



Factors Related To Infant Mortality Rate

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ABSTRACT

Background: Infant mortality rate are infants who death that were 0 to 365 days old. In Indonesia, the infant mortality rate are 24/1000 live births. Risk factors for infant mortality rate were factors from the baby and the mother. Maternal characteristics are a factors in infant mortality rate that can be controlled with early intervention, so it is necessary to know what factors influence infant mortality. The purpose of the study was to analyze the factors related to infant mortality rate in Puskesmas Pejawaran

Methods: This research was conducted in Puskesmas Pejawaran. This is an case control study. The population taken is 1 : 1 by the subjects of 17 cases and 17 babies born alive so that there are 34 respondents. The sampling technique used arandom sampling technique. The study used secondary data, The data analysis used in this study was the chi square test.

Result: There is a relationship between the age of the respondent and infant mortality rate in Puskesmas Pejawaran, there is no relationship between parity, pregnancy interval and the level of education of the respondent's age with mother's age with infant mortality. Mothers aged <20 years and >35 years who gave birth to babies were 4.4 times more likely to give birth to stillbirth.

Conclusion: There is a relationship between respondent's age with mother's age and infant mortality rate in Puskesmas Pejawaran, there is no relationship between parity, pregnancy interval and the level of education of the respondent's age with infant mortality rate.

Keyword : Infant Mortality Rate; Maternal Mortality Rate Factors

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Background. Health is a human right and one of the elements of welfare that must be realized in accordance with the ideals of the Indonesian nation as referred to in the 1945 Constitution of the Republic of Indonesia. Child health problems are one of the main problems in the health sector currently occurring in Indonesia. One of the important indicators in measuring the health status of a country and the quality of life of the community is the Infant Mortality Rate (IMR).

In 2019, the Southeast Asian country with the lowest infant mortality rate was Singapore (2.26), followed by Malaysia (6.65), Thailand (7.80), Brunei Darussalam (9.83) and Vietnam (16.50). In general, factors that influence infant mortality in a country include birth defects,

premature birth, low birth weight, and pregnancy complications (Harismi, 2020). Based on data from the United Nations (UN), the infant mortality rate in Indonesia in 2019 was 21.12. This is a decline from records in 2018 when the infant mortality rate in Indonesia reached 21.86 or in 2017 which reached 22.62. Despite experiencing a significant decline, the infant mortality rate in Indonesia is still relatively high compared to other Southeast Asian countries.

The infant mortality rate in Central Java in 2019 was 8.2 per 1000 live births, this figure has decreased from 2018 which was 8.4 per 1000 live births and 8.9 per 1000 live births in 2017. Despite a significant decline , the infant mortality rate in Central Java describes the

level of public health problems in an area related to the factors causing infant mortality, the level of antenatal care, the nutritional status of pregnant women, the success rate of the MCH and family planning programs, as well as environmental, social and economic conditions (BPS Jawa Tengah, 2020)

Based on data from the Banjarnegara District Health Office, the Infant Mortality Rate in Banjarnegara Regency in 2019 was 12.14/1000 KH which in absolute terms was calculated from the number of infant deaths of 191 with 15,733 live births. This figure decreased compared to 2018 which was 14.1/1000 KH with 216 deaths from 15,317 live births. Although the infant mortality rate in Banjarnegara has decreased, Banjarnegara Regency is still in the top 4 infant mortality rates at the Central Java level (Dinkes Banjarnegara, 2020)

Infant mortality is death that occurs between the time after the baby is born until before the baby turns exactly one year old. Infant mortality can be divided into neonatal mortality (first 28 days) and post-neonatal mortality (between 28–365 days) (Amiruddin & Hasmi, 2014). Infant mortality according to the cause is endogenous and exogenous. Endogenous infant mortality is caused by factors brought by children from birth which are obtained from their parents or acquired during pregnancy and exogenous infant mortality or post-neonatal death is caused by factors related to external environmental influences (Astuti, Solikhah, & Angkasawati, 2015).

Infant mortality risk factors are associated with factors from the baby, mother and pregnancy (Moura, 2014). Factors from infants such as sepsis, congenital, low birth weight and premature (Wandira & Indawati, 2012). Factors from the mother such as maternal age, education, parity and comorbidities (Moura, 2014).

Data from the Puskesmas Pejawaran in Banjarnegara Regency, the Infant Mortality Rate in 2018 there were 15 deaths from a total of 733 births, in 2019 there was a significant decrease in mortality, namely 6 infant deaths

from a total of 653 births, while in 2020 to December infant deaths at the Puskesmas Pejawaran experienced an increase of 17 infant deaths from a total of 704 births. Of the 17 cases of death in Pejawaran in 2020 consisting of 7 cases of low birth weight, 4 cases of asphyxia, 4 cases of infection and 2 cases of congenital.

Based on the results of the MONEV of the Banjarnegara Health Office, various efforts to reduce the Maternal Mortality Rate and Infant Mortality Rate have been carried out by the Puskesmas Pejawaran including through activities for pregnant women, classes for mothers of children under five, classes for breastfeeding mothers, partnerships between midwives and traditional birth attendants, advocacy for childbirth by health workers in Indonesia. health service facilities, and optimal referral systems yet they are still not enough to significantly reduce infant mortality.

Based on the data above, the researcher is interested in conducting research on "Factors Related to Infant Mortality Rate in Puskesmas Pejawaran".

Methods. This research uses a correlational analytic case control with retrospective approach. The independent variables in this study were: age, parity, pregnancy distance, and education level. The dependent variable in this study was the infant mortality rate at the Pejawaran Health Center. This study uses secondary data obtained from cohort documentation/MCH book.

The population in this study were all mothers who gave birth to stillbirths at the Pejawaran Health Center starting from January-December 2020, a total of 34 babies.

Sampling of the case group was all 17 stillbirth babies from January-December 2020 while the control group was 17 babies who were born alive by random sampling so that the total sample was 34 respondents. The sampling technique used was purposive sampling. The data analysis used in this study was the chi square test.

Result and Discussion.

Description of characteristic respondent's

Table 1. Description of characteristic Respondent

characteristic	Total	Percent
Age		
At Risk	16	47.1
Not at Risk	18	52.9
Total	34	100
Parity		
Primipara	9	26.5
Multipara	25	73.5
Total	34	100
pregnancy Distance of pregnancy at risk		
at risk	22	64.7
Not at risk	12	35.5
Total	34	100
Level		
Low	21	61.8
Medium	13	38.2
Total	34	100
Infant Mortality Incidence		
Dead	17	50
Alive	17	50
Total	34	100

Analysis Table 1 shows that most of the mothers who gave birth at the Puskesmas Pejawaran had an age that was not at risk for giving birth, as many as 18 respondents (52.9%). That most of the mothers who gave birth at the Puskesmas Pejawaran were multiparous with as many as 25 respondents (73.5%). That most of the mothers who gave birth at the Puskesmas Pejawaran Community had the interval between pregnancies that are at risk for getting pregnant as many as 22 people (64.7%). That most of the mothers who gave birth at the Puskesmas Pejawaran had a low level of education as many as 21 respondents (61.8%). That mothers who gave birth to babies died at the Puskesmas Pejawaran in 2020 as many as 17 respondents (50%)

Relationship of respondent's age with infant mortality

Table 2. Relationship of Respondent's Age to Infant Mortality

Age	Condition of Infants				Total		P
	Dead		Alive				
	F	%	F	%	F	%	
Risk	11	32,3	5	14.7	16	47	0.039
No Risk	6	17.7	12	35.3	18	53	
Total	17	50	17	50	34	100	

Based on the test of the relationship between age and infant mortality, p value= 0.039 (p< 0.05) means that Ha is accepted which means there is a significant relationship between age and infant mortality at the Puskesmas Pejawaran. While the estimated odds ratio (OR) value obtained is 4.4, which means that mothers aged <20 years and >35 years who give birth to babies are 4.4 times more likely to give birth to a dead baby at the Puskesmas Pejawaran.

The results showed that the condition of infant death was more common in respondents in the at-risk age group (32.3%) compared to the non-risk age group (17.7%). Based on the test of the relationship between age and the incidence of infant mortality at the Puskesmas Pejawaran, the results were p< 0.05. This means that this study shows that there is a significant relationship between age and infant mortality at the Puskesmas Pejawaran. The estimated odds ratio (OR) value obtained is 4.4, which means that mothers aged <20 years and >35 years who give birth to babies are 4.4 times more likely to give birth to a dead baby at the Puskesmas Pejawaran.

The results of this study are in accordance with the theory contained in Latifah (2012) which states that maternal age at the time of pregnancy and birth has an important role as a risk factor for neonatal death. Pregnancy that occurs in mothers who are too young (less than 20 years) have a higher risk of fetal failure to thrive during pregnancy, fetal distress, and fetal death in the womb. In addition, maternal age that is too advanced (more than 35 years) also increases the risk of fetal malformations whether due to chromosomal abnormalities or not (Latifah, 2012)

The results of this study are in line with research conducted by Nidia Putri (2018) and Ainindya Pasca (2018) with statistical test results showing that there is relationship between mother's age between infant mortality rate (Pasca, 2018; Putri, 2018).

Based on the results of the research and the theory that has been described above, the researcher argues that there is a relationship

between maternal age and infant mortality because when the mother is less than 20 years old, the mother's knowledge about pregnancy and childbirth is still lacking. Based on the results of data collection there are mothers who give birth at an early age of 17 and 18 years. At that age women are still classified as teenagers. Mothers who give birth at the age of more than 35 years are also at risk of giving birth to a dead baby because the mother is more susceptible to degeneration and the mother's body condition has also decreased.

The relationship between respondent parity and infant mortality

Table 3. Relationship between Pregnancy and Infant Mortality Distance

Parity	Condition of Infants				Total	P
	Dead		Alive			
	F	%	F	%		
Primipara	5	14.7	4	11.7	9	0.697
Multipara	12	35.3	1	38.3	25	
			3			
Total	17	50	1	50	34	100
			7			

Based on the test of the relationship between parity and the incidence of infant mortality, p value= 0.679 ($p > 0.05$) means H_0 is accepted which indicates that there is no significant relationship between parity and infant mortality at Puskesmas Pejawaran

The condition of infant death was more common in the multiparous group respondents (35.3%) compared to the primiparous group (14.7%). Based on the test of the relationship between parity and the incidence of infant mortality at the Pejawaran Health Center, $p > 0.05$. This means that this study shows that there is no significant relationship between parity and infant mortality at the Puskesmas Pejawaran

The results of this study are inversely proportional to Efriza's (2016) theory which states that babies born to mothers with parity 1 and >3 are at risk of experiencing early neonatal death 1.89 times greater than babies born to mothers with parity 2-3. The high risk of early neonatal death in infants born to mothers with parity one is caused by the stiffness of the

pelvic tissue and low knowledge of pregnancy and delivery care. In women with parity >3 , early neonatal death can be caused by a decrease in the elasticity of the tissue that has repeatedly contracted at the time of delivery, thereby limiting the ability to bleed. This can cause heavy bleeding during delivery and carry a risk of infant death (Efriza, 2016).

The results of this study are in line with research conducted by Iva Budiati (2016) with statistical test results showing that there is no relationship between parity and infant mortality with a value of p value 0.162 where the p value is less than 0.05 (Budiarti, 2016). This study is also in line with previous research which stated that the parity variable was not related to infant mortality with a p value of 0.362 (Batubara, 2019) .

Relationship between pregnancy interval and infant mortality

Table 4. Relationship between Pregnancy Interval and Infant Mortality

Pregnancy interval	Condition of Infant				Total	P
	Dead		Alive			
	F	%	F	%		
Risk	9	26.4	11	32.3	20	0.486
No Risk	8	23.6	6	17.7	14	
Total	17	50	17	50	34	
					100	

Based on the test of the relationship between pregnancy interval and infant mortality, p value= 0.486 ($p > 0.05$) means H_0 is accepted which indicates that there is no significant relationship between the interval between pregnancy and infant mortality at the Puskesmas Pejawaran

The results showed that the condition of stillbirths was found more in respondents with at-risk pregnancies (26.4%) compared to the non-risk (23.6%). Based on the test of the relationship between pregnancy interval and the incidence of infant mortality at the Puskesmas Pejawaran, $p > 0.05$. This means that this study shows that there is no significant relationship between the interval between pregnancies and infant mortality at the Puskesmas Pejawaran .

The results of this study are in contrast to the theory of Maheasy (2011) which states that

if the interval of pregnancy is too close, it can cause the mother to have a short time to restore the condition of her uterus to its previous condition, one of the risk factors for perinatal death is the interval of less than 2 years from the last pregnancies (Maheasy, 2011).

The results of this study are in line with research conducted by Apriany Batubara (2019) with statistical test results showing that there is no relationship between the interval between pregnancy and infant mortality with a p value of 0.273 where the p value is less than 0.05 (Batubara & Ramadhan, 2019)

The relationship between the respondent's education level and infant mortality

Table 5 The Relationship between Respondents' Educational Level and Infant Mortality

Education Level	Infant Condition				Total		P
	Off		On		F	%	
	F	%	F	%			
Low	10	29.4	11	32.3	21	58.6	0.724
Medium	7	20.6	6	17.7	13	41.3	
Total	17	50	17	50	34	100	

Based on the relationship test between pregnancy interval and infant mortality resulted in p value= 0.724 ($p > 0.05$) meaning H_0 was accepted, indicating that there was no significant relationship between education level and infant mortality at Puskesmas Pejawaran

The results of the study showed that stillbirth is more commonly found in respondents with low education levels (29.4%) compared to the group with secondary education levels (20.6%). Based on the test of the relationship between the level of education and the incidence of infant mortality at the Puskesmas Pejawaran, it resulted in $p > 0.05$. This means that in this study, there is no significant relationship between the level of education and infant mortality at the Puskesmas Pejawaran.

The results of this study are in contrast to the theory which states that maternal education is one of the important factors in controlling the occurrence of neonatal death. Mothers with low levels of education tend to be less aware of the benefits of conducting antenatal checks in with

professional health workers, less able to determine who is the birth attendant, not knowing how to care for newborns at home, thus low maternal education factors will contribute to infant mortality (Musrifa, 2014).

This research is in line with research conducted by Gledys Tirsa (2020), infant mortality is not affected by mothers who do not take formal education or mothers who take formal education. The results of statistical tests show that there is no relationship between education level and infant mortality with a p value of 0.562 where the p value is less than 0.05 (Lengkong, Fima, & Posangi, 2020)

Conclusion and Suggestion. Based on research and statistical tests on factors related to infant mortality at Puskesmas Pejawaran, Banjarnegara Regency, it can be concluded as follows:

Most of the mothers who gave birth at the Puskesmas Pejawaran were at a not-at-risk age to give birth, as many as 18 respondents (52.9%). Most of the mothers who gave birth at the Puskesmas Pejawaran were multiparous as many as 25 respondents (73.5%). Most of the mothers who gave birth at the Puskesmas Pejawaran were at risk in terms of pregnancy interval, as many as 22 people (64.7%). Most of the mothers who gave birth at the Puskesmas Pejawaran had a low level of education as many as 21 respondents (61.8%). Mothers who gave birth to dead babies at the Puskesmas Pejawaran in 2020 were 17 respondents (50%).

There is a relationship between the age of the respondent and infant mortality at the Puskesmas Pejawaran with a risk of 4.4 times. There is no correlation between respondent parity and infant mortality at Puskesmas Pejawaran. There is no relationship between pregnancy interval and infant mortality at Puskesmas Pejawaran. There is no relationship between the respondent's education level and infant mortality at the Puskesmas Pejawaran.

For the community, especially mothers, to pay more attention to the pre-pregnancy process by paying more attention to the age

during pregnancy in order to minimize infant mortality and to pay attention to themselves during pregnancy by conducting regular and thorough health checks to ensure that the condition of themselves and their babies are healthy.

Health workers are expected to increase regular socialization about the factors that cause infant mortality and risk factors for pregnancy in the mother. As well as providing consultation on preparing and caring for pregnancy so that the baby can be born healthy while also providing direction on how to care for the baby in its growth and development.

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