

# The Determinant of Perinatal Mortality in Bandung Regency West Java, Indonesia

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**Abstract**-75% of infant mortalities occur in the early neonatal period. 2/3 of perinatal mortalities come from preventable determinant, namely patient, health service utilization behavior, medication reconciliation, and facility. This study aims to determine the determinant related to perinatal mortality. The method used in this study was an analytic survey with a cross-sectional design where the observation of the research subject was conducted in one observation, using Chi-Square ( $\chi^2$ ) statistical test. The population in this study were pregnant women whose fetuses died in pregnancies above 28 week and infants died before seven days of age. The sample in the study was the number of perinatal mortalities that occurred in Bandung Regency in 2015 which was around 221 cases. Based on the results of the study, the determinants of perinatal mortality were health behavior factors (place of initial service and death), medication reconciliation factors (late medication reconciliation and quality of reconciliation), and facilities (availability of supporting facilities). Aid by non-medical employees had a risk of 14,7 times for the occurrence of perinatal mortality. Delay in treating cases of perinatal emergencies will affect the failure of perinatal rescue.

**Keywords:** Determinant, Mortality, Perinatal

## I. INTRODUCTION

The infant mortality rate is an indicator of health development success that has been announced in the national health system. Indonesia's 2012 Basic Health Survey (IDHS) reported perinatal mortality in Indonesia of 26 per 1000 births. The number of stillbirth cases is 118, and the number of early neonatal mortality cases is 268 [1,2].

Perinatal mortality is stillbirth after 28 weeks of pregnancy, and the baby dies before being exactly one week old. The perinatal mortality rate is the most significant contributor to high infant mortality [3,4]. The World Health Organization (WHO) estimates that more than 9 million babies die each year in the perinatal period. 75% occur in early neonatal which the highest the determinant is being premature and Low Birth Weight (LBW) [5,6].

West Java Province is one of the provinces that contribute significantly to infant mortality in Indonesia. The results of the preliminary survey found that the number of perinatal mortality in West Java in 2014 was 2,563, namely 1,055 stillbirths and 1,508 early neonatal mortalities. The

determinants are LBW (31%), asphyxia (27.3%), and others (20.1%) [7,8].

The number of perinatal mortalities in Bandung Regency in 2015 was 221. The number of births in Bandung Regency in 2015 was 64,849. The highest determinant was LBW.[9]

2/3 determinant of perinatal mortalities come from preventable causes. The causes of mortality that can be prevented relate to causes that can be avoided whereas mortality that cannot be prevented is mortality that cannot be avoided even though all efforts have been made to prevent mortality [10,11]. Based on the result of audit data, some factors can be prevented by perinatal mortality, namely patient, health behavior, medication reconciliation and supporting facilities [10,12].

Mortality registration with mortality record and report is needed to plan interventions. The results of the mortality survey often show below the actual figures. The current problem of mortality is not all reported due to lack of coordination between officers and the community to report deaths. The policy to actively carry out data collection on mortality report and the record need support from all parties [13].

The existing problems require severe and proper treatment from all parties. The right information about the determinant of perinatal mortality is useful to get the factors that cause perinatal mortality in Bandung Regency. Further study is needed to find out the determinant so that appropriate interventions can be conducted to reduce perinatal mortality in the future.

## II. METHODS

The type of this study is the analytic survey with a cross-sectional design where the observation of the research subject was done in one observation, using Chi-Square ( $\chi^2$ ) statistical test. The population in this study were pregnant women whose fetuses died in pregnancies above 28 week and infants died before seven days of age. The sample in the study was the number of perinatal mortalities that occurred in Bandung Regency in 2015 totaling 221 cases. The independent variables are causative factors, and the dependent variable is perinatal mortality.

**III. RESULT**

**1. The Determinant of Perinatal Mortality**

**TABLE 1: FREQUENCY DISTRIBUTION OF PERINATAL MORTALITY**

No	Variable	n=221	Percentage (%)
[1]	Perinatal Mortality		
	Preventable	165	74,7
	Not preventable	56	25,3

**TABLE 3. THE RELATIONSHIP BETWEEN HEALTH BEHAVIOR FACTORS AND PERINATAL MORTALITY**

No	Variable	Perinatal Mortality				P Value
		Preventable		Not Preventable		
		n	%	n	%	
<b>1 Place of Initial Health Service</b>						0,007
	There is a health facility	4	9,3	39	90,7	
	There is no health facility	52	29,2	126	70,8	
<b>2 Place of death</b>						0,009
	There is a health facility	7	12,3	50	87,7	
	There is no health facility	49	29,9	115	70,1	
<b>3 Medical rescuer</b>						0,091
	There is a health facility	7	15,6	38	84,4	
	There is no health facility	49	27,8	127	72,2	

Based on table 4.1, it indicates that the highest perinatal mortality determinant is preventable (74,7%).

**[4] The Relationship among Determinants of Perinatal Mortality**

Bivariate analysis was conducted to determine the relationship between independent variables and dependent variables. To determine the relationship between the factors that cause perinatal mortality using the Chi-Square test, the results can be viewed in the table as follows.

**TABLE 2. THE RELATIONSHIP BETWEEN PATIENT FACTORS AND PERINATAL MORTALITY**

No	Variable	Perinatal Mortality				P Value
		Preventable		Not Preventable		
		n	%	n	%	
<b>1 Mother's age</b>						0,330
	Risky	17	21,5	62	78,5	
	Not risk	39	27,5	103	72,5	
<b>2 Education</b>						0,299
	Primary education	36	22,8	122	77,2	
	Secondary education	18	33,3	36	66,7	
	Higher education	2	22,2	7	77,8	
<b>Parity</b>						0,372
	1 or ≥ 4 children	26	22,8	88	77,2	
	>1- 3 children	30	28,0	77	72,0	
<b>Mother's comorbid disease</b>						0,857
	Exist	8	26,7	22	73,3	
	Not Exist	48	25,1	143	74,9	
<b>Complications of pregnancy, childbirth, moreover, postpartum</b>						0,910
	There is a complication	29	25,7	84	74,3	
	There is no complication	27	25,0	81	75,0	
<b>Infant's comorbid disease</b>						0,161
	There is a comorbid disease	42	28,2	107	71,8	

There is no comorbid disease	14	19,4	58	80,6	
<b>ANC visit history</b>					0,095
Risky	14	35,9	25	64,1	
Not Risky	42	23,1	140	76,9	

table 2 indicates that the patient factors are not related to the perinatal mortality with a score of  $p > 0,05$

Table 3 indicates that the statistical result of health service factors (place of initial health service and death) is related to perinatal mortality with a score of  $p < 0,05$ . The medical rescuer is not related to perinatal mortality with a score of  $p > 0,05$ .

**TABLE 4. THE RELATIONSHIP BETWEEN MEDICAL RECONCILIATION FACTORS AND PERINATAL MORTALITY**

No	Variable	Perinatal Mortality				P*
		Preventable		Not Preventable		
		n	%	n	%	
<b>1 Medical reconciliation case</b>						0,094
	Being not reconciled	12	17,9	55	82,1	
	Reconciled	44	28,6	110	71,4	
<b>2 Delays in medical reconciliation</b>						0,000
	Late	12	9,9	109	90,1	
	On time	44	44,0	56	56,0	
<b>3 Quality of medical reconciliation</b>						0,002
	Having no high quality	10	12,8	68	87,2	
	Having quality	46	32,2	97	67,8	
<b>4 Geography</b>						0,720
	Upland	29	24,4	90	75,6	
	Lowland	27	26,5	75	73,5	
<b>5 Transportation</b>						0,375
	Available	2	16,7	10	83,3	
	Unavailable	54	25,8	155	74,2	
<b>6 Residence</b>						0,427
	Rural area	11	21,2	41	78,8	
	Urban area	45	26,6	124	73,4	
<b>7 Time</b>						0,733
	> 2 hours	1	25,0	3	75,0	
	≤ 2 hours	55	25,3	162	74,7	
<b>8 Distance of residence</b>						0,642
	> 5 km	33	24,3	103	75,7	
	< 5 km	23	27,1	62	72,9	
<b>9 Health fare</b>						0,137
	Nonhealth insurance	6	15,8	32	84,2	
	Health insurance	50	27,3	133	72,7	

Table 4 indicates that the results of statistics on medical reconciliation factors (delays in medication reconciliation and quality of medical reconciliation) are related to perinatal mortality with a score of  $p < 0,05$ . Medical reconciliation cases, geography, transportation, residence, time, a distance of residence, and financing are not related to perinatal mortality with a score of  $p > 0,05$ .

**TABLE 5. THE RELATIONSHIP BETWEEN FACILITY FACTORS AND PERINATAL MORTALITY**

No	Variable	Perinatal Mortality				P Value
		Preventable		Not Preventable		
		n	%	n	%	
<b>1 Availability of supporting facilities</b>						0,011
	Available	6	11,8	45	88,2	
	Unavailable	50	29,4	120	70,6	

Table 5 indicates that facility factors are related to perinatal mortality with a score of  $p < 0,05$ .

#### IV. DISCUSSION

The results of the study showed that the factors are related to perinatal mortality with a score of  $p < 0,05$ . Health behavioral factors (first service place is not in health facilities, place of death is not in health facilities), medical reconciliation factors (delays in medical reconciliation, quality of medical reconciliation), and facility factors (availability of supporting facilities) are determinants of perinatal mortality that should be prevented.

The initial service place will affect the occurrence of perinatal complications. The hope of the initial service place will be helped by medical employees and will be able to detect early signs that lead to complications. When it finds signs of complications, it will be able to provide effective early treatment so that the complications do not continue severe or can be treated and there is no perinatal mortality. The first aid which is from a medical employee is a risk factor for the occurrence of maternal death which will directly affect the baby in the birth. In line with the study conducted in Lingga Regency, it is stated that aid from dukun (traditional medical employee) has a risk of 14.7 times for the occurrence of perinatal mortality [14].

The place of birth at home will cause difficulties if the delivery process requires complications that are immediately reconciled to the hospital if the geographical conditions are not supportive and means of transportation are not available. The higher the proportion of mothers giving birth at home the higher the risk of maternal death as well as the condition of the baby being conceived. Moreover, born.14 Medical employees are regarded as competent if they have received training and certificates in providing comprehensive essential neonatal obstetric services [15].

Delays in medical reconciliation are mostly still in the first delay which is a delay in making decisions. The second delay is the delay in getting to health facilities, and the third delay is too late to get service after being in a health facility. It means the delay is caused by more than one determinant.

This is consistent with the results of a study in Tanzania which stated that 72.5% of infant deaths were caused by more than one factor of delay. 35.8% of infant mortalities were caused by delays in taking the infant to a health care facility. This is caused by weak and distant transportation, and the family members do not trust in facilities or medical employees to aid in emergencies [16,17]. The stabilization of the patients' condition aims to maintain the condition in order to not become serious before arriving at the hospital chosen. The procedures for obtaining transportation quickly for emergency cases must be available at every level of health services. There are vehicles used as transportations to the hospital. The results of the study in Ghana reported that midwife and partograph accompanied mothers who were reconciled. The availability of transportation would reduce the general condition and would reduce maternal morbidity [18].

The result of the study explained about the unavailability of supporting facilities at the time of death.

Patients should get treated with more supportive equipment for the survival of infant such as the NICU room, but the availability of these facilities is limited, and the regional hospital does not have the required facilities.

The availability of supporting facilities at the medical reconciliation site affects the delay in handling perinatal emergencies. The maternal mortality that occurred when there were delays in giving treatment at the medical reconciliation site was due to lack of medical facilities, lack of equipment, and lack of trained staff causing maternal mortality in Gambia [19].

#### V. CONCLUSION

There are three factors related to perinatal mortality indicating  $p < 0,05$ , namely health behavior factors (place of initial medical service and death), medical reconciliation (delay of medical reconciliation and quality of medical reconciliation), and facility factors (availability of health support facilities) to be determinants of perinatal mortality that should be prevented.

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