ORIGINAL ARTICLE

FACTORS RELATED TO LOW BIRTH WEIGHT BABIES IN BAGHDAD CITY, IRAQ

Mohammed A. AbdalQader, Shamsul Azhar Shah, Zaleha Md Isa, Hasanain Faisal Ghazi Idayu Badilla &Tiba Nezar Hasan.

Department of Community Health, Universiti Kebangsaan Malaysia Medical Centre, Kuala Lumpur, Malaysia.

ABSTRACT

Great importance has been attributed to birth weight all over the world because it is considered as one of the best predictors of prenatal survival and a good indicator of quality life. The objective of this study was to determine the prevalence of low birth weight babies (LBW) and factors related to it in Baghdad city. A cross sectional study was carried out in four general hospitals in Baghdad city, Iraq. A total of 225 newborn babies, alive, singleton and without congenital malformation were selected randomly from these four general hospitals.The result of the study showed the prevalence rate of low birth weights was 21.3%. Mothers' educational level, monthly family income, mothers with chronic hypertension, mothers with history of previous low birth weight infants and anemic mothers were significantly associated with low birth weight babies (P= 0.03, 0.01, 0.02,<0.01, 0.02) respectively. It is clearly evidenced the lack of equity in populations and disparity in socioeconomic status are common related factors for the low birth weight babies as can be seen as a public and global health problem.

Key words: Low birth weight babies (LBW), Baghdad city, medical history, anemia.

INTRODUCTION

Low birth weight has been defined by the World Health Organization (WHO) as weight at birth of less than 2500 grams (5.5 pounds). This practical cut-off for international comparison is based on epidemiological observations that infants weighing less than 2500 grams are approximately 20 times more likely to die than heavier babies [1].

Many factors affect the duration of gestation and fetal growth, and subsequently birth weight will thus be affected. These factors which include the infant, the mother or the physical environment play an important role in determining the infant's birth weight and future health.Socioeconomic status of the mother is one of the variables that may contribute to the occurrence of low birth weight. In this study the socioeconomic factors are expressed as monthly family income, educational level of the mother and her working status, and study the relationship between economic activity and social life (income, occupation and education).

Other international studies have shown that maternal age has a relationship with low birth weight babies, whereby females less than 17 years of age and females more than 34 years of age are at an increased risk to have low birth weight babies [2].Several studies found that the birth weight was found to be significantly associated with birth interval in relation to previous birth [3,4].

Iraq has been in an unstable condition for a long time and since the beginning of 1980s, the country was in war for more than eight years. Subsequent to the war, there was an economic sanction which started in 1991 until 2003. Consequently, more time was needed to recover and improve the infrastructure, especially the health and education sectors. The issue of low birth weight babies is a big health problem, but it can be controlled and avoided, by preventing its causes, which are many, ranging from causes related to the mother's health status, diseases, socioeconomic status, and behaviors to other causes related to the fathers like

smoking habits. The objective of this study is to determine the prevalence of low birth weight babies and its related factors in Baghdad city, Iraq.

MATERIALS &METHODS

A cross sectional study was carried out in four general hospitals in Baghdad city, Iraq during may 2009 to determine the prevalence and the risk factors of low birth weight babies. A total of 225 newborn babies, alive, singleton and without congenital malformation were selected randomly from four general hospitals. Data were collected during May 2009. There are 16 general hospitals that have maternity and obstetrics wards in the Baghdad city, 4 general hospitals were selected by simple random sampling method. From these 4 selected hospitals, 56 babies were also selected randomly to participate in this study.

Translated questionnaires were developed in English and translated into Arabic to ensure that the respondents understood better. It was then translated back into English to ensure there is no distortion of the content in the phrases. Data were collected by interview method with mothers and data such as height, weight and hemoglobin level of the mothers were extracted from the medical records. Mothers were interviewed within 24 hours after delivery.

Low birth weight in this study was defined as babies born less than 2,500 gm (up to and including 2,499 gm.)[1]. This study was approved by the Research and Ethics Committee of Universiti Kebangsaan Malaysia Medical Centre. Data was analyzed using SPSS version 16.0 .Pearson chi square test was used in data analysis.

RESULTS

The result of the study showed that the prevalence rate of LBW babies was 21.3%. The mean age for the mothers of the babies was of 28.94±6.88 years. The mean weight of the mothers was 67.79±6.77 kg and the mean height of the mothers was 162.28±4.60 cm. Table 1 shows the socio-demographic characteristics of the mothers. Mothers' educational level ($p=0.03$) and monthly family income ($p<0.01$) was significantly associated with low birth weight, with prevalence odds ratio of 10.2 for family income, that mean families with low income have 10 more times to have low birth weight babies from families with high monthly income. The mean income of low birth weight study group is 709,375 Iraqidinars (567.5 US dollar) per month while it is 999,435 Iraqi dinars (799.5 US dollar) per month for the normal weight group.

Table 1 Relationship between socio-demographic characteristics of the mothers and low birth weight babies.

Variable	N	LBW	NBW	POR(95%CI)	*P*- value [a]
Monthly Family Income					
High Income	164	16 (9.7)	148 (90.3)	10.2 (4.96-20.97)	<0.01*
Low Income	61	32 (52.4)	29 (47.6)		
Mothers' Educational level					
High education	174	31 (17.8)	143 (82.2)	0.43 (0.21 -0.87	0.03*
Low education	51	17 (33.3)	34 (66.7)		
Mothers' Working Status					
Working	108	22 (20.4)	86 (79.6)	0.89 (0.47 – 1.69)	0.74
Not working	117	26 (22.2)	91 (77.8)		

[a] pearson chi square was performed, level of significant at p < 0.05 , POR prevalence odds ratio, low education is either illiterate or primary school, high education is secondary or university level. LBW(Low birth weight), NBW (Normal birth weight).

Table 2 shows the medical history of the mothers. Chronic hypertension (p=0.02), mothers with history of previous low birth weight infants (p<0.01) and anemic mothers (p=0.02) were significantly associated with low birth weight babies.

Table 2 Relationship between Medical history of the mothers and low birth weight babies.

Variable	N	LBW	NBW	POR(95%CI)	*P*- value [a]
Low Birth Weight History					
Yes	38	19 (50.0)	19 (50.0)	4.94(2.21-11.06)	< 0.01 [a]
No	113	19 (16.8)	94 (83.2)		
Hypertension					
Yes	57	18 (31.6)	39 (68.4)	2.21 (1.07-4.20)	0.02 [a]
No	168	30 (17.9)	138 (82.1)		
Hemoglobin (Mean ± SD) Level (g/dl)		10.78±2.01	11.46±1.80	(0.09-1.28)	0.02[b]

[a] pearson chi square was performed, [b] independent t test , level of significant at p < 0.05 , POR prevalence odds ratio, LBW(Low birth weight), NBW (Normal birth weight), SD = Standard Deviation

The smoking habits, weight and height of the mothers were not associated with low birth weight as shown in table 3. The result of this study showed that the monthly family income was the strongest risk factor for the low birth weight babies (POR=10.2).

DISCUSSION

The main finding in this study is that monthly family income is the most important factors affecting low birth weight babies in Baghdad city, Iraq. This study has important strengths. The babies from four different living areas in Baghdad city, which provide information about different socio-economic status. However, security situation in some areas of Baghdad limit the selection criteria, especially for hospitals in the rural areas of Baghdad.

The monthly family income was in significant relation with LBW, which is supported by a number of studies that

reported significant effects of poverty on new born weights [5,6], and that's may be due to low income means less food and nutrient supply to the mothers during pregnancy and that will affect weight of the baby. The education levels of the mothers in this study were related to LBW. Women with lower level of education are more likely to have low birth weight babies than women with higher level of education, and this can be explained that those women with higher level of education know more about food requirement during pregnancy, health information, pregnancy needs, and healthy life style, time to go to antenatal care and other important issues. Our study shows similar findings with another study done in Dhaka, Bangladesh [7] and in United States of America [8].

Regarding the working status of the mothers, there was no relationship with LBW. Other studies showed the same results as the current study, that there is no significant relationships between the women work status and the low birth weight as shown in the study which was done in the USA and (Finch B.K., 2003)[8].Although other studies had found significant relationship as (Bener et al. 2008) stated in their study at Al-Ain (United Arab Emirates) in 1992 [9].

The current study could not find a significant association between mothers' smoking and the incidence of low birth weight babies. This is probably due to the low numbers of overall smoking mothers in the whole study sample as there were only six smoking mothers out of 225 mothers.

Table 3 Relationship between smoking history, weight and height of the mothers and low birth weight babies.

Variable	LBW	NBW	POR(95%CI)	*P*- value [a]
Smoking status				
Smoking	1 (16.7)	5 (83.3)	0.73 (0.08-6.41)	0.77[a]
Not smoking	47 (21.5)	172 (78.5)		
Weight (Kg) (Mean ± SD)	66.96±7.77	68.01±6.48	(-1.11-3.22)	0.34[b]
Height (Cm) (Mean ± SD)	161.40 ±5.09	162.53±4.44	(-0.34- 2.60)	0.13[b]

[a] pearson chi square was performed, [b] independent t test , level of significant at p < 0.05 , POR prevalence odds ratio, LBW(Low birth weight), NBW (Normal birth weight), SD = Standard Deviation

The current study could not find a significant association between mothers' smoking and the incidence of low birth weight babies. This is probably due to the low numbers of overall smoking mothers in the whole study sample as there were only six smoking mothers out of 225 mothers. Medical history of the mother in our study was significantly associated with LBW. Another study supported the current study which was carried out in Iran during year 2005; it was found that the mothers with history of chronic hypertension and previous history of LBW were significantly associated with low birth weight babies [10].The current study results showed that the risk of low birth weight increased with decreased mothers' hemoglobin level and this is supported by other studies [11,12].

CONCLUSION

There was significant association between monthly family income, mother education, complaining of hypertension and hemoglobin level with LBW babies. It is clearly evidenced that the lack of equity in populations and disparity in

socioeconomic status are common related factors for the low birth weight babies as can be seen as a public and global health problem.

ACKNOWLEDGEMENT
This study was funded by the Universiti Kebangsaan Malaysia Medical Centre Fundamental Research Grant, Code Number FF-185-2009 without which the study would not have been possible.

REFERENCES

1. WHO. Low Birth Weight: Country, Regional and Global Estimates. Geniva:2004.

2. Kiely JL, Brett KM, YuS, Rowley DL. Low birth weight and intrauterine bgrowth retardation. In: Wilcox LS Marks JS, editors. From Data to Action: CDCb Public Health Surveillance forWomen, Znfunts, and Children. US Department of Health & Human Services, 1994: 185-202.

3. Joshi, H.S. Subba, S.H. Dabral, S.B. Dwivedi, S. Kumar, D. & Singh, S. Risk Factors Associated with Low Birth Weight in Newborns. *Indian Journal of Community Medicine*2005; 30(4):142.

4. John Queenan. Ideal spacing between children. Baby Centre 2009. Accessed on 15 October 2009. http://www.babycenter.com/404_whats-the-ideal-spacing-between-children_7091.bc

5. Moura Da Silva, A.A. Bettiol, H. Barbieri, M.A. Brito, L.G.O. Pereira, M.M. De Aragao, V.M.F. & Ribeiro, V.S. Which factors could explain the low birth weight paradox *Revista de SaúdePública*2006; 40(4).

6. Rizvi, S.A. Hatcher, J. Jehan, I. & Qureshi, R. Maternal risk factors associated with low birth weight in Karachi: a case–control study. *Eastern Mediterranean Health Journal*2007; 13(6)

7. Khatun, S. & Rahman, M. Socio-economic determinants of low birth weight in Bangladesh: A multivariate approach. *Journal of Biosocial Science* 2008; 40(3): 321-337.

8. Finch, B.K. Socioeconomic gradients and low birth-weight: empirical and policy considerations.*Journal ofHealth Serv Res.*2003;38:1849-61.

9. Bener, A. Abdulrazzaq, Y. M. &Dawodu, A. Socio-demographic risk factors associated with low birth weight in United Arab Emirates. *Journal of Biosocial Science*2008; 28: 339-346.

10. Vahdaninia, M. Tavafian,S.S.&Montazeri, A. Correlates of low birth weight in term pregnancies: a retrospective study from Iran. *BMC Pregnancy and Childbirth* 2008;8**:** 8-12.

11. Beard, J. L. Does Iron Deficiency Cause Low Birth Weight, Prematurity, Anemia and Mortality in Early Infancy? *Nestlé Nutrition Workshop Series Pediatric Program* 2003 52:129–141.

12. Lee, HS.Kim, MS.Kim, MH.Kim, YJ. &Kim, WY.Iron status and its association withpregnancy outcome in Korean pregnant women. *European Journal of Clinical Nutrition* 2006; 60:1130–1135.