

EXPLORING PERINATAL DEATH CHARACTERISTICS AT DR. SOETOMO GENERAL HOSPITAL, SURABAYA FROM 2014 TO 2015

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ABSTRACT

Introduction: There are several risk factors for perinatal death. This study aimed to explore the characteristics of perinatal mortality at Dr. Soetomo General Hospital, Surabaya from 2014 to 2015.

Methods: This was a descriptive study. Maternal and perinatal data were taken from the medical records.

Results: The total perinatal death was 285 cases of all deliveries at Dr. Soetomo General Hospital, Surabaya in 2014-2015. Most women were in maternal age of 17-34 years. The maternal education was mostly high school, and most mothers were unemployed. More than a half of maternal parity was multigravida (63.5%), and the gestational age was preterm or under-month gestation at 81.4%. Most infants (73.3%) had low birth weight, and most cases were born vaginally. The majority of cases were non-booked case (NBC). Most of perinatal mortality was caused by prematurity followed by asphyxia, and the maternal factor was preeclampsia/eclampsia.

Conclusion: Perinatal deaths mostly occurred in postnatal with the main causes of prematurity and asphyxia and the maternal factor was preeclampsia/eclampsia.

Keywords: characteristics, perinatal deaths, postnatally, prematurity, hypertensive disease in pregnancy

INTRODUCTION

WHO states that the perinatal period is the period of 22 weeks gestation until the baby is 7 days after birth. Most baby deaths are thought to occur in this period, so they are called perinatal deaths. The results show that every year over 4 million babies die in the first four weeks of life; 3 million of these deaths occur in the early neonatal period. Ninety-eight percent of the deaths take place in the developing world (1). Another report said the risk was highest in sub-Saharan Africa, but the number of deaths was highest in South Asia (2).

There are several factors that are suspected to be risk factors for perinatal death. Several studies have shown that the factors causing perinatal death are infection, maternal age, low birth weight (LBW), history of maternal disease, incomplete antenatal care (ANC), low family income, the presence of congenital abnormalities, asphyxia,

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birth complications, prolonged labor, preeclampsia, and eclampsia (3). Previous report also showed that neonatal tetanus was associated with mortality (4).

Based on Demographic and Health Survey report of Indonesia in 2012, determinants of perinatal mortality consisted of respiratory disorders, prematurity, sepsis, hypothermia, jaundice, and congenital abnormalities (5). Study in 2012 found that most of perinatal mortality was caused by prematurity, which was 75.54 percent or 139 babies out of the total deaths studied (6). The previous study found that the key factors associated with mortality perinatal are premature birth, the size of a small birth weight for gestational age, anemia, and adherence to the program of the ANC (7). Another study stated that birth injury and asphyxia and prematurity are the main causes of perinatal death, while demographic factors that are thought to contribute to perinatal mortality are maternal age, parity, labor intervals, socioeconomic status, and others (8). Therefore, this study aimed to explore the characteristics of perinatal mortality at Dr. Soetomo General Hospital, Surabaya from 2014 to 2015.

METHODS

This was a descriptive study of the characteristics of perinatal deaths that conducted in dr. Soetomo General Hospital, Surabaya from January 1, 2014 to December 31, 2015. Maternal and perinatal data were taken from the medical records. Inclusion criteria were all cases of perinatal period death. Exclusion criteria were incomplete medical records and weekly report records. Variables in this study were the characteristics of perinatal mortality based on maternal factors, such as age, education, employment status, parity, gestational age, ANC status, mode of delivery, and maternal diseases, while the perinatal were birth weight and complications which cause death in perinatal. Data analysis was descriptive and presented in tables.

RESULTS

Tables 1 and 2 present the results obtained in 2014 of the total 1325 deliveries which show total 141 perinatal deaths (10.6%). They were divided into antenatal deaths of 58 (41%) cases, intranatal of 16 (11%) cases, and postnatal of 67 (48%) cases. Whereas, in 2015, there were 144 (12.6%) cases of perinatal mortality, divided into antenatal deaths of 57 (40%) cases, intranatal of 28 (19%) of cases, and postnatal of 59 (41%) cases of 1147 total deliveries. The total perinatal death was 285 cases of all deliveries at Dr. Soetomo General Hospital for two years.

Table 3 shows the characteristics of perinatal mortality based on maternal age, maternal education, and employment status. Most women were in maternal age of 17-34 years. The maternal education was mostly high school, and most mothers were unemployed.

The perinatal mortality characteristics based on parity, gestational age, birth weight, and mode of delivery are shown in Table 4. The majority of maternal parity was multigravida, which was 63.5%, and the gestational age was preterm or under-month gestation at 81.4%, while the perinatal mortality at postterm gestational age was only 1.1%. Most infants had low birth weight of less than 2000 g, which was 73.3%, and most cases were born vaginally.

Table 5 shows the history of antenatal examinations carried out. It was found that the majority of cases was Non Booked Case (NBC) or most were referral cases that had not previously conducted ANC examination at Dr. Soetomo General Hospital. Whereas, Table 6 displays the results of the characteristics of perinatal mortality based on cause of death and maternal diseases that contribute to perinatal death. The most common cause of perinatal mortality was prematurity of 34.4%, followed by asphyxia by 20.4% and 16.1% of congenital abnormalities.

DISCUSSION

The most common cause of perinatal mortality is prematurity. The incidence of preterm birth is a risk factor for perinatal death events with OR of 15.06 compared to babies born normally (9). Premature babies are also more at risk than normal babies to experience perinatal death with a risk of 4.61 times (10). Besides, maternal factor is preeclampsia/eclampsia. Pre-eclampsia/eclampsia cases are the most cases of maternal disease which contribute to perinatal mortality.

The perinatal mortality in 2015 slightly increase as much as 12% compared to the previous year, and most of them were postnatal (age 1-7 days after birth), but the number of antenatal deaths did not differ much with postnatal death. The risk of respondents with the use of ANC services who are not complete to experience perinatal death is 4.08 times compared to respondents who use the ANC service which is complete (11).

This study found that most infants were in LBW cases. The risk factors of LBW cases are age pregnancy, multiple pregnancy, hypertension and anemia (12). Another study also reported that the newborn weight status was

most influential factor on neonatal death in Muna, Indonesia with odds ratio (OR) of 22.548 (95% CI:6.515-78.036) (13).

The most common cause of perinatal mortality is prematurity, followed by asphyxia, and congenital abnormalities. Infants born prematurely have a higher risk of perinatal death when compared to infants born at term because infants born prematurely tend to have difficulty adapting to life outside the womb due to immature body systems. Another report also showed that the incidence of preterm birth was very closely related to perinatal death. Prematurity resulted in perinatal mortality, which is equal to 24 percent (14). These results were in line with a cohort study which presented that 75.54 percent of perinatal deaths were caused by premature births (6). Another report also found that 47 percent of preterm births resulted in perinatal death (15). The same results were also obtained from bivariate analysis results which showed the incidence of preterm birth was a significant risk factor for perinatal death with OR = 2.58 (16).

These findings in the case of asphyxia neonatorum were supported by previous studies which said that the main cause of perinatal death was neonatal asphyxia (3). In addition, another report said both in vaginal and caesarian delivery, most important causes of neonatal complication were moderate and severe asphyxia, respectively (17).

While in the case of congenital anomalies, these findings were slightly different with a study in Columbia. That study stated that congenital anomalies were an important cause of fetal and neonatal deaths in Colombia. The most frequent fatal congenital anomalies were congenital heart defects (32.0%), central nervous system anomalies (15.8%), and chromosomal anomalies (8.0%) (18). Congenital heart disease (CHD) is the leading cause of death in the first year of life (19). Other studies said that the most frequent of malformations and deformations were those of the musculoskeletal system (19.6%), followed by the nervous system (18.8%), the digestive system (18.7%), the circulatory system (12.9%), and the cleft lip and cleft palate (8.2%). Congenital anomalies can be one of the risk factors either in the increase of morbidity and mortality rate in newborn infant, or in the future growth and development disorder of a child.(20) In addition, there are some rare cases such as anomalous congenital bands which may cause serious morbidities due to ischemic intestinal which contribute 3% of total cases (21).

Pregnancy complications are an obstetric emergency that can cause maternal and perinatal mortality. Whereas, the complications of childbirth is a state of deviation from normal which directly causes morbidity and death of both mother and infant due to interference directly due to childbirth. Various studies have found that complications are related to perinatal period mortality. Research conducted in Sao Paulo-Portugal concluded that mothers who experience pregnancy complications are at risk for perinatal death (22).

Whereas, a cohort study in Pakistan found that premature rupture of membranes, prolonged labor, and maternal infections were the risk factors for perinatal death in Pakistan (23). Based on study in various countries, about the relationship of 16 types of complications of pregnancy and childbirth to perinatal death, there are 3 types of complications that are at risk of causing perinatal death, namely placental abruption, uterine rupture, and pre-eclampsia (24). The results of this study were consistent with previous studies, where pre-eclampsia was a risk of perinatal death with an OR value of 1.72 (25).

CONCLUSION

Based on trend of perinatal mortality in 2014-2015, perinatal deaths occurred mostly in postnatal. The causes of perinatal mortality were prematurity, respiratory disorders at birth (birth asphyxia, respiratory distress syndrome, meconium aspiration), as well as congenital abnormalities and neonatal sepsis. The maternal factor such as preeclampsia/eclampsia still requires special attention because it contributes to perinatal mortality.

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Tables

Table 1. Frequency distribution of Perinatal Mortality

Year	Perinatal Death	Total Delivery
2014	141 (10.6%)	1325
2015	144 (12.6%)	1147

Table 2. Frequency distribution of types of perinatal deaths

Types of perinatal deaths	2014		2015	
	n	%	n	%
Antenatal	58	41	57	40
Intranatal	16	11	28	19
Postnatal	67	48	59	41
Total	141	100	144	100

Table 3. Characteristics of perinatal mortality based on socio demographic

Characteristics	n	%
Age (years)		
≤ 16	3	1.1
17-34	226	79.2
≥ 35	56	19.7
Education		
No school	4	1.4
Elementary / middle school	72	25.3
High school	171	60
Diploma	28	9.8
Bachelor	10	3.5
Employee		
No	241	84.6
yes	44	15.4

Table 4. Characteristics of perinatal mortality

Characteristics	n	%
Parity		
Primigravida	88	30.9
Multigravida	181	63.5
Grandemultigravida	16	5.6
Gestational age		
Preterm	232	81.4
Aterm	50	17.5
Postterm	3	1.1
Birth weight		
<2000 g	209	73.3
2000 g-<2500 g	33	11.6
2500 g-<4000 g	42	14.7
>4000 g	1	0.4
Mode of delivery		
Vaginal	175	61.4
Abdominal	110	38.6

Table 5. Perinatal deaths based on ANC examination

	2014		2015	
	n	%	n	%
Booked Case (ANC \geq 3 times)	15	10.6	17	11.8
Non-Booked Case (ANC <3 times)	126	89.4	127	88.2
Total	141	100	144	100

Table 6. Characteristics of perinatal mortality based on cause of death and maternal disease

Characteristics	n	%
Cause of death		
Prematurity	98	34.4
Asphyxia	58	20.4
Sepsis	32	11.2
Congenital abnormalities	46	16.1
Etc	27	9.5
Unknown	24	8.4
Maternal Disease		
Preeclampsia / Eclampsia	153	53.7
Antepartum Bleeding	20	7.0
Complications during childbirth	36	12.6
Heart disease	16	5.6
Etc	60	21.1