectives of this study.

Of the 6 journals reviewed by researchers, one journal described the situation of an increase in LOS in the National Health Insurance or *Jaminan Kesehatan Nasional* (JKN) era, while 3 journals concluded that the implementation of CP in Sectio Caesaria significantly reduced LOS patients, and 2 other journals concluded that in some developing countries CP and the DRG-PPS financing system cannot reduce LOS related to resource factors.

RESULTS

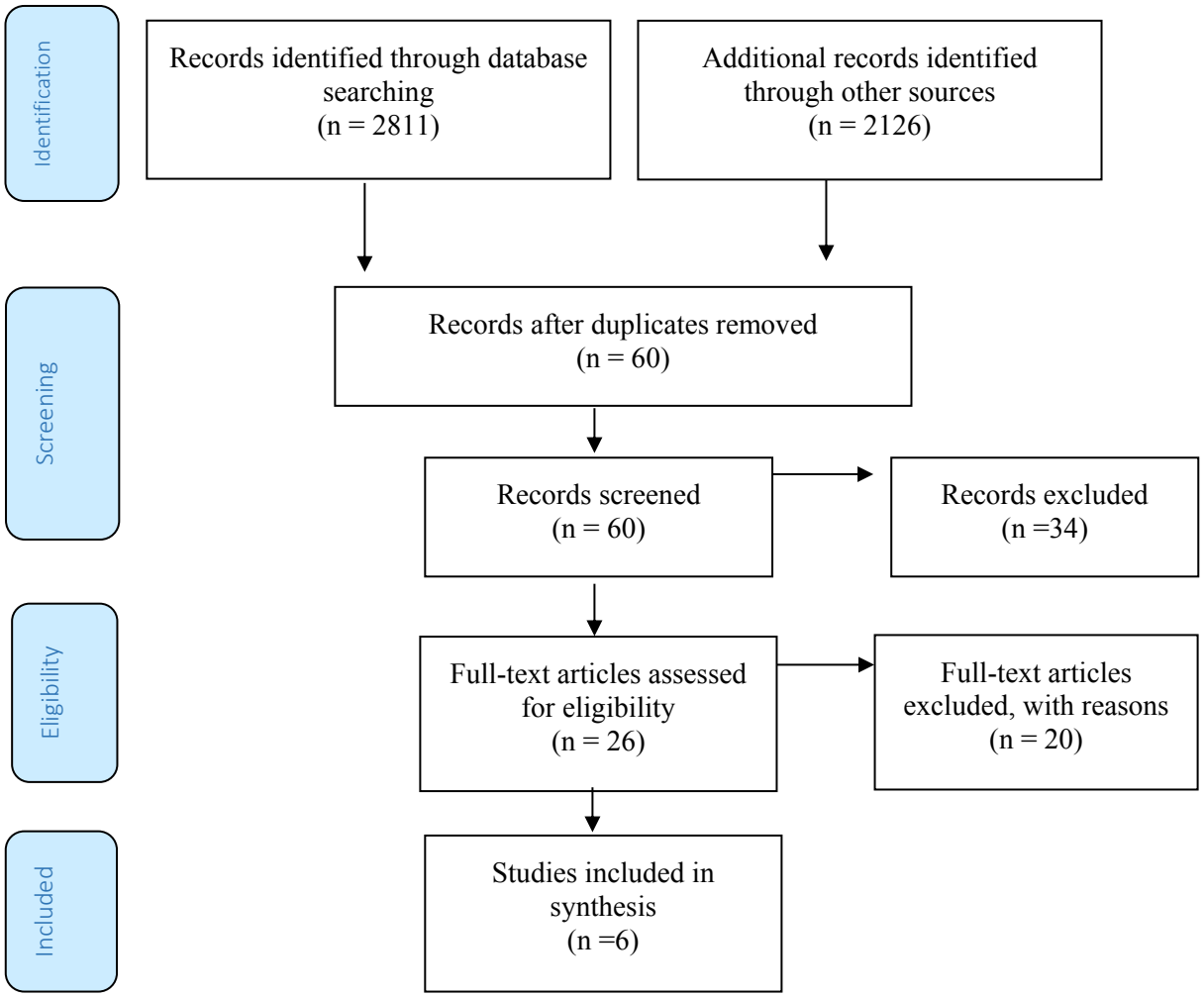

Figure 1. PRISMA-P (Preferred Reposting Items for Systematic review and Meta-Analysis - Protocols) systematic review identification, screening, eligibility, and inclusion

In Identification , authors identified 2811 results from Pubmed and 2126 from Proquest. The duplicated records removed in screening and founded 60 results, excluded 34 results and founded 26 articles eligible for assessed, with 20 excluded with reasons. There were 6 studies included in synthesis.

Table 1. Effectiveness of Clinical Pathway in Childbirth Labor towards Length of Stay

No.	Journal Title	Database	Place of Journal	Author, Year	Result	Clinical Pathway
1	Implementation of Clinical Pathways in Malaysia: Can Clinical Pathways Improve the Quality of Care?	International Medical Journal Vol. 23, No. 1, pp. 47 - 50, February 2016	Japan Health Sciences University	Aniza I, Saperi S, Zafar A, Aljunid SM, Wan Norlida I, Oteh M, Husyairi H, Ismail S, Nor Hamdan Y, Faizal AH, Hassan MYS, Hamat H. (2016).	The average LOS was significantly lower in the CP group (4.04 days vs. 4.99 days, p <0.001) and a greater proportion of patients in the CP group were excluded from the 4-day long LSCS target compared to the Control group (95 % vs 68.3%, p <0.001).	The pathways for these conditions were developed by multidisciplinary teams comprising of 6-10 members including physicians, public health specialists, physiotherapists, pharmacists and nurses. Each team undertook extensive literature
2.	Compliance with Clinical Pathway for Cesarean Section after Implementation of JKN in Hospital X	KnE Life Sciences. p29-40	Jakarta, Indonesia	Nurwahyuni A, Sjaaf AC, Hapsari WP, Nugraha RR. (2018)	Variation of patients' characteristic, length of stay, services and drugs utilizations in both years compared to the standardized clinical pathway. The number of caesarean section cases was 58 in 2012 and 117 in 2015. The length of stay was 3.8 days in 2012 and slightly increased in 2015 became 4.8 days.	During a periode of care there are 4 times doctor's visit, 3 times consultations. Laboratory : omplete blood and urine test, blood type test, BT,PT, APTT, HbSAg, HIV, SGOT, SGPT, Ureum, Creatine, Fasting Glucose Test, CTG. Ultrasonography (USG). Spinal Anesthesia, Caesarean Section, Changing Verband, Breast care, Surgical Wound Care, Personal Hygiene, Catheter ins/aff, Insertion of contraceptive devices, and Sterilization. Drugs : IVFD (1500 cc/24 hr), Oxytocin 1 vial IV, Ceftriaxone 2 gr, Methergine 1 vial, Pronalgest Supp (3 supp), Amoxicillin 500 mg, Mefenamic Acid 500 mg, Sulfas Ferosus, and Opsite

No.	Journal Title	Database	Place of Journal	Author, Year	Result	Clinical Pathway
3.	The perceived and objectively measured effects of clinical pathways' implementation on medical care in China	PLOS One. China. p1-13	China	Bai J, Bai F, Zhu H, Xue D. (2018).	The relatively low involvement in the application and adherence to CP caused CP not to have a significant effect on overall hospital medical care. However, a chart review of 5 conferences in hospitals in China shows that compliance with national CP reduces length of stay and hospitalized medical costs.	Multidisciplinary care plans used by health services to detail essential stepsin the care of patients with a specific clinical problem
4.	Clinical pathways in China – an evaluation.	International Journal of Health Care Quality Assurance Vol. 28 No. 4. p394-411	China	Jingwei AH, Yang W. (2015).	The main objectives: to standardize treatment procedures by reducing length of stay and containing costs, were not fully achieved	Qualifications, competencies, program design and many institutional factors, especially incentives to shape prescribing behaviors
5.	Charting a path forward: policy analysis of China's evolved DRG-based hospital payment system	Int Health. Oxford University Press. p317–324	Shanghai, China	Liua R, Shic J, Yange B, Jin C, Sund P, Wuf L, Yuc D, Xionga L, Wang Z. (2017).	Simplified DRG-PPS is useful in controlling hospitalization costs, but that it cannot reduce LOS	Covers 320 types of diseases, each province is instructed to implement no fewer than 100 diseases, such as appendicitis, cataract, and hysteromyoma. Primary angle-closure glaucoma, cerebral infarction and ectopic pregnancy are also commonly included
6.	Enhanced recovery after elective caesarean: a rapid review of	BMC Pregnancy and Childbirth. p17-91	United Kingdom	Corso E, Hind D, Beever D, Fuller G, Wilson MJ, Wrench IJ, Chambers D. (2017).	Minimally invasive Joel-Cohen surgical technique, early catheter removal and post-operative antibiotic prophylaxis reduced LoS	Early oral intake, mobilization and removal of catheter single component Enhanced Recovery After Surgery (ERAS) interventions in CS, minimally

No.	Journal Title	Database	Place of Journal	Author, Year	Result	Clinical Pathway
	clinical protocols, and an umbrella review of systematic reviews				after CS most significantly by around half to 1 and a half days. Ten meta-analyses of multi-component Enhanced Recovery after Surgery (ERAS) packages demonstrated reductions in LoS of between 1 and 4 days.	invasive Joel-Cohen surgical technique, early removal of catheter and postoperative antibiotic prophylaxis

DISCUSSION

CPs are structured multidisciplinary care plans used by health services to detail essential steps in the care of patients with a specific clinical problem [6]. CPs can contribute to increased adherence to clinical guidelines (CGs), improved quality of care, decreased length of stay (LOS), and reduced hospital costs. The implementation of CPs varies among different countries [7]. But there are similar principles concept of a care pathway, from the field of Health Operations Management (Health OM), described by Vissers and Beech as the analysis, design, planning and control of all the steps necessary to provide a service to a client. They distinguish five levels of Health OM includes a care plan for each individual patient (patient planning and protocol), the planning of care in care pathways (patient group planning and control), the capacity planning of professionals, equipment and space (resource planning and control), the planning of the number of patients to be treated and care activities to be carried out (patient volume planning and control), and the long-term policy of the institution or strategic planning [8].

Since their first introduction in 1985 at the US New England Medical Center, CPs are mainly used as a framework for balancing costs and quality in response to escalating healthcare costs. Winning popularity in the past three decades, CPs became internationally accepted in almost all healthcare management models. By standardizing care provision, CPs improve care quality, reduce risks, increase efficiency and control costs [9]. There is relationship between the compliance and the implementation of the clinical pathway to the outcome of therapy (SSI cases, length of stay, and pain intensity) and real costs [10].

Prior to the merging, Indonesia had several social health insurance schemes, each covering a different target population and a different benefit package. Indonesia is in the midst of major health system reforms aimed at attaining universal health coverage (UHC) by the merging of social health insurance programs with the aim of providing UHC to the entire population in which was gradually implemented since 2014 (11). The national health insurance program (JKN) in Indonesia is a government program that aims to provide assurance of comprehensive health insurance for every Indonesian community to live a healthy, productive and prosperous life [12]. In Indonesia, since the implementation of the JKN system, CS increased in 2015, from 411,543 in 2012 and continued to increase until 2015. The results varied in terms of clinical assessment, which consisted of doctor visits and consultations, because the amount was still below the recommended by CP. Doctor visits were still 1.06 in 2012 and increased to 2.52 in 2015. Variations also occur in medical procedures. CP includes nine procedures for each treatment period. The average utilization of SC is above CP, which is 2.36 in 2012 and 2.45 in 2015. Variations in assessment, services in terms of medical support and procedures occur due to a lack of evaluation from the hospital CP. There are several studies evaluating the use of CP in the field of obstetrics and gynecology even though CP for episiotomy and monitoring of previous perinatal results has been carried out elsewhere.[7]

The effect of CP is not felt by hospitals or by managers and doctors and not to have a significant effect on overall hospital medical care in China, it caused by the relatively low involvement in the application and adherence to CP. However, a chart review of 5 conditions in hospitals in China shows that compliance with national CP reduces length of stay (LoS) and hospitalized medical costs [7] .A number of strategies have been proposed to reduce avoidable health care costs associated with childbirth. Among these, length of hospital stay (LoS) has been identified as an important quality indicator of obstetric care and efficiency of hospital performance [13].

The high prevalence of the Lower Segment Caesarian Section (LSCS) in United Kingdom (UK) resulted in the development and implementation of normal labor CP. In studies in the UK, CP was enhanced through effective consultation with providers of maternity care in conjunction with national policy initiatives to support normal delivery. From the findings of the researcher, a large number of patients in the CP group managed to reach the target of the Average Length of Stay (ALOS) for 4 days. The study

by researchers shows that CP has the potential to reduce ALOS, and has a direct effect on patient care. Standardization or downsizing of patient management helps support the application of casemix cases in hospitals because it reduces variability in case management. CP combined with casemix can increase resource use according to homogeneous patient groups (eg. in Diagnosis Related Groups or DRG). A well-designed and optimal CP must capture between 60% and 80% of patients.[6]

Cases with higher levels of CP adherence have lower LoS and impatient medical costs are lower for all 5 conditions after controlling for the hospital's permanent effects and patient characteristics. However, the strong positive effects of CP on LoS and inpatient medical costs did not significantly increase their positive perceptions by doctors applying CP. In UK, there are 3 aspects of CP in CS that most often provide improvement in the condition of patients in the Obstetric and Gynaecology unit, namely initial oral intake, catheter mobilization and release, and also obtained with a single component Enhanced Recovery After Surgery (ERAS), with implementation in CP in the form of minimally invasive Joel-Cohen surgical techniques, early catheter release and postoperative antibiotic prophylaxis showed a statistically significant effect at the 5 percent level. This intervention reduced LoS by 0.49 to 1.5 days.[14] Infection is one of the most common complications of cesarean delivery. Factors that have been associated with an increased risk of infection among women who have a cesarean delivery include emergency cesarean section, labor and its duration, ruptured membranes and the duration of rupture, the use of prophylactic antibiotics or not, the socioeconomic status of the woman, number of prenatal visits, vaginal examinations during labor, anemia, blood loss, obesity, diabetes, general anesthesia, the skill of the operator and the operative technique [20]. Appropriate antibiotic treatment in adult patients with a suspected bacterial infection associated with admission, mortality and shorter length of hospital stay [15].

Successful patient-care can be developed and established through knowledge management. Thus, identifying knowledge required to prevent nosocomial infection post-Caesarean section should be performed in order to design effective measures/training [16].

Another finding from Jingwei et al. 2014 in the Clinical Pathways in China journal, evaluation that the main goal (standardization of treatment procedures by reducing LoS and containing costs) was not fully achieved. In addition, implementing executives also face institutional obstacles. Hospital managers do not see CP as a useful instrument and still driven by income. Researchers also found that CP's effectiveness was damaged by opposing incentives that formed an institutional environment that was not conducive to cost control efforts. Similar findings were also reported in a study from Liu et al (2012) in a study entitled Charting a Path Forward: Policy Analysis of China's Evolved DRG-based Hospital Payment System that simplified the diagnosis of Related Groups-based Prospective Payment System (DRG-PPS) in many cases in reducing the average cost of hospitalization. However, the study showed that it was not very effective in reducing LOS in public hospitals in China. The criteria for the cost of hospitalization and LOS differ between China and other developing countries. Deficiencies in coding standardization, data availability and information technology have made it difficult for scientific implementation of DRG in low and middle income countries [17].

Systematic reviews provide varying quality evidence that some individual components can reduce length of stay by about, most commonly, half a day after CS. Although this represents a substantial proportional reduction in duration of hospital stay after CS, packages of components for enhanced recovery in other settings can achieve much greater absolute reductions in length of stay of between one and 4 days [18].

Length of hospital stay is likely to be longer after a caesarean section (an average of 3–4 days) than after a vaginal birth (average 1–2 days). However, women who are recovering well, are apyrexial and do not have complications following caesarean section should be offered early discharge (after 24 hours) from

hospital and follow-up at home, because this is not associated with more infant or maternal readmissions [19]. In Bhakti Rahayu Denpasar Hospital, as one of the private hospitals in Denpasar that has been serving Badan Penyelenggara Jaminan Sosial Kesehatan (BPJS Kesehatan) participants since the start of the JKN program was launched in 2014, the implementation of CP especially for new CS actions was implemented in 2018. In-depth interviews with CP team leader, the head of the obstetric room and Obstetric Gynaecologist gave the results that with the application of CP for uncomplicated SC actions at Bhakti Rahayu Hospital in Denpasar, there was a match for LoS. This is because, before the implementation of the CP for uncomplicated SC action, Bhakti Rahayu Hospital Denpasar has implemented the SC package pattern for each class. The LoS gets better demanded on SC Packages adjusted by clinical practice guidelines "SC without Complications" which consist medical service, Operating Room usage, rooms and care unis, medicines with one day operation pattern and two days observation. Another supporting factor that plays a role is the need for a high bed, with a limited number of beds. This condition is in accordance with the Bed Occupancy Ratio (BOR) value which reaches 85% and Bed Turn Over reaches 0.8 days. The strong commitment of all Obstetric Gynaecologist also gave a significant role, and there was salary similarity between SC fees for Obstetric Gynaecologist with CP application or not.

CONCLUSION

Since the presence of JKN, there has been an increase in the LoS in CS patients. Implementation of CP on CS has a good influence, reducing LoS without reducing service quality, but in several developing countries the implementation of CP has not shown a significant reduction in LoS due to limited resources. Further research is needed to develop and evaluate pathways for enhanced recovery in elective CS with appropriate quality improvement packages to optimise their implementation. The study concludes that the implementation of CP has a positive impact and therefore, is recommended In Indonesia and in Indonesian hospitals generally.

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