

# Association of Advanced Maternal Age with Low Sonographic Fetal Weight

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## Abstract:

Low fetal weight (LFW) is an important symbol in public health, as it can help predict health outcomes in later life. At international level, LFW is considered as weight under 2500 grams or 5 pounds 8 ounces.

## Objective:

To determine the association of advanced maternal age with low sonographic fetal weight.

## Methods:

This was an observational descriptive study with a sample size of 104 advanced age pregnant women, conducted in Mansura Teaching Hospital Lahore. The present study was conducted in 6 months duration. All the primigravida and multigravida pregnant women's aged  $\geq 35$  years were included, pregnant women aged  $< 35$  years and congenital anomalies uterus were excluded.

## Results:

Total numbers of female taken in this study were 104. Mean age of the 104 patients included in the study was 38.61 with a minimum age of 35 years and maximum age of 45 years. 63(60.6%) females were having a fetus with low estimated fetal weight, and 41(39.4%) female were having normal fetal weight.

## Conclusions:

Advanced maternal age affected fetal weight. This research revealed that mother with age more than 35 years gave birth to a low weight fetus (LFW).

## Keywords:

Pregnancy, Advanced age, Low Fetal weight.

## Introduction

Low Fetal Weight (LFW) is an important symbol in public health, as it can help predict health outcomes in later life.<sup>1</sup> At international level, LFW is considered as weight less than 2500 grams or 5 pounds 8 ounces.<sup>2</sup> The previous three decades have seen noteworthy increments in maternal age at labor in some high-salary nations. All over the world, twenty million low weight babies are recorded each year. It was found that 8% of all infants conceived in the US have LFW.<sup>3</sup>

The traditional definition of advanced maternal age (AMA) is a mother age of 35 years or more at delivery time.<sup>4</sup> Advanced maternal age can be divided into two groups; primigravida and multigravida. Mothers with age 35 and plus may face adverse pregnancy results including low fetal weight. Elderly primigravida is clearly growing trend over the past decades, these women usually belong to the privileged class. Due to late marriage, career, and education, they delay their pregnancy. Apart from age, other risk factors for Low Fetal Weight (LFW) include smoking, alcohol consumption, drug, stress, and depression.<sup>5</sup> Multigravida usually belongs to deprive socioeconomic class. These women usually suffer from a chronic health problem like hypertension leading to preeclampsia, hormonal imbalance hyperlipidemia anemia, smoking, nutritional deficiency diabetes.<sup>6</sup> The overall rate of LFW is 16% in the world; 19% in developing nations, and 7% in the developed countries. The rate of LFW in South Asia is 31% took after by East and North Africa (15%), (14%), (7%) in Sub-Saharan Africa and East Asia respectively. In Nepal, the LFW rate is moderately high, increasing from 14 to 32%, as recorded from different doctor's facility and group based investigations in concurrence with past examinations, maternal instruction developed as a solid determinant for LFW.<sup>7</sup> As per Babak Khoshnood, Advanced maternal age has all the signs of being related to generally comparable expanded chances of LFW for African Americans, Mexican Americans, Puerto Ricans, and non-Hispanic whites. In any case, the age-related additions in the danger of low birth related to cutting edge maternal age are more noteworthy for African Americans, Puerto Ricans and, to a lesser degree, Mexican Americans, as compared with non-Hispanic whites. Almost 20% of the babies were conceived with LFW because of low maternal training level, age more than 35, and poor nutritional status.<sup>8</sup> Rizvi et al. reported an increased risk of LFW with

increasing maternal age.<sup>9</sup> For quite a long while, it has been archived that smoking amid pregnancy can affect the strength of the mother's unborn youngster. As indicated by Horta et al maternal smoking, in any case, is a reason for intrauterine development impediment (IUGR) which is a sign of LFW. In practically every investigation concerning low fetal weight newborn children, instruction as a hazard feature has been specified as an essential marker for LFW.<sup>10</sup> An examination direct of Silvestre et al education is the most grounded financial indicators of well-being status when considered alone, and the most critical cause of fetal weight in a populace.<sup>11</sup> An investigation in Taiwan recommended that mature mothers (e.g. 30 or more) can be a solid hazardous factor for low fetal weight.<sup>12</sup> High incidence of complications such as hypertension, gestational diabetes, placental accidence, cesarean delivery, abortion, premature delivery, low fetal weight were seen in pregnant women age 40 years & older.<sup>13</sup> The National Nutritional Survey data reports the frequency of LFW in advanced age is 12- 25% in Pakistan.<sup>14</sup> Starting at 2014, there have just been 4 studies recognized where the fundamental impacts of maternal schooling on LFW have been estimated.<sup>15</sup>

The rationale of my study was advanced maternal age (AMA) postulated as an independent cause for LFW.

### Methods:

This was an observational study with sample size 104 of advanced age pregnant women conducted from October 2016 to March 2017 at Mansoura Teaching hospital, Lahore. All the primigravida and multigravida pregnant women aged  $\geq 35$  years were included in this study. Pregnant women aged  $\leq 35$  years and congenital uterine anomalies were excluded. Known cases of different anomalies and other obstetrical completion for expert opinion. The outcome measures were diabetic, Fetal Biometry, gravidity, gestational age, biparietal diameter, abdominal circumference, femur length and estimated fetal weight. The ultrasound was performed on MyLab™50 gray scale machine. The curve linear transducer was used. The Transducer frequency range was 2.5-3.5 MHz. No specific preparation was needed. The pre-tested questionnaire was used to collect data, while Microsoft excel and SPSS Version 21.0 was used to analyze the data.

### Results:

A total of 104 pregnant females with advanced maternal age were taken in this study. The mean of age was  $38.6 \pm 2.0$  sd with minimum 35 years and maximum 45 years as shown in Table I.

Descriptive Statistics						
Maternal age	N	Range	Minimum	Maximum	Mean Std.	Deviation
	104	10.00	35.00	45.00	38.6154	2.01117

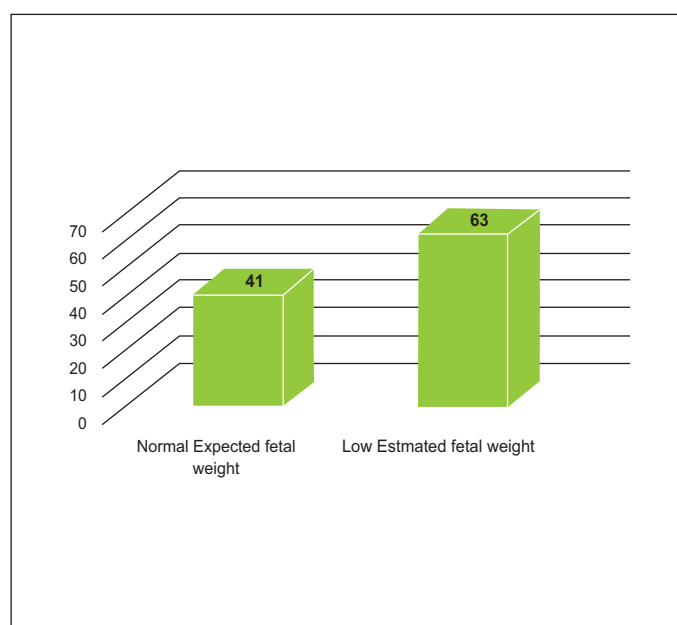
**Table 1:** Maternal Age

The mean of estimated fetal weight (in grams) was  $1764.8 \pm 434.3$  s.d with minimum and maximum were 760g and 2524g respectively shown in Table II.

Descriptive Statistics						
EFW	N	Range	Minimum	Maximum	Mean	Std. Deviation
	104	1764.00	760.00	2524.00	1764.858	434.346

**Table 2:** Estimated Fetal Weight (in Grams):

Among 104 females 41(39.4%) mother has normal expected fetal weight. 63(60%) mother have low estimated fetal weight was shown in figure 1.



**Figure 1:** Frequency distribution of Fetal Weight with advanced maternal age

Biparietal was 36 weeks, abdominal circumference was six below than stranded measurement. EFW was 1153g, but normal fetal weight at this stage was 2383g.



**Figure 2:** Biparietal diameter

Biparietal diameter and femur length shown in this ultrasound image. Abdominal circumference was three weeks below than standard measurement. EFW was 1672g but the normal fetal weight at 31 weeks was 1918g.



**Figure 3:** Biparietal diameter and femur length

## Discussion:

The weight of baby reflects the health and nutritional status of a mother during pregnancy. Mothers in mid-30s face adverse hazards during pregnancy because they are more likely to LFW issues. Mother age is not a single factor that affects fetal weight but Women's health during pregnancy, race, mother's height, weight, smoking and/or any kind of alcoholic consumption during gestation period can have severe effect on fetus development. A study held in Ghent University, by Ilse Delbaere et al reported that maternal age was correlated, independent confounder and middle features with very premature delivery (gestational age less than 32 weeks) [adjusted odds ratio (OR) 1.51, 95% confidence intervals (CI) 1.04–2.19], LFW (fetal weight less than 2500 g) (OR 1.69, 95% CI 1.47–1.94) and early neonatal death (OR 1.68, 95% CI 1.06–2.65).<sup>16</sup> Suzanne C. et al. studied the late pregnancy and its effect on population and the percentage of births to women more than 35 years of age were 8.4% and 12.6% in 1990 and 1996

respectively, a 51.2% increase was noted. Among these females, LFW increased by 11% and premature birth increased 14%, late childbirth accounted for 78% of the change in LFW rate in the population and 36% of the change in premature birth rate in the population.<sup>17</sup> Women from low privileged class reflected in low body mass index (<18.5) had 49% had higher odds of having a LFW. These findings were in line with the previous studies where low pre-pregnancy body mass index was significantly associated with LFW of a newborn. Low maternal body mass index is a marker for marginal tissue nutrient reserves and a predictor of protein-energy malnutrition, which might affect the fetal growth.<sup>18</sup> Rich-Edwards et al in 2003 presented the outcomes of a study of 887 deliveries where mothers in the age group of 20-45 years had a higher incidence of LFW as compared to the mothers less than the age group.<sup>19</sup> In 2013, 9.7 mothers had the habit of smoking and the frequency of LFW increased from 7.6 to 8.2 % respectively.<sup>20</sup> M. Jolly et al. Study of pregnancy-related risks in women aged 35 and over. Obstetrics risks of adverse pregnancy outcomes during pregnancy in women age  $\geq 35$  years with a retrospective quantified analysis of 385,120 singleton pregnancies data in North West Thames, UK.<sup>21</sup> In the early age of pregnancy and also in the late age of pregnancy that is above 35 years of age was highly associated with LFW babies.<sup>22</sup> Chronic hypertension refers to a disease prior to pregnancy hypertension, either by documenting previous levels of high blood pressure with diagnosis process that indicates before the 2nd trimester of gestation. Chronic hypertension and certain maternal disorders may lead to changes in fetal growth, perhaps due to the reduction of the liquid uteroplacenta. These vascular diseases, including pregnancy hypertension, were clearly associated with intrauterine growth restriction. Studies show that hypertension with increased resistance in the uterine artery was more frequently associated with intrauterine growth restriction and LFW than low resistance hypertension. As previously reported, hypertension in pregnancy was associated with the reduced uteroplacental which lead to an increased risk of premature delivery and LFW.<sup>23</sup> According to the study conducted in Australia, pregnancy-induced hypertension significantly influence the development, weight, and growth of a fetus. In this study, the ratio of placental fetal weights decrease with advancing



gestational age.<sup>24</sup> The maternal placental weight and area were small fetus have low weight due to poor supply of oxygen and nutrients. Therefore, prolongation of pregnancy in 40 weeks might adversely affect the fetus.<sup>25</sup>

### Conclusions:

Advanced maternal age had affect on fetal weight. Advanced maternal age more than 35 years resulted in the lower fetal weight. These findings were similar to post published.

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