

Mortality Rate Among Low Birth Weight Infants in Al-Battool Teaching Hospital , Diyala Province, Iraq

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ABSTRACT:

BACKGROUND:

An analytic cross-sectional study through which a review for the records of all patients admitted to neonatal nursery in Al-Battool teaching hospital, Diyala province, Iraq during the first six months of 2003 and 2009 were performed.

OBJECTIVE:

To demonstrate the deterioration of the condition of low birth weight infants.

PATIENTS AND METHODS:

This study about mortality rate among low birth weight infants who delivered in Al-Battool teaching hospital Diyala governorate including the records of 366 patients admitted during first six months of 2003 and compared with records of 558 patients admitted during the same period of 2009. Information has been studied extensively for gestational age, birth weight, predisposing factors and mortality.

RESULTS:

Mortality rate is increased to 30% during 2009, while it was 12% during 2003.

Increase percentage of low birth weight infants (28-36wks) during first 6 months 2009 (49%), as compared to first 6 months 2003 (45%).

Increase in congenital abnormalities rate (ranging from cleft palate to congenital heart diseases) (42%) on 2009 as compared to (29%) on 2003.

Increase number of low birth weight infants to total deliveries at hospital (13.1%) during 2009 as compared to (11.7%) during 2003.

CONCLUSION:

High mortality rate, increase percentage of low birth weight infants and increase cases of congenital abnormalities during 2009, to be studied extensively and thoroughly regarding the environmental causes and health services availability.

KEY WORDS : mortality rate, low birth weight infant.

INTRODUCTION:

Low birth weight infants are defined as: all infants whose birth weight is less than 2500 gm irrespective of the cause & without regard to the duration of gestational age.

Sixty percent of low birth weight infants are premature and 40% are with intrauterine growth retardation of which 35% are dysmature and other 5% are hypoplastic⁽¹⁾. Newborn infants can now be categorized as⁽²⁾

Appropriate for gestational age, small for G.Age and large for gestational age .

About one third of low birth weight infants are small for gestational age while two third of them are appropriate for gestational age and preterm, but in developing countries 70% of low birth weight infants are small for date⁽³⁾ .

The incidence of low birth weight infants is about 7% of total birth in UK & USA^(1,2,3)

The common causes of low birth weight infants include inherited factors (Constitutional a mother who has produce a small for date infant has 20% chance of doing so in subsequent pregnancies^(4,5) , infants whose parents are small tends to be small at birth^(6,7) , chromosomal anomalies e.g. trisomy 18 Edwards Syndrome , 45-OX Turner Syndrome⁽⁸⁾ . Malnutrition ; many studies support the importance of nutrition as a factor in intrauterine growth retardation although protracted and severe nutritional insult is required to produce such effect⁽⁹⁾. Infections (e.g. maternal cytomegalic virus infection^(1,10)). Toxemia of pregnancy and hypertension. Placental causes and others causes (multiple gestation , high altitude . teratogenes , low socioeconomic , first born infant and maternal polycythemia during the latter half of pregnancy)^(2,11) .

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PATIENTS AND METHODS:

Diyala Governorate is located in the middle of Iraq about 65 kilometers to the north-east of Baghdad , Baquba city is the center of Diyala. There are two main hospitals in Baquba (Baquba general teaching hospital and Al-Battool Maternity and Pediatric teaching hospital)⁽¹²⁾. This analytic cross-sectional study was performed during the period from 1st of January to the end of June 2003 compared to the same period in 2009 all records of admitted cases to neonatal intensive care unit in Al-Battool teaching hospital for maternity and pediatric in statistic records from the case sheets of 366 cases were admitted to the neonatal intensive care unit from hospital delivery rooms exclusively at first 6 months of 2003 compared to 558 cases were admitted at first 6 months of 2009.

In our study the following data in respect to every case were included;

1. The total number of low birth weight infants classified according to body weight and gestational age.
 2. Mortality in relation to gestational age
 3. Mortality in relation to body weight.
 4. Predisposing factors.
 5. Causes of death.
 6. Percentage of death in relation to total admission to intensive care unit and percentage of low birth weight infants to total deliveries at hospital.
- The total number of deliveries in Al-Battool

teaching hospital during the 1st 6 months 2003 was 3140 and during the 1st 6 months 2009 was 4288.

RESULTS:

Increase percentage of low birth weight infants (28-36wks) during the first 6 months 2009 which is 49%, as compared to same period of 2003 which is 45% table (1), and during 2009 increase cases who are more than 36wks i.e. mostly small for date rather than pre-maturity is the cause, furthermore there is increase percentage of infants below 1.5 kg during 2009 as compared to 2003 table (2).

Distribution of death according to birth weight and gestational age shown in table (3) and (4). Causes of infant's death (table 5 for 2003 & table 6 for 2009).

Congenital abnormality (ranging from cleft palate to cong. heart diseases) is (42%) on 2009 as compared to 2003 which is (29%) , as it is shown in table (7), also there is increase in the known predisposing factors to 44.5% during 2003 while it is 33.1% during 2009 that means unknown causes are more in 2009 as compared to 2003.

Mortality rate increased to 30% during 2009 which is more due to RDS & asphyxia while it is 12% during 2003 & more due to sepsis & asphyxia (table 5,6 ,8)

Percentage of low birth weight infants to the total deliveries in hospital is more during the 1st 6 months of 2009 which is (13.1%) as compared to 1st 6 months of 2003 which is (11.7%) table (8) .

Table 1: Distribution of low birth weight infants according to gestational age in first 6 months of 2003 compared to first 6 months of 2009.

Gestational age	2003	%	2009	%	P value
<28wks	118	32.2	136	24.3	0.02
<<<< < 28wk					
28 -36wks	165	45	273	49	0.28
>36wks	83	22.8	149	26.7	0.2
Total	366	100	558	100	

Table 2: Distribution of low birth weight infants according to the birth weight in first 6 months of 2003 compared to first 6 months of 2009.

Birth weight	2003	%	2009	%	P value
<1kg-1.5kg	247	67.5	347	62.2	0.12
1.5– 2.5kg	119	32.5	211	37.8	0.14
Total	366	100	558	100	

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Table 3: Distribution of mortality according to birth weight in first 6months of 2003 compared to first 6months of 2009

Birth weight	No. of death 2003	%	No.of death 2009	%	P value
<1kg-1.5kg	34	77.3	126	75	0.049
1.5 – 2.5 kg	10	22.7	42	25	0.91
Total	44	100	168	100	

Table 4: Distribution of mortality according to gestational age in first 6months of 2003 compared to first 6months of 2009

Gestational age	No.of death 2003	%	No .of death 2009	%	P value
< 28wk	16	36.4	52	30.3	0.61
28-36 wks	20	45.4	82	48.8	0.82
> 36wks	8	18.2	34	20.9	0.93
Total	44	100	168	100	

Table 5: Distribution of infants death 2003 (total number 44) according to causes of death

	Sepsis	RDS	Asphyxia	Congenital Abnormalities	others
<1kg-1.5kg	4	8	12	0	0
1.5-2.5kg	4	8	4	2	2 cot death
Total	8	16	16	2	2
%	18.2	36.4	36.4	4.5	4.5

Table 6: Distribution of infants death 2009 (total no. 168) according to causes of death.

Birth weight	Sepsis	RDS	Asphyxia	Congenital abnormalities	Others
<1kg-1.5kg	36	18	40	4 CHD* 2 cleft lip	2 Congenital pneumonia
1.5-2.5kg	26	20	16	2 Multiple congenital abnormalities	2 cot death
Total	62	38	56	8	4
%	36.9	22.5	33.4	4.8	2.4

*CHD; congenital heart disease.

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Table 7: Predisposing factors of low birth weight infants in first 6 months of 2003 compared to first 6 months of 2009

Factor	2003 number of patient No.&%		2009 number of patient No.&%	
	Total	163	Total	185
Maternal disease	57	35.6%	30	16%
Maternal age	18	Less than 20y 11%	20	Less than 20y 11%
	26	Above 35y 16.4%	28	Above 35y 15%
History of low birth wt.	0		10	5%
Multiple pregnancy	14	8.6%	19	11%
Smoking	0		0	
Congenital abnormality	48	29.4%	78	42%

Table 8: Percentage of low birth weight infants in the first 6 months of both 2003 and 2009 compared to the total deliveries in Al-Battool teaching hospital and percentage of death of low birth weight to total low birth weight number during 2003 compared to 2009.

	No. of death	Total low birth weight infants No.	Total deliveries in Al-Battool teaching hospital	% of death of low birth weight to total low birth weight no.	% of low birth weight infants to total deliveries
First 6 months of 2003	44	366	3140	12	11.6
First 6 months of 2009	168	558	4288	30	13.1

DISCUSSION:

All infants whose birth weight is less than 2500 gm irrespective of the cause and disregard to the duration of gestational age are called low birth weight infants⁽¹⁾

The mortality rate of low birth weight according to WHO in developed countries according to degree of low birth weight ranging from 5% for those whose birth weight (1.5-2.5kg), more than 20% for those with birth weight (1-1.5kg) which is called (very low birth weight infants) and for those with birth weight less than 1kg called (extremely low birth weight) ranging from 50% to 90% for those who less than (0.750kg) which called (immature low birth weight infants)⁽¹³⁾.

Neonates at risk should be identified as early as possible to decrease neonatal morbidity and mortality. Approximately 9% of all births require special or neonatal intensive care⁽¹⁴⁾.

Usually needed for only a few days, such observation may last from a few hours to several

months. Some institutions find it advantageous to provide a special or transitional care nursery for high-risk infants, often within the labor and delivery suite. This facility should be equipped and staffed similar to a neonatal intensive care area⁽¹⁵⁾.

Many infants who are born prematurely, are small for gestational age (SGA), have significant perinatal asphyxia, are breech, or are born with life-threatening congenital anomalies do not have previously identified risk factors.

For any given duration of gestation, the lower the birth weight, the higher the neonatal mortality; for any given weight, the shorter the gestational duration, the higher the neonatal mortality. The highest risk of neonatal mortality occurs in infants who weigh <1,000 g at birth and whose gestation was <28 wk⁽¹⁶⁾.

Therefore, this study which performed among those unfortunate low birth weight infants who admitted to this nursery with poor equipment and

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inexpert, poorly trained sub-staff who should look after and to keep 24hr maintained care, furthermore the number of specialized doctors which should be available 24hrly in the ward is not enough as well. Unfortunately with successive years from 2003 to 2009 the state of the nursery is deteriorating more, meanwhile the bad circumstances in the community during these years of occupation leading to lack of good antenatal care, these factors with other factors like feeling of insecurity and sorrowful condition ultimately led to this results and as the present study implies that the number of low birth weight infants is increasing during 2009, and mortality rate is doubled.

Mortality rate of low birth weight infants found higher during the 1st 6months of 2009 (30%) while it is (12%) during the 1st 6 months of 2003 .

Causes of death as shown in table(5) and (6) increase number of sepsis and then asphyxia as a leading causes of death during 2009 as compared to 2003 in where the main causes are asphyxia and RDS, can be explained by the same mentioned factors.

The number of low birth weight infants is higher during the 1st 6months of 2009 than during the 1st 6 months 2003 in regard to the total admission to the neonatal intensive care unit and regarded to the total deliveries in Al-Battool teaching Hospital.

The known predisposing causes i.e. the known factors (excluding malnutrition) are less in this study during 1st 6 months 2009 which is (33.1%) as compared to 1st 6months of 2003 which is (44.5) ,congenital abnormalities (varying from cleft palate to congenital heart diseases) are increased during 2009 to 42% as compared to 29% during 2003 , thus the known causes of low birth weight infants are more during 2003 i.e. the unknown causes are more in 2009 , which are attributed mostly to malnutrition , psychological , socioeconomic conditions during these six years of loss of security , unstable and irritable circumstances which affect all the essential services for life especially the health services including medical supplies ,enough staff number and training.

CONCLUSION:

High mortality rate, increase percentage of low birth weight infants and increase cases of congenital abnormalities during 2009 , need to be studied extensively and thoroughly regarding the environmental causes and health services availability .

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