

Maternal Risk Factors Associated with Low Birth Weight in Ibn al-Baladi Hospital in Baghdad Governorate

عوامل الخطورة المرتبطة بانخفاض اوزان الاطفال حديثي الولادة في مستشفى ابن البلدي في محافظة بغداد

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الخلاصة:

خلفية البحث: انخفاض اوزان المواليد حديثي الولادة هو مؤشر موثوق في مراقبة وتقييم نجاح برامج صحة الام والطفل ويعرف انخفاض اوزان المواليد حديثي الولادة عندما يكون اقل من ٢ كيلو غرام ونصف غرام.

الهدف: الدراسة هو تحديد متوسط وزن انخفاض اوزان المواليد حديثي الولادة واجداد العوامل المرتبطة بانخفاض اوزان المواليد حديثي الولادة.

المنهجية: دراسة وصفية مقطعية اجريت في بغداد في مستشفى ابن البلدي للولادة لعينة غرضية وحجم العينة كان ٢٠٠. حيث جمعت المعلومات والبيانات باستخدام استبانة معدة مسبقا للحصول على المعلومات الاجتماعية والديموغرافية لكل امرأة.

النتائج: اظهرت الدراسة ان متوسط وزن الحالات كان ٢.٠٩ كيلو غرام مقارنة ٣.٥ كيلو غرام للأصحاء، وحوالي ١٢ % من العينة كن اميات، ٣٦.٩ % اطفال قليلي الاوزان كانت بشكل رئيسي في الثلث الثالث من مرحلة الحمل، وعدد النساء اللاتي انجبن اكثر من طفل واحد كن ممن . بعد تحليل النتائج بطريقة (مربع كاي) تبين وجود ترابط معنوي واضح بين قلة الوزن عند حديثي الولادة وبين (عمر الام، تدني المستوى التعليمي، والولادة المبكرة ، وقلة المراجعة بين حمل واخر ، والاحمال المتعددة ، وقلة عدد الزيارات للمركز الصحي ، والنساء المدخنات).

الاستنتاج: اظهرت الدراسة تبين وجود ترابط معنوي واضح بين قلة الوزن عند حديثي الولادة وبين (عمر الام، تدني المستوى التعليمي، والولادة المبكرة ، وقلة المراجعة بين حمل واخر ، والاحمال المتعددة ، وقلة عدد الزيارات للمركز الصحي ، والنساء المدخنات).

التوصيات: توصي الدراسة بأثناء برنامج منتظم للتثقيف الصحي خلال وسائل الاعلام وبرنامج تثقيفي منتظم في وحدات الرعاية الصحية التي للنساء الحوامل لتجنب انخفاض اوزان للمواليد حديثي الولادة.

ABSTRACT:

Background: low birth weight is a reliable indicator in monitoring and evaluating the success of maternal and child health programs and has been defined as a birthweight less than 2500 grams.

Aims of study: to determine the mean birthweight of the studied sample and to identify factors associated with the low birth weight.

Methodology: A cross-sectional study conducted in Baghdad in Ibn Al-Baladi hospital. Sampling was convenient & sample size was 200. The study started from 1st October 2016 to 30th March 2017. Data was collected by questionnaire to obtain social- demographic information.

Results: The result shows that mean weight of cases was 2.09 kg as compared to 3.5kg in controls, and the 12% were illiterate. About (36.9%) of the women with low birthweight were mainly at less than 37 weeks of gestation age , the number of women who had more than one child was higher among LBW than among normal birthweight. Analysis of results by (chi-square test) show that low educational level, preterm, short birth space interval less than 2 years, and multigravida, and low ANC visits and smoking were significant factors associated with low birthweight

Conclusions: This study shows the low educational level, medical and obstetric and low visit to antenatal clinic and smoking factors have strong association with low birth weight.

Recommendation: The study recommended that regular health education program through mass media and regular education program in ANC units for pregnant women to avoiding LBW babies.

Keywords: low birth, weight, Factors, mother, Baghdad.

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INTRODUCTION

Low birthweight (LBW) has been defined by "World Health Organization" as weight at birth of less than 2.5 kg ⁽¹⁾. The measurement being taken preferably within the first hour of life, before significant postnatal weight loss has occurred ⁽²⁾. Birthweight is the first weight of the fetus or newborn obtained afterbirth. For livebirths, birthweight should preferably be measured within the first hour of life before significant postnatal weight loss has occurred ⁽³⁾. One of the major challenges in measuring the incidence of low birthweight is the fact that more than half of infants in the developing world are not weighed ⁽⁴⁾. Low birth weight is therefore an important indicator for monitoring progress towards these internationally agreed-upon goals ⁽⁵⁾.

Intrauterine growth restriction or a combination of both pathophysiologic conditions, there are numerous factors contributing to LBW both maternal and fetal Weight at birth is directly influenced by general level of health status of the mother. Maternal environment is the most important determinant of birthweight a factors that prevent normal circulation across the placenta because poor nutrient and oxygen supply to the fetus, restricting growth. The maternal risk factors-biologically and socially interrelated ⁽⁶⁾, it is illustrated by the fact that the risk of neo natal mortality for low birth infant is 25 to 30 times greater than for infants with birthweight exceeding 2500g, and it increases sharply as birth weight de creases⁽⁷⁾. The incidence of LBW is estimated to be 16% worldwide, 19% in the least developed and developing countries, and 7% in the developed countries. The incidence of LBW is 31 % in South Asia followed by East and North Africa (15%), Sub-Saharan Africa (14%), and East Asia and Pacific (7%). Asia accounts for 75% of worldwide L BW followed by Africa (20%) and Latin America (5%) ⁽⁸⁾.

AIMS OF STUDY

To determine the mean birthweight of the studied sample and to identify factors associated with the low birth weight.

METHODOLOGY

A cross-sectional study was conducted in (Ibn al-Baladi Hospital in Baghdad governorate .was chosen for this study and The sample was selected by (convenient sampling) and sample size was 200. The study started from 1st October 2016 to 30th March 2017. The data was collected by direct interview using special questionnaire to obtained social demographic information (age from <20-39 per year , and gestational age period into Preterm less than 37 and term more than 37 weeks , obstetrical history (twin, birth space interval classification in to less than 2 years and more than 2 years , and gravidity in to prim gravidae and multi gravidae), chronic disease within the included Heart disease, Pre induced hypertension, Diabetes mellitus, Urinary tract infection and excluded kidney diseases psychosocial status.

Cigarette smoking: Based on maternal self-reporting, mother's smoking status was categorized into 1 of 3 groups: "nonsmoker (did not smoke throughout the pregnancy), smoker (smoked during pregnancy), and passive smoker (had a household member who smoked more than 10 cigarettes per day inside or outside of the house) ⁽⁹⁾. Mothers who smoked were divided into three groups according to quantity of maternal cigarette consumption: mild smokers (smoked 1to 5 cigarettes per day), moderate smokers (smoked 6 to 10 cigarettes per day), and heavy smokers (smoked more than 10 cigarettes per day) ⁽⁹⁾.

Statistically: collection data was analyzed by SPSS package version 18, X 2 tests was used for significance of p value of <0.05 was considered significant.

RESULTS:

Table (1): Distribution of the study sample according to age group, and education level by low birthweight

Valid	Frequency and percentage
<20	29 (14.5)%
20-24	66 (33.0)%
25-29	33 (16.5)%
30-34	43 (21.5)%
35-39	29 (14.5)%
Total	200 (100)%
Education level <20	
Illiterate	24 (12%)
Read and write	29 (14.5 %)
Primary	71 (35.5 %)
Intermediate	27 (13.5 %)
Secondary	23(11.5 %)
College	26(13 %)
Total	200(100 %)

Table (1) shows that of the (200) sample there were (33%) in age group (20-24) years. The primary school rate was (35.5%) compared to (12%) in illiterate.

Table (2): Associated age group with birth weight

Age	Birth weight		Total	Total
	LBW	NBW		
<20	23 (11.5%)	6 (3%)	29 (14.5%)	$X^2 = (20.493)$ P-VALUE = (0.651)
20-24	38 (19%)	28 (14%)	66 (33%)	
25-29	9 (4.5%)	24 (12%)	33 (16%)	
30-34	17 (8.5%)	26 (13%)	43 (21.5%)	
35-39	13 (6.5%)	16 (8 %)	29 (14.5%)	
Total	100 (50%)	100 (50%)	200 (100%)	

This table shows that women in age group (20-24) year had higher rate of Low birth weight

(19%) compared with (14 %) women in the age group 20-24 years had normal birth weight. Results found non significant as p-value was ≥ 0.05 .

Table (3): Distribution of the study group by educational level and birth weight

Education	Birth weight		Total	P - value
	LBW	NBW		
Illiterate	21 (10.5%)	3 (1.5%)	24 (12%)	$X^2 = (61.282)$ P-VALUE = 0.062
read & write	27 (13.5%)	2 (1%)	29 (14.5%)	
Primary	18 (9%)	53 (26.5%)	71 (35.5%)	
Intermediate	18 (9%)	9 (4.5%)	27 (13.5%)	
Secondary	8 (4%)	15 (7.5%)	23 (11.5%)	
College	8 (4%)	18 (9%)	26 (13%)	
Total	100 (50%)	100 (50%)	200 (100%)	

This table shows the relationship between birthweight & education level of the most women with low birth weight were read & write level (13.5%), while 26.5% of women with normal birthweight were Primary school. Results are highly significant as p-value was ≤ 0.05 .

Table (4): Distribution of the study group by gestational age and birth weight

Gestational Age Weeks	Birth Weight		Total	p-value
	LBW	NBW		
less than 37	72 (36.9)%	34 (17)%	106 (53)%	$X^2 = 28.984$ P-VALUE = 0.022
more than 37	28 (14)%	66 (33)%	94 (47)%	
Total	100 (50)%	100 (50)%	200 (100)%	

This table shows the relationship between gestational age & birth weight of the most women with low birthweight were (36.9%) of less than 37. Results show no significant as p-value was ≤ 0.000 .

Table (5): Distribution of the study group by birth space interval and birth weight

Birth space interval Years	Birth Weight		Total	p-value
	LBW	NBW		
Less than 2	91 (45.5)%	48 (24)%	139 (69.5)%	$X^2 = 43.61$

more than 2	9 (4.5)%	52 (26)%	61 (30.5)%	P-VALUE =0.024
Total	100 (50)%	100 (50)%	200 (100)%	

This table shows that women with birth interval Less than 2 years had higher rate low birth weight (45.5%), while (26%) of women with normal birth weight had birth interval more than 2 years significant difference were found as p- value ≤ 0.000

Table (6): Distributionon of the study group by gravidity and birth weight

Gravidity	Birth Weight		Total	p-value
	LBW	NBW		
1-2	48 (24)%	58 (29)%	106 (53)%	X ² =8.366 P-VALUE = 0.030
3-4	21 (10.5)%	28 (14)%	49 (24.5)%	
>5	31 (15.5)%	14 (7)%	45 (22.5)%	
Total	100 (50)%	100 (50)%	200 (100)%	

This table shows about 15.5% women had >5 Gravidity with low birthweight while 7% of women had >5 Gravidity with normal birthweight. Results are significant as p- value was ≤ 0.000

Table (7): Distribution of the study group by parity and birth weight

Parity	Birth Weight		Total	p-value
	LBW	NBW		
1-2	51 (25.5)%	57 (28.5)%	108 (54)%	X ² =2.580 P-VALUE =0.046
3-4	25 (12.5)%	28 (14)%	53 (26.5)%	
>5	24 (12)%	15 (7.5)%	39 (19.50)%	
Total	100 (50)%	100 (50)%	200 (100)%	

This table shows about 12% women had >5 children with low birthweight while 7.5 % of women had >5 children with normal birthweight. Results are significant as p- value was ≤ 0.000

Table (8): Distribution of the study sample according to disease during pregnancy

diseases	Birth weight		Total	Total
	LBW	NBW		
Non	17 (8.5)%	26 (13)%	43 (21.5)%	X ² =12.062
Heart disease	23 (11.5)%	6 (3)%	29 (14.5)%	

Pre induce hypertension	38 (19%)	28 (14%)	66 (33%)	P-VALUE =0.017
Diabetes mellitus	9 (4.5%)	24 (12%)	33 (16%)	
Urinary tract infection	13 (6.5%)	16 (8 %)	29 (14.5%)	
Total	100 (50%)	100 (50%)	200 (100%)	

This table shows the relationship between birthweight & disease during pregnancy of the most women with low birthweight were at were PIH (19%), while (13 %) of women with normal birthweight were non-disease. Results are significant as p- value was ≤ 0.000 .

Table (9): Distribution of the study group by antenatal clinic visit and birth weight

No. of antenatal clinic visit	Weight		Total	p-value
	LBW	NBW		
<4	83 (41.5)%	77 (38.8)%	160 (80)%	$X^2 = 1.125$ P-VALUE =0.0001
>4	17 (8.5)%	23 (11.5)%	40 (20)%	
Total	100 (50)%	100 (50)%	200 (100)%	

This table shows that women with ANC visit <4 had higher rate low birthweight (41.5%), while (38.8%) of women with normal birthweight, significant difference was found as p- value ≤ 0.000 .

Table (10): Distribution of the study group smoking and birth weight

Smoking	Birth Weight		Total	p-value
	LBW	NBW		
Smokers	65 (32.5)%	40 (20)%	105 (52.5)%	$X^2 = 22.910$ P-VALUE =0.0001
passive smokers	30 (15)%	31 (15.5)%	61 (30.5)%	
Non-smokers	5 (2.5)%	29 (14.5)%	34 (17)%	
Total	100 (50)%	100 (50)%	200 (100)%	

This table shows that women with smokers had higher rate low birthweight (32.5%), while (20%) of women with normal birthweight, significant difference was found as p- value ≤ 0.000 .

DISCUSSION

LBW is a public health problem linked to a wide range of possible predictors. Sometimes those are difficult to handle. Despite efforts to decrease the proportion of newborns with LBW. Success has been quite limited and the problem persists in both developing and developed countries ⁽¹⁰⁾.

Most of the mothers in both study groups belong to the 20-24 years age group. Thus the maternal age of 20-24 years has been found to be not significant age group for giving birth to LBW and NBW neonates. The finding of the present study is in agreement with study done in Iraq⁽¹¹⁾ and, in Bangladesh⁽¹²⁾. They found that mother's age has independent significant effect on birthweight with p-value 0.001 this could be explained by the fact that this is usually the top of the reproductive age. In this study, the highest percentage of maternal educational level attainment among the LBW group and the NBW group was (13.5%), (1%) respectively for the read and write mothers while the lowest percentage of educational level attainment among the LBW group and the NBW group was 4%, and 9% respectively for the college level of education with significant association with birth. The findings are in agreement with study done in Malaysian⁽¹³⁾; they found that educational level of mothers was significant risk factor associated with Malaysian LBW infants.

In this study, GA variable strongly associated with LBW ($p < 0.0001$) GA less than 37 weeks was 36.9% in LBW. Fetus with less than 37 weeks was 17% in NBW, This result agreement with done in Pakistan⁽¹⁴⁾. They found was that the neonates born before 37 weeks of gestational period had risk 6.4 times higher than neonates with gestational period of 37 weeks and more with p value < 0.0001 , In Australia⁽¹⁵⁾. These agreements this may be due to growth retardation of neonate born from mothers before 37 weeks of GA in the most world countries⁽¹⁵⁾. This study found that there was between the last birth space intervals and delivering LBW. Mothers who pregnant less than (2) years at greater risk of having LBW neonates when compared with more than (2) years, similar findings in study done in Iraq⁽¹⁶⁾, they found that an increased chance of LBW with short interval between births. This might be explained by incomplete return of the maternal physiology and nutritional reserves to normal levels encountered among rapid conceivers.

Gravidity and parity have significant association with LBW. The risk of giving birth to LBW significantly increased gravidity than 1-3 LBW 24% and NBW 29% and the parity than (1-2) LBW (25.5)% and NBW (28.5)% . This result was similar to study done in Bangladesh⁽¹⁷⁾, who found that the mothers of the parity one had 1.44 times and parity more than three had (2.19) times higher risk of having LBW neonates compared to mothers who were parity two. This similarity may be due to health services offered to mothers with more delivery.

This study demonstrated an increased risk of having LBW neonate among mothers with PIH or pre-eclampsia during current pregnancy with significant association ($p < 0.000$). These results similar to study done in Tehran⁽¹⁸⁾, and in Pakistan⁽¹⁹⁾, who found that uterine placental blood flow was decreased in pregnancies complicated by PIH or preeclampsia which affects the growth and status of placenta as well as fetal growth. Also hypertension causes blood vessel stenosis in some pregnant women and results in LBW in infants⁽²⁰⁾. ANC visits less than 4 were (41.5%) and (38.8%) in the LBW and the NBW groups respectively. The mothers who attended ANC visits less than (4) visits to greater risk to deliver LBW neonates than mothers who attended ANC visits 4 and more, This result is similar to study done in Washington, USA⁽²¹⁾, who found that a reduction in risk for prematurity, LBW. Was consistently demonstrated with improved levels of ANC. Also this result agreement with study done in Brazil⁽²²⁾, recorded that babies of mothers who had regular and more than 4 ANC visits showed higher Birthweight by 70gms than babies of mothers who didn't. This

could be explained by the fact that with adequate ANC, many problems can be identified early, allowing treatment that may reduce their risk of having LBW neonates.

Passive smokers from husbands and relatives were (15% and 15.5%) in the LBW and NBW group respectively. The risk of giving birth to LBW significantly increased when the mother's smokers were (32.5% and 20%) in the LBW and NBW group during pregnancy. The result goes with the findings obtained by study done in Lebanon ⁽²³⁾, who found that mother's smokers were three times more likely to give birth to LBW neonates. An increased incidence of low birthweight infant's has been ascribed to heavy cigarette smoking by pregnant women; this increases the fetal risk as well as the maternal risk of death or damage. Since there are many potentially hazardous substances in tobacco smoke, the particular one responsible for these adverse effects has not been identified ⁽²⁴⁾.

CONCLUSION:

1. This study shows higher rate of low birthweight occurs in age group 20-24 years.
2. Factors that were associated with low birthweight were low educational level, preterm (gestational age less than 37 weeks), short spacing, and multigravidas, multiparty mothers, and low ANC visits.
3. Obstetric problems of the current pregnancy seem to be crucial for the occurrence of LBW these include PIH and pre-eclampsia, UTI
4. Maternal behaviors that appear to contribute to having a LBW neonates were passive smoking.

RECOMMENDATIONS:

1. Emphasizing on nurses as health personal to take their role in screening the maternal risk factors associated with low birth weight.
2. Insure the importance of attending the antenatal care clinic regularly, and starting from the first months.
3. Community based studies are needed to cover the high percentage of births that take place at home.

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