

The Analysis of The Determinants of Caesarean Section Delivery in Dr. TC. Hillers General Hospital in Maumere

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ABSTRACT

Introduction: Caesarean section was commonly performed if there was a medical indication, mainly because of complications in pregnancy. Aim: To understand the determinants of Caesarean Section delivery in Dr. Tc. Hillers General Hospital.

Material and methods: This was a case control study, with 392 samples which was divided into 196 cases and 196 control. The samples in this study was obtained by using the purposive sampling which is a non-probability sampling method. This study was conducted for a month. Data bivariate data was analyzed using the simple linear regression and multiple logistic regression for multivariate data.

Results: Bivariate analyses showed that there was a correlation between, hypertension/pre-eclampsia ($p = 0.000$), fetal distress ($p = 0.000$), prolonged labor ($p = 0.000$) with caesarean section delivery and there was no significant correlation between history antenatal care ($p = 0.360$), parity ($p = 0.158$) with caesarean section. Multivariate analyses showed that there was a significant correlation when hypertension/pre-eclampsia, fetal distress, and prolonged labor, was analyzed simultaneously, in which the order of the significance from the most significant was fetal distress ($OR = 8.55$), Hypertension/pre-eclampsia ($OR = 8.49$), prolonged labor ($OR = 6.49$).

Conclusions: The determinants of the delivery method which was fetal distress, hypertension/pre-eclampsia, prolonged labor, was correlated significantly with caesarean section delivery.

Keywords: Determinants; Delivery; Caesarean Section.

INTRODUCTION

The method of cesarean section (C-section) is still a scary thing in the past, but with the development of technology in the fields of medicine and midwifery that view began to shift. Labor with the cesarean section method is often an alternative choice of labor. In¹ the incidence of section caesarea (SC) is increasing in developing countries with the provision of indicators of sectio caesarea according to the World Health Organization (WHO) 10-15% per 1000 births in the world. The increase in labor with cesarean section in all countries during 2007-2008 was 110,000 per birth in all of Asia. Cesarean section levels are increasing worldwide, although the latest uneven analysis of Demographic and Health Survey Data in 26 South Asian and sub-Saharan African countries found that among all countries, namely rich countries or poor or low-income countries, it was found that the average of 5% of mothers give birth by a cesarean section method.² Caesarean section (CS) has been

on the rise worldwide and Bangladesh is no exception. In Bangladesh, the CS rate, which includes both institutional and community-based deliveries, has increased from about 3% in 2000 to about 24% in 2014.³ The caesarean rate in women of five countries viz., India, Maldives, Indonesia, Pakistan, and Bangladesh, have found more than 15% which have crossed the WHO recommended range.⁴

Research in South Africa by⁵ yielded results Of a total of 6,542 births analysed, 4,815 were sectio caesarea giving a rate of 73.6%. Emergency section caesarea were the most common mode of delivery (39.7%), followed by elective section caesarea (39.5%). sectio caesarea rates increased with increasing maternal age and were higher for women with a medical condition.

The occurrence of cesarean in Indonesia is generally carried out when there are medical indications, for example, the method of terminating a pregnancy with complications. Cesarean section method is also an alternative delivery without medical indication because it is considered easier and more comfortable.⁶ The nutritional status of pregnant women affects the type of delivery. mothers with giant babies (macrosomia) are at risk of giving birth by cesarean section. Nutritional status in pregnant women will affect fetal development, so it can be prevented early by early detection of predisposing factors in the intrauterine and extrauterine periods. Anthropometric monitoring of the mother is essential during pregnancy to provide nutritional interventions for the first days of life.⁷ Riskesdas in 2013 showed births by cesarean section were 9.8% of the total 49,603 births during 2010 to 2013, with the highest proportion in DKI Jakarta (19.9%) and the lowest in Southeast Sulawesi (3.3%). Research conducted by⁸ obtained the results of the

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How to cite this article: Ferni EN, Lada CO, Lerik MDC, Trisno I, Ruliati LP. The analysis of the determinants of caesarean section delivery in Dr. TC. Hillers General Hospital in Maumere. International Journal of Contemporary Medical Research 2021;8(1):A16-A22.

DOI: <http://dx.doi.org/10.21276/ijcmr.2021.8.1.23>



factors associated with an increase in the likelihood that sectio caesarea is urban living, maternal age ≥ 35 years, large babies, and mothers who give birth to more than one. Mothers with obesity, mothers who give birth for the first time, husband's education level is medium / high, health insurance coverage and antenatal visits ≥ 4 . Research conducted by⁹ shows the results of the reasons for the sectio caesarean method, most of which occur due to reasons of head-pelvic disproportion (DKP) as much as 45% and followed by fetal distress of 21%. Research conducted by¹⁰ found that four factors played a major role in the increase in the incidence of sectio caesarea, namely fetal distress at 31.4%, underdeveloped labor 27.55%, pre-eclampsia 24.55%, and cephalopelvic disproportion 16, 76%.

The results of a survey conducted by the researcher about cesarean section in several Government Hospitals in East Nusa Tenggara, namely WZ Johannes Regional Public Hospital Kupang, for three consecutive years the incidence of cesarean section has increased from year to year. The cesarean section method in 2016 contained 489 cases, an increase in 2017 by 652 cases, and in 2018 it increased again to 767 cases. The reason for the cesarean section method, overall, is due to medical indications. Labor data with cesarean section method in Mgr. Gabriel ManekAtambua SVD Regional Public Hospital for the last three years as follows; in 2016 there were 1,190 cases, in 2017 there were 1,194 cases, and in 2018 there were 1,297 cases. This three year number has increased although in 2016 to 2017 there were only an increase of 4 cases, but in 2018 there was an increase of 103 cases. The reason for the cesarean section method was 95% due to medical treatment and 5% due to non-medical reasons. Data obtained from RSUPP Betun in Malaka Regency, has a range of 24 cases of cesarean sectional methods in 2017, in 2018 there were 191 cases, and in 2019 from January to August there were 157 cases. The reason for the cesarean section method is entirely due to medical reasons.

Results of a preliminary study conducted at dr. Tc. Hillers Regional Public Hospital Maumere, found that labor with cesarean section method has increased for each month. Data taken for the last three months of April 2019 contained: 84 deliveries using the cesarean section method, this number increased in May to 97 cases, and increased again in June to 117 cases. Total deliveries by cesarean section for three months amounted to 292 cases. Based on the data and synthesis above and unknown risk factors that are the dominant cause of the occurrence of cesarean section in Tc. Hillers Regional Public Hospital, then the researcher is interested in conducting research "Analysis of Childbirth Determinants with the Cesarean Section Method in Tc. Hillers Regional Public Hospital Maumere."

MATERIAL AND METHODS

This research was an observational analytic study, with the research design used was a case control study. This research was conducted in the Medical Record Room of dr. Tc Hillers Maumere Regional Public Hospital, the time

of data collection was carried out for 1 (one) month, from 10 February to 10 March 2020. The total sample was 392 people, consisting of 196 case samples and 196 control samples that met the inclusion and exclusive criteria. The sampling technique in this study was to use non-probability sampling with purposive sampling. The selection of the control and the case groups was carried out by matching, ie a ratio of 1: 1 and the age of the mother. This study was conducted by collecting secondary data from medical records from January to December 2019. The recruitment process of subjects began with screening one by one the medical records of obstetric patients treated in the Anggrek room. Data analysis consisted of univariate, bivariate and multivariate analyzes. Bivariate analysis using simple linear regression test and multivariate multiple logistic regression. The research has passed an ethical review based on the decision of the UNDANA medical faculty health research ethics commission on February 7, 2020 with Number: U N 0 2 2 0 0 1 0 4.

RESULT

Table 1 describes subjects with low levels of education consisting of mothers who graduated from elementary school and junior high school, while higher education consists of subjects who graduated from high school, tertiary education ie Diploma, Bachelor, and Magister degrees. Job is divided into working and not working. Subjects classified as not working are subjects as housewives and do not have a regular income each month. Respondents who are working are mothers who work regularly and earn regular income, consisting of private employees, farmers, entrepreneurs, laborers, traders, and civil servants. The data in Table 1 shows that most of the subjects are low-educated mothers, namely above 50% and not working above 70%, in both the cesarean section and normal delivery groups.

Based on the Table 2 above, it can be seen that in parity there are 196 respondents who had risk parity, and as many as 105 respondents (53.6%) who delivered by cesarean section method and 91 respondents (46.4%) who delivered vaginal delivery. Statistical test results obtained 0.158 so that $p > 0.05$, meaning that there was no significant relationship between reproductive status (parity) with the cesarean section method. In Hypertension/pre-eclampsia, there were 81 respondents who suffered from hypertension/

Characteristic	Cesarean Section		Normal Labor	
	N	%	n	%
Education				
Low	151	77	101	51,5
Higher	45	23	95	48,5
Job				
Working	168	85,7	163	83,2
Not working	28	14,3	33	16,2

Table-1: Characteristics of the determinants of labor by the cesarean section method in dr. Tc. Hillers Regional Public Hospital Maumere

Variabel	Labor Process		p-value	OR
	Caesarean Section	Labour Normal		
	n(%)	n(%)		
Parity				
Risk	91(46,4)	105(53,6)	0,158	-
Normal	105(53,6)	91(46,4)		
Hypertension/Pre-Eclampsia				
Normal	135(68,9)	176(89,8)	0,000	8,49
Hypertension/Pre-Eclampsia	61(31,1)	20(10,2)		
Fetal distress				
Fetal distress	39(19,9)	12(6,1)	0,000	8,55
Normal	157(80,1)	184(93,9)		
Prolonged labor				
prolonged labor	69(35,2)	32(16,3)	0,000	6,49
No prolonged labor	127(64,8)	164(83,7)		
Antenatal care history				
Incomplete	12(6,1)	8(4,1)	0,360	-
Complete	184(93,9)	188(95,9)		

Table-2: Bivariate analysis of the relationship between labor determinants with the cesarean section method at dr. Tc. Hillers Regional Public Hospital Maumere

Variable	B	P	OR	95% CI	
				Lower	Upper
Hypertension/ Pre-eclampsia	2,139	0,000	8,49	4,50	16,01
Fetal distress	2,146	0,000	8,55	3,98	18,34
Prolonged Labor	1,871	0,000	6,49	3,69	11,41

Table-3: Multivariate analysis of the relationship between labor determinants with the cesarean section method at dr. Tc. Hillers Regional Public Hospital Maumere

pre-eclampsia, 61 respondents (31.1%) who delivered by cesarean section method and 20 respondents (10.2%) who had vaginal delivery. Statistical test results showed that the p-value is 0,000 so that $p < 0.05$, means that there was a significant relationship between hypertension/pre-eclampsia and the cesarean section method. Statistically obtained OR value = 8.49 means that women who had hypertension / pre-eclampsia were 8.49 times at risk of childbirth by the cesarean section method compared to mothers who did not have hypertension / pre-eclampsia. In the fetal distress variable, there are 51 respondents who had fetal distress, 39 respondents (19.9%) who had cesarean section delivery, and 12 respondents (6.1%) who delivered vaginal delivery. Statistical test results showed that the p-value is 0,000 so that $p < 0.05$, means that there was a significant relationship between fetal distress and cesarean section method. Statistically obtained OR value = 8.55 means that mothers who had fetal distress were a 8.55 times at risk of experiencing labor with cesarean section method compared with mothers who did not have fetal distress.

The variable prolonged labor, there were 101 respondents who had fetal distress, 69 respondents (35.2%) who gave birth by cesarean section and 32 respondents (16.3%) who delivered vaginal delivery. Statistical test results showed that the p-value is 0,000 so that $p < 0.05$, means that there was a significant relationship between the prolonged labor and the cesarean section method. Statistically obtained OR value = 6.49 means that mothers who had prolonged labor 6.49

times at risk of labor with cesarean section method compared to mothers who did not have a prolonged labor. Variable antenatal care services are known from 20 respondents with incomplete antenatal care services, 12 respondents (6.1%) who experienced cesarean section and 8 respondents (4.1%) who experienced vaginal delivery. Statistical test results obtained p-value = 0.360 so that $p > 0.05$, means that there was no significant relationship between antenatal care services and the cesarean section method.

The latest results from multivariate analysis modeling showed that there was a significant relationship when the analysis was carried out together which was hypertension/pre-eclampsia, fetal distress, prolonged labor, with the order of strength of the relationship from the largest to the smallest was fetal distress (OR = 8, 55), hypertension/pre-eclampsia (OR = 8.49), prolonged labor (OR = 6.49). Out of the three determinants of labor using the cesarean section method, the most dominant factor was the fetal distress variable with an odds ratio (OR = 8.55) (table-3).

DISCUSSION

The characteristics of the subjects in this study were > 70% of the sectio caesarean group had a low level of education and did not work. The results of research conducted by¹⁰ said that the level of education affects the labour process. The higher a person's education, the faster he will understand about the risks of childbirth at hand. Mothers who do not work or as housewives with a low educational background can

influence the delivery process due to a lack of knowledge and information regarding early detection of risk factors during pregnancy and childbirth such as fetal distress, hypertension / pre-eclampsia, and also the importance of antenatal care.

The results obtained are that there parity is no relationship that occurs with the incidence of section caesarea. The results of the same study on 57 respondents of mothers giving birth at the Ade Muhammad Djoen District Hospital, namely there was no relationship between parity and sectio caesarea method.¹¹ The results showed that the majority of mothers who gave birth using the sectio caesarean method were 53.6% at normal parity (1-4), while mothers with parity > 4 were only 46.4%. The results of the analysis showed no significant relationship between parity and sectio caesarean method. This is supported by research¹², that there was no relationship between parity and cesarean section method. This research is in line with research at TK IV KESDAM I / BB Pematangsiantar Hospital with a sample size of 230 people. Research that has different results on 60 respondents at the YAKSSI Islamic Hospital, Gemolong Regency, Sragen, is that there is a relationship between parity and childbirth with the sectio caesarea method.¹³

Grandemultipara parity carries a higher risk of maternal mortality. This is evidenced by the maturity and decreased function of the organs of labor. Multigravida parity is the safest parity for a mother to give birth and is still classified as a low-risk pregnancy.¹⁴ The results showed that mothers with parity were at risk and performed the sectio caesarean method due to other determinants, such as fetal distress, hypertension / pre-eclampsia, and obstructed labor.

Pre-eclampsia is defined as a specific syndrome in pregnancy which is a reduction in placental perfusion due to vasospasm and endothelial activation that can ultimately affect the entire organ system, characterized by hypertension and proteinuria in mid-late pregnancy or above 20 weeks of pregnancy with a minimum blood pressure criteria ≥ 140 mmHg, proteinuria ≥ 300 mg.¹⁵ The results showed that the variable hypertension / pre-eclampsia in mothers with sectio caesarea was the majority of mothers who did not have hypertension/ pre-eclampsia, 68.9%, while mothers who had hypertension / pre-eclampsia were 31.1%. The results of statistical analysis there was a significant relationship between of hypertension / pre-eclampsia with cesarean section method with an OR value of 8.49 so that mothers who had hypertension / pre-eclampsia had a 8.49 times more risk of labor with the cesarean section method than mothers who did not have hypertension / pre-eclampsia. Research on 95 respondents with a cross sectional approach in TK.II Pelamonia Hospital Makassar had the same results; there was a significant relationship between hypertension/pre-eclampsia with childbirth cesarean section method.¹⁶ The results of the same study with a sample size of 750 respondents in a study conducted at the Dompu District Hospital using a cross-sectional design and analyzed by chi-square showed a relationship between hypertension / pre-eclampsia and the incidence of section caesarea.¹⁷ Pregnancy with hypertension can cause serious complications, whereas pre-eclampsia can occur in pregnant women with a history

of chronic chronic hypertension. Pre-eclampsia is a multi-systemic disorder that occurs in pregnancy which is characterized by hypertension and odema, and can develop from mild, moderate to severe, which can progress to eclampsia.¹⁸

Hypertension / pre-eclampsia can be prevented early if health workers are able to carry out intensive antenatal care supervision so that they can diagnose as early as possible the complications that occur in pregnant women, improve service quality according to conditions and risk factors that exist in pregnant women, and improve referral access, namely: utilization of maternal health service facilities and facilities according to risk factors through planning referrals for mothers and fetuses. Regular and quality and accurate antenatal examinations in recognizing signs of hypertension / pre-eclampsia as early as possible have the aim of providing adequate treatment so that the disease does not become more severe.

Fetal distress is a reaction when the fetus does not get enough oxygen. Fetal distress can be identified by the frequency of the fetal heart rate <100 or > 160 times per minute, the reduced of fetal movement, there is meconium in the amniotic fluid, the color of amniotic fluid turns to greenish.¹⁹ The results showed that there was a significant relationship between the fetal distress with the cesarean section method, with an OR value of 8.55, meaning that mothers with fetal distress had a 8.55 times risk of having labor with the cesarean section method compared to mothers who did not have fetal distress. The results showed that most of the mothers did not have fetal distress (normal) 80.1%, while the mothers who had fetal distress and performed the sectio caesarean method were 19.9%. Research conducted in Peru showed the same results as this study, namely that there was an association between preeclampsia and sectio caesarean.²⁰ This study is in line with research conducted at Panembahan Senopati Bantul Hospital in 906 respondents, with the result that there is a significant relationship between fetal distress and delivery of section caesarea.²¹ Research at RSUD Rantaupraptat in 2017, found that 151 respondents had a relationship between fetal distress and delivery of sectio caesarea.²² Disorders of the fetus can occur during the antepartum or intrapartum. The emergence of the antepartum fetus becomes evident in the form of intrauterine growth retardation, fetal hypoxia, increased vascular resistance to fetal blood vessels, and simultaneous respiratory and metabolic (lactic) acidosis.²³

Fetal distress can be overcome by intrauterine resuscitation, namely by changing the sleeping position to the left side to reduce pressure on the stomach veins so that the fetus gets adequate oxygen intake, ensuring the amount of maternal fluid intake is sufficient to avoid dehydration, monitoring maternal oxygen levels. If the treatment is ineffective, the method used is to get the baby out as soon as possible by delivery using the cesarean section method to save the fetus and the mother. In a fetal distress situation, the fetus must be delivered immediately. If the fetal heart rate is known to be abnormal, the definite method in fetal distress can be done in the shortest time possible to avoid complications in the

fetus, so one alternative option is to do the cesarean section method.

Prolonged labor is a condition of a labor that is experiencing a congestion and lasts a long time resulting in complications of both mother and fetus, with no head loss > 1 hour in nulliparous and multiparous. The main causes of prolonged labor include: large baby size or abnormal fetal position, narrow pelvis, and birth canal problems.¹⁴ The results showed that most of the mothers were not obstructed labor (normal), 64.8%, while the mothers who had obstructed labor and carried out the method of sectio caesarea were 35.2%, and prolonged labor a significant relationship between the prolonged labor with the cesarean section method, with an OR value of 6.49, meaning that mothers with fetal distress had a 6.49 times risk of having labor with the cesarean section method compared with mothers who were not with prolonged labor. The results of the same research at dr. Abdul Moeloek Lampung in 319 respondents that there is a relationship between prolonged labor and delivery of section caesarea.²⁴ This statement is supported by research on jammed labor at BLU RS. Prof. Dr. R.D. Kandou Manado in 2013 that during the period of 1 year there were 73 cases of obstructed labor and that ended with 23.3% maternal death.²⁵ Prolonged labor is caused by abnormal position, pelvic abnormalities, negligence of his, wrong parturition, large fetus, congenital abnormalities, premature rupture of membranes and most often due to inadequate hising.²⁶ Prolonged/obstructed labour or suspected cephalopelvic disproportion and previous caesarean section were the most frequent maternal indications.²⁷

Mothers with prolonged labor need to receive maximum monitoring of the general condition of the mother, including vital signs and hydration level, periodic examination of the fetal heart rate and if there is fetal distress, immediate cesarean section is performed. Safe delivery is very important in efforts to improve the welfare of the mother and fetus. Prolonged labor is a high risk of uterine atony, laceration, bleeding and infection and maternal fatigue and shock. In the fetus there will be a danger of increased mortality and morbidity due to hypoxia so that delivery by cesarean section is the right choice.

Antenatal care is a pregnancy check up to optimize the mental and physical health of pregnant women so that they are able to deal with childbirth, the puerperium, and preparation for breastfeeding, and the return of reproductive health properly.²³ The recommended frequency of antenatal checks is at least 4 times with antenatal care in the first trimester 1 time, second trimester at least 1 time, and third trimester at least 2 times.²⁸ The results showed that the variable of antenatal care services most of the mothers had a complete history of antenatal care (according to the standard of at least 4 times) 93.9%, while the history of antenatal care was incomplete (not according to the standard <4 times) 6.1%. The results showed also there was no significant relationship between antenatal care services with sectio caesarea method. This study is not in line with the research conducted by²⁹

which stated that there was a significant relationship between antenatal care with the cesarean section method.

The results of this study showed that most of the mothers had a complete history of antenatal care (according to the standard of at least 4 times) but there were still many mothers who gave birth using the sectio caesarea method, this was due to other factors such as fetal distress, risky parity, obstructed labor, hypertension / pre-eclampsia and the low level of maternal education which affects the mother's understanding of complications or danger signs of pregnancy and childbirth. Pregnant women should be advised to visit a midwife or doctor as early as possible since they think they are pregnant to get antenatal care or services. Pregnancy examination will be better if it is more than the standard, namely > 4 times so that it is easier to detect pregnancy complications. Research conducted by³⁰ states that pregnant women who attended ANC visits experience a significant reduction in the odds of cesarean section.

The frequency of antenatal examinations shows the concern of pregnant women in caring for and paying attention to their health during pregnancy and the babies they are carrying as well as really preparing for the labor they will face. Care during pregnancy plays a very important role in determining the health condition of the mother and fetus in the womb. The standard of examination recommended by WHO is at least 4 visits during pregnancy with the aim of knowing fetal development, and the presence of risk factors and abnormalities that occur during pregnancy.³¹ Examination of pregnancy (antenatal care) as recommended (K4) is more likely to experience cesarean section delivery surgery than mothers who do not do antenatal care as recommended. Pregnant women should be advised to visit a midwife or doctor as early as possible since they feel they are pregnant to receive antenatal care or services. The frequency of antenatal checks shows the concern of pregnant women in caring for and paying attention to their health and also the baby they are carrying during pregnancy, and really preparing for labor. Every pregnant woman has a risk of getting pregnant, to detect early and prevent complications in pregnancy, pregnant women must perform routine antenatal care. Adequate use of ANC services by performing regular ANC does not guarantee to avoid delivery by caesarean sectio, but with the use of ANC services, signs of pregnancy complications can be identified so that prompt and precise treatment can be done. Antenatal care plays a role in improving the health condition of the mother and the position of the fetus in the womb and to prepare for the delivery process, so that if it can be repaired, labor by sectio caesarean will not occur. One of the studies carried out in Ethiopia showed results that are indicative for caesarean section was fetal distress, malpresentation, large infant, failed induction and CPD. This indications of fetal distress and failure of induction are associated with poor success³²

CONCLUSIONS

Based on the results of the study with the title Analysis of Childbirth Determinant Analysis with Caesarean Sectio

Method in Tc. Hillers Regional Public Hospital Maumere, it can be concluded that there is a significant relationship between hypertension/pre-eclampsia, fetal distress, prolonged labor with a method of cesarean section in maternity women in dr. Tc. Hillers Regional Public Hospital Maumere.

Suggestion

For the community it is recommended to doing pregnancy checks regularly and regularly is recommended more than 4 times so that complications that may occur are easier to detect. For mothers who no longer want to get pregnant, it is advisable to use contraceptives to prevent unwanted pregnancies which will have an impact on risk factors such as fetal distress, prolonged labor, hypertension / pre-eclampsia, and other risk factors. In general, the history of antenatal care services for mothers is complete (according to the standard, > 4 times), both for women who give birth with cesarean section and normal delivery, but delivery of cesarean section still occurs. This makes the authors want to provide suggestions for increasing the number and quality of antenatal care services

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 18-12-2020; **Accepted:** 21-01-2021; **Published:** 12-01-2021