Determinant Factors on Childbirth Complications in Lumajang District, East Java, Indonesia

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Abstract-Maternal Mortality Rate (MMR) in Lumajang District until 2014 is still high above the Sustained Development Goals (SDG's) at 70 of 100,000 live births. Health Office of Lumajang District published MMR at 111 of 100,000 live births on 2014. Incidence of childbirth complication is one of direct determinant of maternal mortality. This study aims to identify the determinant factors on childbirth complication among maternal' mother to reduce MMR in Lumajang District, Indonesia. The data used in the analysis are secondary data from a rapid survey of maternal health services conducted by the Health office of Lumajang District in 2015. The method used in the rapid survey is analytical observation with cross sectional design. Sample selection is done by multistage cluster random sampling with 210 respondents mothers with babies aged 0-11 months. The results showed there is a significant correlation between pregnancy complications and birth attendants with the incidence of childbirth complications. Integrated Antenatal Care (ANC) adequate and qualified is necessary to decrease the incidence of childbirth complications. Traditional Birth Attendants (TBAs) partnerships needed to improve maternity coverage by health personnel so that childbirths are being safe and secure.

Keywords: Complication, childbirth, pregnancy

1. INTRODUCTION

World Health Organization (WHO) and other international institutions assess the health of a nation with some indicators such as morbidity and mortality of vulnerable groups such as infants, toddlers, and mothers during childbirth. Nowadays, morbidity, and mortality in pregnant and childbirth women are still a major problem in developing countries. Every year estimated 358,000 maternal deaths occurred and approximately 99% of these deaths occur in poor developing countries and about 67% were donated by 11 countries including Indonesia.

Maternal Mortality Rate (MMR) data from years 1990-2012 shows that Indonesia is included in the list of the highest MMR among ASEAN countries. MMR targets in the Sustained Development Goals (SDGs) in 2016 amounted to 70 per 100,000 live births still not been reached. MMR in Lumajang District is also not much different from the fluctuated data in the East Java. Lumajang District is accounted for 50% of the maternal deaths in the East Java. MMR in Lumajang District in 2012 accounted to 48.56 of 100,000 live births, in 2013 accounted to 143.59 of 100,000 live births, and in 2014 accounted to 111 of 100,000 live births. There is a significant increase in the last two years and the MMR is above the target of the SDG's

Maternal mortality is a complex event that is caused by a variety of causes that can be distinguished on the close, between, and far determinants (McCarthy & Maine, 1992).

Close determinants directly related to maternal mortality are obstetric disorders or complications during pregnancy. Close determinants influenced by the determinants of health-related factors such as maternal health, reproductive status, access to health care, and behavioral health facility usage while the indirect determinant is much related to the demographic and socio-cultural factors.

The incidence of pregnancy complications in Lumajang District had a fluctuating increase. This can be identified from the data increase the coverage of obstetric complications treated in Lumajang District Health Office Profile that in 2012 accounted to 117.48%, in 2013 accounted to 112.07%, and in 2014 accounted to 99.7%. The Incidence of obstetric complications addressed more than 100% indicates that the complications occur more than the previously expected as much as 20% compared to the total number of pregnant women. The increase in the number of pregnancy complications need to be watched because it is a close determinant of the childbirth complications and maternal mortality (Simarmata et al., 2012). It encourages researchers to identify determinant factors of childbirth complication in Lumajang District.

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2. RESEARCH METHOD

Data analysis is using secondary data from a rapid survey of maternal health services conducted by the Health Office of Lumajang District in 2015. The method used in the rapid survey is analytical observation with cross sectional design. Sample selection is done by multistage cluster random sampling. Selection of clusters as a probability proportionate to size means that sample by using probability theory with the help of a C survey program to get 30 villages or clusters. It's randomly selects respondents as many as 7 respondents each village. The inclusion criteria of the samples are mothers with babies aged 0-11 months old. The sample size was 210 respondents. The data collection was conducted on October to November 2015.

The independent variables such as the mother's education level, mother's age at childbirth, the parity, information given about danger signs in pregnancy, ANC visits, and the complications in pregnancy. The dependent variable is the incidence of childbirth complications.

The data analysis is a bivariate analysis using multiple linear regression to determine the correlation between the dependent and independent variables.

3. RESULT

3.1 Childbirth Complications

The incidence of childbirth complications experienced by 32 mothers (15.24%), while mother with no childbirth complications are 178 mothers (84.76%).

Table 1. Type of childbirth complications

Childbirth complications	frequency	%
Abnormalities of the fetus' position	11	34.4
Obstructed	2	6.3
Hypertension in pregnancy	6	18.8
Postpartum hemorrhage	4	12.5
Severe infections	0	0.0
Early contractions	1	3.1
Multiple pregnancy	1	3.1
Other complications	7	21.9
Total	32	100

Table 1 shows that the most of childbirth complications experienced by the mothers are the Abnormalities of the fetus' position.

3.2 Correlations between Mother's Education Level and Childbirth Complications

Maternal characteristics can be described from the mother's education level. This research categorizes the level of mother's education into two types. First is low education level (not completed in primary, elementary, and junior high school) and high education level (high school and college).

Table 2. Correlation between Mother's Education Level and Childbirth Complications

Variables	Childbirth complications				B	P value
	Yes		No			
	n	%	n	%		
Level of education						
Low	0	0	5	3	0.19	0.782
High	32	100	173	97		
Total	32	100	178	100		

Table 2 shows that there is no significant correlation between mother's education level and the incidence of childbirth complications (p = 0.782; α = 0,05).

3.3 Correlation between Reproductive Status and Childbirth Complications

Maternal reproductive status correlated with the mother's age at childbirth, parity, and pregnancy complications experienced by the mother.

Table 3. Correlation between Mother's Age at Childbirth and Childbirth Complications

Variables	Childbirth complications				B	P value
	Yes		No			
	n	%	n	%		
Maternal age:						
≤ 19 years old or ≥ 35 years old	3	9.4	30	16.9	-0.007	0.804
20-34 years old	29	90.6	148	83.1		
Total	32	100	178	100		

Table 3 shows that there is no significant correlation between maternal age at childbirth and the incidence of childbirth complications (p=0.804; α=0.05).

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Table 4. Correlation between Parity and Childbirth Complications

Variables	Childbirth complications				B	P value
	Yes		No			
	N	%	n	%		
Parity						
1 or ≤ 4 children	17	53.1	97	54.5	0.022	0.312
2-3 children	15	46.9	81	45.5		
Total	32	100	178	100		

Table 4 shows that there is no significant correlation between parity and the incidence of childbirth complications (p =0.312; α=0.05).

Table 5. Correlation between Pregnancy Complication and Childbirth Complications

Variables	Childbirth complications				B	P value
	Yes		No			
	n	%	n	%		
Pregnancy Complications						
Yes	5	15.6	8	4.5	0.145	0.001
No	27	84.4	170	95.5		
Total	32	100	178	100		

Table 5 shows that 15.6% of women who experience childbirth complications also have complications in pregnancy. Statistical analysis showed that there is a significant correlation between the incidence of pregnancy complications with childbirth complications (p=0.001; α=0.05). Mothers who experience complications in pregnancy are likely to experience childbirth complications accounted to 14.5%.

3.4 Correlation between Health Care Utilization and Childbirth Complications

Utilization of health services by pregnant women are at the time of ANC visit at health care centers and providing obstetric danger sign during ANC.

Table 6. Correlation between ANC Visits and Childbirth Complications

Variables	Childbirth complications				B	P value
	Yes		No			
	n	%	n	%		
ANC visit						
<4 times	4	23.6	42	12.5	-0.2	0.432
At least 4 times (1-1-2)	28	76.4	136	87.5		
Total	32	100	178	100		

Table 6 shows that the most mothers who experience childbirth complications always attend ANC at least 4 times (once on the first and second trimester and twice on third trimester). Based on statistical test, there is no significant correlation between the number of ANC visits and the incidence of birth complications (p=0.432; α=0.05).

Table 7. Correlation between Information Given about Danger signs in Pregnancy and childbirth complications.

Variables	Childbirth complications				B	P value
	Yes		No			
	n	%	n	%		
information given about danger sign						
Yes	3	9.4	20	11.2	0.05	0.126
No	29	90.6	158	88.8		
Total	32	100	178	100		

Table 7 shows that there is no significant correlation between given information about danger signs in pregnancy during ANC and childbirth complications incidence (p=0.126; α=0.05)

Table 8 Correlation between Birth Attendants and Childbirth Complications

Variables	Childbirth complications				B	P value
	Yes		No			
	n	%	n	%		
Health workers						
Yes	32	100	163	91.6	-0.245	0.000
No	0	0	15	8.4		
Total	32	100	178	100		

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Table 7 shows that there is a significant correlation between birth attendants and childbirth complications (p=0.000; α=0.05). Regression coefficients shown that the birth attendant has a negative correlation (B=-0.245) which means that births attended by skilled health personnel reduced the incidence of childbirth complications.

4. DISCUSSION

4.1 Childbirth Complications

The incidence of childbirth complications in Indonesia is based on the analysis of Indonesian Demographic and Health Survey (IDHS) 2007 was quite high at 43.7% increase from the previous survey period is equal to 36% (Simarmata et al., 2012). The results of the analysis of Basic Health Research (Riskesdas) in 2010 showed the incidence of birth complications reached 47.8%. The figure represents a complication incidence data at the district level in Indonesia. IDHS is a national survey conducted by the Central Statistics Agency (BPS) in collaboration with UNFPA, Macro International Inc., and USAID. While based on the results of the Basic Health Research in 2010 known that the incidence of childbirth complications 47.8% (Simarmata et al., 2014).

Based on this research results revealed that the incidence of childbirth complications in Lumajang reached 15.24%. The figure is still below the results of previous studies, but the incidence of childbirth complications should remain a concern because it is a close determinant of maternal mortality (Simarmata et al., 2012).

4.2 Correlations between Mother's Education Level and Childbirth Complications

Mother's education level is not directly related to the incidence of childbirth complications. Education is a far determinant in maternal morbidity and mortality. This determinant will affect access and utilization of health services. Mothers with higher education pay more attention to the health of themselves and their families to seek prenatal care when pregnant and choose a health professional birth attendant in health care facilities. Mothers with higher education will also be easier to absorb information provided related to health and pregnancy.

4.3 Correlations between Reproductive Status and Childbirth Complications

Research variables that can be categorized into maternal reproductive status include maternal age at childbirth, parity, and pregnancy complication. The results of the study showed that the age of the mother at childbirth and parity are not associated with the incidence of complications of childbirth. This is in contrast with the results of research conducted by Simarmata et al. (2014) states that mothers primipara or multiparous> 4 children tend to experience childbirth complications 1.08 times compared to mothers with children 2-3 parity.

Mothers with a history of pregnancy and childbirth is more than six times (grandemultipara) eight times higher risk of death[4]. Mothers with high parity will have a greater risk of the occurrence of childbirth complications especially postpartum bleeding. Mothers who often give birth, her uterus muscles are often stretched, resulting in depletion of the lining of the uterus and causes contractions. Rupture of the uterus is a childbirth complication that often occurs in women who previously have given birth to several children [6].

Complications of pregnancy had a significant correlation with the incidence of childbirth complications (p=0.001; α=0,05). Pregnancy complications increase the incidence of childbirth complications 14.5%. This is in line with the results Simarmata et al. (2014) that mothers who experience complications in pregnancy tend to have complications at birth 2.72 times compared to women who did not experience complications in pregnancy. The result of this study also consistent with researched by Aeni (2013) which states that the close determinant of maternal mortality are complications of pregnancy and childbirth. Childbirth complications contributing to maternal mortality risk 9.94 times.

The facts show that more than 90 percent of maternal deaths due to obstetric complications that often can not be foreseen at the time of pregnancy. Therefore recommended approach is to assume all of the pregnancy was risky and every pregnant woman should have access to aid childbirth of safe and adequate obstetric care (Saifuddin et al., 2001). Therefore, early detection in pregnant women with high risk are necessary to prevent complications of childbirth that can lead to maternal death. Childbirth complications can be prevented by quality antenatal care (ANC).

Mother and family will be ready to be parents and through safe childbirth process with quality ANC. Based on the Ministry of Health Regulation No. 97 Year 2014 on Health Care period before pregnancy, during pregnancy, childbirth, and the period after childbirth, Implementation Services Contraception and Health Services Sexual mentioned that the adequate and quality ANC implemented in an integrated and comprehensive include promotion, prevention well as curative and rehabilitative services that include Mother and Child Health, nutrition, infectious disease control (immunization, HIV-AIDS, malaria, STDs), the handling of non-communicable diseases as well as several local and other specific programs in accordance with the needs of the program.

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Integrated ANC requires health professional able to ensure that mother can through normal pregnancy. Also able to detect early problems and illnesses past experienced by pregnant women, and to intervene adequately so that pregnant women are ready to undergo safe childbirth.

4.4 Correlation between Health Care Utilization and Childbirth Complications

In this study, the variables classified in the effort utilization of health services by pregnant women include antenatal examination visits and birth attendant election. Antenatal care (ANC) visit is a pregnancy examination on health personnel with the frequency of examination visits at least 4 times is once in the first and second trimester, and twice in the third trimester.

The results showed that antenatal care visits was not associated with the incidence of childbirth complications. This is in contrast with the results Simarmata et al., (2014) which states that the mother did not visit antenatal care at least 4 times likely to experience birth complications 0.93 times compared with women who visited antenatal care at least 4 times. Nevertheless the results of statistical analysis showed that there is a negative correlation between antenatal care visit with the incidence of childbirth complications (B =-0.2), which means a visit antenatal care can reduce the incidence of complications of childbirth. Based on the research results conducted by Ntambue et al. (2012), factors related to ANC visits include parity and pregnancy planning. Inadequate quality of ANC visits cause no effect on the number of ANC visits on the incidence of childbirth complications. Infrastructure facilities that have not been standardized in the implementation of ANC in primary health care in Lumajang District can affect the quality of ANC given to pregnant women.

The results showed that there was no significant correlation between obstetric danger signs giving information to mothers and childbirth complications incidence (p = 0.126; α = 0,05). This contrasts with the research results conducted by Kabakyenga et al., (2011), that the provision of obstetric danger signs information has a significant correlation to the preparation of pregnancy and childbirth. Thus the provision of obstetric danger signs information can affect the incidence of childbirth complications.

Meanwhile, according to research birth attendants had a significant correlation with the occurrence of childbirth complications (p = 0.000; α = 0,05). Variable birth attendants have a negative correlation (B=-0.245) and the incidence of childbirth complications means that births attended by skilled health personnel can reduce the incidence of birth complications by 24.5%. This is in line with the results Sabatini & Inayah (2012), maternal birth is assisted by skilled health personnel may reduce the risk for childbirth complications (RR 0.63; 95% CI 0.503-0.792). Criteria birth attendance by skilled health personnel is if childbirth is only performed by health professional which general practitioners, obstetricians, midwives, or nurses without the intervention of birth attendants who are not health workers such as traditional birth attendant (TBA), family, or others.

Nevertheless there is still a childbirth performed by traditional birth attendant as much as 15 deliveries (8.4%). Unsafe childbirth can increase the risk of maternal mortality (Mochtar, 2007). In Lumajang, there are still child births performed by traditional birth attendant but their numbers are declining year by year. Implementation of Health Office policy with partnership program of TBAs has influence to decrease number of child birth by TBAs in Lumajang District.

5. CONCLUSION

Based on these results it can be concluded that the determinant correlated with the incidence of childbirth complications are complications of pregnancy and birth attendants by health personnel. Other determinants do not have a significant correlation with the occurrence of complications of childbirth.

Efforts to decrease the incidence of childbirth complications can be done with integrated, adequate and quality antenatal care (ANC). Integrated ANC requires health professional able to ensure that mother can through normal pregnancy, also able to detect early problems and illnesses experienced by pregnant women, and to intervene adequately so that pregnant women are ready to undergo safe childbirth. Births attended 100% by skilled health personnel may decrease the incidence of childbirth complications. Implementation of the partnership TBAs program have continued since the amount TBAs are still many in the community. So that TBAs do not carry out aid childbirth.

Recommendations for further research are to studies the correlation quality ANC given at the health care center and childbirth complication incidence. Determinants that may affect the quality of the ANC can also be a further research review.

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