Case Control Study Of The Occurrence Factors Of Low Birth Weight (LBW) In The Dr. SoerotoNgawi Hospital

ABSTRACT

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Background: Infant morbidity and mortality (IMR) is an indicator in determining health status. Because the infant mortality rate is able to describe the state of health of both mother and baby including LBW and HIV / AIDS.

Purpose: to knowing the case control study of the occurrence factors of low birth weight (LBW) in the dr. SoerotoNgawi Hospital.

Methods Research: Retrospective with case control study design. Research executed on 25 July to 7 August 2019 in Dr. SerotoNgawi Hospital. with population of all postpartum mothers who have babies as many as 2901 and a large sample of cases 176 and 176 control . Data approach used observations by medical record and analyzed with Chi-Square test and binary logistic regression.

Results of research: The Factors Of incidence Low Birth Weight (LBW) in the dr. SoerotoNgawi Hospital. is HIV p-value 0,000; OR = 0.042; HB (p-value 0,000, OR 3,465) and ANC (p-value 0,000, OR 0,14).

Conclusion: There is HB level is that factor dominant incidence of Low Birth Weight (LBW) in the dr. SoerotoNgawi Hospital.

Solution: The hospital's efforts to improve IEC, HIV surveillance and care of LBW risk groups. Action needs to be taken for LBW to maintain body temperature with in incubator, the Kangaroo method and adequate nutrition intake.

Keywords: HIV, HB, ANC and LBW

INTRODUCTION

Infant morbidity and mortality (IMR) is a benchmark or indicator in determining health status. Because the infant mortality rate is able to describe the state of health including mothers and babies suffering from HIV / AIDS. The most common causes of death in infants are LBW complications and the impact of HIV infection. The Human Immunodeficiency Virus makes a major public health challenge in southern Africa with a prevalence of 10% in the general population and 16% at the age of 15 -49 years. And in South Africa, pregnant women who are infected with HIV have a 4 times higher risk of giving birth to LBW babies and 4 times earlier than those who do not have HIV. In addition to the Human Immunodeficiency Virus, the economy also affects LBW wherehigh-income countries have an LBW incidence of 8% and in low and middle-income countries up to 18%. (Naidoo, Sartorius, &Tshimanga-Tshikala, 2016).

LBW neonatal deaths in Ethiopia range from 60% to 80% of all neonatal deaths. The factors that influence the occurrence of LBW include the age of the mother during pregnancy, primipara, low HB levels, maternal diseases such as HIV and incomplete ANC. As for the impact of LBW, it still causes global and international health problems when compared to LBW, because it can interfere with growth and development, and its importance can not result in death (Hartiningrum&Fitriyah, 2016). WHO estimates that 15% to 25% of all births in the world will be born with LBW and 96.5% occur in developing countries.(Wahyuni,Makaba, Sandjaja, &Mallongi, 2018).

Considering LBW is still a global concern, finally the 2012 World Assembly adopted a Comprehensive Implementation Plan on Maternal, Infant and Adolescent Nutrition with a 30% increase in LBW change in 2025, (Wahyuni Hafid, 2018). The reduction of MMR and IMR is an international agreement, which is set forth in the Sustainable Development Goals. The primary goal of the SDGs is to reduce maternal mortality below 70 per 100,000 live births (KH) and the second target is to stop infant and toddler deaths, by reducing infant mortality to 12 per 1000 KH in 2030. And Indonesia ranks 77 IMR in the world, with infant mortality rate 14 per 1000 KH (UNICEF, 2015). (Bangun, Abdiana, & Edison, 2019).

Based on 2014 WHO (World Health Organization) data from 172 countries in the world, Indonesia is ranked 70 and the percentage of deaths due to underweight is 10.69%. Of all babies born with LBW where less than 2.5 kg were on average 16% and 11.1% were born less than months. (Silveiran et al, 2018)

In Indonesia, LBW ranks fifth with the largest number of premature babies in the world and is identified as the largest contribution of infant deaths, reaching 25 deaths per 1,000 babies born. (RefniYulisa, 2018). Based on data from the Ministry of Health of the Republic of Indonesia 2018 Riskesda the number of LBW in Indonesia weighing <2500 gr is 6.2% and the length of less than 48 cm is 22.7%

METHODS

Retrospective design of case control study. The study was conducted from July 25 to August 7, 2019 in Dr.SerotoNgawi Hospital with populasi was maternal mother in 2018 with the number of case samples were 176 cases and control were 176. The data were obtained using observation sheet of medical record data and analyzed using chi-square test and logistic binary regression.

RESULTS

Analisa Bivariat

a.   Effects of HIV on LBW occurrences

Table 1.Effects of HIV on LBW occurrences in RSUD Dr.SoerotoNgawi Hospital on July 25 to August 7, 2019.

Variabel HIV	No Low birth weight		Low birth weight		Total
	F	%	f	%	F
No HIV	164	93,2	174	98,9	338
Yes HIV	12	6,8	2	1,1	14
Total	176	100	176	100	352

Table 1 shows that most respondents did not have HIV and experienced LBW as many as 174 (98.9%) and the smallest data from HIV had LBW as much as 2 (1.1%). The result of chi-square statistic = 0,05 obtained p-value 0,006 or pα test at significance value of 95% (< α 0,05),thus there is significant HIV effect to the occurrence of LBW in dr.SoerotoNgawiHospital.When viewed from the value OR = 0,157 so that mothers with HIV are at risk with the incidence of LBW 0,157 time greater than women who non HIV.

b. Effects of HB on LBW occurrences

Table 2.Effects of HB on LBW occurrences in RSUD Dr.SoerotoNgawi Hospital on July 25 to August 7, 2019.

Variabel HB	Low birth weight				Total
	No Low birth weight		Low birth weight		
	F	%	f	%	F
Normal	147	83,5	109	61,9	256
Abnormal	29	16,5	67	38,1	96
Total	176	100	176	100	352

Table 2 shows respondents who had normal HB levels and experienced LBW as much as 147 (83.5%) and the smallest data from abnormal HB levels experienced LBW as many as 29 (16.5%). Statistical results of chi-square = 0.05 obtained p-value of 0,000 or pα test at a significance value of 95% (<α 0.05), so there is an influence between HB levels on the occurrence of LBW in dr.SoerotoNgawi Hospital. .When seen from the value of OR = 3.116 so that mothers with abnormal HB are at risk of experiencing LBW 3.116 times greater than mothers with normal HB levels.

c. Effects of ANC on LBW occurrences

Table 3.Effects of ANC on LBW occurrences in RSUD Dr.SoerotoNgawi Hospital on July 25 to August 7, 2019.

Variabel ANC	Low birth weight				Total
	No Low birth weight		Low birth weight		
	F	%	f	%	F
ANC complete	159	90.3	122	69,3	281
Incomplete	17	9,7	54	30,7	71
Total	176		176		352

Table3 shows that most ANC respondents were complete and not LBW as many as 159 (90.3%) and the smallest data from ANC were incomplete and not LBW as many as 17 (9.7%). Statistical results of chi-square = 0.05 obtained p-value of 0,000 or pα test at a significance value of 95% (<α 0.05), so there is an influence between ANC on the occurrence of LBW in dr.SoerotoNgawiHospital. When viewed from the value OR = 4,140 so that mothers with incomplete ANC are at risk of LBW 4.140 times greater than mothers with complete ANC.

3.1 Multivariate Analysis

Multivariate analysis uses a logistic regression test that is used to determine the factors that influence LBW where each independent variable is tested against the dependent variable.

Table 4. Analysis Of Multiple Logistic Regression Variables

Variabel	p- value	R²	Sig parsial	Ex(B)
HIV	0,000	0,230	0,000	0,042
HB	0,000	0,230	0,000	3,465
ANC	0,000	0,230	0,000	0,14

Table 4 above shows that the variables of HIV, HB and ANC have a Sig value <0.05 which means that the variables of HIV, HB and ANC affect the occurrence of LBW. And the most dominant factor is the HB level is very influential on the incidence of LBW in RSUD dr. Soeroto Ngawi

DISCUSSION
The influence of HIV mothers on LBW events.
     The results of this research shows that there is a significant effect of maternal HIV and LBW events in RSUD dr. SoerotoNgawi. Where mothers who did not HIV and gave birth to LBW were 174 (98.9%) and mothers who were HIV positive and LBW were 2 (1.1%). HIV variable obtained by the value of Sig 0,000 <α = 0.05 means that there is an influence between HIV and the incidence of LBW in RSUD.Dr.Soeroto Ngawi. And the OR results showed that mothers with HIV had 0.042 times the chance of giving birth to LBW compared to mothers who did not.
     Based on the results of previous studies in South Africa pregnant women who are infected with HIV are more at risk of giving birth to LBW and premature 4-fold when compared to mothers who do not have HIV. This shows that mothers with HIV infection are a significant risk factor for premature birth. (Naidoo, Sartorius, &Tshimanga-Tshikala, 2016).
Based on the above research results, it is possible that LBW births are not only influenced by HIV but can also be influenced by other factors such as socioeconomic, nutritional factors, maternal age factors or incomplete pregnancy examination (ANC) factors or other factors suffered by the mother or fetus contained.

The influence of HB mothers on LBW events.
     The results showed there was a significant effect between HB levels with LBW in dr. SoerotoNgawi. The most and smallest data from the normal and not normal HB groups and not LBW were 147 (83.5%) and 29 (16.5%). HB variable obtained Sig value 0,000 <α = 0.05 means there is an influence between the levels of HB with LBW in RSUD.Dr.SoerotoNgawi. And OR results show mothers with HB levels have less chance of 3,116 times to give birth to LBW when compared to mothers with normal HB.
     Based on the results of research (Pregnancy & Fur, 2017) there is no significant relationship between HB levels with LBW, but according to Sri Wahyuni's research results (2018) HB levels are very influential on LBW. While the results of research researchers found HB levels have the most dominant influence on LBW. This is possible during pregnancy without consuming fe at least 90 tablets, inadequate nutrient intake, bleeding or other factors. Normal HB levels will be able to distribute nutrients and oxygen throughout the body especially for infants and can reduce maternal complications such as preeclampsia, anemia and can reduce morbidity and perinatal mortality, namely LBW, growth disturbance and disruption of brain cells.

Effect of ANC Frequency on LBW Occurrence
The results showed that there was significant effect of ANC frequency on the Occurrence of LBW in dr. SoerotoNgawi.The most research results from complete ANC and not experiencing LBW as many as 159 (90.3%) and at least ANC incomplete and not LBW as many as 17 (9.7%). ANC variable obtained value of Sig 0,000 <α = 0.05 there is an influence between ANC status on LBW in Dr. SoerotoNgawi Hospital. And OR shows that mothers with incomplete ANC have a 0.140 chance of giving birth to LBW than mothers with complete ANC.

Based on the results of research conducted by Mipa and Undana that incomplete ANC visits (<4 times) the risk of experiencing neonatal death is 7.3 times greater than that of pregnant women who have more than 4 times of pregnancy checks. (Mipa&Undana, 2016).

CONCLUSION

There is a significant effects of HIV on LBW occurrence in dr.Soeroto Ngawi Hospital (p-value 0,000; OR = 0,042

There is a significant effects of HB on LBW occurrence in dr.Soeroto Ngawi Hospital (p-value 0,000; OR = 3,465

There is a significant effects of ANC frequency on the occurrence of LBW in dr.Soeroto Ngawi Hospital (p-value 0,000; OR = 0,140

Based on the results of research HB levels are the most dominant factor occurrence of LBW in RSUD Dr. Soeroto Ngawi

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