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Analysis of Risk Factors for Parity and age on the Incidence of Spontaneous Abortion at the Mother and Child Hospital in Makassar

Andi Sri Mutmainna[1]*, Rosdianah Rahim[2], Andi Irhamnia Sakinah[3], Sari Ifdiana Jalal[4], Mukhtar Lutfi[5]

[1]Pendidikan Dokter FKIK Universitas Islam Negeri Alauddin, Makassar | andisrimutmainna2@gmail.com

[2]Pendidikan Dokter FKIK Universitas Islam Negeri Alauddin, Makassar | rosdianah.rahim@uin-alauddin.ac.id

[3]Pendidikan Dokter FKIK Universitas Islam Negeri Alauddin, Makassar | andi.irhamnia.sakinah@uin-alauddin.ac.id

[4]Pendidikan Dokter FKIK Universitas Islam Negeri Alauddin, Makassar | sari.jalal19@gmail.com

[5]Pendidikan Dokter FKIK Universitas Islam Negeri Alauddin, Makassar | mukhtar.lutfi64@gmail.com

* Corresponding Author: andisrimutmainna2@gmail.com

ABSTRACT

Introduction: The worldwide incidence of abortion is about 35 per 100 women aged 15-44 years. Abortion is one of the causes of high maternal mortality in Indonesia from all pregnancies. Spontaneous abortion is the threat or expulsion of conception before the fetus can live outside the womb.

Objective : Assess and analyze the relationship between parity and maternal age with the incidence of spontaneous abortion at Ananda Makassar Mother and Child Hospital during 2021-2022.

Research Methods: This type of research is quantitative using an observational analytic research design through a case control study approach. The samples used in this study amounted to 102 case samples and 102 control samples, with a purposive sampling method. Data analysis was performed using univariate and bivariate techniques using the chi-square test.

Results : The results showed that there was no relationship between parity and the incidence of spontaneous abortion with a p value of 0.123 and an OR value of 1,607 and there was no relationship between age and the incidence of spontaneous abortion with a p value of 0.344 and an OR value of 1,499.

Conclusion : Parity and age do not have a statistically significant relationship with the incidence of spontaneous abortion at Ananda Makassar Mother and Child Hospital in 2021-2022.

Keywords: Parity; Age; Spontaneous Abortion

INTRODUCTION

Pregnancy is an event that begins with the process of fertilization, then develops into a full-term fetus, and ends with the process of childbirth. (1) Based on data from the World Health Organization (WHO) in 2010, around 800 pregnant women experience death during pregnancy every day due to complications in the birthing process. (2) Maternal mortality is caused by two things, directly and indirectly. Direct maternal deaths can be caused by complications during pregnancy, childbirth, and the postpartum period, as well as inappropriate intervention and treatment of the complications. Indirect causes can be caused by previous and emerging diseases. (3)

One of the pathologies of pregnancy is bleeding. Bleeding can occur in early pregnancy, late pregnancy and labor, and postpartum. Young pregnancy bleeding can be caused by abortion, interrupted ectopic pregnancy, and hydatidiform mole. The limit of pregnancy is said to be young pregnancy is less than 20 weeks. 3. Abortion is the threat or release of conception before the fetus can live outside the womb. As a limitation is a pregnancy of less than 20 weeks or a fetal weight of less than 500 grams. 3. Another definition states that abortion is an event of termination of pregnancy that occurs in women before 20 weeks of gestation and a fetal weight of less than 500 grams where the fetus cannot live outside the womb. (4)

Risk factors for abortion are maternal age, parity, anemia, nutrition, history of abortion, occupation, fatigue, gestational distance, gestational age, disease, antenatal care, psychiatry, antiseptic, body mass index, education, marital status, gravida, smoking, health services, delivery history, contraception and hormones. The first and second highest risk factors for abortion are caused by maternal age and parity. Maternal age 20 to 35 years is a safe age, while unsafe maternal age in pregnancy is under 20 years and over 35 years. (5)

Parity is the total number of children who have been born by the mother, whether the child is born alive or born dead. Mothers with a history of parity with abortion are usually one of the risk factors for subsequent abortions. 6. Data from the Ministry of Health in 2020, there were 44 cases of maternal death due to bleeding in South Sulawesi and in 2021, there were the same number of cases, namely 44 cases of maternal death due to bleeding in South Sulawesi. Specifically, cases of maternal death due to abortion increased from 2020 to 2021, namely from 0 to 2 deaths in South Sulawesi.

Globally, 80% of maternal deaths are direct causes. About 25% are caused by bleeding, sepsis 15%, hypertension in pregnancy 12%, frozen partus 8%, complications of unsafe abortion 13%, and other causes 8% 3. The worldwide incidence of abortion is about 35 per 100 women aged 15-44 years. Abortion is one of the causes of high maternal mortality in Indonesia from all pregnancies.(6)

Abortion is one of the direct causes of maternal mortality. Data from the World Health Organization (WHO) in 2020, there were 4.7%-13.2% who experienced abortion cases. Approximately 30 women are estimated to die in 100,000 unsafe abortions in developed countries, increasing to 220 in 100,000 unsafe abortions in developing countries. Data and information from the Indonesian Health Profile in 2019 said that around 1,280 abortions occurred in pregnant women. (7) Based on research conducted by Jumiati (2019) entitled "Factors Associated with Abortion at Mutia Saro Duri Hospital 2017 Period" found that there was a relationship between parity and the incidence of spontaneous abortion with the chi square test ρ (sig) = 0.032 < (0.05). (8) The research is also in line with research conducted by Siska (2020) entitled "Analysis of Abortion Risk Factors at the Private Practice Midwife clinic Hj. Gunarti Banjarbaru" found that the results of the Chi Square test with a significance of 0.039 which indicates a significant relationship between parity and the incidence of spontaneous abortion. (9)

Age is also one of the risk factors for spontaneous abortion. based on research conducted by anggun et al (2018) entitled "The Relationship between Age and the Incidence of Abortion in Mothers in the Ponek Room of Jombang Hospital" found that there was a relationship between age and the incidence of spontaneous abortion with the results of the Chi-Square test significance 0.002 (<0.05). (10) The study is also in line with research conducted by man zhang et al (2022) entitled "Non-linear Relationship of Maternal Age with Risk of Spontaneous Abortion: A Case-Control Study in the China Birth Cohort" found that there is a relationship between age and the incidence of spontaneous abortion. At the age of> 30 years, there was a significant relationship between age and spontaneous abortion with a Chi-Square test significance of 0.001 (<0.05). Whereas at the age of <30 years the significance value is only 0.542. This study also says that an increase in age every year after the age of 30 years increases the risk of spontaneous abortion. (11) Based on the description above, the research question is "Is there a Relationship between Parity and Age on the Incidence of Spontaneous Abortion at Ananda Makassar Mother and Child Hospital in 2021-2022?"

METHOD

This type of research is quantitative using an observational analytic research design through a case control study approach that links parity and age with the incidence of abortion at Ananda Makassar Mother and Child Hospital. The case population in this study were all pregnant women who experienced abortion with a population of 138 cases at Ananda Makassar Mother and Child Hospital in 2021-2022. The control population in this study were

all pregnant women who checked themselves at the Makassar Ananda Mother and Child Hospital in 2021-2022 with a total population of 13,964. Population, Case samples used in this study were mothers who experienced spontaneous abortion with medical record data that met the exclusion and inclusion criteria through purposive sampling method. The control sample used in this study were mothers who were in pregnancy with medical record data that met the exclusion and inclusion criteria through purposive sampling method. Based on the results of the sample size calculation using the Isaac and Michael formula, 102 samples were obtained for the case sample. This study used a case: control ratio (1: 1) so that the control sample was 102 samples. So, the total number of samples in this study was 204 consisting of 102 case samples and 102 control samples.

The research instrument in this study was secondary data using medical record data. Medical records obtained from Ananda Makassar Mother and Child Hospital in 2021-2022. The analysis techniques used in this study were chi square and odds ratio with the help of statistical test software. The chi square statistical test was used to determine the significance of the relationship between the independent and dependent variables and the odds ratio (OR) statistical test was used to determine the comparison of the risk factors of each variable for case samples and control samples with the Statistical Program for the Social Sciences (SPSS) application. This study has received permission from the Health Research Ethics Committee of the Faculty of Medicine and Health Sciences UIN Alauddin Makassar with letter number B.353/KEPK/FKIK/XII/2022.

RESULTS

Based on the research that has been done, the following data is obtained:

Table 1 Respondent Characteristics

Variables		Frequency	Percentage (%)
Spontaneous Abortion	Yes	102	50
	No	102	50
Parity	Primipara	102	50
	Multipara	96	47.1
	Grande multipara	6	2.9
Age	<20 and >35 years	55	27
	20-35 years	49	73

The distribution of characteristics of the study sample based on the incidence of abortion, parity and maternal age is presented in table 1. Based on the incidence of abortion, it is known that the frequency of respondents who experienced spontaneous abortion in the case sample was 102 people (50%) and respondents who did not experience spontaneous abortion in the control sample were 102 people (50%). Based on parity, respondents with parity 1 (primipara) were 102 people (50%), respondents with parity 2-3 (multipara) were 96 people (47.1%) and respondents with parity ≥4 were 6 people (2.9%). The average number of parities obtained from the results of the chi square test based on the data obtained is 1.70 with a median value of 1.50. Based on age, respondents with ages <20 and >35 years were 55 people (27%) and respondents with ages 20-35 years were 149 people (73%). The mean age obtained from the chi square test results based on the data obtained is 31.51 with a median value of 31.

Table 2 Risk of Spontaneous Abortion based on Maternal Parity at RSIA Ananda Makassar in 2021-2022

Parity	Spontaneous Abortion		Total	p value	OR	95% CI
	Case n(%)	Control n(%)				
<2 and >3	60 (58.8%)	48 (47.1%)	108 (52.9%)	0.123	1.607	0.924-2.796
2-3	42 (41.2%)	54 (52.9%)	96 (47.1%)			
Total	**102**	**102**	**204**			

Table 2 presents the risk analysis of spontaneous abortion according to the number of parities. In the case group, there were 60 mothers (58.8%) who had <2 and >3 parities and 42 mothers (41.2%) who had 2-3 parities. In

the control group, there were 48 mothers (47.1%) who had <2 and >3 parities and 54 mothers (52.9%) who had 2-3 parities. The results of the chi-square test showed a significance (p) of 0.123 with a significance α>0.05. This shows there is no significant relationship between parity and the incidence of spontaneous abortion. The OR value obtained is 1.607 with 95% CI between 0.924 to 2.796.

Table 1 Risk of Spontaneous Abortion by Mother's Age at RSIA Ananda Makassar in 2021-2022

Mother's age	Spontaneous Abortion		Total	p value	OR	95% CI
	Case n(%)	Control n(%)				
<20 and >35 Years	31 (30.4%)	24 (23.5%)	55 (27.0%)			
20-35 Years	71 (69.6%)	78 (76.5%)	149 (73.0%)	0.344	1.419	0.762-2.644
Total	**102**	**102**	**204**			

Table 3 presents the risk analysis of spontaneous abortion according to maternal age. In the case group, there were 31 mothers (30.4%) who had ages <20 and >35 years and 71 mothers (69.6%) who had ages 20-35 years. In the control group, 24 mothers (23.5%) were <20 and >35 years old and 78 mothers (76.5%) were 20-35 years old. The chi-square test results showed a significance (p) of 0.344 with a significance α>0.05. This shows there is no significant relationship between age and the incidence of spontaneous abortion. The OR value obtained is 1.499 with 95% CI between 0.762 to 2.644.

DISCUSSION

Parity is the number of previous pregnancies that have reached the limit of viability and have been born.(12) Another definition states that parity is a woman who has given birth to an aterm baby. (13) Based on the results of research on the relationship between parity and the incidence of spontaneous abortion, it is stated that parity and spontaneous abortion are not statistically related but parity is a risk factor for spontaneous abortion. The results of this study are in line with research conducted by Asniar et al. (2020) which was conducted at Baubau City Hospital, Jl. Drs H. La Ode Manarfa during 2021 and obtained chi-square test results which showed a p value of 0.713 with a significance of α>0.05 and OR 1.145. This shows that there is no statistical relationship between parity and the incidence of spontaneous abortion but parity can be a risk factor for spontaneous abortion. Another study that also showed no relationship between parity and the incidence of spontaneous abortion was a study conducted by Sari, Apriyanti, and Isnaeni (2020), the results of the chi square test showed a p value of 0.124 with a significance of α>0.05 and OR 1.800. This shows that there is no significant relationship between parity and the incidence of spontaneous abortion but parity is at risk for spontaneous abortion. The results of the research that has been done are in accordance with existing theory when viewed from a clinical point of view. (14,15)

The OR value obtained in this study is in line with existing theory that parity is one of the risk factors for spontaneous abortion where primipara and grandemultipara are at risk groups. Safe parity is parity 2-3 (multipara) and unsafe parity is parity 1 (primipara) and >3 (grande multipara). (3). Unsafe parity 1 (primipara) can be caused by an unstable mental condition and lack of obstetric care which has an impact on fetal growth and development so that the risk in parity 1 (primipara) can be controlled with better obstetric care. At parity >3 (grande multipara) it becomes unsafe due to decreased reproductive function in accepting pregnancy due to reduced vascularization of the endometrial wall so that the risk of high parity can be controlled with family planning. (2,5,16)

Through the results of this study, it can also be said that pregnant women who have safe parity also have a risk of spontaneous abortion. This is due to the presence of other causative factors that were not studied such as occupation, stress level, maternal knowledge of pregnancy, placental abnormalities, malnutrition, delivery distance, gestational distance and also factors that may contribute to the incidence of spontaneous abortion such as the use of alcohol, caffeine, tobacco and radiation exposure.

Cunningham's theory states that the incidence of abortion is influenced by several factors, namely age, parity, education, economic status, marital status and place of date. Based on the results of this study, the age of the mother with the incidence of spontaneous abortion was stated to be statistically unrelated but age is a risk factor for spontaneous abortion. The results of this study are in line with research conducted by Muliana, Fitriani and Nasution (2019) conducted at Chik di Tiro Sigli Hospital during 2017 and the results of the chi-square test showed a p value of 0.202 with significance α>0.05 and OR 1.587. This shows there is no relationship between age and the incidence of spontaneous abortion but age can be a risk factor for spontaneous abortion. Another study that is also in line with

this study is research conducted by Arianti and Umami (2021) obtained an OR value of 3.56 in this case >1 indicating that age is at risk for spontaneous abortion. (17,18)

This study and previous research are in accordance with the theory that the age of the mother at the time of pregnancy which is at risk for abortion is the age of <20 years and >35 years while at the age of 20-35 years there is a decrease in the abortion rate. Pregnancy <20 years is associated with immature physical and mental conditions while age >35 years is associated with decreased reproductive function and increased chromosomal abnormalities Based on the number of cases of spontaneous abortion by age in this study, it can be said that the safe age of 20-35 years is also at risk for spontaneous abortion. This is due to other causative factors that were not studied such as maternal education, stress level, occupation, placental abnormalities, malnutrition, spacing of labor, pregnancy spacing or factors that may also play a role in the incidence of spontaneous abortion such as alcohol use, caffeine, tobacco and radiation exposure. (3,11,19,20)

CONCLUSION

Based on the results of the research that has been carried out regarding the relationship between the risk factors of parity and age with the incidence of spontaneous abortion at Ananda Makassar Mother and Child Hospital in 2021-2022, it can be concluded as follows: 1) There were 138 mothers who experienced spontaneous abortion out of 13,964 (0.99%) pregnant women who visited Ananda Mother and Child Hospital Makassar in 2021-2022. 2) Parity has a risk of spontaneous abortion at Ananda Makassar Mother and Child Hospital in 2021-2022. 3) Age has a risk of spontaneous abortion at Ananda Makassar Mother and Child Hospital in 2021-2022. 4) Parity and age do not have a statistically significant relationship with the incidence of spontaneous abortion at Ananda Makassar Mother and Child Hospital in 2021-2022.

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