

# Prevalence of Low Birth Weight Babies and its Related Factors in Thi-Qar City

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## ABSTRACT

Birth weight has been universally acknowledged as a prime indicator of prenatal survival and health outcomes. This study set out to discover the incidence of low birth weight babies (LBW) in Thi-Qar city, and to examine the factors which play a part the LBW phenomenon. This cross-sectional study focussed on a general hospital in Thi-Qar city, Iraq, and was based on a random sample of 777 newborn infants, who had no congenital malformations and survived birth. Twins were excluded from the study. The findings revealed that 19 per cent of these babies had low birth weight, and three main factors were highlighted for placing a mother at risk of having a LBW baby. These were: the educational level of the mother; maternal chronic hypertension; and a history of low birth weight babies - (P= 0.01, <0.01, <0.01) respectively. These results underscore the link between low birth weight babies and socio-economic status, and emphasise the importance of tackling this global public health issue.

**Key words:** Low birth weight babies (LBW), Thi\_Qar city, medical history.

## INTRODUCTION

The World Health Organization has provided a definition of low birth weight as 2500 grams (5.5 pounds) or less. This is based on evidence that newborns who weigh under 2500 grams are 20 times more likely to die than babies who weigh above this threshold.<sup>1</sup>

The length of time a mother carries a child and foetal development are both crucial factors in relation to low birth weight and subsequent health, as is the health of the mother and her physical

environment. It has been argued that the mother's socio-economic circumstances play a significant part in determining the birth weight of the baby. This study uses the mother's educational level and working status as indicators of socio-economic standing.

A number of international studies have determined that the age of the mother is a significant factor in relation to low birth weight, since mothers who are either under 17, or over 34 years old, are at a higher risk of giving birth to low birth weight babies. 2 Certain studies also found a connection between birth weight and the period of time which elapsed between births. 3, 4

The situation in Iraq has been volatile and insecure since the 1980s. The country suffered as a result of the eight-year war which erupted at the beginning of that decade, and was severely affected by the economic sanctions imposed in 1991, which remained in force for 12 years. The infrastructure was badly damaged over this period and both the health and education sectors, in particular, need to be upgraded and improved to meet the population's needs. The preponderance of low birth weight babies in Iraq is clearly a significant health issue, but one which can be dealt with and minimised by tackling the range of causes which exacerbate the situation. These include maternal health, socio-economic factors, and lifestyles, as well as the use of nicotine by the fathers. This study aims to examine the factors which lead to the birth of low weight babies in Thi-Qar city, Iraq.

## **MATERIALS AND METHODS**

In December 2020, a cross-sectional study was undertaken in a general hospital in Thi-Qar city, Iraq, to analyse the incidence and the risk factors associated with giving birth to low weight babies. A random sample of living newborns, without any congenital deformations, was selected to form part of the study. Twins were excluded from the research. The data was gathered throughout December 2020. Although Thi-Qar city has two general hospitals, both of which have obstetrics and maternity wards, simple random sampling was used to select one for the study.

The questionnaires used in this research were created in English, then translated into Arabic, to make it easier for the respondents to understand the questions. The Arabic version was then translated back into English, in order to check that no changes or ambiguities had been introduced into the questions. The medical records were used to extract data on mothers'

educational level, mothers' working status, history of low birth weight babies, hypertension and smoking status. Mothers also took part in interviews, where they were asked questions on the number of ultrasound examinations they had been given during their pregnancy.

The study used the WHO definition of low birth weight noted above - namely, babies who weighed less than 2500 grams, up to and including 2499. 1 Thi-Qar Directorate of Health approved the study. SPSS version 25.0 was used for data analysis, alongside the Pearson chi square test.

## RESULTS

The study found a prevalence rate of LBW babies of 19 per cent. The mothers' mean age was  $28.94 \pm 6.88$  years. Table 1 illustrates the mothers' socio-demographic characteristics. Although the educational level ( $p=0.01$ ) of the mothers was significantly associated with low birth weight, their working status had no connection to low birth weight babies.

Table 1

The relationship between the mothers' socio-demographic characteristics and low birth weight babies.

Mothers' Educational Level	n	LBW	NBW	POR	P_Value
High education	604	89	515	0.42(0.28-0.63)	0.01
Low education	173	50	123		
Mothers' Working Status	n	LBW	NBW	POR	P_Value
Working	375	65	310	0.92(0.64-1.3)	0.06
Not Working	402	74	328		

Pearson chi square was performed in analysis, the level of significance at  $p < 0.05$ , POR prevalence odds ratio. Low education signifies illiteracy or primary school level; high education refers to secondary school or university level. LBW (Low Birth Weight).NBW (Normal Birth Weight).

Table 2 illustrates the mothers' medical history. Both chronic hypertension ( $p < 0.01$ ), and a history of giving birth to low birth weight babies ( $p < 0.01$ ), were significantly associated with low birth weight babies.

Table 2:

The relationship between mother's medical history and low birth weight babies.

Low Birth Weight History	n	LBW	NBW	POR	P_Value
Yes	177	70	107	5.0(3.4-7.4)	( $p < 0.01$ )
No	600	69	531		
Hypertension	n	LBW	NBW	POR	P_Value
Yes	193	52	141	2.1(1.4-3.11)	( $p < 0.01$ )
No	584	87	497		

Pearson chi square was performed during analysis, level of significance at  $p < 0.05$ , POR prevalence odds ratio. LBW( Low Birth Weight), NBW (Normal Birth Weight).

Table 3

The relationship between the smoking history, Multiple ultrasound of the mothers, and low birth weight babies.

Smoking status	n	LBW	NBW	POR(95%CI)	P_Value
Yes	21	3	18	0.76(0.22-2.6)	( $p < 0.06$ )

No	756	136	620		
Multiple ultrasound more than 5 times	n	LBW	NBW	POR	P_Value
Yes	581	47	534	10.0(6.6-15-1)	(p<0.01)
No	196	92	104		

Pearson chi square was performed during analysis, level of significance at  $p < 0.05$ , POR prevalence odds ratio. LBW( Low Birth Weight) NBW (Normal Birth Weight).

It was determined that if a mother had several ultrasounds during pregnancy ( $p < 0.01$ ) this made her significantly more likely to have a low weight baby. Prevalence odds of 10.0 indicate that mean families with a number of repeated ultrasounds during pregnancy were 10 times more likely to have a low birth weight baby than families where the number of ultrasounds was low. Table 3 illustrates that no link was found between LBW and whether or not a mother smoked.

## DISCUSSION

This paper assessed the factors which contribute to LBW in a representative sample of singleton term births which took place in 2020, in a general hospital in Thi-Qar, Iraq.

Among the conclusions reached by this study, it was found that women's levels of education were of key importance in predicting whether or not they would have a low weight baby. The higher the education level, the less likely a woman is to have a low birth weight baby. This is because women with higher levels of education are more aware of the nutritional demands of pregnancy and what to eat, are more informed about health issues, how to lead a healthy lifestyle, the importance of antenatal care and a range of other, related, topics. This study's findings were corroborated by studies carried out in Dhaka, Bangladesh, 5, and in the USA.6

The working status of women was found to have no connection to LBW in this study, a finding noted by Finch (2003)[6], and in a study undertaken in the USA. However, it is important to

note that Bener et al.'s (2008) study of Al-Ain, in the United Arab Emirates, which was carried out in 1992, did find a relationship between women's working status and LBW.<sup>7</sup>

This study found a major correlation between LBW and the health history of the mother. This mirrors the conclusions of a study carried out in Iran in 2005, which also found that mothers with a history of persistent hypertension and a history of LBW were far more likely to have low birth weight babies.<sup>8</sup>

Given the fact that only 20 of the 777 mothers who took part in this study reported that they smoked, it is perhaps not surprising that there appears to be no connection between mothers who smoke and low birth weight babies. A larger, more diverse sample could well have produced different results.

Lastly, this study found a significant association between mothers who had multiple ultrasounds in pregnancy and low birth weight babies. A different study also concluded that women who had several ultrasounds from 18 weeks' gestation on could well find that this had a minor effect on foetal development and growth. Nevertheless, this difference did not persist into childhood, since children who had a single ultrasound examination, and those who had multiple ultrasounds, subsequently grew and developed at the same rate.<sup>9</sup>

## **CONCLUSION**

In conclusion, this study found that there is a significant association between LBW babies and the education of the mother, persistent maternal hypertension and a history of low birth weight babies. Differences in socioeconomic status play a major role in determining which babies will have a low birth weight, and which will have a normal birth weight. This issue is not restricted to specific communities or countries and needs to be viewed as a public health issue, which requires a global response.

In addition, a great deal of evidence indicates that multiple prenatal ultrasounds are linked to low birth weight babies.

Low birth weight is often a precursor of health issues in infancy and over a lifetime. It is therefore essential to tackle the various factors which can lead to LBW within the primary healthcare setting, and in so doing maximise the health of both mothers and children.

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