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Relationship between the Incidence of Fetal Death in the Womb and the Mother's Age and Parity

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ABSTRACT

A fetus that dies in the womb at 20 weeks of pregnancy or later, or that weighs 500 grams or more, is said to have died in the womb. This study used a cross-sectional methodology with a correlational analytical research design, which collects data on both independent and dependent variables simultaneously. The 48 responders in this study were all pregnant women who received treatment. The study's findings were examined using the Chi-square test, which revealed a correlation ($p < 0.05$) between the incidence of fetal death in the womb and maternal age and parity. In conclusion, a number of circumstances, such as mother age and parity, can result in fetal death in the womb.

Keywords: age, fetal death in the womb, parity, pregnancy

BACKGROUND

Pregnancy is an event that is eagerly awaited by husband and wife. Nowadays, in general, a mother understands how she should take better care of her body's condition in order to have a smooth pregnancy and the development of the fetus in her womb. However, things that can interfere with the pregnancy process still cannot be avoided. One of them is intrauterine fetal death (IUFD).

Fetal death in the womb is a fetus that dies in the womb with a body weight of 500 grams or more or fetal death in the womb at 20 weeks' gestation or more. Fetal death in the womb can be caused by several factors, namely maternal factors, fetal factors and placental factors. Maternal factors include age, post-term pregnancy (>42 weeks) and diseases suffered by the mother such as anemia, preeclampsia, eclampsia, diabetes mellitus, rhesus isoimmunization, infections in pregnancy, premature rupture of membranes (KPD), uterine rupture, acute maternal hypotension (Saifuddin, 2010). Fetal death in the womb is included in perinatal deaths which contribute to the Neonatal Mortality Rate (AKN) and Infant Mortality Rate (IMR). Fetal death in the womb is included in the infant mortality rate (IMR), which is an important indicator for assessing the level of welfare of a country. in Indonesia (Manuba, 2012).

Fetal death in the womb is the cause of the high incidence of stillbirths which is one of the contributors to perinatal deaths today. Maternal and perinatal deaths are a big problem, especially in developing countries, around 9%, while in developed countries it is only 1-2%. Based on WHO research throughout the world, there are 10,000,000 infant deaths per year. Indonesia, among ASEAN countries, is the country with the highest perinatal mortality rate, which means that the ability to provide health services still requires comprehensive and higher quality improvement. With an estimate of around 5,000,000 births in Indonesia every year, it can be explained that a baby death occurs every 25-26 minutes. Maternal and infant mortality rates are two indicators commonly used to determine the level of health in a country.

Based on research conducted by Pane (2020) regarding the characteristics of mothers who gave birth to babies with LBW and experienced fetal death in the womb, it was found that there were 98 cases of pregnant women who gave birth to babies with LBW and mothers who experienced fetal death in the womb. The research results showed that the majority of mothers who experienced LBW (49.6%) or fetal death in the womb (43.4%) were aged 20-35 years. The majority of mothers who experienced LBW (75.2%) had parity 0, while the majority of fetal deaths in the womb (44.4%) were at parity 2 and 3.

Based on data from Maternal Perinatal Death Notification (MPDN), the Ministry of Health's maternal death recording system, the number of maternal deaths in 2022 will reach 4,005 and in 2023 it will increase to 4,129. Meanwhile, infant deaths in 2022 will be 20,882 and in 2023 it will be recorded at 29,945. The prevalence of fetal death in the womb is quite high in Maluku Province. These deaths occur when the gestational age is more than 28 weeks and the cause is often unknown to the pregnant woman, this should be a serious concern for mothers.

Fetal death in the womb can be caused by several factors, namely maternal factors, fetal factors, and umbilical cord abnormalities. Maternal factors include age, parity, antenatal examination, and diseases/pregnancy complications suffered by the mother (anemia, pre-eclampsia and eclampsia, placental abruption, diabetes mellitus, rhesus isoimmunization, infection in pregnancy, premature rupture of membranes, and latitude). Fetal factors, namely congenital abnormalities and intranatal infections). Factors for umbilical cord abnormalities are abnormalities in umbilical cord insertion, umbilical cord knots, and umbilical cord coils (Wiknjosastro, 2015).

Based on preliminary survey data conducted by researchers in November 2024 at the Gandasuli Community Health Center, Kab. South Halmahera, North Maluku, there were 20 cases of fetal death in the womb from 170 pregnant women (11.76%) in 2022, in 2023 there were 35 cases of fetal death in the womb from 193 pregnant women (18.13%) and the latest data from August-October 2024 there were 5 cases of fetal death in the womb. This data is not as much as other death cases, but this case is quite a health problem, especially for mothers, especially for mothers who want to have a baby and then experience cases of fetal death in the womb.

Based on the description above, the author is interested in conducting research on the relationship between maternal age and parity on the incidence of fetal death in the womb.

METHODS

This study employs a correlational analytic research design with a cross-sectional approach, in which data on the independent and dependent variables are collected simultaneously at a single point in time. The purpose of this study is to determine the relationship between maternal age and parity with the incidence of intrauterine fetal death at Gandasuli Public Health Center, South Halmahera District, North Maluku Province in 2024. The population in this study consists of all pregnant women who received treatment at Gandasuli Public Health Center during the last six months, from January to June 2024, totaling 48 respondents. The sampling technique used is total sampling, as the total population is less than 100 individuals; therefore, all members of the population were included as research samples (Arikunto, 2010). The inclusion criterion in this study is mothers who are recorded in medical records and experienced intrauterine fetal death, while the exclusion criterion is mothers who are not recorded in the medical records.

The variables in this study consist of the independent variables, namely maternal age and parity, and the dependent variable, which is the incidence of intrauterine fetal death. This research was conducted at Gandasuli Public Health Center, South Halmahera District, North Maluku Province in January 2025. Prior to conducting the study, the researcher obtained a research permit from the Faculty of Health Sciences, University of Kadiri, followed by

securing research approval from the Head of Gandasuli Public Health Center. The researcher then reported to the head of the medical records department regarding the plan to conduct the study using secondary data from medical records. Data collection was carried out by reviewing existing medical records, and the collected data were then compiled and processed using computer software for further analysis in accordance with the objectives of the study.

RESULTS

Univariate Analysis

Frequency Distribution by Maternal Age

Table 1. Frequency Distribution by Maternal Age

Mother's Age	Frequency	Percentage (%)
Risk	37	**77,1**
Not Risk	11	**22,9**
Amount	**48**	**100**

Table 1 shows that the distribution of mothers based on age is mostly those at risk (<20 years and >35 years) for fetal death in the womb, as many as 37 mothers (77.1%), while the least is non-risk age (20-35 years) as many as 11 mothers (22.9%).

Frequency Distribution by Occupation

Table 2. Frequency Distribution by Occupation

Work	Frequency	Percentage (%)
Housewife	46	**95,8**
Civil Servants	0	**0**
Private Employees	1	**2,1**
Farmer	0	**0**
Self Employed	1	**2,1**
etc	0	**0**
Amount	**48**	**100**

In Table 2 it can be seen that the distribution of mothers based on their occupation at the Gandasuli Health Center, South Halmahera Regency, North Maluku, the majority were housewives, as many as 46 mothers (95.8%), while the most few are those who work as private employees and self-employed, each consisting of 1 mother (2.1%).

Frequency Distribution Based on Last Education

Table 3. Frequency Distribution Based on Last Education

Last Education	Frequency	Percentage (%)
No School	1	**2,1**
Elementary School	9	**18,8**
Junior High School	5	**12,8**
Senior High School	28	**58,3**
Bachelor	4	**8,3**
Amount	**48**	**100**

Table 3 shows that the distribution of mothers based on their last education at Gandasuli Health Center, South Halmahera Regency, North Maluku, the most were high school graduates with 28 mothers (58.3%), then elementary school graduates with 9 mothers (18.8%), junior high school graduates with 6 mothers (12.8%), while the least were bachelor's degree graduates with 4 mothers (8.3%).

Frequency Distribution by Parity

Table 4. Frequency Distribution by Parity

Parity	Frequency	Percentage (%)
Risk	41	**85,4**
Not Risk	7	**14,6**
Amount	**48**	**100**

Table 4 shows that the distribution of mothers based on parity is mostly those with risky parity (> 3 times) as many as 41 mothers (85.4%), while the least are those with non-risky parity (≤ 3 times) as many as 7 mothers (29.2%).

Frequency Distribution Based on Incidence of Fetal Death in the Womb

Table 5. Frequency Distribution Based on Incidence of Fetal Death in the Womb

Incidence of Fetal Death in the Womb	Frequency	Percentage (%)
Yes	43	**89,6**
No	5	**10,4**
Amount	**48**	**100**

Table 5 shows that the incidence of fetal death in the womb was 43 (89.6%).

Bivariate Analysis

Relationship between Maternal Age and the incidence of Fetal Death in the Womb

Table 6. Relationship between Maternal Age and the incidence of Fetal Death in the Womb

Mother's Age	Fetal Death in the Womb						*p-value*
	Yes		No		Total		
	n	%	n	%	n	%	
Risk	36	75	1	**2,1**	**37**	**77,1**	
Not Risk	7	**14,6**	4	8,3	11	22,9	**0,007**
Amount	**43**	89,6	**5**	10,4	**48**	**100**	

Of the 37 mothers who were at risk, 1 mother (2.1%) did not experience fetal death in the womb and 36 mothers (75.0%) experienced fetal death in the womb, while of the 11 mothers who were not at risk, 4 mothers (8.3%) did not experience fetal death in the womb and 7 mothers (14.6%) experienced fetal death in the womb.

Based on the results of the Chi-square statistical test, $p = 0.007$ ($p < 0.05$) was obtained. This means rejecting H0, in other words, there is a relationship between maternal age and the incidence of fetal death in the womb.

Relationship between Parity and the incidence of Fetal Death in the Womb

Relationship between Parity and the incidence of Fetal Death in the Womb

Mother's Age	Fetal Death in the Womb						*p-value*
	Yes		No		Total		
	n	%	n	%	n	%	
Risk	40	**83,3**	1	**2,1**	**41**	**85,4**	
Not Risk	3	**6,2**	4	**8,3**	7	**14,6**	**0,001**
Amount	**43**	89,6	**5**	10,4	**48**	**100**	

Of the 41 mothers who had a risky parity, 1 mother (2.1%) did not experience fetal death in the womb and 40 mothers (83.3%) experienced fetal death in the womb, while of the 7 mothers who had a non-risk parity, 4 mothers (8.3%) did not experience fetal death in the womb and 3 mothers (6.2%) experienced fetal death in the womb.

Based on the results of the Chi-square statistical test, $p = 0.001$ ($p < 0.05$) was obtained. This means rejecting H0, in other words, there is a relationship between parity and the incidence of fetal death in the womb.

DISCUSSION

Relationship between Maternal Age and the Incidence of Fetal Death in the Womb

The results of the analysis of the relationship between maternal age and the incidence of fetal death in the womb illustrate that the incidence of fetal death in the womb is highest in mothers aged 35 years, namely 36 mothers (75.0%), and 7 mothers (14.6%) experienced fetal death in the womb even though they were at a non-risk age, namely 20-35 years. Based on statistical tests with the chi-square test, a p value of 0.007 ($p < 0.05$) was obtained. This means that there is a significant relationship between maternal age and the incidence of fetal death in the womb.

This study is in line with research conducted by Susanti (2024) that there is a relationship between maternal age and the incidence of abortion. According to Tamalene and Rosida (2019) maternal age is one of the risk factors related to the quality of pregnancy and related to the mother's readiness for reproduction, the safest age to face pregnancy and childbirth is 20-35 years. While the incidence of abortion increases at the age of less than 20 years and more than 35 years. This is because, the younger the mother's age when pregnant, the greater the risk of abortion, likewise the older the mother's age when pregnant, the greater the risk of abortion. A healthy maternal age for pregnancy ranges from 20 to 35 years (Arnianti and Umami, 2021). The results of this study are also in line with the research of Azisah (2019) and I Made (2022) where in their research there was a significant relationship between maternal age and the incidence of abortion.

The researcher's assumption that maternal age is related to the incidence of fetal death in the womb because age greatly influences pregnancy, where it is expected that the reproductive organs are ready and mature to face pregnancy. Increasing age will be followed by changes in the development of organs in the pelvic cavity. Under 20 years of age, the reproductive organs are not mature enough to accept pregnancy, and over 35 years of age, the reproductive organs experience fragility to maintain pregnancy so that there is a risk of fetal death in the womb. The relationship between maternal age and the incidence of fetal death in the womb is based on the theory that age <20 years and> 35 years is a high-risk age for pregnancy and childbirth. Mothers who are under 20 years old, the uterus and other body parts are not ready to accept pregnancy and tend to pay less attention to their pregnancy. Mothers who are over 35 years old, the uterus and other body parts have decreased function and the mother's health is not as good as when they were 20-35 years old.

Mother's age <20 years blood circulation to the cervix and also to the uterus is still not perfect so that this can interfere with the process of distributing nutrients from the mother to the fetus she is carrying (Manuaba, 2003). Increasing age will cause changes in the blood vessels and also decrease the function of hormones that regulate the reproductive cycle (endometrium). In addition, the increasing age will increase the risk of hypertension which is also a predisposing factor for intrauterine fetal death (IMR) (Varney, 2006). The older a woman is, the hormones that regulate the reproductive cycle will also decrease. One of an example of the hormone is estrogen, estrogen has several functions, one of which is to increase uterine blood flow (William F. Ganong, 2003). Another function of estrogen is that it can cause real endometrial proliferation and the development of endometrial glands which are then used to help channel nutrients from the mother to the fetus. If estrogen levels are low and endometrial development is not perfect, then blood flow to the uterus will also decrease so that it can affect the distribution of nutrients from the mother to the fetus (Varney, 2006). In addition to decreasing estrogen hormone due to increasing age, another hormone that also decreases is progesterone. The function of progesterone during pregnancy is to maintain the pregnancy so that it continues, this progesterone begins to be produced immediately after the placenta is formed and if the progesterone levels are low, it is unable to maintain the pregnancy so that it can cause fetal death (Green, 2003).

In this healthy reproductive period (20-35 years), most women can undergo pregnancy, childbirth, and postpartum in optimal conditions so that the mother and baby are healthy. In other words, the morbidity and mortality rates of mothers and babies that occur due to pregnancy and childbirth in this age group are the lowest compared to other age groups.

Relationship between Parity and the incidence of Fetal Death in the Womb

The results of this study illustrate that the incidence of fetal death in the womb (KJDR) is highest in mothers with parity >3 times, namely 40 mothers (83.3%), and 3 mothers (6.2%) experienced KJDR even though they were of unmatched parity.

risk is ≤ 3 times. The relationship between parity and the incidence of fetal death in the womb based on the chi-square test obtained a value of p = 0.001 (p <0.05). This means that there is a significant relationship between parity and the incidence of fetal death in the womb.

The results of this study are in line with the research conducted by Kasmara (2021) which stated that there is a significant relationship between parity and the incidence of KJDK. Juniarti's research (2023) also stated the same thing that there is a significant relationship between parity and the incidence of intrauterine fetal death (IUFD). High parity or having experienced repeated pregnancies is at high risk for fetal death in the womb, because these pregnancies cause damage to the blood vessels in the uterine wall which can affect the circulation of nutrients to the fetus. High parity also causes scar tissue due to previous pregnancies and deliveries so that placental attachment is inadequate which causes the distribution of nutrients from the mother to the fetus to be hampered (Varney, 2006).

The distribution of nutrients from the mother to the fetus can be explained as follows, the embryo has two protective layers, the inner layer is called the amnion and the outer layer is called the chorion. Part of the chorion, namely the chorionic villi, penetrates the uterine wall and functions as a transporter of nutrients from the mother's blood to the embryo. Then part of the chorion enters the placenta and feeds the embryo during pregnancy. The embryo is connected to the placenta through the umbilical cord. Through the umbilical cord the embryo obtains food and removes its metabolic waste (Green, 2003).

CONCLUSION

Based on the available data, it is known that the majority of fetal deaths in the womb occurred in 43 cases, accounting for 89.6%. In addition, there is a significant relationship between maternal age and parity (number of previous births) with the incidence of fetal death in the womb. This indicates that maternal age and parity are important factors that need to be considered in efforts to prevent fetal death in the womb.

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