# STUDY OF DEMOGRAPHIC FACTORS WITH LBW EVENTS IN TASIKMALAYA GENERAL HOSPITAL

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## ABSTRACT

LBW infants are at risk not only due to neonatal complications but also by other risk factors (eg. congenital anomalies associated with LBW). This research is motivated by the high incidence of LBW in Tasikmalaya City Hospital each year. The purpose of the study was to determine the relationship between demographic factors in this case the mother's age, maternal education level, socio-economic level with the incidence of LBW. The research hypothesis has a relationship between maternal age, maternal education level, socioeconomic level, pregnancy with LBW incidence. The benefits of research provide a basis for evidence-based practice to nursing practitioners, that there is a relationship between demographic factors (maternal age, education level and socioeconomic level) with the incidence of LBW. Quantitative research method was used with cross sectional approach. The data was processed using univariate and bivariate analysis. The results of the study show no significant relationship between the factors of maternal age, education level, socioeconomic level with the incidence of LBW in Tasikmalaya City Hospital with $p$ value > 0.05 for all variables. From the present study it is suggested that nurses should improve health education so that people can understand better about the risk of LBW.

*Keywords: Maternal Age, Education Level, Socio-Economic Level, LBW*

## INTRODUCTION

Low birth weight babies (LBW) are a serious problem faced by the world. In Indonesia the incidence of LBW varies nationally. According to the 2002-2003 IDHS, the incidence of LBW was 6%. LBW incidence by province varies with a range of 2% - 15.1%. In West Java LBW is the number 3 cause of infant mortality (age 0-1 years) in 1998 (8.5%) and number 4 in 1999 (8.71%).LBW often puts babies at risk not only because of neonatal complications experienced (eg hyperbilirubinemia and respiratory distress syndrome) but also because of other risk factors (eg congenital anomalies associated with LBW). LBW requires proper management by a nurse because if they do not get adequate care, LBW will have an impact on the respiratory system, the visual system, reflexes, motor movements and even long-term effects of neurobehavior (Lester *et al.*, 2004; Institute of Medicine (US) Committee, 2007). Several studies have been conducted relating to the impact of LBW on children in the next stage of growth and development. Vohr *et al.*, (2000) conducted a prospective study of premature infants about factors that influence neurological development and functional outcomes among school going children where it was found that children with a premature history suffered from intraventricular haemorrhagic (IVH) with the incidence of cerebral palsy, hearing loss, low scores on daily self-care, low IQ, vocabulary, reading and mathematical calculations. Other factors affecting these children are biological factors, social environment, mother's knowledge and the language of everyday conversation used at home also contributes to achieving optimal results in school-age children. Another study by Hack *et al.*, (2003), examined cognitive achievement for school children. It was found that low birth weight and abnormal prematurity and head size had an impact on the cognitive, neurofunctional and physical arrangements of school going children. Another study by Saigal *et al.*, (2002) which states that there is no significant relationship between adolescents with a premature

history and adolescents with normal birth in terms of self-esteem.

Babies born prematurely with low body weight are at risk for mental disorders and development of motor skills especially among infants treated at NICU (Datar & Jacknowitz, 2009). In general, premature infants with very low birth weight also have a high incidence of mental retardation and disability. It is estimated that half of babies born very low in weight (BB <1500 gr) experiences the risk of CNS (central nervous system) damage due to intraventricular bleeding which also poses a risk of increased disability (Resnick *et al.*, 1987). The lowest incidence of prematurity and LBW was seen among middle economy class and upwards, because pregnant women in this group usually have good health condition, adequate nutrition and get early and comprehensive prenatal care. The highest incidence occurs among the low socioeconomic classes with a combination of adverse conditions. Other factors such as multiple pregnancy, hypertension due to pregnancy and placental problems that interfere with normal gestational travel before fetal development play a role in most preterm births and LBW (Hockenberry & Wilson, 2009).

It is difficult to determine exactly the cause of LBW, but there are several risk factors that are closely related to the incidence of LBW, namely the age of the mother during childbirth, gestational age at delivery, mother's level of education and the sex of the baby born. So, from several research, it can be seen that, preterm birth and LBW greatly influence the development of children in the future. Therefore, promotive efforts are needed to prevent and minimize the occurrence of prematurity and LBW so that children as future of the nation are more fit and strong. So, the factors that influence the incidence of LBW in the Tasikmalaya City Hospital must be analyzed. The results of a preliminary study in the RSUD Kota Tasikmalaya found that the incidence of LBW was quite high. Judging from these figures it is clear that the incidence of LBW in the Tasikmalaya City Hospital is still large, it is necessary to pay attention to what factors influence the incidence of LBW.

## MATERIALS AND METHODS

The type and design of the study used is quantitative with cross sectional approach, where the measurement of the variables is done only once. The study population consisted of all mothers with babies treated in the Tasikmalaya City Hospital along with study sample of mothers with babies treated in the Perinatology Room, NICU and Ponek in Tasikmalaya Hospital during the period of September to December 2015. The technique for sampling was accidental sampling, with criteria for inclusion:1) Mothers with babies treated in the Perinatology Room, NICU and Ponek Dr. Soekardjo Tasikmalaya City whether born with LBW or not, 2) Age of mothers during pregnancy till birth in the range of 36-42 weeks (aterm), 3) Conditions for healthy babies and mothers, 4) Mothers can write and read and 5) delivery in RSUD City of Tasikmalaya or outside the RSUD Kota Tasikmalaya. Data collection was carried out with a questionnaire containing 16 questions related to maternal demographic factors (biodata, data of babies born, socio-economic data, data on the home environment and health facilities).

## RESULTS

This study was conducted from September 29 to October 27, 2015 among 65 respondents.

a. Overview of maternal age characteristics

*Table 1: Characteristics of Mothers based on Age*

| Age Mother | Number | Percentage |
|---|---|---|
| <20 years | 6 | 9.2 |
| 20 - 35 years | 48 | 71.6 |
| > 35 years | 11 | 16.4 |
| **Total** | **65** | **100** |

From table 1 above it can be seen that the highest response age is in the age group 20-35 years as many as 71.6%, while the age of <20 years is at least is 9.2%.

b. The mother's education level overview

*Table 2: Characteristics of Mothers by education level*

| Education Level | Number | Percentage |
|---|---|---|
| High | 27 | 40.3 |
| Low | 38 | 56.7 |
| **Total** | **65** | **100** |

From Table 2 above shows that most respondents

have a low education category, with 27%, as for respondents in the higher education category, namely high school equivalent and college as much as 40.3%.

c.    Overview of family socioeconomic level

*Table 3: Characteristics of the Socioeconomic Level of Family*

| Socioeconomic Level | Number | Percentage |
|---|---|---|
| High | 27 | 40.3 |
| Low | 38 | 56.7 |
| **Total** | **65** | **100** |

From the table 3 it is evident that most of the respondent's socioeconomic level is low, which is 56.7% while respondents with a high socioeconomic level were 40.3%.

d.    Characteristics of childbirth

*Table 4: Distribution of births based on body weight*

| Full incidence | Total | percentage per |
|---|---|---|
| Experienced LBW | 22 | 33.8 |
| Did Not Experience LBW | 43 | 66.2 |
| **Total** | **65** | **100** |

From table 4 above, it can be seen that some respondents did not experience LBW as many as 66.2%, while 33.8% experienced LBW.

e.    Cross-table relationship between demographic factors and LBW births

In this study bivariate analysis was conducted to describe the relationship between independent variables, namely factors related to LBW events and the dependent variable is LBW incidence and to select variables to be included in multivariate analysis and modeling. The relationship between factors associated with LBW events is indicated by a *p* value <0.05 in CI (Confident Interval) 95%.

*Table 5: Relationship between demographic factors and LBW incidence*

| Variable | incidence LBW Σ | incidence LBW % | incidence No LBW Σ | incidence No LBW % | *P value* | OR | 95% CI (confidence interval) |
|---|---|---|---|---|---|---|---|
| **1.    Maternal age** | | | | | | | |
| a.    <20 years | 4 | 15.3 | 5 | 4.7 | | | |
| b.    20 - 35 years | 13 | 59.1 | 35 | 81.4 | 0.104 | - | - |
| c.    > 35 years | 5 | 22.7 | 6 | 14.0 | | | |
| Total | 22 | 100 | 43 | 100 | | | |
| **2.    Education Level of Mother** | | | | | | | |
| a.    Low | 15 | 62.8 | 23 | 53.5 | | | |
| b.    Height | 7 | 32.2 | 20 | 46.5 | 0.383 | 1·863 | 0.563 - 5·481 |
| Total | 22 | 100 | 43 | 100 | | | |
| **3.    Socioeconomic Status** | | | | | | | |
| a.    Low | 13 | 59.1 | 25 | 58.1 | | | |
| b.    High | 9 | 40.9 | 18 | 41.9 | 1.00 | 1.0040 | 0.366 - 2.953 |
| Total | 22 | 100 | 43 | 100 | | | |

The table 5 above shows the results that the age factor is crucial regarding the incidence of LBW among most experienced with an age range of 20-35 years which is as much as 59.1% as well as the incidence of LBW is experienced by many at the age of 20-35 years as many as 81.4%. The results of statistical testing showed that $p$ value=0.104, it can be concluded that there is no relationship between age factors and the incidence of LBW. For the mother's education factor, the majority of LBW events were experienced by mothers with a low education level of 62.8% as well as the incidence of low LBW experienced by low socio-economic circles as much as 53.5%. The statistical test results obtained $p$ value=0.383 which means $\alpha>0.05$ with the conclusion there is no relationship between the level of education of the mother and the incidence of LBW. From the results of the analysis also obtained OR 1.863, which means that mothers with low levels of education have the chances of getting LBW 1,863 times more compared to mothers with high education levels.

For socio-economic factors, the majority of LBW events experienced by mothers with a low socioeconomic level of as much as 58.1%, as well as the incidence of low LBW experienced by low socio-economic circles as much as 59.1%. The statistical test results obtained $p$ value=1.00 means $\alpha>0.05$. Thus, it can be concluded that there is no relationship between the socioeconomic level of the family and the incidence of LBW. From the results of the analysis also obtained OR 1.040, which means that mothers with low socioeconomic levels have 1,040 times chances for the occurrence of LBW compared to mothers of high social level.

## DISCUSSION

a. The relationship between maternal age at delivery and the incidence of LBW

Age is generally associated with biological and psychological development. A woman's age is very important in relation to reproduction and childbirth. The development of reproductive organs among mothers if less than 20 years is not optimal, as she is still unstable, and complications often arise in pregnancy. According to research Suradi & Kristina (2004) the age of mothers less than 20 years has 1,27 times the chance to give birth to babies with LBW compared to the age of 20-35 years and mothers from 35 years have a chance of 2,10 times to give birth to babies with LBW compared to those aged 20-35 years.

In the research that has been done the results show that age is not related to the incidence of LBW. This is certainly not in line with other studies that have been conducted. The increase in infant births for mothers with young age or less than 20 years is associated with low primipara education and antenatal care while old age is associated with a potential lack of fetal growth due to age of biological tissue and the presence of disease. Whereas according to Chumnijarakij, *et al.*, (1992) research, it is known that of the several factors that influence LBW include maternal age, number of children, gestational age, gender, and distance of pregnancy. In this study it was concluded that the age factor of the mother does not clearly affect the weight of the newborn baby. The baby's weight is less than 2500 grams for a small part (3%) in the age group of less than 20 years, and 8% at the age of the mother of more than 30 years. But almost 89% in the ideal age group of 20-30 years.

b. The relationship between the level of education of mothers with the incidence of LBW:

The level of education of mothers illustrates knowledge regarding health. A person who has higher education has the possibility of knowledge about health is also high, because it is easier to obtain information about health more than those with low education (Notoadmojo, 2007). The higher the level of education of the mother, the higher the health knowledge. Higher education makes it easier for someone to receive more information than low education. High health knowledge supports healthy behavior in fulfilling maternal nutrition during pregnancy. Therefore, health education needs to be promoted by health personnel. Health education is essentially an attempt to convey health messages to the community, groups, or individuals. With the hope that with this message the community can gain knowledge about the importance of nutritional intake during pregnancy. In the research conducted, it was found that education levels were not related with the incidence of LBW ($p$ value 0.383). The incidence of LBW within one year did not reflect the actual conditions.

c. Relationship between socio-economic level and the incidence of LBW

These variables indirectly affect the occurrence of LBW. Education is a tool that can change family values

and norms. With education one can receive more information and broaden the horizons of thinking so that it is easy to develop themselves to make decisions and perform. The mother of a less educated person is difficult to accept innovation, and most are less able to improve the welfare of her family. Less-educated mothers are usually less aware of the importance of prenatal care and have limitations in getting adequate antenatal care, the limitation of consuming nutritious foods during pregnancy, all of which will interfere with the health of the mother and the fetus, she often experiences miscarriage (stillbirth). Moreover, pregnancy examination as the main variable is an important factor in determining early detection of maternal and child health because it has a role in prevention efforts. These examination help to detect early abnormalities or diseases that exist in pregnant women and their fetuses so that intervention in the form of preventive measures and treatment can be done as early as possible. Studies that support this finding, for example, observations by Becerra *et al.*, (1993) of 257,537 babies born in 1986-1989 in Puerto Rico, it was stated that the risk factors that affect the incidence of LBW are mothers who have never received antenatal care, mothers less than 20 years old, mothers with low education, and mothers giving birth in hospitals general. Then the study based on the recording of vital statistics from 1979-1989 to determine the incidence of LBW in 3 ethnic groups in Hawaii in terms of maternal education, maternal age, parity, and antenatal care education factors showed significant differences. Based on secondary data analysis, Camerota *et al.*, (2015) stated that antenatal care is still significant in reducing the incidence of low birth weight despite social stigmas.

## CONCLUSION

Based on the results of the research conducted there are no significant relationships between demographic factors in the mother, including maternal age, level education and socio-economic level with the incidence of LBW ($p$ value=0.104 for age factors, 0.383 for maternal education level and 1.00 for socio-economic factors. Nevertheless, nurses are required to play an active role in providing health education for women especially women in fertile age group to be able to better safeguard her pregnancy.

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