

Implementation of Robson Classification for Sectio Caesarean Patients at Bhayangkara Puskokkes POLRI Hospital and its Relationship with the Length of Patient Hospitalization

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ABSTRACT

There has been an increase in CS numbers globally. Compared to normal childbirth. In 2001, Robson published a classification system called Robson Classification, where pregnant women who undergo CS divided into 10 criteria. The purpose of this study is to analyze the characteristics, LOS, and Robson criteria of CS patients at Bhayangkara Hospital I Puskokkes POLRI. This study used retrospective cohort study with medical records as a data source. The data collection techniques used are collecting medical records documents and literature studies. The sampling technique used is total sampling. Inclusion criteria include emergency room or polyclinic patients, patients with or without comorbidities. There are no exclusion criteria. The number of samples used was 111 patients, who underwent CS in May-June 2024. The most Robson criteria were Robson 5 (33.9%), Robson 9 (27%), and Robson 10 (11.7%). There was a positive correlation between Robson criteria and LOS (0.405). If the Robson criteria are divided into 10 categories, the correlated ones are Robson 1 negative tightness (-0.410), Robson 2 negative tightness (-0.370) and Robson 9, with weak positive tightness (0.22). Age, emergency room patients and comorbidities also have positive correlations. The largest CS contributor is Robson 5, the most LOS is Robson 9. There was a positive correlation between Robson criteria and LOS. If the Robson criteria are divided into 10, the correlated ones are Robson 1 negative closeness, Robson 2 negative closeness and Robson 9 with weak positive closeness. Other factors that affect LOS include age, emergency room patient and comorbidities.

Keywords

Childbirth, SC, Robson criteria, Correlation, Emergency room, Age, Comorbidities.

Introduction

The latest research conducted by the World Health Organization (WHO) in 2021 shows that CS continues to increase globally, where currently the CS rate has reached 21% and this figure is predicted to increase in the future, with an estimate that almost 29% of all births will undergo CS by 2030 [1]. Compared with vaginal delivery, CS increases the risk and mortality rates [2,3]. CS births require longer LOS than vaginal deliveries, and require more expensive care costs [4]. Research conducted by Ali Sungkar et al. in 2019 [5] stated that the highest CS rate was preterm

singleton pregnancy with previous CS scars (27.82%), and second was multiparous pregnancy without previous CS scars (18.00%), third was nulliparous pregnancy with ongoing labor (17.34%). Research by Parveen et al. [6] stated that the highest CS rate (50.9%) was multiparous pregnancy > 37 weeks with a single fetus with a history of CS followed by multiparous pregnancy <37 weeks with a history of previous CS (14.4%) then nulliparous > 37 weeks with ongoing spontaneous labor (11.4%). Candel et al. in 2020 [7] through their research concluded that the highest number of CS (29.4%) were multiparous patients who were planned for CS, followed by multiparous patients > 37 weeks with a history of previous CS (12.8%) and (10.4%) patients who CS were primiparous patients who were in the process of spontaneous labor. Based on research by Windiyaningsih and Dewi in 2023 [8],

there was an influence between comorbidities (OR = 3.886; 95% CI = 0.948 -15.925) and the incidence of surgical wound infection or SSI, while other factors did not have a significant effect on the incidence of SSI.

In 2001, Robson published a classification system based on pregnancy characteristics called The Robson 10-Group Classification System (Robson Classification). This system leads to good procurement to handle groups of pregnant women based on their pregnancy conditions. In this system, each classification has its own role and characteristics in adding the number of CS in a region, then WHO in 2015 and FIGO (International Federation of Gynecology and Obstetrics) in 2016 made the Robson classification the international standard for handling, monitoring and comparing CS events in a health facility over time and in other health facilities with different environments [9-11].

Length of stay (LOS) or also called Length of Hospitalization is the total number of days a patient is hospitalized. LOS is often a key indicator for improving efficient health care because shorter lengths of stay indicate more effective hospital resources [12,13]. This study aims to analyzing the description of the characteristics and description of LOS and Robson criteria in CS patients at the Bhayangkara Hospital Class I Pusedokkes POLRI. The specific objective of this study was to analyze the Robson classification that contributed the most CS numbers, Robson's classification contributed the most LOS figures, the relationship between patient LOS and CS contributor criteria based on Robson's criteria and analyse other factors that affect LOS besides Robson's criteria. The benefits of this study are as information for knowledge and educational development for the Hospital Administration Management Study Program related to the implementation of Robson's criteria, providing input to the Management of Bhayangkara Hospital Class I Pusedokkes POLRI to improve and streamline CS services at Bhayangkara Hospital Class I Pusedokkes POLRI related to determining CS patients, improve researchers' ability to conduct research and provide additional knowledge about the hospital industry, especially in determining patients who require CS to improve the quality of patient services.

Method

The data collection method used in this study was observation and used a retrospective cohort approach using patient medical records. The population in this study were all women who underwent CS throughout May and June 2024 with a sample size of 111 people, using the total sampling method. Data grouping was carried out using an assessment table, and dividing the data based on patient entry through the ER, comorbidities, birth order, and Robson criteria. After that, univariate, multivariate and bivariate analysis were carried out.

Results and Discussion

Of the 111 patient samples tested in May and June 2024, the percentage of patients based on the Robson criteria was found to be the highest, namely Robson 5 (33.9%), then Robson 9 (27%)

and Robson 10 (11.7%). From the age of the patients, patients over 30 years old had an average LOS of 4.16 days while patients aged 30 years or less had an average LOS of 4.11 days. Of the 111 patient samples, it was also found that 64.9% of patients had no comorbidities and 35.1% of patients had comorbidities. Of the 39 patients with comorbidities, the most common comorbidities were hypertension (25.6%), then DM (12.8%), anemia (12.8%), preeclampsia (12.8%), and asthma (5.1%). Validity and reliability tests showed that the data was valid (value > 0.1865) and reliable (Cronbach Alpha (α) value > 0.60). Furthermore, a normality test was conducted and it was found that the data was not normally distributed (value < 0.05). The data variation test showed that there were significant differences in the number of patients admitted from the ER, comorbidities, Robson 1 and Robson 2 criteria, and maternal age (value < 0.05) with patient LOS as a group variable. Correlation test was conducted to see the influence of Robson criteria as a whole, the presence of comorbidities, the patient's entry route from the ER with the patient's LOS. The results of the correlation test showed a significant correlation in the patient's entry route from the ER (0.01), the overall Robson criteria (0.00), the presence of comorbidities (0.03) and the patient's age (0.038) with the patient's LOS. The correlation coefficient of the ER patient, Robson criteria, comorbidities with LOS was sufficient (0.33), (0.405) and (0.285) while the correlation coefficient of the patient's age with LOS was very weak (0.180). Next, a correlation test was conducted on each Robson criterion with the patient's overall LOS, the results showed that there was a significant correlation between Robson criterion 1 and LOS (0.00), with a sufficient correlation and negative (-0.410), there was a significant correlation between Robson criterion 2 and LOS (0.00), with a sufficient correlation and negative (-0.370), there was a significant correlation between Robson criterion 9 and LOS (0.01), with a very weak correlation and positive (0.22). Then a linear regression test was conducted on the variables of admission route, comorbidities, Robson criteria, and age to see their effect on the patient's LOS. The results of the linear regression test showed that the influence of ER patients on patient LOS was 16%, the influence of comorbidities on patient LOS was 13.3%, the influence of Robson criteria on patient LOS was 32.4%, the influence of patient age on patient LOS was 6.6%, the influence of Robson criteria 1 on patient LOS was 19.7%, the influence of Robson criteria 2 on patient LOS was 16.1%, and the influence of Robson criteria 9 on patient LOS was 8.6%.

Some of the shortcomings of this study include the researcher not meeting and not conducting a physical examination on the patient, the research time was quite narrow (2 months) and the number of samples was not too large, as well as the lack of factors studied, where because they did not meet the patient directly or conduct interviews, the researcher could not study other factors such as body weight, payment type, socioeconomic factors, maternal education, routine ANC and the mother's place of residence.

The solution to the limitations of this study that should be done include research conducted with direct data from patients (interviews, questionnaires, physical examinations) and continuing

to use medical record data, so that medical record data does not become the sole source of data, and can measure other factors that were not measured in this study (weight, payment, socioeconomic, maternal education, routine ANC, and maternal residence), longer research time (6 months-1 year) and using a larger number of samples, and research should be conducted using several different hospitals (state and private hospitals) for comparison.

From the results of the study, it was found that the Robson criteria in the most CS patients were Robson [5]. This is in accordance with research from Fristika which stated that there is a significant relationship between CS history and current CS actions [14]. Mothers giving birth with a history of previous CS 1 time have the opportunity to give birth normally or VBAC (Vaginal Birth After Caesarean) with the provision that the pregnancy interval is at least 2 years from the previous CS delivery, does not experience preeclampsia, the size of the fetus is not large, is not >35 years old, and the previous CS scar is horizontal and the CS wound is in the lower abdomen [15].

The next most Robson criteria undergoing CS are Robson criteria 9 (patients with transverse position). According to research from Siagian et al. [16], fetal position has an influence on the incidence of CS, where the risk of CS is 3.413 times higher in mothers whose fetuses are in the breech/transverse position and mothers with PROM have a 1.352 times risk of undergoing CS. Based on research from Prihartini [17], there is a relationship between fetal malposition and the incidence of PROM, where 86.8% of mothers with breech or transverse fetuses experience PROM while only 40.4% of mothers with normal fetal positions experience PROM.

The most common comorbidity in patients is hypertension (25.6%). This is in accordance with research by Helmi & Rasyid [18] which states that there is a correlation between hypertension and CS. Helmi & Rasyid [18] also said that pregnant women who will undergo labor with hypertension will be given medication first, if the patient's blood pressure decreases and is stable then the mother will be able to give birth vaginally. However, if the patient's blood pressure does not decrease before labor then the mother will be advised to have a CS.

Patients admitted from the ER have a significant and positive correlation, which means that if the number of patients admitted from the ER increases, the total LOS will increase. This is in accordance with research from Hassan et al. [19] which states that patients undergoing emergency CS have significantly longer LOS. This is related to the number of cases of postpartum complications in patients undergoing emergency CS. In their research, Hassan et al. also said that women with emergency CS have 13% longer LOS in the hospital. Research from Cegolon et al. [20] also said that patients undergoing emergency CS tend to have longer LOS than patients with elective CS, with an average hospitalization of emergency CS patients being 4.3-5.6 days, and elective CS being 4 days. Based on research from Larsson et al. [21], emergency CS has a higher risk than elective CS, where some of the risks include

gastrointestinal obstruction to incisional hernia. Patients with comorbidities have a significant positive correlation, which means that the number of patients with comorbidities will increase the amount of LOS. This is in accordance with research from Pereira et al. [22] which stated that comorbidities have a significant influence on patient LOS, and the comorbidity that most often causes increased LOS is hypertension in pregnancy. Hassan et al. [19] stated that patients with maternal complications have a 24.0% longer LOS than women without maternal complications, while women with babies who have perinatal complications have a 21.0% LOS compared to babies without perinatal complications, and the patient's weight factor also has an influence on LOS. Another study from Cegolon et al. [20] stated that increased LOS tends to occur in patients with mothers with diabetes or hypertension, usually after elective CS. The most common comorbidities found are preeclampsia/gestational hypertension/chronic hypertension (12.8%), asthma (6.7%), BMI 40-49% (6%) and severe preeclampsia with a picture leading to eclampsia (5.1%). LOS also tends to increase in mothers with preeclampsia, eclampsia and low birth weight babies.

The combined Robson criteria have a strong significant correlation with LOS, but when broken down into 10 criteria, the correlation is significant but weak or even negative, where Robson 1 and 2 are negatively correlated, meaning that when patients with Robson 1 and 2 increase, the total LOS can actually decrease, while Robson 9 has a weak positive correlation, where if the number of patients with Robson 9 criteria increases, the total LOS increases. The effect of all Robson criteria on the overall LOS of patients is 32.4%. Based on research by Hassan et al. [19], it was found that previous labor history was not related to LOS, and women with elective CS tended to have shorter LOS than emergency CS. Based on research by Jamshed et al. [23], there was no long-term effect of CS on patients with transverse, oblique or breech presentations. Research by Matthews et al. [24], patients with elective CS had shorter LOS than emergency CS. The effect of age has a significant positive correlation with an average of patients over 30 years of age having longer LOS than patients under 30 years of age. This means that the number of patients with older age will increase the total LOS. This is in accordance with research from Cegolon et al. [20] which stated that older patients have higher LOS. Cegolon et al. [20] also stated that LOS was found to be higher in older patients (> 45 years), but even higher in older patients who underwent emergency CS, and comorbidities were most commonly found in patients aged 35-39 years. This is also in accordance with research from Fiederspiel [25] which stated that there was a correlation between younger patient age and shorter LOS figures. LOS also tended to be shorter in patients treated in government hospitals compared to private hospitals. Research conducted by Schaal et al. [26] stated that there was a relationship between older age, primiparity and higher anxiety post-operatively as significant factors related to longer LOS. Research from Pereira [22] stated that increased LOS only occurred in patients who were too young (15-17 years) and too old (over 40 years). This is in contrast to research from Kumar & Dhillon [4] which stated that

age has no effect on LOS, but that it does include complications of childbirth, education, type of hospital, number of parities and type of payment. Another study by Hassan et al. [19] stated that there was no significant effect between age and LOS. Another study by Matthews et al. [24] stated that older patients (>35 years) actually had shorter LOS. Research from Hassan [19] stated that age, parity, place of residence, occupation, and post-CS hemoglobin levels had no effect on LOS.

Conclusion and Suggestions

The conclusion of this study includes the description of Robson criteria in CS patients at Bhayangkara Hospital Class I POLRI dominated by Robson 5 (33.9%), followed by Robson 9 (27%), Robson 10 (11.7%) and Robson 1 (10.8%), the Robson criteria that contributed the most to LOS was Robson 9, because Robson 9 was the only criterion that had a significant positive correlation with LOS. There was a significant correlation between Robson criteria and LOS (0.00), with a closeness of 0.405. However, if the Robson criteria are broken down, the only ones that have a significant correlation are Robson 1 with LOS (0.00), with sufficient and negative closeness (-0.410), while the correlation of Robson 2 and LOS is significant (0.00), with sufficient and negative closeness (-0.370) and the correlation of Robson 9 with LOS is significant (0.01), with very weak and positive closeness (0.22), and other factors that have a relationship with LOS include patients who enter from the ER, patient age and the presence of comorbidities. The suggestion from this study for the Bhayangkara Hospital TK I POLRI in the short term is to review patients with a history of previous CS (Robson 5) before repeating CS to determine whether the patient is possible to undergo VBAC and to discuss patients with transverse baby positions (Robson 9) whose conditions allow for external version. Suggestions for the medium term include conducting closer monitoring of mothers with transverse fetal position (Robson 9 criteria) or consideration of external version to change the fetal position so that normal delivery is possible if the fetal position changes, as well as conducting closer monitoring of mothers with comorbidities that have been detected since early pregnancy (eg: hypertension, DM, anemia) and treatment to prevent worsening of the comorbidities. Suggestions for the long term include Contraceptive counseling is provided for older mothers who already have many children in order to reduce the risk for the mother and fetus. Counseling is provided for mothers who come for pregnancy check-ups regarding accompanying diseases during pregnancy, their control and how to prevent them.

Suggestions for further researchers include conducting interviews and direct physical examinations of patients to determine the Robson criteria and determine categories based on patient clinical outcomes directly, and conducted in several different hospitals (state and private hospitals) for comparison, with larger samples and longer periods. The next suggestion is to conduct separate research on factors that influence the number of babies with transverse positions (Robson 9) and premature babies (Robson 10), as well as looking for other factors that influence patient LOS such as weight, payment type, socio-cultural factors, and maternal education.

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