Original Article

Maternal Referral Delay Factors

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ARTICLE INFO	ABSTRACT
	Background: Maternal Mortality Rate (MMR) is one indicator to see the health status of women. Maternal mortality is a very important problem for received attention because death does not only affect women, but also affects the health conditions of families and communities. This is because women are the main pillars in the family who play an important role in educating children, providing health care in the family, and helping the family economy. Maternal mortality rate is an indicator that reflects maternal health status, especially the risk of death for mothers during pregnancy and childbirth. MMR in Indonesia is still quite high, Based on the 2012 Indonesian Demographic and Health Survey (IDHS), delivery, and postpartum) of 359 per 100,000 KH. *Methods*: This study aims to analyze the factors of delay in maternal referral, which consist of close determinants, intermediate determinants and far determinants. in hospital. PKU Muhammadiyah Gombong period 2013-2016. *Results*: This research uses the method of Survey with approach Cross Sectional. The population of this study were all pregnant women who experienced a maternal death in the hospital. PKU Muhammadiyah Gombong period 2013-2016. The sample in this study was to take the whole of the total population, namely all medical records of mothers who died in the hospital. PKU Muhammadiyah Gombong period 2013-2016. Data analysis was performed univariate and multivariate with SEM. *Conclusion*: The results of the study indicate the factors that influence mortality mother in hospital. PKU Muhammadiyah Gombong for the 2013-2016 period, both from close determinants, intermediate determinants and distant determinants are childbirth complications, postpartum complications, age, pregnancy distance, history of maternal illness, previous birth history, first birth attendant, education, place of residence, and method of delivery.
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Introduction

Maternal Mortality Rate (MMR) is one indicator to see the health status of women. Maternal mortality is a very important problem for received attention because death does not only affect women, but also affects the health conditions of families and communities. This is because women are the main pillars in the family who play an important role in educating children, providing health care in the family, and helping the family economy. Maternal mortality rate is an indicator that reflects maternal health status, especially the risk of death for mothers during pregnancy and childbirth. MMR in Indonesia is still quite high, Based on the 2012 Indonesian Demographic and Health Survey (IDHS) , delivery, and postpartum) of 359 per 100,000 KH (Alimohamadi et al., 2019; Ananth et al., 2021; Girum & Wasie, 2017).

The risk factors for perinatal mortality are maternal factors, infant factors, health care factors, and environmental factors. Maternal factors include the age of pregnant women (less than 20 years or more than 35 years), parity (more than 4 children), birth spacing (less than 2 years), mother's education, mother's occupation, economic status, diseases suffered by the mother during pregnancy. , nutrition of pregnant women and the shape of the mother's body. Health service factors include antenatal care (not according to K4 and 5T standards), birth attendants (not assisted by health workers), service coverage for postpartum mothers, coverage for pregnant women who receive a minimum of 90 Fe tablets, coverage for handling pregnant women with complications and environmental factors the distance from home to health care is more than 10 kilometers.

Method

Type of research uses the Survey with approach Cross Sectional. The population of this study were all pregnant women who experienced a maternal death in the hospital. PKU Muhammadiyah Gombong period 2013-2016. The sample in this study was to take the whole of the total population, namely all medical records of mothers who died in the hospital. PKU Muhammadiyah Gombong period 2013-2016. Data analysis was performed univariate and multivariate with SEM
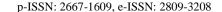
Results

Table 1. Close Determinant Risk Factors, Intermediate Determinant Risk Factors, Far Determinant Risk Factors, and Respondents Maternal Mortality

No.	Variable	F	Percentage	Cum.
		(n)	(%)	
1	**Complications of**			
	Pregnancy	29	93.55	93.55
	No	2	6:45	100.00
	Total	31	100	
2	**Complications of labor**			
	There are	3	9.68	9.68
	No	28	90.32	100.00
	Total	31	100	
3	**Complications Postpartum**			
	There are	27	87.10	87.10
	No	4	12.90	100.00
	Total	31	100	
4	**Minimum Capital**			
	74.20>	6	19.4	19.40
	20-35	17	54.8	<20
	35	8	25.8	100.00
	Total	31	100	
5	**Parity**			
	1	6	19.35	19.35

No.	Variable	F	Percentage	Cum.
		(n)	(%)	
	2	5	16.13	35.48
	3	6	19.35	54.84
	4	7	22.58	77.42
	5	6	19.35	96.77
	7	1	3.23	100.00
	Total	31	100	
6	**Distance pregnancy**			
	0	7	22.58	22.58
	1	8	25.81	48.39
	2	16	51.61	100.00
	Total	31	100	
7	**medical history**			
	have	27	87.10	87.10
	Not having	4	12.90	100.00
	Total	31	100	
8	**history of pregnancy complications before**			
	there are	17	54.84	54.84
	No	14	45.16	100.00
	Total	31	100	
9	**Previous delivery history**			
	Good	14	45.16	45.16
	Poor	17	54.48	100.0
	Total	31	100	
10	**Nutritional status**			
	KEK(<23.5cm)	8	25.80	25.80
	No SEZ (lila >23.5cm)	23	74.20	100.00
	Total	31	100	
11	**status**			
	AnemiaAnemia (Hb<11 gr/dl)	11	35.48	35.48
	No anemia (Hb≥11)	20	64.52	100.00
	Total	31	100	
12	**Government iksaan antenatal**			
	Good	25	80.64	80.64
	Not good	6	19:35	100.00
	Total	31	100	

No.	Variable	F	Percentage	Cum.
		(n)	(%)	
13	**Helper first delivery**			
	of health workers	19	61.29	61.29
	No health workers	12	38.71	100.00
	Total	31	100	
14	**Ways of labor**			
	action	16	51.61	51.61
	Spontaneous	15	48.39	100.00
	Total	31	100	
15	**Place of delivery**			
	The place of health workers	31	100.00	100.00
	No place for health workers	0	0	0
	Total	31	100	
16	**Referral when complications occur**			
	Referred	1	3.22	3.22
	Not referred	30	96.78	100.00
	Total	31	100	
17	**Late referral**			
	Late	0	0	0
	Not late	31	100.00	100.00
	Total	31	100	
18	**Education level**			
	SD-SMP	25	80.6	80.6
	SMA	5	16.1	16.1
	PT	2	6.5	6.5
	Total	31	100	100.00 The

Table above shows that 29 (93.5%) mothers who died were those who had complications in pregnancy, 27 (87 ,1%) mothers who died were mothers who had complications during the puerperium, the age of mothers who experienced the most maternal deaths was in the age group of 20-35 years, namely 17 (54.8%), 7 (22.5%) mothers who died were the mother who have children more than 3, mothers who died within 2 years of pregnancy as many as 16 (51.6%), mothers who experienced

maternal death who had a history of disease as many as 27 (87.1%), as many as 17 (54.8%) mothers who died had a history of complications in previous pregnancies, then mothers who died with a history of poor childbirth before were 17 (54.8%), at the level of education the mothers who experienced the most maternal deaths were in secondary education groups, namely 21 (67.74%), and mothers who experienced maternal death were mothers who mostly lived in cities, namely 21 (67.74%).

Discussion

The results of data analysis showed that there was an influence between pregnancy complications and maternal mortality in hospitals. PKU Muhammadiyah Gombong. The parameter coefficient of 0.571 and the t-statistic value of 11.177 is significant at (p < 0.05) and the t-table is 1.659. The results of the study are in line with the results of research conducted by (Muthoharoh et al., 2016), where the results of his research show that most of the respondents have risk factors that are close to the determinants of maternal death in Batang Regency.

The results of this study are also in line with the results of (Ien & Fibriana, 2017), where the results of his research show that most of the respondents who have a close determinant risk factor in Cilacap Regency have a high risk of dying compared to those who do not have a close determinant risk factor. The results of this study are also in line with the results of (PRATAMA et al., 2016), where the research was conducted at Dr. Moewardi Surakarta which shows that most of the respondents have risk factors that are close determinants of experiencing maternal death.

Complications of pregnancy, childbirth and postpartum which are direct causes of maternal death, namely: vaginal bleeding, especially in the third trimester of pregnancy, delivery and post-delivery, infection, pregnancy poisoning, complications due to prolonged labor and birth trauma (Dinkes, 2013). Maternal mortality is caused by several influencing factors, the following are risk factors that influence maternal mortality which are grouped into three, namely close determinants (pregnancy, delivery, and postpartum complications), intermediate determinants (mother's health status, nutritional status, anemia status, history of previous delivery, history of maternal illness, history of pregnancy complications, reproductive status, maternal age, parity, gestational distance, access to health services, place of delivery, behavior towards health services, history of family planning use, antenatal examination, implementation of referrals, mode of delivery, first aid delivery, delay in referral) and determinants of distance (mother's education level, employment status, region of residence).

The results showed thatmcomplications pregnancy that occurred were mostly preeclampsia/ eclampsia and infection which had proportion the same of 13 (42%) and bleeding 3 (9.7%). The presence of complications in pregnancy, especially heavy bleeding that occurs suddenly, will result in the mother losing a lot of blood and will result in maternal death in a short time.

Hypertension in pregnancy that is often encountered, namely preeclampsia and eclampsia, if not treated immediately will cause the mother to lose consciousness which continues in the occurrence of heart failure, kidney failure or brain hemorrhage which will result in maternal death. The presence of pregnancy complications fulfills the aspect biologic plausibility of the causal association between pregnancy

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complications and mortality maternal. In this study, the closest known factors on the incidence of maternal mortality (close determinants) that pregnancy itself and complications after childbirth, which influence directly the maternal mortality itself.

The results showed that there was an effect between postpartum complications and maternal mortality in the hospital. PKU Muhammadiyah Gombong. The parameter coefficient value is -0.234 and the value is t-statistic 7.249 significant at ($p < 0.05$) and t-table is 1.659. The results of this study are in line with the results of research conducted by (Muthoharoh et al., 2016), where the results of his research indicate that most of the respondents have risk factors that are close to the determinants of maternal death in Batang Regency. The results of this study are also in accordance with the results of (Ien & Fibriana, 2017), where the results of his research show that most of the respondents who have a close determinant risk factor in Cilacap Regency have a high risk of dying compared to those who do not have a close determinant risk factor. The results of this study are also in accordance with the results of (PRATAMA et al., 2016), where the research was conducted at Dr. Moewardi Surakarta research results show that most respondents have risk factors that are close determinants of experiencing maternal death.

According to (Dinkes, 2008), complications of pregnancy, childbirth and the puerperium which are direct causes of maternal death, namely: vaginal bleeding, especially in the third trimester of pregnancy, labor and postpartum, infection, pregnancy poisoning, complications due to prolonged labor and birth trauma. Maternal mortality is caused by several influencing factors, the following are risk factors that affect maternal mortality which are grouped into three, namely close determinants (complications of pregnancy, childbirth, and postpartum), intermediate determinants (mother's health status, nutritional status, anemia status, history of childbirth previous history, history of maternal illness, history of pregnancy complications, reproductive status, maternal age, parity, gestational distance, access to health services, delivery place, behavior towards health services, history of family planning use, antenatal examination, implementation of referrals, delivery method, first birth attendant , delay refer) and the determinant j auh (mother's education level, employment status, area of residence) .

Complications during the puerperium, especially infection, can cause maternal death due to the spread of germs into the bloodstream (septicemia), which can lead to abscesses in body organs, such as the brain and kidneys, while bleeding during the puerperium can lead to maternal death, especially during the puerperium. if the mother does not receive early treatment to control bleeding. This means that the presence of puerperal complications fulfills theaspect biologic plausibility of the causal association between puerperal complications and maternal mortality.

The results showed that there was an influence of age on maternal mortality in hospitals. PKU Muhammadiyah Gombong. The parameter coefficient value is 0.369 and thevalue is t-statistic 11.422, which is significant at ($p < 0.05$) and the t-table is 1.659. The results of this study are reinforced by the results of research conducted by Kristina et al (2016) that found the highest proportion of maternal deaths was in the age group 20-35 years, while in the risk age group <20 and 35 the number of maternal deaths that occurred was less than after group is not at risk.

The results of research conducted by Dwi Sarwani, et al (2008) also prove by bivariate analysis that there is a relationship between age and maternal mortality in Banyumas district, the age group is 20-35 years old, i.e. 79 (77.5%). The results of research conducted by (Wandira & Indawati, 2012) also prove that the age of most mothers who experience maternal death is aged 20-35 years.

Maternal deaths that occurred in the hospital. PKU Muhammadiyah Gombong are mostly owned by mothers who are at a safe age in pregnancy, which is between 21-34 years and of sufficient parity. A safe age for pregnancy and sufficient parity turns out to be a phenomenon behind the occurrence of a disease that indirectly affects the mother's condition, one of which is the mother's own health history and family health history.
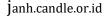
The results showed that there was an effect between gestational distance and maternal mortality in the hospital. PKU Muhammadiyah Gombong. The t-statistic value of 2.899 is above the critical value of 1.659. This is in line with the results of Mahesa Pratama's research (2016), which shows that there is a significant relationship between gestational distance and maternal mortality (p = 0.000). This means that the distance of pregnancy <2 years has a risk of maternal death 4.516 times greater than the distance between pregnancies of 2 years. The results of research conducted by (Ien & Fibriana, 2017) which also found that the proportion of maternal deaths at pregnancy intervals was highest at <2 years of gestation, namely 75.6%.

The distance between pregnancies that are too close (less than 2 years) can increase the risk of maternal death. Delivery with an interval of less than 24 months (too frequent) nationwide is 15%, and is a high-risk group for postpartum

hemorrhage, maternal morbidity and mortality. The recommended interval between pregnancies is generally at least two years, to allow a woman's body to recover from the extra needs during pregnancy and lactation. According to the National Family Planning Coordinating Board (BKKBN) the ideal birth spacing is 2 years or more, because a short birth spacing will cause a mother to not be able to recover her body condition after giving birth before. The recommended pregnancy interval for a safe pregnancy is at least 2 years, to allow the mother's body to recover from pregnancy and lactation. Pregnancy spacing that is too close causes the mother to have a high risk of experiencing hemorrhage postpartum and maternal death. Pregnancy intervals that are too long (≥5 years) will increase the risk for pre-eclampsia or eclampsia, gestational diabetes, bleeding in the third trimester and increase the risk for maternal death, so mothers with long gestation intervals require special attention during prenatal care. Saifuddin, et al, 2005). Pregnancy spacing has been shown to affect maternal mortality.

The results showed that there was an influence between the history of maternal illness and maternal mortality in the hospital. PKU Muhammadiyah Gombong. The parameter coefficient obtained is -0.621 and the value is t-statistic 13.714 (significant at p<0.05) and the t-table is 1.659. This is in line with previous research on risk factors for maternal death in Pati Regency which states that a history of disease affects maternal mortality, where mothers with a history of disease increase the risk of maternal death by about 27.74 times greater than mothers without a history of the disease. Research on risk factors for maternal death in Cilacap also shows that a history of maternal disease affects maternal mortality with an odds ratio (OR)

of 210.2, where mothers who have a history of disease before pregnancy have a risk of 210.2 times greater than mothers with no history of disease before pregnancy.

Research on risk factors for maternal death in Tigray Ethiopia which states that the mother's disease history has an effect on maternal mortality and mothers with a history of disease have a risk of 5.58 times compared to mothers with no history of disease. Research on the risk factors for maternal death at the Hospital Tertiary in Kenya also states that a history of influence on maternal mortality, where mothers who have a history of disease have a 3.9 times higher risk of dying compared to mothers who have no history of disease.

The results of research conducted by Anita, et al also prove that there is a history of maternal health at risk as many as 43 (28.7%) respondents. And the results of research conducted by Dwi Sarwani, the results of bivariate analysis showed that there was a significant relationship between history of illness and maternal mortality. Mothers who have a history of the disease have a 6.4 times greater risk of maternal death than those who do not have a history of the disease.

These results are in line with the theory put forward by the Ministry of Health that the history of the disease in question is a disease due to direct complications with pregnancy such as preeclampsia and eclampsia, antepartum bleeding, premature rupture of membranes and diseases due to indirect complications such as diabetes mellitus and anemia.

It can be concluded that chronic diseases such as tuberculosis, kidney heart disease, malaria, hepatitis, anemia and malnutrition are diseases that contribute to maternal mortality in developing countries.

The results showed that there was an influence between the history of previous childbirth and maternal mortality in the hospital. PKU Muhammadiyah Gombong. The parameter coefficient obtained is 0.480 and the value is t-statistic 11.173 (significant at $p<0.05$) and the t-table is 1.659. These results are in line with studies at the Hospital Tertiary in Kenya also states that a history of complications matters on maternal mortality, where mothers with a history of complications have a 9 times higher risk of dying compared to mothers who do not have a history of complications. The results of research conducted by Krisnita, showed that there was a significant relationship between the history of complications in previous deliveries and the incidence of maternal death. The results of research conducted by Dwi, et al (2008) can be seen that the factors that jointly influence maternal mortality are obstetric complications, history of disease and history of childbirth (Baeva et al., 2018; King & Bushwick, 2017; Nur et al., 2018; Sasnitiari & Puspitasari, 2019).

Several factors are included in the determinants, as follows: maternal health status consists of nutritional status, history of pregnancy complications, history of previous childbirth and comorbidities/history of maternal disease (heart and others). The results of this study indicate that the incidence of maternal death for mothers who have a history of complications in previous deliveries is still high. It can be concluded that the most dominant factor influencing maternal mortality in the hospital. PKU Muhammadiyah Gombong, namely obstetric complications (bleeding, pre/eclampsia and infection).

The results showed that there was an influence between the first birth attendant and maternal mortality in the hospital. PKU Muhammadiyah Gombong. The coefficient obtained is 0.11 and the t-statistic value of 2.164 is above the critical

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value of 1.659. The results of this study are reinforced by the results of research conducted by Sari.S (2017) which shows that there is a significant relationship between birth attendants and the incidence of maternal death. This study contradicts the results of research conducted in Lombok, West Nusa Tenggara (NTB) Province in 2010 with a case control study design (case-control) showing a p value of 0.377, there is no relationship between birth attendants and the incidence of maternal death. According to the Ministry of Health of the Republic of Indonesia (2009), the purpose of preparing for safe delivery is so that pregnant women and their families are moved to plan safe delivery places and birth attendants, deliveries are carried out in health facilities and assisted by health workers.

The results showed that there was an influence between the mode of delivery and maternal mortality in the hospital. PKU Muhammadiyah Gombong. The parameter coefficient has a value of -0.527 and the t-statistic value of 13.994 is above the critical value of 1.659. The results of the study are supported by the results of a study conducted by (Ien & Fibriana, 2017), where the results of the study showed that the method of delivery with action had a 3.8 times greater risk of experiencing maternal death than spontaneous delivery (OR = 3.8; 95%).

The results showed that there was an influence between education on maternal mortality in hospitals. PKU Muhammadiyah Gombong. The parameter coefficient has a value of 0.642 and the t-statistic value of 15.559 is above the critical value of 1.659. The results of this study are strengthened by the results of research conducted by (Latuamury, 2001; LATUAMURY, 2001) which states that low maternal education (SLTP) has a 3.4 times greater risk of experiencing maternal death. However, the results of this study contradict the results

of research conducted by (Ien & Fibriana, 2017) where the results of his research show that there is no effect of maternal education with maternal mortality (OR = 1.4; 95%).

Risk factors for maternal death include age of pregnant women (less than 20 years or more than 35 years), parity (more than 4 children), birth spacing (less than 2 years), mother's education, mother's occupation, economic status, disease suffered by the mother during pregnancy, the nutrition of pregnant women and the shape of the mother's body. The relationship between education and maternal mortality is not direct. Education will have an indirect influence through increasing the social status and position of mothers in society, increasing their choices in life and increasing the ability to make their own decisions and express opinions. pregnant, especially in the case of emergency pregnancy and childbirth, so that there are no gaps in the results of research and theory.

CONCLUSION

Labor complications and puerperal complications as close determinants have a significant effect on maternal mortality. Meanwhile, pregnancy complications did not significantly affect maternal mortality. The determinant risk factors, namely age, gestational distance, disease history, previous delivery history, birth attendant, and mode of delivery were proven to have a significant effect on maternal mortality. Remote determinant risk factors, namely education and place of residence, have been shown to have a significant effect on maternal mortality.

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