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# Age, Parity, Antenatal Care and Pregnancy Complication as Contributing Factors of Low Birth Weight Infants

Sisilia Leny Cahyani[a]*, Sulansi[b], Bringiwati Batbual[c]

[a,b,c]*Health Polytechnic MoH Kupang, Jl. Piet A. Tallo, Liliba, Kupang NTT Province Indonesia*

[a]*Email: lechy74@gmail.com*

**Abstract**

Low Birth Weight (LBW) is the weight of baby which is scaled at the first hour after be born < 2500 gram. This problem is very important to be cared because it relate to the baby's life for furthermore. The research aim is to find out the risk factors of baby Low Birth Weight (LBW) in Ende Regional Public Hospital. This research used the quantitative method with case control design. Samples are 100 persons for group case and 100 persons for group control. The sample is taken by using the purposive sampling way, in consideration that all of the mothers as the sample is living in Ende Regency. Total 200 mothers. Be based on the bivariate analysis there correlation the baby Low Birth Weight (LBW) incident with age (OR 4,42), parity (OR 4,57), Antenatal Care (OR 23,06), pregnancy complication (OR 139,33) and with congenital defect (OR 0,19). Multivariat analysis obtained that factors which cause the baby Low Birth Weight (LBW) incident are, age, paritas, ANC, and pregnancy complication. The care to pregnant mother should be improved by coordinating system among related units that provide preventive measures which involve families in supervising pregnant mother.

***Keywords:*** age; parity; ANC; pregnancy complication; low birth weight.

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* Corresponding author.

## 1. Introduction

Low birth weight (LBW) is the weight of the baby who weighed within 1 hour after birth <2500 grams. LBW infants is a important issue because it is very closely related to the survival of the baby. Baby with low birth weight is a determinant of mortality and morbidity in the neonatal period (age 0-28 days after birth) and postnatal period (age >28 days - 12 months). This is because the LBW infants may arise various problems related to organ immaturity so easily happening infections and developing complications that have an impact on the disruption of the growth and further development.

Babies with low birth weight is generally undergo a process of long-term survival is poor. If it does not die at the beginning of the birth, low birth weight babies are at risk grow and develop more slowly than babies who are born with normal weight. In addition to growth disorders, individuals with a history of low birth weight have a risk factor for hypertension, heart disease, and diabetes after reaching the age of 40 years [1].

According to the results of health basic research 2007 that 78% of the causes of death in infants is asphyxia, low birth weight, and infections, but infant mortality caused by the incidence of low birth weight babies remains high at 38.85% [2]. The infant mortality rate in the neonatal period in Indonesia according to the Indonesian Demographic and Health Survey (IDHS) in 2012 Neonatal Mortality Rate (AKN) of 19/1000 live births (KH) and Infant Mortality Rate (IMR) of 32/1000 KH, these figures is still very high when compared to the 2015 MDG targets KH 23/1000 IMR [3].

At the present time, has been developed with the management of the start of the LBW infants maintain optimal temperature, provide adequate nutrition and the prevention of infection. Nevertheless, they obtained 50% of LBW infants who died in the neonatal period or survive malnutrition, recurrent infections and neurological developmental disability. Therefore, prevention of incidence of LBW preferably in an effort to suppress the Infant Mortality Rate [4]. One indicator to determine the degree of public health is the infant mortality rate (IMR). Baby Born Rate is an indicator that is commonly used to determine the degree of public health, both at provincial and national level. In addition, the health programs in Indonesia, many of which focused on reducing infant mortality. IMR refers to the number of infants who died in the phase between birth until the child has not reached the age of 1 year per 1,000 live births [3]. Based on Indonesian Demographic and Health Survey (IDHS) in 2012, Neonatal Mortality Rate (NMR) in Indonesia is 19 deaths per 1,000 live births and the infant mortality rate (IMR) is 32 deaths per 1,000 live births [3]. LBW prevalence according to WHO in 2011 estimated 15% of all births in the world with a limit of 3.3% - 38% and is more common in developing countries or low socio-economic. Statistically shows that 90% LBW obtained in developing countries and a death rate 35 times higher than in infants weighing more than 2500 grams [5}. Based on data from District Health Office Ende, in 2011 out of 5,442 live births of 132 (2.42%) cases was LBW, and in 2012 of 4,472 live births, the number of cases of LBW as much as 267 (5.97%) cases [6].

In order to achieve the Millennium Development Goals are to IV, namely reducing child mortality, especially in developing countries, need to be undertaken to prevent the incidence of low birth weight in the future, one of them with strict monitoring of risk factors that affect the incidence of low birth weight. Based on the data above,

the purpose of this study was to determine the factors relate to the incidence of LBW babies in Ende Regional Public Hospital.

## 2. Research Methodology

Quantitative research with case control study design was conducted to analyze the factors including maternal age, parity, ANC, complications of pregnancy and congenital abnormalities to the occurrence of LBW babies in Ende Regional Public Hospital. The population in this study is the mother who gave birth in Ende Regional Public hospitals, in period from March 2014 until March 2015 as many as 214 babies. Samples are divided in two groups, one as a case group of 100 mothers with LBW and one as a control group of 100 mother with no LBW, so the total sample of 200 mothers. Sampling with purposive sampling method with consideration of these mothers gives birth to live and reside in the district of Ende.

## 3. Finding and Discussions

The results show that of the 200 respondents in the room maternity Ende Regional Public there are 125 mothers (62.5%) are 20 to 34 years, women with more parity than 3 children amounted to 108 people (54%). The results also show more mothers who do ANC less than 3 times during her pregnancy which amounted to 147 people (73.5%), more mothers who do not experience complications during pregnancy which amounted to 107 people (53.5%), and also more mothers gave birth to babies with no congenital abnormalities which amounted to 146 people (73%), as seen in table 1.

**Table 1:** Correlation between Research Variables and Low Birth Weight Infants

| Variabel | | Cases | Control | Total | OR (95% CI) |
|---|---|---|---|---|---|
| Age | < 20 or ≥ 35 | 54 | 21 | 75 | 4.42 |
| | 20 - 34 | 46 | 79 | 125 | |
| | | | | | (2.37 – 8.22) |
| Parity | ≤ 3 | 28 | 64 | 92 | 4.57 |
| | > 3 | 72 | 36 | 108 | |
| | | | | | (2.52 – 8.31) |
| Antenatal Care | ≥ 3 | 4 | 49 | 53 | 23.06 |
| | < 3 | 96 | 51 | 147 | |
| | | | | | (7.876 – 67.51) |
| Pregnancy complications | Yes | 88 | 5 | 93 | 139.33 |
| | No | 12 | 95 | 107 | |
| | | | | | (47.18 – 411.45) |
| Congenital abnormalities | Yes | 12 | 42 | 54 | 0.19 |
| | No | 88 | 58 | 146 | |
| | | | | | (0.09 – 0.39) |
| Total | | 100 | 100 | 200 | |

Table 1 shows that mothers with age <20 years and ≥35 years have risk for 4.42 times more likely to give birth to low birth weight babies compared to mothers with ages 20 to 34 years. Table 1 also shows that mothers who have parity >3 had 4.57 times greater risk of having a low baby birth weight compared to mothers with parity ≤3. Mothers who did ANC <3 times have the risk for 23.06 times more likely to give birth to low birth weight babies than mothers who did the ANC >3 times.

Mothers who experienced complications during pregnancy have a greater risk of 139.33 times to give birth to LBW babies compared mothers did not experience complications during pregnancy. Mothers who give birth to babies with congenital abnormalities had a 0.19 times greater risk of having infants of low birth weight compared to respondents who did not give birth to babies with congenital abnormalities.

**Table 2:** Effect of Age, Parity, ANC, and Pregnancy Complications on Low Birth Weight Incidence

| Variabel | B | Sig | Exp (B) | 95% CI |
|---|---|---|---|---|
| Age | 1.472 | 0.017 | 4.357 | 1.307 – 14.523 |
| Parity | 1.759 | 0.005 | 5.805 | 1.688 – 19.967 |
| Pregnancy complication | 4.951 | 0.000 | 141.347 | 35.583 – 561.471 |
| Antenatal Care (ANC) | 2.207 | 0.004 | 9.085 | 2.008 – 41.099 |
| Constanta | -5.237 | 0.000 | 0.005 | |

## 4. Discussion

Mother's Age has influence very closely with the development of the female reproductive organs. Healthy reproductive age for a woman to give birth is 20 to 35 years. Research before found mothers <20 years or ≥35 years old have the possibility of having a baby of low birth weight 2 times greater compared to mothers 20 years up to 35 years old [7]. It is also consistent with the theory before that the increasing age and maturity level of the power of a person to think and work will also be more mature [8]. Mothers aged 20-35 years referred to adulthood and is also called reproductive life, which at this time people are more able to solve the problems faced with emotionally calm, especially in the face of pregnancy, childbirth, postpartum and care for her baby later. In reproductive age, reproductive organs and hormone already mature and balance. This makes the process of conception, fetal development in the mother's womb until the baby is ready to be born to run well, so as to reduce the incidence of other risk factors that accompany pregnancy can harm both mother and fetus.

Parity factor often associated with the incidence of LBW infants. LBW occurred because the mother's reproductive system is already experiencing thinning as a result of frequent childbirth. In this study, the results show that the parity is very significant factor to the incidence of LBW infants. Previous study showed a low

perinatal mortality occurred at parity two to three, and increased in the fourth parity. The perinatal mortality rate was highest in six and above parity [9]. The results of this research was supported by the results of research in Jamaica that the risk of death a woman who went into labor fifth and next. The prevalence of death approximately doubled when compared with the second delivery. The woman who had been in labor for ten or more risks to be threefold. Wiknjosastro (1999) stated in obstetrics theory that the higher the mother increasingly unfavorable parity endometrial (lining of the uterus) [10]. It is explained that every pregnancy is followed by childbirth will cause abnormalities in the uterus. Repeated pregnancies affect the circulation of nutrients to the fetus where the amount of nutrients will be reduced compared with previous pregnancies. This situation causes impaired fetal growth so that babies born have low birth weight. The same results were shown by Kumar and his colleagues, which is found in many preterm births parity> 3 with 0.92-fold risk compared with parity <3 [11].

ANC examination regularly by pregnant women will allow for the early detection of the mothers at risk for having a baby of low birth weight so that the preventive and curative can be performed optimally. This study results show that the ANC is very significant factor to the incidence of low birth weight babies and is also a risk factor for the incidence of LBW infants. Pregnant women who have a negative perception of the use of antenatal care services such as antenatal services performed after the mother's abdomen big or approaching childbirth and early pregnancy does not have to perform the examination [12]. Other pregnant women who will assume checkups for pregnant mothers midwife if there are complaints or abnormalities. The presumption will provide opportunities LBW. Antenatal checks on a regular basis will provide early detection of high-risk mothers give birth to low birth weight babies. So that the preventive and curative can be performed optimally. Antenatal services provide a significant impact to the end of pregnancy and is one of the efforts in reducing morbidity and mortality in infants. Monitoring during pregnancy will provide an opportunity to monitor and diagnose problems that may occur during pregnancy and childbirth. Intervention may be declared if the antenatal there is a problem.

Pregnancy complications in this study showed a very significant result, where the influence of kompilkasi pregnancy can lead to babies who are born having a baby of low birth weight. Ramsey and his colleagues found a significant association between placental abnormalities with LBW. Abnormalities plesenta such as placenta previa, placental abruption and premature rupture of membranes associated with bleeding antepartum, preterm birth and failure of fetal growth and can lead to other complications such as preeclampsia [13]. Mothers with Preeclampsia and eclampsia maternal endothelial dysfunction resulting in ischemia of the placenta and cause disturbed placental circulation and reduced supplay nutrients and oxygen to the fetus. This condition can lead to impaired fetal growth of babies born have low birth weight. Mothers who experience health problems during pregnancy such as mothers with anemia can also give birth to low birth weight babies. This is because the distribution of oxygen to the tissues will be reduced which will decrease fetal tissue metabolism so that growth will be retarded and result in low birth weight infants. Nutrient requirements especially iron in pregnant women increases with increasing gestational age. If there is an increased need for iron without being accompanied by sufficient income then iron stores will decrease and may result in anemia. The iron (Fe) needing during pregnancy is greater than non-pregnant women because Fe needed by placenta and fetus in the womb. Research in Brazil, said that a considerable percentage of LBW occurred in women who had anemia (67.6%), parity grandemultipara (22.3%), history of abortion as much as 22.7%, lower education sebanyak23,4%, and low

socioeconomic status as much as 15.4% [14].

This study congenital factor significantly not a risk factor for LBW. Fetal factors such as birth defects (congenital abnormalities) is a disorder in the structured growth of infants that arise from the life of the conceptus egg. Babies born in congenital anomalies generally will be born as low birth weight baby or a small baby to her pregnancy. Low birth weight babies with congenital abnormalities of approximately 20% died in the first week of life. Potential growing fetus itself is important in achieving birth weight. Fetuses with congenital abnormalities, male sex and have multiple gestations is said to be a risk factor for LBW [15].

This is consistent with previous studies that get the value of p = 0.72 on a congenital abnormality which states there is no significant relationship between congenital abnormalities with LBW. Congenital abnormalities have a low proportion, which is about 3% of all births. At the time of intrauterine abnormalities in embryos have resulted in the death of about 50%. Fetuses that survive with congenital abnormalities had a 50% -60% had a spontaneous abortion, so chances of fetuses with congenital abnormalities can be born a little more [16].

## 5. Conclusion

Risk factors of LBW babies in Ende Hospital District are age, parity, ANC and pregnancy complications. Complications of pregnancy have more influence than other factors on the incidence of LBW infants.

## 6. Suggestion

The care to pregnant mother should be improved by coordinating system among related units that provide preventive measures which involve families in supervising pregnant mother.

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