

Is maternal age being a risk factor for

the low birthweight (LBW)?

by

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**One in eight babies worldwide born with a low birthweight**.

Practically in excess of 30 million infants were brought into the world with low birthweight for example under 2500g; in 2018 around. In Southern Asia and Sub-Saharan Africa right around three quarter of these children were conceived.

Lamentably, this issue remains significantly in high pay or completely created nations like Europe, North America, Australia and New Zealand, where there has been no such advancement in the decrease of low birth-rate since 2000, As per another examination done by the exploration of The London School of Hygiene and Tropical Medicine, UNICEF and the World Health Organization(WHO) including nearly148 nations and 281 million births in recent decades, distributed in Lancet Global Health diary.

Birthweight of infant under 2500g is a significant pointer of maternal and fetal wellbeing, anticipating the mortality, veering off, and grown-up incessant conditions is considered as LBW. Worldwide supplements focus on an aspiring 30% of the decrease in LBW prevalence between 2012 to 2025.

LBW is a significant general medical issue in each nation.

**Introduction:**

Birth weight is the primary load of the embryo or infant got after birth and estimated inside the principal hour of life. Low birthweight (LBW) is named as a birthweight underneath 2500 g paying little mind to gestational age and is generally applied to livebirths as it were. LBW additionally incorporates both suitably developed preterm neonates (<37 weeks of pregnancy). Maternal age is another significant autonomous variable prompting LBW and preterm birth.

With special case of scarcely any examinations which led that age didn't essentially influence birth weight of infants, the majority of research papers demonstrates that Avery youthful maternal age accompanies expanded danger of having LBW and preterm births and then again a little research has been directed on births to more established moms for example progressing maternal age is causally involved with diminished potential for fetal development, conceivably as a result of maturing of maternal issues.

**Causes**:

More than 80% of neonatal deaths are in LBW newborns, of which two-thirds are preterm and one-third are term small-for-gestational age. LBW newborns also have a higher risk of morbidity, stunting in childhood, and long-term developmental and physical ill health including adult-onset chronic conditions such as cardiovascular diseases. Factor influencing LBW include extremes of maternal age (especially younger than 16 years or older than 40 years), multiple pregnancy, obstetric complications, chronic maternal conditions (e.g., hypertensive disorder of pregnancy), infections and nutritional status.

**Discussion**:

The low birthweights (LBW) are identified with the mother's age as well as ladies' wellbeing practices during pregnancy, ethnicity, destitution status, maternal tallness, net maternal weight and smoking during pregnancy independently affected birth weight.

In an investigation led at pre-urban ghettos zone of Mumbai, India, pregnancy at adolescent was seen as a hazard factor for lower birth weight when contrasted with ladies between the age of 21 to 31 years. A medical clinic-based examination in eastern Taiwan announced that high school mother brought forth infants of fundamentally lower birthweight than grown-up moms. Numerous examinations indicated that the childbearing during immaturity conveys an expanded danger of less conceptive result, including low birthweight, preterm birth and neonatal mortality. Mental variables may likewise be included, since numerous juvenile pregnancies are impromptu, undesirable or found late.

**Objective**:

The main objective of this report is to find out whether is there any reduction in the LBW rate.

In this report I have taken a dataset of birth weight with respect to maternal age and babies’ gender. This is a secondary dataset from a city in Europe.

**Calculations:**

All the calculations are done in Excel.

I set up the null hypothesis that the obtained data is independent of the maternal age. In other words, the null hypothesis is that there is no significant difference between the live birth weight corresponding to respective maternal age.

**Procedure**:

1. I have converted the non-numeric data into dummy variable form so to make it easy for the calculations. Now we have a pivot table with frequencies of birth weight w.r.t maternal age.



1. To perform further calculations, I have used chi-sq test to check whether the birth weight significantly differs with maternal age of mother. Therefore, I have calculated the grand total of all weight categories with respect to maternal ages, here in the other excel sheet it is given below.



1. Since it is not appropriate to apply -test headlong with as the first and last frequencies are less than 5, we should do pooling in this case. Now all frequencies which are less than 5 are going to be merged or pooled with the next one, it is basically done in order to obtain the goodness of fit. In the next excel sheet the Observed frequencies are pooled just right next to it. As it is clearly seen frequency under 500-999 and100-1499 are less than 5 so they pooled with just right next one i.e.1500-1999 then a new interval is created i.e. 500-1999. And from the last, frequencies come under i.e. 4000-4499 and 4500-4999 gall are less than 5 therefore pooled with the previous one 3500-3999 then a new interval is created i.e. 3500-4999.



1. Since we have the observed frequencies as shown in the above figure. Now a new excel sheet will be created for the expected frequencies. To create the pivot table for expected frequencies we use the formula:

Here is the grand total row wise where as is the grand total column wise and N is the total number row wise and column wise.

Therefore, we have new excel sheet with the Expected frequencies. As given below.



**Formulation of data**:

Prior to the plan, a concise introduction for the integrity of fit test: it's an amazing test for testing the importance. It was given by Prof. Karl Pearson in 1900 and is known as ‘chi-square trial of integrity of fit’. Well it empowers us to discover, if the deviation of the test from hypothesis is simply by

possibility or it is extremely because of the insufficiency of the hypothesis to fit the watched information.

Here is the watched frequencies from 1 to nth term and ei is the relating expected frequencies then Karl Pearson's chi-square, given by

follows the chi-sq distribution with (n-1) d.f.

The term ‘Degree of Freedom’ (d.f.) is defined as the total number of independent variates which makes up the statistics is known as the degree of freedom.

Now the above formula is applied on the dataset I have, therefore new excel sheet is formed with

Here we got the

Therefore, we have 6\*5 contingency table after pooling and

d.f. = (6-1) \* (5-1)-1= 19, since 1 d.f. is disoriented in the method of pooling.

Tabulated value () for 19 d.f. at 5% level of significance is 30.14



**Conclusion**:

Since determined worth is higher than the classified worth, we may not acknowledge the invalid speculation at 5% level of essentialness, and we may presume that there is some critical contrast between the live birth weight comparing to separate maternal age.

Along these lines, obviously the acquired dataset isn't autonomous of the maternal age.

In this graph different weight categories of babies are shown with respect to the corresponding maternal age and its frequencies. From these figures it is clear only in very few cases when mother age is between 15-19 the baby’s weight is nearly or equals to 2500g otherwise because of younger maternal age it’s been a risk for low birthweight (LBW).

From this examination features it's especially explained that when the pregnancy happens at outrageous of the regenerative age-both youthful young people and more seasoned ladies after the 40's is at higher hazard for bringing forth low birthweight babies; there ought to be mindfulness for the anticipation of adolescent pregnancies and pregnancies following 40 years of maternal age; these sort of mindfulness are significant for the general wellbeing centrality in decreasing the low birthweight babies, accordingly it will be useful in maintaining a strategic distance from further outcomes among the newborn children with low birthweight.

Scarcely any country, district and overall appraisals of low birthweight in 2015.

With accumulated 1447 nation long stretches of birthweight information ( in excess of 282 million births) for 149 nations of 195 UN individuals states. In 2015, a gauge of 21 million livebirths were LBW, 91% from created and under creating nations, basically Southern Asia (48%) and Sub-Saharan Africa (24%).

#2

In a specific test to look at two weight classifications of Boy and Girl childbirth weight in order to check whether is there any difference between their live birth weights.



***Null hypothesis***, : If there any increase in the weights due to baby’s gender are denoted by B and G respectively, then , i.e., no huge distinction is there in the loads because of child's sexual orientation.

***Alternative hypothesis***, (right-tailed).

Note: if these two samples of live birthweights will be assumed to be independent of baby’s gender, then *t*-test is appropriate for statistics of means to test

*Test statistics*, under, , the test criterion is:

All the calculations are done in excel:



Here mean of boy childbirth weight is

and mean of girl childbirth weight is

now we calculate  *=*

similarly,

Therefore,

The tabulated value of *t* for (9+9-2) =16 d.f. for the one tail test is 1.746

**Conclusion**:

Since the determined t is under 1.746, How might be acknowledged at 5% level of criticalness. Consequently, we infer that there is no huge contrast in loads because of infant's sex.

**Graph for above data**:

**Final Conclusion**:

From this examination I accompanied a translation that from the above chart it unmistakably shows that male embryo needs more calorie proficient group of mother than a female baby in the event that we check the diagram male labor weight is at top when the mother is completely developed maternal age. Be that as it may, there can be number of different reasons why male embryo gauges more than female hatchling, which is the reason the specialist endorsed the pregnant ladies to be increasingly cautious if the infant is male youngster, along these lines I have referenced an investigation led by different scientists so as to discover the reason behind it.

**The Study of few Researchers:**

An examination was distributed in PLOS (the logical diary distributed by the Public Library of Science) dissected information from about 70 million births over a course of 25 years. The examination accompanied an outcome that expanded pregnancy weight was related with male infants.

At the point when the mothers picked up around 10 kilos, they offered births to about 49% male children. At the point when pregnant ladies picked up almost 20 kilos, they gave birth to male child about 52.5% of the time. What's more, when they increased 30 kilos, they gave birth to male child about 54% of the time, despite the fact that it's not yet totally found why it occurs.

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