
Bacterial Infection in the Neonatal Unit of the Maternity and Pediatrics Hospital in Diyala, Iraq

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Abstract:

Objective: This study was carried out to find out the factors associated with neonatal infection among neonates to the special baby care unit (SBCU) at the Maternity and Paediatrics Hospital in Diyala governorate.

Methods: All admitted neonates (533) to the SBCU for the period 20th Dec. 1999 to 20th June 2000 were included in the study. Demographic and medical data of the mothers, birth weight of neonates, delivery place and delivery attendant were obtained. Multiple logistic regressions were used to study the association between neonatal infection and the studied factors.

Results: Out of the total neonates, there were 176 (33%) neonates with bacterial infection. Birth weight, gestational age, maternal age, maternal education, hypertension, UTI, delivery place and delivery attendants were significantly associated with neonatal infection. Antenatal care was not associated with neonatal infection.

Conclusion: Several variables were found to be associated with in the SBCU. These findings were discussed in the view of the effects of gulf wars and economic sanctions on neonatal health.

Keywords: neonatal infection, low birth weight, prematurity, delivery place and attendants, antenatal care, Iraq

Introduction:

Infection is a frequent and important cause of mortality and morbidity in neonatal period [1]. Some risk factors for neonatal infection are: low birth weight (LBW) and prematurity [2], prolonged rupture of membrane (mother – infant colonization) [3, 4], maternal peripartum fever or infection or multiple gestation, resuscitation at birth [5, 6]. Several reports in Iraq demonstrated that low birth weight (LBW) and prematurity were risk factors and specified the causative agents of infection [7-9].

This work was carried out to study the possible social and medical determinants of neonatal infection among neonates admitted to the special baby care unit (SBCU) of the Maternity and Paediatrics Hospital in Diyala governorate.

Materials & Methods:

A total of 533 neonates admitted to SBCU of the Maternity and Paediatrics Hospital in Diyala governorate during the period of 20th December 1999 to 20th June 2000 were included in this study.

Information regarding the mother was collected by direct interview of the mother. The data requested were maternal age, education and occupation, gestational age, parity, medical history of the mother (hypertension, diabetes mellitus and urinary tract infection), delivery place, delivery attendant and history of receiving antenatal care (ANC).

The birth weight and bacterial infection of the newborns were taken from the case records. Neonatal infections referred to all systemic infections (septicaemia and meningitis) and focal infections (pneumonia, enteritis and urinary tract infection).

Multiple logistic regressions were done to find out which variables are significantly and independently associated with neonatal infection. Chi square was used to examine the association between some variables with neonatal infection [5]. P value equal or less than 0.05 was considered statistically significant.

Results:

Out of the total 533 neonates, there were 176 (33%) having bacterial infection. LBW was recorded in 276 (51.8%) neonates and 289 (54.2%) were premature.

Multiple logistic regressions revealed that neonatal infection was significantly associated with birth weight, gestational age, maternal age, maternal education, maternal hypertension, delivery place and delivery attendant ($p < 0.05$) as shown in Table 1.

A significant statistical difference was observed in neonatal infection among neonates delivered by different delivery attendants ($p < 0.05$). Neonatal infection was significantly higher among neonates delivered at home ($p < 0.05$). (Table 2).

Table1. Analysis of variables associated independently with neonatal infection by multiple logistic regressions.

Variable	β	SE	P value
Birth weight	0.51	0.16	0.004
Gestational age	-0.07	0.003	0.037
Maternal age	0.07	0.024	.008
Maternal education	-0.36	0.016	0.023
Maternal occupation	-0.108	0.065	0.099
Hypertension	-0.14	0.065	0.031
Diabetes mellitus	-0.129	0.19	0.498
UTI	-0.155	0.1	0.02
Delivery place	-0.206	0.57	0.001
Delivery attendant	0.09	0.021	0.001
ANC	-0.38	0.045	0.403

Table2. Distribution of neonatal infection according to delivery attendant and place of delivery

Variable		No. of neonates	Neonatal infection	
Delivery attendant			No.	(%)
	Physician	278	54	(19.4)
	Nurse	152	60	(39.4)
	Midwife	58	39	(67.2)
	TBA *	32	28	(56.3)
	Others (relatives)	13	5	(38.5)
Delivery place				
	Home	99	59	(59.6)
	Hospital	434	116	(26.8)

* Traditional Birth Attendants

Discussion:

The prevalence of neonatal infection varies with considerable fluctuation over time and geographical location and even from hospital to hospital. These variations may be related to rates of prematurity and LBW [11], prenatal care [12], conduct of labour [13], and environmental conditions [14]. The finding that 33% of neonates admitted to SBCU had infection is higher than that reported at teaching hospital in Baghdad (22.5%) [8] Which included systemic and focal infections? The high prevalence

of neonatal infection reported in this study may be attributed to our finding of high prevalence of prematurity and LBW [11, 15]. UNICEF [16] reported an increase in the prevalence of LBW from 4.5% in 1990 to 23.8% in 1998. Gulf wars and economic sanctions were contributed for the high prevalence of LBW and prematurity [16-18].

The finding that maternal age was significantly associated with neonatal infection may be attributed to the fact that maternal age affects the birth weight [19,20].

Maternal education was significantly associated with neonatal infection. Other workers have showed neonatal infection is a major cause infant

Mortality^{1, 21} and that education of mothers reduces the infant mortality rate^[21]. UNICEF^[16] found that 29.5% of 23105 Iraqi women aged 15 – 49 years never attend school. Illiteracy among ever – married women under 50 years was 50% in 1989²². Although sustained increase in young children mortality are extremely rare²³. Iraq is a unique situation with high infant mortality rates that have shown upward trend in the past three decades^[16, 24, 25].

Our finding that neonatal infection, also, was significantly associated with hypertension may be attributed to the fact that hypertension is associated with LBW and prematurity^[19, 20].

This study revealed, also, that neonatal infection was significantly associated with delivery place and delivery attendants. Similar findings were reported from India^[26] and Bangladesh^[27]. Neonatal infection was significantly higher among neonates delivered at home. Home deliveries are largely in hands of untrained birth attendants. However, the finding that more than quarter of hospital deliveries developed neonatal infection is relatively high when compared with other developing countries^[15, 26-28]. This indicate that these deliveries whether at home or hospital were presumably conducted in poor hygienic practices with increased risk of neonatal infection during delivery or thereafter. Others, in Iraq, reported that unhygienic conditions during delivery were the cause for high neonatal infection^[7, 9]

It is surprisingly that ANC was not significantly associated with neonatal infection although other studies stress on the association of ANC with neonatal infection^[12, 13, 21]. This may be due to generalized deterioration in health services and environmental sanitation after the gulf wars and economic sanctions. The UNICEF reported that health system has been badly eroded in Iraq over the period of sanctions together with water purification, sewage system and electricity which in turn have a strong impact on the prevalence of infectious diseases^[16].

This work revealed that several factors are associated with infection in SBCU. The effects of gulf wars and economic sanctions on neonatal health were demonstrated.

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