Impact of Maternal Risk Factors on Birth Weight of Newborn in Two Maternity Hospitals in Baghdad City

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الخلاصة

الهدف: تم إجراء دراسة تحليلية مقطعية لغرض التعرف على عوامل الخطورة المتعلقة بالأم التي تسهم في انخفاض أوزان المواليد حديثي الولادة وإيجاد الفروقات المعنوية ذات الدلالة الإحصائية بين عوامل الخطورة وانخفاض أوزان المواليد.

المنهجية: اختيرت عينة غرضيه متكونة من (٤٠٠) امرأة في مستشفى العلوية التعليمي للولادة ومستشفى فاطمة الزهراء التعليمي للنسائية والأطفال. جمعت المعلومات بطريقة المقابلة مع الأمهات. صممت الاستمارة الاستبيانية والتي تكونت من سبعة أجزاء تشمل المتغيرات الديموغرافية، المتغيرات الإنجابية ،متغيرات عن الصحة الإنجابية ، مضاعفات الحمل الحالي، المتغيرات المتعلقة بالوليد حديث الولادة، الحالة التغذوية للأم ، خدمات الرعاية أثناء فترة الحمل، الحالة النفسية والاجتماعية للحامل. تم تحديد الصدق والثبات من خلال الدراسة الاستطلاعية،وتم استخدام الإحصاء الوصفي والاستنتاجي لتحليل البيانات

النتائج: تشير نتائج الدراسة أن معظم الأمهات هن من الفئة العمرية (٢٠-٣٤) سنة وأن أعلى نسبة منهن خريجات الدراسة الابتدائية فأقل. ومعظمهن ربات بيوت وذات مستوى معاشي واطئ كما تشير النتائج إلى وجود خمس متغيرات مهمة تساهم في حدوث انخفاض أوزان المواليد وتشمل عمر الحمل، الحالة التغذوية، الولادات الناقصة الوزن السابقة، الحالة النفسية والاجتماعية للحامل خلال فترة الحمل وعمر الأم.

التوصيات: أوصت الدراسة التأكيد على العناية المبكرة خلال مدة الحمل، تحسين نوعية الخدمات المقدمة للأمهات خلال تلك المدة على أن تأخذ الممرضة دورها في تقليل نسبة حدوث انخفاض في أوزان المواليد .

Abstract

Objectives: A cross sectional analytic study was carried out to identify the maternal risk factors which contribute to occurrence of low birth weight, and to determine the statistical significant differences between low birth weight and maternal risk factors.

Methodology: A purposive sample of (400) woman was selected from AL-Elwyia Maternity Teaching Hospital and Fatima Al-Zaharia Maternity and Pediatric Teaching Hospital. Data was collected through the interview of mothers. Questionnaire format was designed and consisted seven parts, demographic variables, and reproductive variables , Reproductive health variables, complications during the current pregnancy, the mother newborn variables nutritional status for the mother , antenatal care services, and the psychosocial status for pregnant women. Validity and reliability of the questionnaire were determined by conducting a pilot study. Descriptive and inferential statistical procedures were used to analyze the data.

Results: The results of the study revealed that the most of them their age was ranged between (20-34) years, and the highest percentage of them were graduated of primary school and less, most of them were housewives with low socioeconomic status. The result indicated that there were five important variables contributed to the incidence of low birth weight and these variables were gestational age nutrition status, previous low birth weight, and psychosocial status for pregnant women during pregnancy and the age of mothers.

Recommendations: it is recommended to emphasize on prenatal care as early as possible and improve health services rendered to mothers during pregnancy that the nurse must take the role in reducing the incidence of LBW.

Key words: Low birth weight, Normal birth weight and Newborn variables, (Gestational age, weight & Mode of delivery)

Introduction

The birth weight of newborn is the most important determinant of newborn survival and prenatal morbidity . Low birth weight (LBW) is more common in developing countriesthan in developed countries and significantly contributes to both neonatal and post neonatal mortality in those settings.[1]

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The incidence of low birth weight varies between regions, countries and within the area of the same country. The highest rate of LBW occurring in Asia region (21%) followed by Oceania (20%) Africa (15%), Latin America (11%) North America (7%) and Europe (6%).[1]

It is illustrated by the fact that the risk of neonatal mortality for low birth infant is (25) to (30) times greater than for infants with birth weight exceeding 2500 g. and it increases sharply as birth weight decreases. Low birth weight contributes to estimate (9.1) Million infant deaths each year. [2]

Certain parameters have been used to screen pregnant women who are at risk of delivery babies with LBW, these comprise genetic and constitutional factors, demographic psychosocial factors, obstetric factors, nutritional factors, maternal morbidity during pregnancy, toxic exposures and prenatal care.[3]

So educating the women about the risk factors and management will lead to minimize the obstetrical complications associated with pregnancy for safety of mothers then delivery of alive mature newborn that will not require intensive and prolonged neonatal care.[4] The objectives of the study *are* to identify the maternal risk factors which contribute to occurrence of low birth weight and to determine the statistical differences between birth weight and the following variables, demographic variables, reproductive variables, reproductive health variables, complications during current pregnancy, dietary pattern, new born variable, antenatal care services and psychosocial status.

Methodology

Cross- sectional analytic study was conducted to identify the maternal risk factors associated with birth weight among (400) women at labour, who were attending at the Al-Elwyia Maternity Teaching Hospital and Fatima Al-Zaharaa Maternity and Pediatrics Teaching Hospital in Baghdad city during the period from [15]th of June to 15th of November 2003.

Non probability sampling technique was used. A purposive sample of (400) woman at labour was selected who attended for delivery at two maternity Hospital mentioned above with equal sample size from each one. Tools were constructed by the investigator and comprised of seven parts were as the following: demographic variables, reproductive variables, complications of current pregnancy, characteristics of immediate newborn, estimation of dietary pattern, characteristics of the antenatal care services, and the psychosocial status. Descriptive statistic and inferential statistic were used.

Results

Table (2): statistical differences between reproductive variables and birth weight (N=400)

Table (1): Statistical differences between demographic variables and birth weight (N=400)

Characteristics of Mothers	NBW		LBW		Total		X^2	P value
	No.	%	No.	%	No.	%		
Maternal Age								
Less than 20 years	34	17	24	12	58	14.5	2.686	N.S
20-34 years	134	67	148	74	282	70.5	Df =2	*P> 0.05*
≥35	32	16	28	14	60	15		
Level of Education								
Illiterate	31	15.5	29	14.5	60	15		
Primary school & less	91	45.5	97	48.5	188	47	2.083	N.S
							Df =3	*P> 0.05*
Secondary	55	27.5	59	29.5	114	28.5		
University & above	23	11.5	15	7.5	38	9.5		
Occupation of mother								
Housewife	184	92	181	90.5	365	91.2	0.281	N.S
Employed	16	8	19	9.5	35	8.8	Df = 1	*P> 0.05*

This table had revealed that there were no significant differences between birth weight and demographic variables.

Maternal Risk Factors on Birth Weight of Newborn

Variable	NBW		LBW		Total-400		X^2	P value
	No	%	No	%	No	%		
Gravidity								
Primigravidae	67	33.5	56	28	123	30.8	*1.142* df = 1	*N.S.* p > 0.05
Multigravidae	133	66.5	144	72	277	69		
Parity								
Primipara	84	42	79	39.5	163	40.8	*3.052* df = 2	*N.S.* p.> 0.05
2-4	89	44.5	81	40.5	170	42.5		
≥ 5	27	13.5	40	20	67	16.8		
History of abortion								*N.S.* p.>0.05
Yes	54	27	69	34.5	123	30.8	*-2.692* df = 1	
No	146	73	131	65.5	277	69.2		
Total	200	100	200	100	400	100		
History of still birth							*5.570* df = 1	*S.* P. < 0.05
Yes	1	0.5	8	4	9	2.2		
No	199	99.5	192	96	391	97.8		
Previous LBW								*S.* P. < 0.05
Yes	26	13	42	21	68	17	*4.536* df = 1	
No	174	87	158	79	332	83		

This tableshowed that there were significant differences between birth weight and reproductive variables

Table (3) Distribution of the sample according to their complications during current pregnancy *(N=400)*

Variable	NBW		LBW		Total		X2	P value
	No.	%	No.	%	No.	%		
Complications during current pregnancy							**16.59** Df = 1	**H.S** *p < 0.05*
Yes	61	30.5	101	50.5	162	40.5		
No	139	69.5	99	49.5	238	59.5		

This table shows that there were significant differences between birth weight & the complications during current pregnancy.

Table (4) Statistical differences between birth weight and maternal anemia. *(N=400)*

Variable	NBW		LBW		Total		X^2	P Value
	No	%	No	%	No	%		
Anemia							0.010 Df =1	N.S P.> 0.05
Incidence of anemia	94	47	95	47.5	189	47.2		
No incidence of anemia	106	53	105	52.5	211	52.8		

This table had revealed (4) shows that there was no significant difference between birth weight and the incidence of maternal anemia

Table (5) Statistical differences between birth weight and dietary pattern (N=400)

Variable	NBW		LBW		Total		X^2	P Value
	No	%	No	%	No	%		
Daily calorie intake								
Less than 2500 kcal	20	10	52	26	72	18	17.31 Df =1	H.S P.<0.05
More or equal to 2500 kcal	180	90	148	74	328	82		
Daily calorie expenditure								
Less than 2500 kcal	32	16	12	6	44	11	10.21 Df =1	H.S P.<0.05
More or equal to 2500 kcal	168	84	188	94	356	89		

This table showed that there was a significant difference between birth weight & nutritional status of the pregnant women.

Table (6) Statistical differences between newborn variables (gestational age & mode of delivery) and birth weight (N=400)

Variables	NBW		LBW		Total		X^2	P value
	No	%	No	%	No	%		
*Gestational age								
Preterm (20 – 37) weeks	-	-	166	83	166	41.5	28.3 Df = 1	H.S $p < 0.05$
Term (38 - 42) weeks	200	100	34	17	234	58.5		
*Mode of delivery								
Normal vaginal delivery	172	86	132	66	304	76	20.63 Df = 1	H.S $p < 0.05$
Cesarean section	28	14	68	34	96	24		

This table had showed that there were significant differences between birth weight & *gestational age and mode of delivery*.

Table (7) Comparative differences between quality of antenatal care services and birth weight (N=400)

Groups	N.	Mean	SD	T. value	Sig.
Low birth weight	200	2.1304	1.00036	0.854	N.S
Normal birth weight	200	2.2241	1.0683		P. > 0.05

This table had indicate that there was no a significant difference between birth weight and *quality of antenatal care services*.

Table (8) Comparative differences between the psychosocial status and birth weight(N=400)

Group	Psychosocial status				
	N	Mean	SD	T	Sig.
Low birth weight	200	93.68	15.20	4.55	H.S.
Normal birth weight	200	86.55	16.88		P. < 0.05

This table had revealed that there was a significant difference between birth weight and psychosocial status

Table (9): Un confounding factor of LBW by using stepwise multiple regression

Variables	Beta	T	P.value	Sig.
Gestational age	0.732	23.099	0.000	H.S
Nutrition status	-111	-3.497	0.001	H.S
Previous low birth weight	-093	-2.923	0.002	H.S
Psychosocial status	-103	-3.197	0.004	H.S
Age of mother	0.075	2.324	0.021	H.S

This table illustrated that the five variables were contributed to low birth weight include : Gestational age, nutrition status, previous low birth weight, psychosocial status, and age of mother.

Discussion

Table (1) and (2) shows that there was no significant differences between birth weight and demographic and reproductive variable except history of still birth and previous history of LBW. Still birth and previous LBW are risk factors for LBW and IUGR.[5]

Table (3) shows that there was a significant difference between complications during current pregnancy and birth weight. Woman who had IUGR and LBW had significantly higher frequency of having hypertensive disorders, antepartum haemorrhage, respiratory diseases, anemia and oligohydramnious, compared with those who had normal growth newborn.[6]

Table (4) shows that there was significant difference between birth weight and maternal anemia. Most Iraqi women suffer from anemia because they were facing economic sanction as well as they depend on governmental ration

Table (5) shows that there was significant difference between birth weight and nutrition status. The poor and inadequate nutrition status including low pre pregnant weight for height, low energy intake comparing with energy expenditure, low Hb and in adequate early weight gain lead to LBW and IUGR[7]

Table (6) shows that there were significant differences between birth weight and gestational age and mode of delivery

The incidence of LBW was higher in women delivering prematurely before 38 week of gestation compared with those who had terminated their pregnancy (38-42) week.[8]. Concerning mode of delivery: normal vaginal delivery with episiotomy is usually advised for woman with LBW to facilitate delivery and prevent complication.[9]

Table (7) shows that there was no significant difference between birth weight and the quality of antenatal care, so no significant differences was demonstrated in the rate of LBW among birth of women who received ANC and birth of women who did not received ANC[10]

Table (8) shows that a significant difference between birth weight and woman" psychosocial status women who had lived more life event stresses such as death in the family, divorce during pregnancy, loss of job and financial difficulties had a significantly increased risk of having a low birth weight.[11]

Also the result indicates there are five un confounding factor were contributed in low birth weight these factors included gestational age, nutrition status, previous LBW, psychosocial status and age of mother as shown in table (9)

The first order of importance of variables of LBW was gestational age. Birth weight increased with increasing gestational age.[12]

The second order of importance of variable of LBW was nutrition status. Good maternal nutritional status through out gestation would best assure a good milieu for fetal growth and development. [13]

The third order of importance of variable which contribute to LBW was previous LBW. Women with previous IUGR have four times increase in the risk of subsequent growth restricted fetus. [5]

The fourth order of importance variable was psychosocial status. Lack of psychosocial and emotional support increase the likelihood of delivery of newborn baby with low birth weight.[14]

The fifth order of importance variable was the mother's age. Maternal age is one of the high risk factor that may face one or more problems during their reproductive period.[15]

Recommendations

1. Insure the importance of attending the antenatal care clinic regularly, and starting from the first-month of pregnancy until delivery and postpartum period.

2. Emphasizing on a collaborative work between the ministry of health, ministry of higher education and ministry of education in order to introduce in depth knowledge concerning low birth weight with in their curriculum.

3. Emphasizing on nurses as health personal to take their role in screening the maternal risk factors associated with low birth weight.

4. Further studies should be made to find out the national prevalence of LBW among Iraqi women for both home delivery and hospital delivery through accurate registration.

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