

# Descriptive Study of Neonatal Death in Neonatal Care Unit of Baghdad Teaching Hospital / Medical city / Baghdad (2007-2009)

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## Summary:

**Background:** In developing countries, neonatal death account for 99% of neonatal deaths in the world. In Iraq, the neonatal death rates are still unknown.

**Objectives:** To assess the death rate and the major causes of neonatal death in the neonatal care unit (NCU) in Baghdad Teaching Hospital-Medical City/ Baghdad.

**Patients & Methods:** A descriptive study of 564 neonatal deaths in the neonatal care unit (NCU) from 1st of January 2007 to 31st of December 2009 in Baghdad Teaching Hospital-Medical City/ Baghdad was carried out, and the causes of death as registered in the neonatal medical records and death certificates were studied.

**Results:** Neonatal death rate relative to admission was (18.5%). The Neonatal death rates were lower in 2007(15%) than 2008(20%) and 2009(19.2%), of 564 total neonatal deaths, males were 329 (58.3%), 235 (41.7%) were females with male to female ratio was 1.4:1. Eighty percent of neonatal deaths were preterm deliveries and (79%) were low birth weight (< 2.5 kg). Major causes of death were: Respiratory problems (62.8%), followed by congenital anomalies (17%), neonatal infections (11.2%) and birth asphyxia (9%).

**Conclusions:** The Neonatal death rate was lower in 2007 than 2008 and 2009. There was a high male to female ratio, and high percent of preterm deliveries and LBW. The main causes of death were respiratory problems, congenital anomalies and neonatal infections.

**Keywords:** Neonatal Deaths, Neonatal Care Unit, Neonatal mortality.

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## Introduction:

The neonatal mortality rate includes all infants dying during the period from birth to the first 28 days of life and is expressed as the number of deaths per 1000 live births.(1) Neonatal mortality, amounting to an estimated 4 million deaths worldwide each year, comprises nearly two third and two fifths of infant and under – 5 childhood mortality, respectively in developing countries, and 98% of global neonatal mortality occurs in developing countries.(2)

Causes of neonatal death can be summarized into: Immaturity related including multiorgan immaturity, hyaline membrane disease or clinical respiratory distress in the absence of any other detectable cause, Birth asphyxia: when a normally formed term baby is unable to initiate and sustain respiration at birth or has low Apgar score, Congenital abnormalities: including fatal chromosomal & somatic malformations and Infections: sepsis, pneumonia or meningitis.(3,4) In Iraq, deaths in neonatal period account for more than half of under-five children deaths, highlighting urgent need to introduce health interventions to improve essential neonatal care and effective treatment for neonatal conditions. (5)

This study aimed to know the death rates and major causes of neonatal death in the neonatal care unit (NCU) in Baghdad Teaching Hospital-Medical City/ Baghdad.

## Patients & Methods:

A descriptive study over 3 years period was done on the medical records of neonates admitted to NCU in Baghdad Teaching Hospital-Medical City and died in the period from 1<sup>st</sup> of January 2007 to the 31 of December 2009.

The data regarding the (name, gender, birth weight, gestational age, mode of delivery, cause of admission to NCU, age and the cause of death), all were gathered from neonates medical records and death certificates.

Analysis of data was carried out using the available statistical package of SPSS-18 (Statistical Packages for Social Sciences-version 18). Data were presented in simple measures of frequency, percentage. (6)

## Results:

The neonates admitted to NCU during 3 years period were 3043 and the admission rate of the total live births was (12.2%).

The year 2007 was of highest percent of admission (13.43%) and lowest number and percent of death from total live births 103(15%). table 1

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Total neonatal admissions was (3043), (564) neonates died, and the death rate was (18.5%). table 1

Males forming 329 deaths (58.3%) & females were 235 (41.7%), male to female ratio was 1.4:1.

Table 2

According to gestational age, of 564, 451(80%) of neonatal deaths were preterm and 113(20%) were term. Table 3

According to body weight, 445 (79%) were < 2.5 kg and 119 (21%) were >2.5kg.

Main causes of neonatal deaths were respiratory problems (62.8%), followed by congenital anomalies (17%), neonatal infections (11.1%), and birth asphyxia (9%). Table 4

From 62.8% of respiratory problems, respiratory distress was diagnosed in 48.8%, meconium aspiration 9.6%, pneumonia 2.5%, and pneumothorax 1.9% .table 4

According to their gestational age, out of 275 of those who died due to respiratory distress, 251(91.3%) were <= to 35weeks of age, and 24(8.7%) were > 35weeks of age.

According to their gestational age; out of 54 with meconium aspirate, 41(75.9%) were post term, and 13(24.1%) were term.

According to delivery mode, 312 (55.3%) of total neonatal deaths were delivered by vaginal delivery and 252 (44.7%) by cesarean section.

Neonatal infections accounted for 11.1% of neonatal deaths, Sepsis account for (10.3 %) of causes of infection and meningitis in 0.8%. table 4

Early onset infection accounted for (85.7 %) and late onset infection accounted for (14.3%) of cases of infection. table 5

**Table 1: Distribution of neonatal admissions and deaths in neonatal care unit according to years**

Year	Total live birth	Number and % of neonates admitted to NCU	Number and % of neonatal deaths in NCU
2007	5115	687(13.43)	103(15%)
2008	9152	1204(13.16)	240(20%)
2009	10663	1152(10.80)	221(19.2%)
Total	24930	3043(12.2%)	564(18.5%)

**Table 2: Distribution of total neonatal death according to gender.**

Gender	2007	2008	2009	Total	%
Male	55	151	125	329	58.3%
Female	48	89	96	235	41.7%
Total	103	240	221	564	100%

**Table 3: Distribution of neonatal deaths according to Gestational age.**

Gestational age	Number of deaths	%
Less than 37 completed wk.	451	80%
Equal or more than 37 wk.	113	20%
Total	564	100%

**Table 4: The main causes of neonatal death**

Causes	2007 no.(%)	2008 no.(%)	2009 n.(%)	% from Total neonatal death
Respiratory				354(62.8)
RDS	32(31)	116(48.3)	127(57.5)	275(48.8)
meconium aspiration	15(14.6)	29(12)	10(4.5)	54(9.6)
Pneumonia	3(2.9)	7(2.9)	4(1.8)	14(2.5)
Pneumothorax	5(4.9)	4(1.7)	2(0.9)	11(1.9)
Congenital Anomalies	19(18.4)	34(14.2)	43(19.5)	96(17)
Infections	17(16.5)	27 (11.3)	19 (8.6)	63(11.1)
Septicemia	15	26	17	58(10.3)
meningitis	2	1	2	5(0.8)
Birth asphyxia	12(11.7)	23(9.6)	16(7.2)	51(9)
Total	103(100%)	240(100%)	221(100%)	564(100%)

Table 5: Distribution of neonatal deaths according to onset of infection

Onset of infection	2007 n.	2008 n.	2009 n.	Total n.	%
Early onset	14	23	17	54	85.7
late onset	3	4	2	9	14.3
Total	17	27	19	63	100

**Discussion:**

Of the estimated 130 million infants born each year worldwide 4 million died in the first 28 days of life(7) ,three- quarters of neonatal deaths occur in the first week, and more than one-quarter occur in the first 24 hours.(3, 7)

Neonatal deaths account for 40% of deaths under the age of 5 years worldwide. Therefore, efforts to achieve the UN Millennium Development Goal 4 of reducing childhood mortality by two- thirds by 2015 are focused on reducing neonatal deaths in high mortality countries.

The current study showed that the neonatal death rate of (18.5%) which is higher than Rashid et al study in Bangladesh 2010 (15.5%)(8) and Adeolu AA et al study in Nigeria 2010(10.8%)(9). Death rate decreased in 2009 which may be due to improved health services.

The high male to female ratio of 1.4:1, which was similar to Adeolu AA et al study in Nigeria 2010(1.5:1)( 9), this may be due to the fact that male neonates have approximately two folds higher incidence of sepsis and respiratory distress syndrome than females. (10, 11)

Regarding body weight, (79%) of neonatal deaths were in neonates less than 2.5kg, which is lower than Foran H study in Ireland 2002(12) (88%), but higher than Rashid study in 2010(67.12%)(8), and Jehan I et al study in Pakistan 2009 (54%). (13)

In the current study, (44.7%) were delivered by C/S, which is higher than Rashid study in Bangladesh 2010 (35%) (8).

In the current study, respiratory problems were the most common cause of neonatal deaths (62.8% of total deaths), which differs from Rashid study in 2010 in which immaturity – related and birth asphyxia were the most common cause of neonatal death (26%) (8) for each and differ from Adeolu AA et al study in Nigeria 2010 in which infection was the most common cause of neonatal death (26.1%)(9).

According to gestational age relation to neonatal death, 80% of deaths were pre term, which is higher than Rashid study in Bangladesh 2010 (59.59%). (8)

Death from congenital anomalies formed (17%) of total deaths which is higher than Jehan I et al study in Pakistan 2009 (8%). (13)

Neonatal infections formed (11.2%) of total deaths, which

is lower than Rashid study in Bangladesh (28.77%) (8) And Adeolu A A et al study in Nigeria 2010, (26.1%). (9)

Birth asphyxia caused (9%) of total neonatal deaths, which is lower than Jehan I et al study in Pakistan 2009 (26%) (13), this may be due to more hospital deliveries in the current study.

**Conclusions:**

The Neonatal deaths rates were lower in 2007 than 2008 and 2009. There was high male to female ratio, and high percent of preterm deliveries and LBW. The main causes of death were respiratory problems, congenital anomalies and neonatal infections.

We recommend better care of preterm and low birth weight babies, especially those with respiratory problems and steps to prevent or decrease neonatal infections and congenital anomalies.

**References:**

1. *Overview of Mortality and Morbidity.* Stoll B J, Kliegman R M.. *Nelson Essentials of Pediatrics, 5th ed.* WB Saunders& Elsevier; 2007; 11:275.
2. *World Health Organization. Estimates. In: State of the World's Newborns.* Washington, DC: Saving Newborn Lives, Save the Children/USA; 2001:1–49.
3. Lawn JE, Cousens S. *Four millions neonatal deaths: when? Where? Why?.* *Lancet* 2005; 365 (9462): 891-900.
4. Hill K, Choi Y. *Neonatal mortality in the developing world.* *Demographic research* 2006; 14(18): 429-452.
5. Awqati NA, Ali MM, Alak M. *Causes & differentials of childhood mortality in Iraq.* *BMC pediatrics* 2009 June 22; 9 (1): 40.
6. Norusis M. *SPSS 18.0 Statistical Procedures Companion SPSS statistical software. SPSS: Base and Advanced statistics 18.0.* Chicago, SPSS Inc, 2004.
7. *World health report 2005: make every mother and child count.* Geneva: WHO; 2005.
8. Rashid M, Rasul H, Hafiz M. *Neonatal mortality: a scenario in a tertiary level hospital of a developing country.* *Pediatr. Rep.* 2010 June 18; 2(1): e9.
9. Adeolu AA etal. *Pattern of death in a Nigerian teaching hospital; 3 decade analysis.* *Arf Health Sci.* 2010 Sep;

10(3):266-72.

10. Frankul FM, Al-Hadad SA, Al-Kazraji MA. Children Mortality Rate and Causes of Death in Al-Mansour Teaching Hospital. *Iraqi Post Graduate Medical Journal (IPMJ) April 2003; 2(3): 234-238.*

11. Stoll BJ. Infection of neonatal infant. In: Kliegman RM, Behrman RE, Jenson HB, Stanton BF (Editors), *Nelson Textbook of pediatrics, 18<sup>th</sup> edition, Chapter 109, 2007, Saunders – Elsevier, Philadelphia: 794-811.*

12. Foram H. Irish neonatal mortality--12 years. *Ir Med J 2002 Oct; 95(9):267-8, 270.*

13. Jehan I, Harris H, Salat S, et al. Neonatal mortality, risk factors and causes: a prospective population-based cohort study in urban Pakistan. *Bull World Health Organ. 2009 Feb.; 87(2): 130–138.*