Prevalence and Risk Factors of Low Birth Weight in Al- Elwiya Maternity Teaching Hospital in Baghdad

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ABSTRACT:

BACKGROUND:

Low birth weight as a public health indicator and determinant of perinatal mortality should always be monitored. Attempts to trace possible risk factors and prevalence of low birth weight should not be wasted.

OBJECTIVE:

Finding the prevalence of low birth weight in Al-Elwiya maternity teaching hospital in Baghdad in 2011 and 2012 and studying risk factors associated with a sample of low weight neonates born in the hospital.

PATIENTS AND METHODS:

Prevalence of low birth weight in Al-Elwiya maternity teaching hospital in 2011 and 2012 was obtained through reviewing data registered in the hospital′s medical statistics unit and inpatient medical records unit, while risk factors were traced through conducting a case control comparison by collecting 100 cases and similar number of controls using direct interview questionnaire with the mothers who laboured in the hospital.

RESULTS:

The calculated prevalence of low birth weight in Al Elwiya hospital was slightly higher than the national figure, and the risk factors found statistically significant for low birth weight were; multiparty, anaemia, urinary tract infection, chest infection, passive smoking and level of education. While age, antepartum haemorrhage and pregnancy induced hypertension found insignificant.

CONCLUSION:

Prevalence of low birth weight in the hospital is slightly higher than the national figure although the latter was not published, all factors affecting birth weight were controllable.

KEYWORDS: Prevalence, risk factors, low birth weight.

INTRODUCTION:

The global definition of low birth weight as adopted by WHO is: Weight at birth of less than 2.5 kg to be measured within the first few hours of life. It is an important public heath indicator, based on epidemiological observations, low weight infants are approximately 20 times more likely to die than normal babies. In Iraq, and according to WHO estimates, 15% of live births are born low weight although 65% of births are not weighed [1,2]. Birth weight represent an endpoint of intrauterine growth, which depends on maternal, placental and fetal factors, as well as a sequence of constitutional and environmental influences [3].

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Low birth weight continues to represent the most important determinant of perinatal mortality and impaired later development around the globe [4]. It can also be considered as an indicator in evaluating the success of maternal and child health programs, this is why the prevention of low birth weight is a major public health priority [5]. Low birth weight includes both preterm (less than 37 weeks) and small for gestational age; combining these two categories is problematic from the research point of view since the underlying etiology and management are believed to be different [6]. As a leading cause of childhood mortality and morbidity worldwide [7], low birth weight due to restricted fetal growth affects the person throughout his life and is accompanied with poor growth in childhood and higher incidence of adult diseases such as DM,

hypertension, cardiovascular diseases and obesity in adults. An additional risk for girls is having smaller babies when they become mothers [1,6], low birth weight children are at higher risk for cognitive and school performance problems than are their normal birth weight peers [8]. Many risk factors were investigated worldwide to discover their effects on birth weight; in developed countries, the most important factor was cigarette smoking followed by nutrition and pre-pregnancy weight; meanwhile, in the developing countries, the major determinants are: racial origin, nutrition, low pre-pregnancy weight, maternal short stature and malaria [9].

PATIENTS AND METHODS:

An observational analytic study has been conducted in Al-Elwiya maternity teaching hospital in 2013 (which is the largest maternity teaching hospital in Al Risafa side in Baghdad) completed in two phases, For calculating the prevalence of low birth weight in the hospital; data were collected from the statistical records unit and inpatient files storage unit (after acquiring the necessary approvals) in the hospital to figure out the overall prevalence of low birth weight in the hospital in the previous two years (2011 and 2012) and compared with the national figures in the same time period. With the national data collected directly from the statistical department in the ministry of health/ planning and resource development directorate. The process was completed in one-month period (from 3rd to 30th January 2013) which represented the first phase. The second phase is a case control study that has been conducted in the hospital in the following 9 months' (from February 2nd to October 21st 2013) using a specified questionnaire designed for the purpose of interviewing 100 cases and same number of controls in order to examine a number of risk factors. Cases included all term singleton non-diabetic pregnancies with no previous history of low birth weight with their babies' birth weight measured less than 2.5 kg that happen to present during data collection period. While all preterm, twin pregnancy, gestational diabetes, and past history of low birth weight pregnancies were excluded from the study. Controls collected using the same inclusion and exclusion criteria for cases with the exception of birth weight being 2.5 kg and more. Among variables that were included in this study: Age, parity, level of education, antenatal care visits number, cigarettes smoking, anemia, hypertension, antepartum hemorrhage, urinary infections and chest infection. The questionnaire design contained mixed open as well as closed ended questions and filled by direct interview with the researcher, and the newborn weight was directly supervised by the researcher. Data analyzed using ratio of the odds and chi square analysis with P value taken at <0.05 level of significance.

RESULTS:

Among 8430 live births in 2011, 607 were low birth weight with percentage of 7.2, while in 2012 there were 10762 live births and 721 of them were low weight giving a percentage of 6.7. The national figure in comparison is slightly diluted with percentage of 6 and 5.9 respectively (figure 1). The study found that anemia, passive smoking, urinary tract infection, chest infection, level of education and multiparty were all statistically significant factors for low birth weight cases with p value < 0.05. At the same time, ante partum hemorrhage, hypertension, number of ante natal care visits, and age were statistically insignificant (table 1 & 2).

Figure 1: Percentage of low birth weight in Al-Elwiya hospital and Iraq in 2011 and 2012

Table 1: Case-control comparison using odd ratio in regard to several variables

Variable	Cases N=100	Control N=100	Odd ratio	95% confidence interval	P value
Anemia	82	53	4.03	2.12-7.69	<0.0001 S
Ante partum hemorrhage	7	2	3.68	0.74-18.21	0.109 NS
Passive smoking	64	36	3.16	1.77-5.63	0.0001 S
Hypertension (pregnancy induced)	11	19	0.52	0.23-1.17	0.117 NS
Urinary tract infection	66	28	4.99	2.73-9.1	<0.0001 S
Chest infection symptoms	39	7	8.49	3.56-20.21	<0.0001 S
Level 0 education (illiterate)	24	6	4.94	1.92-12.72	0.0009 S
Level 4 education	3	17	0.151	0.04-0.53	0.003 S

S: significant
NS: not significant

Table 2: Chi square analysis of the sample in regards to several variables.

Variable	Cases N=100	Controls N=100	X2	P value
Adequacy of ANC*	17	31	4.633	0.0314 S
AGE				
<20 years	16	7	4.709	0.09 NS
20-34	71	74		
≥35	13	19		
PARITY				
Primiparous	47	18	22.919	<0.0001 S
2-4 pregnancies	41	50		
>4 pregnancies	12	32		

* 10 antenatal care(ANC) are considered adequate for nulliparous and 7 for parous mothers

DISCUSSION:

The prevalence of low birth weight in the hospital was higher than the national figures in 2011 and 2012 and could represent the fact that the sample was taken from the largest maternity hospital serving with full capacity in Baghdad, so there was a direct high admission rate and a non-specified geographical area dedicated to the services of the hospital. Anemia in pregnancy is globally recognized as a major public health problem [10,11,12], the number of anemic mothers among cases group was 82 out of 100 in comparison with 50 out of 100 among controls with odd ratio of 4.03 and p value of 0.0001. Pregnancy induced hypertension as well as antepartum hemorrhage are both associated with low birth weight [13, 14], and they were both statistically insignificant for low birth weight in this study which could be due to exclusion of preterm deliveries that they both known to contribute to and the small sample size enrolled in this study. Passive smoking was considered for 2 or more hours of side stream smoke on daily basis [15] found in 64 cases and 36 controls giving an odd ratio of 3.16 and a p value of 0.0001. In consistency with previous researches from different parts of the world [12,16,17], urinary tract infection seemed to be statistically significant with odd ratio equals 4.99 and p value <0.0001. Chest infection was not intended to be followed through this study as a probable risk factor, but the presence among cases of many mothers with symptoms highly suggestive for chest infection with documented physician prescription of chest infection treatment made it inevitable to add it to comparison. So among cases, 39 mothers had symptoms of chest infection in comparison with 7 controls, giving an odd ratio of 8.49 and p value <0.0001 (significant). Regarding the number of antenatal care visits, the chi square analysis showed a p value of 0.03 (statistically significant) and this goes with previous research in Egypt [18]. Age has not showed significant relation in this study (p value 0.09) although a U shaped relation has been shown in previous studies [19]. Multi-parity seems to have a protective effect with primiparous mothers are more distributed among cases than controls giving a p value less than 0.0001.

Level of education has well established a clear relation with study outcome [4,20], the chi square analysis of the level of education gives a p value <0.0001 and, going into sub categories, the odd ratio of illiterate mothers was 4.94 (positive relation) while academic graduates had an odd ratio of 0.15 (negative relation). The percentage of low birth weight among mothers <12 years of education is 56.3 in comparison with mothers with >12 years of education which was 10.7% that is consistent with previous studies in USA [21].

CONCLUSION:

Prevalence of low birth weight in the hospital was higher than the national figures could be due to selection bias being the main maternity hospital operational in Baghdad. Factors known to have adverse health effect on mothers during pregnancy such anemia, urinary tract infection, illiteracy, smoking were associated with low birth weight while higher educational achievements and parity showed inverse relation and that was consistent with previous studies.

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