



MORBIDITY AND MORTALITY FACTORS ANALYSIS OF CAESAREAN SECTION

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ABSTRACT

Caesarean Section is the most common obstetric surgery performed today. CS delivery without medical indication increases the risk of maternal morbidity and mortality 3-5 times higher than vaginal delivery techniques. The increased risk of morbidity and mortality in CS delivery is due to complications caused, during intraoperative or postoperative. Lampung Province is one of the provinces with the highest MMR value in Indonesia (148 per 100,000 live births) with a CS birth selection of 13.18%. The aim of this research is to analyze the characteristics of factors associated with maternal morbidity and mortality in CS delivery. Both morbidity groups characteristics (case and control) show correlations were found between maternal age ($p < 0.02$), obstetric complication ($p < 0.01$), education ($p < 0.02$) and the incidence of maternal deaths. Meanwhile, parity and delivery complication variables did not show significant correlations to maternal deaths ($p > 0.05$). Both mortality groups characteristics (case and control) show correlations were found between maternal age ($p < 0.02$), obstetric complication ($p < 0.05$), education ($p < 0.03$), delivery complication ($p < 0.04$) and the incidence of maternal deaths. Meanwhile, maternal age and parity variables did not show significant correlations to maternal deaths ($p > 0.05$).

Keywords: complication; maternal death; maternal morbidity; post caesarean section; risk factor

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INTRODUCTION

Caesarean section (CS) is an operative procedure to give birth to a baby by making an incision in the abdominal wall and uterus with the condition that the uterus is intact and the fetal weight is above 500 grams (Sung S, 2015). In 2015, it was estimated that 21.1% of the total births worldwide were CS deliveries. While in Indonesia, the ratio of CS deliveries in 2018 was recorded at 17.6% of a total of 78,736 deliveries. This is certainly not following the WHO-defined CS delivery limit, which is 10-15% of the total births regardless of the status of developed or developing countries (Betran et al., 2016; Elflein, 2019; Indonesian Ministry of Health, 2019).

CS delivery is chosen if there are medical indications for the mother or fetus such as; cephalic disproportion, the presence of pregnancy complications such as eclampsia, uterine rupture, placenta previa, malpresentation, and fetal distress. The main goal of labor-management with

CS is to save the mother and fetus. Therefore, the selection of CS based on adequate medical indications can reduce the risk of maternal and neonatal morbidity and mortality. However, the use of social indications such as anxious mothers to perform vaginal deliveries, or even requests from mothers and/or families have been widely practiced, including in Indonesia, and has led to an increase the incidence of CS deliveries that are not medically needed. This becomes a health problem because there is no empirical evidence that the choice of CS technique in the absence of medical indications can reduce the risk of maternal and neonatal morbidity and mortality. Furthermore, CS delivery even increases the risk of maternal morbidity and mortality 3-5 times higher than vaginal delivery techniques (Cavallaro et al., 2013; Gupta & Saini, 2018; Keag et al., 2018; Mylonas & Friese, 2015; POGI , 2017; Wiknojosastro, 2008).

The increased risk of morbidity and mortality in CS delivery is due to complications caused, during intraoperative or postoperative (Gupta & Saini, 2018). The incidence of postpartum infection in patients with CS deliveries is 5x higher risk than vaginal deliveries, with fever as the main symptom (30%). Incision wound infection and endometritis are the most common sites of post-CS delivery infection. Similar to the incidence of bleeding, the incidence of infection in emergency CS deliveries was higher than in elective CS deliveries (97 per 1000; 68 per 1000 CS deliveries) (Leth et al., 2009). Infection in the abdominal incision is a complication with the highest incidence rate in CS deliveries (3-15%) and is the cause of maternal death in up to 3% of total cases and has a risk up to 3 times higher than vaginal delivery (Mascarello et al., 2017). Bleeding complications are also common in patients with CS. Cases of bleeding requiring blood transfusion or 1000 mL occurred in at least 8.6 – 13% of CS deliveries. Meanwhile, cases of heavy bleeding or blood loss 1500 mL occurred in 2.2% of elective CS deliveries and 3.4% of emergency CS (Gupta & Saini., 2018).

Estimating the risk of maternal death due to CS delivery with certainty is generally difficult considering that research data shows the risk of maternal death related to CS delivery is low in developed countries but can be very high in lower-middle countries. In Brazil, a study conducted by Fahmy et al., (2018) showed that there was an increased risk of death from 1.6 to 7.08x higher in the CS delivery technique. However, data in China show that there is no significant difference in the incidence of maternal mortality in CS or vaginal deliveries (Hou et al., 2017).

Maternal mortality is one of the main health problems in the world, both in developed and developing countries. Lampung Province is one of the provinces with the highest MMR value in Indonesia (148 per 100,000 live births) with a CS birth selection of 13.18% (Lampung Provincial Health Research and Development Agency, 2019; Lampung Provincial Health Office, 2019). Therefore, it is necessary to conduct research to analyze the characteristics of factors associated with maternal morbidity and mortality in CS delivery.

METHODS

This research is quantitative research with an observational analytic design. The research design is case-control, which studies the relationship between research factors/exposure and disease by comparing the case group and control group based on their exposure status. The type of data used in this study is secondary data originating from the Medical Records (MR) of patients at Abdul Moeloek Hospital in the period January 2019 – December 2019. The study was carried out at Abdul Moeloek Hospital Bandar Lampung in April – August 2021. The population in this study was all pregnant women who undergo Caesarean Section delivery at Abdul Moeloek Hospital in the period January 2019 – December 2019. The

population in this study were all pregnant women who delivered Caesarean Section at RSUD Abdul Moeloek in the period January 2019 – December 2019. The sample in this study was taken through a total sampling of the population with inclusion criteria, namely the medical records of mothers with CS deliveries that were fully documented. This study used a comparison of the case group and the control group of 1: 1, so the number of cases and controls of morbidity group was 90 people, while the number of cases and controls of mortality group was 18 people. In this study, bivariate analyses were carried out using Chi Square.

RESULTS

The sample of this study included 110 women underwent caesarean section in RSUD Abdul Moeloek Lampung who divided into morbidity group consist of 92 women and mortality group consist of 18 women. Most of women in morbidity group are 20-35 years old (66,3%), multipara (60,9%), senior high school education level (46,7%), had obstetric complication (69,6%), and didn't experience delivery complication (62%). Most of women in mortality group are 20-35 years old (77,8%), multipara (77,8%), junior high school education level (50%), had obstetric complication (77,8%), and experienced delivery complication (55,6%).

Table 1.
Factors Related with Morbidity post Caesarean Section (n=92)

Factors	p value
Age	0.015
Parity	0.699
Education level	0.018
Obstetric Complication	0.007
Delivery Complication	0.133

Table 2 .
Factors Related with Mortality post Caesarean Section (n=18)

Factors	p value
Age	0.508
Parity	1.000
Education level	0.028
Obstetric Complication	0.044
Delivery Complication	0.034

DISCUSSION

Factors Associated with Maternal Morbidity

Maternal morbidity after caesarean section experienced by respondents in this study included bleeding (50.6%), hysterectomy (8.6%), post CS surgery wound infection (32%) and urinary incontinence (7.8%). Both morbidity groups characteristics (case and control) show correlations were found between maternal age ($p < 0.02$), obstetric complication ($p < 0.01$), education ($p < 0.02$) and the incidence of maternal deaths. Meanwhile, parity and delivery complication variables did not show significant. correlations to maternal deaths ($p > 0.05$). One of the risk factors that influence is the mother's age ($p = 0,015$). This finding supported by the study of Lisonkova et al in (2017) which stated that severe maternal morbidity increased significantly among mothers with old age (>35 years). Several studies have reported that complications in pregnancy increase with age, especially in women aged 35 years and over. Older women (aged >35 years) were considered to have a higher risk of pregnancy. The risk

of obstetric complications in women aged >35 years occurs because of a higher comorbidity (Rosendo et al., 2017). The morbidity (uterine rupture and hysterectomy) increased dramatically in the oldest mother (>50 years). Meanwhile, sepsis increased in adolescent mothers.

There is a significant relationship between maternal education and maternal morbidity post caesarean section ($p = 0.018$). This is in line with the research of Balla et al (2018) which states that there is a significant relationship between education level and surgical wound healing in SC ($p=0.048$). The level of education greatly affects a person's absorption of the information obtained, so that it can affect the mother's knowledge, especially about caesarean section wound care. Education also affects a person in motivating himself to the complaints he experiences after giving birth with surgery, at the level of education a person will also get more information (Nursalam, 2011; Susilo, 2015).

There is a significant relationship between obstetric complications and maternal morbidity post sectio caesarea ($p = 0.007$). This finding is supported with a study by Alemye et al (2021) which stated that . PROM before CS was positively and significantly associated with post-CS surgical wound infection. A meta-analysis of the association between membrane removal and post-CS surgical wound infection reported a six-fold increase in patients with pre-existing PROM (Mekonnen, 2021). Unsterilized uterine cavity can provide an opportunity for the entry of bacteria and therefore post-CS surgical wound infection (Azeze, 2019). The results of this study showed that obstetric complications that occurred in the case group were mostly preeclampsia (44.7%) and bleeding (2.7%), as well as in the control group, where preeclampsia had a proportion of 21.2% and bleeding 4, 3%. Delivery complications that occurred in the case group were mostly bleeding (50%), uterine inertia (21.4%), and uterine rupture (11.5%), as well as in the control group, namely preeclampsia and bleeding (21.4%).) followed by prolonged labor (15.2%).

Factors Associated with Maternal Mortality

Both mortality groups characteristics (case and control) show correlations were found between maternal age ($p<0.02$), obstetric complication ($p<0.05$), education ($p<0.03$), delivery complication ($p<0.04$) and the incidence of maternal deaths. Meanwhile, maternal age and parity variables did not show significant correlations to maternal deaths ($p>0.05$). Maternal mortality risk factors were classified into three determinants: close, intermediate, and distant. The study variables included as close determinants were obstetric complications and delivery complications. All close determinants included in this study had a significant correlation with the incidence of maternal deaths. This finding supported by a research of Astuti et al (2017) which states that mothers with complications during pregnancy have 6,368 times greater risk of maternal death compared to those who do not. The results showed that obstetric complications that occurred in the case group were mostly preeclampsia (38.2%) and bleeding (11.7%). The presence of obstetric complications, especially heavy bleeding that occurs suddenly, will result in the mother losing a lot of blood and will result in maternal death in a short time. Hypertension in pregnancy, which is often found, namely preeclampsia and eclampsia, if not treated immediately will cause the mother to lose consciousness which continues in the occurrence of heart failure, kidney failure or brain hemorrhage which will result in maternal death (Bazar et al, 2012; Khaskeli MS et al. al, 2013).

Mothers with complications during childbirth are at risk of 5.083 times more vulnerable to maternal death compared to those who do not have them (Astuti et al., 2013). The presence of childbirth complications, especially postpartum hemorrhage, contributes 25% to the

occurrence of maternal deaths. This bleeding will cause the mother to lose a lot of blood, and will result in maternal death in a short time. Mild preeclampsia can easily turn into severe preeclampsia and this condition will easily become eclampsia which causes seizures. If this situation occurs during childbirth, it will cause the mother to lose consciousness, and can result in maternal death. Prolonged labor or non-progressive labor, is labor that lasts more than 18 hours since delivery. Long parturition can endanger the life of the mother, because in prolonged labor the risk of postpartum hemorrhage will increase and if the cause of prolonged labor is due to head-pelvic disproportion, the risk of uterine rupture will increase, this will result in the death of the mother and fetus in a short time. Prolonged labor can lead to infection of the birth canal. This infection can endanger the life of the mother because it can cause sepsis (Joseph et al., 2018).

There is a significant relationship between maternal education level and maternal mortality post caesarean section ($p = 0.028$). This finding support by a study of Zolala et al (2012) who found that Sistan and Baluchestan, which have the highest number of maternal deaths among various provinces, have a low level of education (68%). Meanwhile, Tehran, which shows the lowest maternal mortality rate, has a high level of education (91%) (Zolala et al., 2012). The relationship between education and maternal mortality is not direct. Education will have an indirect influence through increasing the social status and position of mothers in society, increasing their choices of life and increasing the ability to make their own decisions and express opinions. Women with low levels of education cause their lack of understanding of the dangers that can befall pregnant women, especially in the case of emergency pregnancy and childbirth.

CONCLUSIONS

It is concluded that the risk factors that affect maternal morbidity in RSUD Dr. H. Abdul Moeloek Lampung are age, parity, education level, and obstetric complication. Meanwhile, that the risk factors that affect maternal morbidity in RSUD Dr. H. Abdul Moeloek Lampung are education level, obstetric complication, and delivery complication.

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