Correlation Between Early Age Pregnancy with Low Body Weight (LBW) Newborn at Universitas Airlangga Academic Hospital, Surabaya, Indonesia

Roy Prasojo¹, Budi Prasetyo²*, Widati Fatmaningrum³, Ahmad Hadi Modi⁴

¹Faculty of Medicine, Universitas Airlangga Surabaya, Indonesia
²Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Airlangga– Dr. Soetomo General Academic Hospital, Surabaya, Indonesia
³Department of Public Health and Preventive Medicine, Faculty of Medicine, Universitas Airlangga– Dr. Soetomo General Academic Hospital, Surabaya, Indonesia
⁴Faculty of Medicine and Health Science, School of Healthy Aging, Medical Aesthetics and Regenerative Medicine, UCSI University, Kuala Lumpur, Malaysia

ABSTRACT

Introduction: Birth weight is often used to evaluate a newborn baby’s health. Low birth weight (LBW) is one of the leading causes of neonatal mortality. Mothers under the age of 20 (early pregnancy) are at a greater risk of affecting the weight and nutritional status of the unborn child. This research aimed to determine the relationship between early pregnancy and LBW.

Methods: This was a cross-sectional study of women and newborns at Airlangga University academic hospital from January through December of 2017. Data on characteristics such as maternal age and LBW were collected. The correlation between early pregnancy and infant weight was determined using the Chi-square test, with a significance level of p<0.05.

Results: We conducted research on 210 pairs of mothers and their infants. 64 (30.48%) of the pregnancies occurred in women under the age of 20; 61 (29.55%) were born LBW (weighing less than 2,500 grams). Early age pregnancy was linked to a higher proportion of LBW infants (p=0.001). Research indicated that the risk of LBW was more significant in the early groups of pregnancy.

Conclusion: This research establishes a relationship between early age pregnancy and LBW. The findings may aid in identifying vulnerable mothers in need of further assistance and personalized treatments.
is high around the world, including in Indonesia. The purpose of this research is to determine the relationship between LBW and maternal age in a single-center study in Surabaya.

Methods

A cross-sectional study was conducted from January to December 2017 at the academic hospital of Universitas Airlangga Surabaya, through a birth cohort of hospital deliveries of newborns. The WHO defines adolescent mother as women under the age of 20 who are more likely to have LBW babies, as well as preterm deliveries and severe neonatal disorders.2 The research data was collected from medical records of LBW patients at the Department of Obstetrics and Gynecology, Universitas Airlangga Hospital Surabaya. The study population were all normal pregnancies and deliveries, which were divided into 2 groups, namely the group of severe infant cases born <2500 g, which occurred at the Department of Obstetrics and Gynecology, Universitas Airlangga Hospital Surabaya. The total sampling approach was employed.

The study sample consisted of 37-week-old normal pregnancy patients divided into two groups in January 2017 and 2018. Some patients with normal births a 37 weeks and giving birth with a normal delivery, met the inclusion criteria. The criteria for exclusion were patients who had eclampsia, hypertension, diabetes mellitus, postdate, abortion, amelioration, amnion, anemia cases, and pregnant women > 35 years old. The variables in this study were differentiated into 2 groups, independent and dependent variables, as follows: independent variables: age (early age pregnancy and non-early age pregnancy), history of previous pregnancy (primigravida and multigravida). The dependent variable is the baby’s weight (LBW and non-LBW). The chi-square test was used to see if early-age pregnancy influenced newborn weight, with p<0.05 considered statistically significant using SPSS version 17.0 (SPSS Inc., Chicago, IL, USA). The ethical committee of Universitas Airlangga Hospital approved this study with ethical number: 172/KEH/2018.  

Results

There was 210 participants included in the study, with all subjects having a normal delivery over the study period. Most responses showed that they had become pregnant later (Table 1). The non-early age pregnancy group was nine years older age than the early age pregnancy (15.77±1.34 vs. 24.42±1.99). Primigravida was becoming the majority in early-age pregnancy (27.6%) and the non-early-age pregnancy group (44.3%). The incidence of LBW was more frequent in early-age pregnancy group (21.43% vs. 7.62%).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Early age pregnancy</th>
<th>Non-early age pregnancy</th>
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</thead>
<tbody>
<tr>
<td>Age (mean ± SD) year</td>
<td>15.77±1.34</td>
<td>24.42±1.99</td>
</tr>
<tr>
<td>Newborn birth-weight (mean ± SD) gram</td>
<td>2400.94±418.36</td>
<td>2923.29±372.84</td>
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<tr>
<td>Pregnancy</td>
<td></td>
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<tr>
<td>Primigravida</td>
<td>58 (27.60%)</td>
<td>93 (44.30%)</td>
</tr>
<tr>
<td>Multigravida</td>
<td>6 (2.90%)</td>
<td>53 (25.20%)</td>
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<tr>
<td>Birth weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW (%)</td>
<td>45 (21.43%)</td>
<td>16 (7.62%)</td>
</tr>
<tr>
<td>Non-LBW (%)</td>
<td>19 (9.05%)</td>
<td>130 (61.90%)</td>
</tr>
</tbody>
</table>

Discussion

The findings of this research reveal a significant association between early pregnancy (under the age of 20 years) and low birth weight (LBW) incidence. According to the newest Surabaya study, 30.48 % were categorized early age pregnancy, which is much higher than the rates in developed countries (1.8%-2.1%).12-14 Mothers aged 14-19 years did not have fully developed reproductive organs. Nutritional demands were also not fulfilled optimally due to the competition for nourishment between the mother and the developing baby, which might affect fetal growth and development in the form of LBW.14,15 The WHO recommended that women between the ages of 20 and 35 years old experience pregnancy and delivery. In 2010, Indonesia had a female mean marriage age of fewer than 25 years (22.17-year-old on average), which increased from 19.28-year-old in 1971.15 In Indonesia, despite their physical and mental immaturity, child marriage is mainly controlled by social and economic aspects inside and around the girls.15

Early pregnancy between the ages of 14- and 19-years effect on pregnancy and childbirth problems.15 Early-age pregnancy also increased the chance of LBW incidence by 4.1 times compared to pregnant women over 20 years. In general, children born to young mothers with LBW had congenital anomalies and physical problems, including epilepsy, mental retardation, blindness, and deafness.18 Furthermore, even if the infant survives, he or she may be impaired, causing significant issues and experiencing delayed development.19

Parity is the number of children born alive and born dead by a mother. When a woman becomes pregnant for the first time and her parity exceeds four, she is at risk of giving birth to LBW. Since the mother’s uterus has not healed, if she becomes pregnant again, the second pregnancy may be affected.8 Because the causes of LBW

Table 1. Distribution of characteristics of respondents based on maternal age at Airlangga Hospital Surabaya period January 2017-December 2017

<table>
<thead>
<tr>
<th>P value</th>
<th>PR</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age - LBW</td>
<td>0.0001</td>
<td>19.243</td>
</tr>
</tbody>
</table>

PR = prevalence ratio
are often complex, it was sometimes difficult to establish a preventative intervention. Premature delivery was the most prevalent cause of LBW newborns, and the younger the gestational age, the greater the risk of short- and long-term complications.\(^{20–22}\) Generally, maternal variables such as pregnancy disease, maternal age, labor distance, gestational age, parity, environmental factors, fetal factors, and placental factors are connected with LBW.\(^{8,9}\) However, the precise mechanism behind premature pregnancy and LBW remains unknown.

A systematic review and meta-analysis discovered that adolescent pregnancy is associated with low socioeconomic status, but that after controlling for high socioeconomic status (SES), adolescents were not at increased risk for LBW.\(^{8,23}\) This finding implies that SES had a significant influence on LBW.\(^{24}\) Low SES is a complicated issue that necessitates the implementation of government legislation.\(^{25}\) We recommend that the government provide access to high-quality prenatal care for teenage mothers from poor socioeconomic backgrounds to lower the frequency of LBW births.

The research has a limitation in that variable such as calorie consumption, weight gain during pregnancy, and the high socioeconomic level was not included since they may be associated with LBW. Additionally, the outcomes of this research were not compared to those of adolescents who did not receive antenatal or prenatal care or those of any external comparator. We obtained data primarily from single-center academic hospital, and hence cannot generalize to other hospitals.

Acknowledgment

The authors liked to express their gratitude to Budi Utomo and Atika for their support with statistical analysis. The research was developed and evaluated by Budi Prasetyo, Widati Fatmaningrum, and AH Modi. The article was written by Roy Prasojo.

Conflict of Interest

The authors declare that there is no conflict of interest.

References