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## *Correlation between Maternal Age and Cesarean Section*

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### **Abstract**

*Maternal age at risk has increased over the past few decades, this is the same as the rate of labor in the cesarean section (WHO, 2014) the development of this trend reflects the views of women and advanced societies. Because there are many career and educational choices, women are motivated to continue pursuing their professional goals (Ramachandran et al., 2015). The purpose of this study was the correlation between medical indications and cesarean section delivery. The type of research used in this study was quantitative with a cross-sectional approach. Simple random sampling technique. Univariate analysis and bivariate analysis using the statistical test Chi-Square with a confidence level of 95% ( $\alpha=0,05$ ). After analysis using a Chi-Square statistical test with a confidence level of 95% ( $\alpha=0,05$ ) obtained *p* value 0,004 which means that there is a correlation between the age of the mother with cesarean section delivery.*

**Keywords:** *maternal age; cesarean section; advanced maternal age*

## **Korelasi antara usia ibu dan operasi sesar**

### **Abstrak**

Usia ibu yang berisiko telah meningkat selama beberapa dekade terakhir, sama dengan tingkat persalinan di operasi sesar (WHO, 2014). Tren yang berkembang ini mencerminkan pandangan maju perempuan dan masyarakat. Pilihan pendidikan dan karir yang luas saat ini mendorong perempuan untuk mengejar tujuan profesional mereka tanpa henti (Ramachandran, Sethuraman, Nachimuthu, & Natrajan, 2015). Tujuan penelitian ini adalah hubungan indikasi medis dengan kejadian persalinan operasi sesar. Jenis penelitian yang digunakan dalam penelitian ini adalah kuantitatif dengan pendekatan *Cross Sectional*. Teknik *simple random sampling*. Analisis Univariat dan analisis bivariat menggunakan uji statistik *Chi-Square* dengan tingkat kepercayaan 95% ( $\alpha=0,05$ ). Setelah dilakukan analisis menggunakan uji statistik *Chi-Square* dengan tingkat kepercayaan 95% ( $\alpha=0,05$ ) didapatkan *p* value 0,004 yang mempunyai arti bahwa ada hubungan antara usia ibu dengan persalinan operasi sesar.

**Kata kunci:** usia ibu; operasi sesar; usia ibu lanjut

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## INTRODUCTION

Labor is the process of opening and thinning the cervix then the fetus descends to the birth canal. Labour can be done by normal delivery and can also be done by caesarean section delivery if a mother experiences a condition that does not allow her to do normal labor and requires surgery. (Sihombing, Saptarini, & Putri, 2017).

Cesarean section is an operation that is common to the world community. The number of cesarean operators in each country is increasing in both developed and developing countries. Surgery is often done without medical indication. Cesarean section has an impact on the baby for a long or short time. Cesarean section is needed when vaginal delivery can have a negative impact on the mother or baby. Cesarean delivery can be a significant complication, disability, or death, especially in hospitals that do not have adequate facilities for a safe surgery and treating potential complications (WHO, Caesarean Section Only be Performed when Medically Necessary, 2015).

Maternal age at risk has increased over the past few decades. This is the same as the rate of delivery of the cesarean section (WHO, 2014). The Growth of this trend reflects the progressive view of women and society alike. Today's broad educational and career options encourage women to pursue their goals endlessly. Driven by a desire to achieve higher educational and economic status, a large number of women choose to postpone pregnancy. Easy access to a variety of modern contraceptive methods has enabled them to achieve better fertility control (Ramachandran et al., 2015).

Results from the 2004-2008 World Health Organization (WHO) study stated overall cesarean section delivery in the world were 25,7%, in Asia 27,3%, Europe 19%, Latin America 29,2% and the highest was China with 46,2% (World Health Organization, (2015), Australian Institute of Health and Welfare (2013), (Hamilton, Martin, Osterman et al (2015).

Betrán, Ye, Moller, Zhang, & Gülmezoglu (2016) Betrán, Ye, Moller, Zhang, & Gülmezoglu (2016) found that for all births in 150 countries, 18,6% were Caesarean births ranging from 6% to 27% in the least developed and most developed regions. 40,5% occur in Latin America and 32,3% in the Caribbean, 31,1% in North America, 25% in Europe, 19,2% in Asia, and 7,3% in Africa. While Indonesia 15,3% (Badan Penelitian dan Pengembangan, 2010). The limitation of doing cesarean section delivery in each country recommended by WHO is 10%-15% (World Health Organization, 2015). The highest percentage of Caesarean section is known based on the provincial level throughout Indonesia, the first rank is DKI Jakarta with a percentage of 19,9%, the second is Riau with a percentage of 17%, the third is Bali 16% and the last is Yogyakarta with a percentage of 15,7% (Kemenkes RI, 2013).

There are 2 types of cesarean section depending on the necessity for the cesarean section delivery; the first elective cesarean section in which when the cesarean section is planned and made more than 24 hours before delivery (Herstad et al.,(2016), Dodd, Crowther, Grivell, & Deussen,(2017). The second is the cesarean section delivery is done not by planning or not scheduled. This is done due to the deterioration of maternal and fetal health (Badan Penelitian dan

Pengembangan, 2010). Although cesarean section delivery is an attempt to save the mother and fetus, cesarean section delivery is a major operation and has risks for the mother and fetus (Mylonas & Friese, 2015). The World Health Organization (WHO) recommends 10 Robson classifications as a basis for sending mothers to deliver with cesarean section (World Health Organization, 2015). Based on research conducted by Begum et al (2017), Mylonas & Friese, (2015), Mpogoro, Mshana, Mirambo, Kidenya, & Gumodoka, (2014), Straface et al., (2016) the major indications for cesarean section are 24% cesarean section, 21% fetal distress, 16% long-time delivery, 14% oligohydramnios and 13% post maturity. More than 80% of cesarean section deliveries are carried out in private non-profit facilities. The probability of cesarean section delivery increases because of socioeconomic status, higher education, low birth rates, older age, poor obstetric history (Begum et al., (2017)Herstad et al., (2016) Ming et al., (2019).

### METHOD

This research was a quantitative study using a cross-sectional approach. The independent variables in this study were maternal education and work. The dependent variable was section cesarean delivery. The data collected in this study by using secondary data, namely, medical record data. The population in this study was all mothers who had delivered section cesarean.

Sampling was done by a simple random sampling technique that was taking members of the sample from the population randomly regardless of the strata that exist in that population. The number of samples was determined by using the Slovin formula with an estimated error of 5%, which were 179 respondents. Univariate analysis was carried out to describe the characteristics of each variable, and bivariate analysis was conducted to test the hypothesis, bivariate analysis applying statistical tests Chi-Square with a 95% confidence level ( $\alpha = 0,05$ ).

### RESULT AND DISCUSSION

Univariate analysis of the characteristics of the respondents

**Table 1.** Characteristics of respondents based on the mother in cesarean section delivery

No	Delivery Section Cesarean	Frequency	%
1	Not Doing	45	25,1
2	Conducted	134	74,9
	Total	179	100

Source: Secondary data (2017)

Based on the data from table 1 a respondent who did cesarean section delivery was 134 (74,9%) of the respondents, and not doing cesarean section delivery was 45 (25,1%) respondents.

**Table 2.** Characteristics of respondents based on the age of the mother in cesarean section delivery

No	Mother's age	F	%
1	At-risk	111	62
2	Not at risk	68	38.0
	Total	179	100

Source: Secondary data (2017)

Based on table 2 above, the respondents who carried out Cesarean Section delivery with the age of at risk mother obtained during the study were 111 mothers or 62.0%, and mothers with not at risk were 68 mothers (38.0%).  
 Bivariate Analysis

**Table 3.** Relationship between maternal age and cesarean section delivery

No	Data Description	Cesarean section delivery				Total	(%)	P value
		Not done		Done				
		Frequency (F)	(%)	Frequency (F)	(%)			
<b>Age</b>								
1	At-risk	36	32,4	75	67,6	111	62	0,004
2	Not at risk	9	13,2	59	86,8	68	38	
Total		45		134		179	100	

Source: Secondary data (2017)

Based on table 3, it was found that the risk mothers who performed cesarean section labor were 75 (67,6%), and the risky mothers who did not have cesarean section labor were 36 (32,4%) while the non-risk mothers who had cesarean section labor were 59 ( 86,8%), and non-risk mothers who did not have cesarean section labor were 9 (13,2%) with p-value 0,004. Based on these data it can be concluded that there is a significant relationship between cesarean section labor and maternal age

Cesarean section delivery is an obstetric intervention that is used to save the life of the mother and the fetus to be born, which is caused by complications experienced during pregnancy. This has a negative impact on mothers and newborns (Begum et al.,2017). The rate of cesarean section delivery recommended by who is 10-15% in each country (World Health Organization, 2015).

This study used a sample of 179 mothers who had delivered cesarean section to see the correlation between the age of the mother and the cesarean section delivery. Based on the results obtained from the study of mothers doing cesarean section delivery with age at up to 111 mothers and mothers aged not at risk, a total of 68 mothers from the analysis carried out results that mothers with at-risk age had more cesarean section delivery. This study found that there was a significant relationship between the age of the mother and the increase in cesarean section delivery, which was adjusted for the complications of the mother, the health institution, and the characteristics of the doctor.

This study is in accordance with research conducted by older mothers, especially above 35, generally considered to have an increased risk of pregnancy complications like perineal lacerations, preeclampsia, gestational diabetes mellitus, antepartum, placenta previa, prematurity, and postpartum hemorrhage (Blomberg, Tyrberg, & Kjølhed, (2014), Ramachandran, Sethuraman, Nachimuthu, & Natrajan, (2015)). It has been described that older mothers may be more psychologically stressed to undergo vaginal birth (L. Wang, Xu, Baker,

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Tong, & Zhang, 2016). Many people in China believe that age 35 is a turning point for fertility and that more than 35 years old are classified as a high-risk pregnancy. (Zhang, Wu, & Norris, 2017). Hence, these women would prefer CS, and this has also increased the possibility of actual CS and change from the desire for normal birth to actual CS without any clinical indication. In addition, Yoshioka Maeda Et al. found similar results for women over the age of 35 at risk of developing hypertension, which would lead to elective cesarean delivery and emergency (Yoshioka-Maeda, Ota, Ganchimeg, Kuroda, & Mori, 2016).

Variance Analysis showed that women with cesarean section had higher, compulsive, levels of anxiety symptoms, obsessive somatization, and depression compared with those who gave birth naturally with general difficulties such as maternal age, controlling premorbid mental health, primipara, education, and medical complications in newborns. Women who have unplanned cesareans also have higher levels of PTSD symptoms associated with birth, excluding those with vaginal instruments ((Dekel et al., (2019), Chung, Seol, Choi, & Oh, (2014). Women over 35 years have a 7.4-fold higher risk of giving birth to CS compared to women under 25 years (OR 7,388, 95% CI 5,561-9,816, P-value < 0,001) (Song, Wei, Zhu, & Yang, 2017). Attitudes of participants were negatively correlated with the age of pregnant women, lower age, and more positive attitudes toward normal labor (Siabani, Jamshidi, & Mohammadi, 2019).

Research conducted by aging increases the risk and proportion of primary cesarean section (25-34 years 20%, 35-39 years 25,9%, relative risk (RR) 1,25 (CI 95% =1,20-1,29), 40-44 years 30,9%, RR=1,45 (CI95% =1,40-1,50); 45-49 years: 35,7%, RR=1,59 (CI 95%=1,45- 1,75); and  $\geq$ 50 years: 60,7%, RR=2,44 (CI 95% =1,95-3,05); P value <0,001). No associations differ between women that were multiparous. No differences were noted for the quantity of maternal morbidity, issuing an increase in the length of stay between births for older women. (P-trend <0,001). Several studies have shown that CSS without medical indications may have a high impact on CSR ((Liu, Landon, Cheng, & Chen, (2015), Song et al., (2017).

Emergency cesarean delivery is adjusted according to risk ratio (aRR)=1,77, CI 95%=1,58-1,99, preeclampsia=aRR:1,86, CI 95%=1,43-2,42), severe preeclampsia (aRR:2,03, CI 95%=1,31-3,13, placenta previa=aRR=2,17, CI 95% = 1,60-2,95, and preterm birth=aRR=1,20, CI 95%=1,04-1,39. Among those who conceived naturally compared to those contained by ART, The effects on older women from the risk of emergency cesarean section, preeclampsia, and preterm birth were significantly greater. The risk of older age-related preeclampsia is significantly greater among multiparous women, whereas the effects of the emergency cesarean section are greater among primiparous women (Ogawa et al., (2017), Aiken et al., (2016)).

The ratio of women undergoing cesarean delivery is indicated for eclampsia or preeclampsia, the alleged abnormalities of fetal growth and other maternal obstetric complications are significantly higher in women over 35 years. (Winkel et al., 2015). As Faisal-cury, Menezes, Quayle, Santiago, & Matijasevich, (2017) believe that some of the factors that cause increased cesarean delivery are higher education, higher per capita family income, lower housing density, planning for

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pregnancy, having a partner, white color, and advanced maternal age. The comparability of surveillance data can be improved by the application of the Robson classification system. (J. Wang, Sun, Huang, Zheng, & Tao, 2017).

### CONCLUSION

This research found that there was a relationship between maternal age and delivery of the cesarean section, cesarean section labor was mostly performed in mothers who were at-risk mothers.

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