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Neonatal Mortality in Post-Conflict Baghdad, Iraq

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Abstract: ***Background: Neonatal mortality is an index for neonatal care. In Iraq, reports showed an increase in neonatal mortality with time in hospitals, recently. Objective: this study was carried out to show the effect of health services on neonatal mortality. Methods: Two hospitals (Welfare Children Teaching Hospital and Al-Kadhmia Children Hospital) were included in the study. Data about neonatal admissions and neonatal death in neonatal intensive care units in both hospitals were obtained from Dept. of statistics. Neonatal mortality proportions of admission were calculated. Number of incubators and specialists reflects the health services. Results: Neonatal mortality proportions in Welfare Children Teaching Hospital was 0.05 and 0.07 before and after 2015, respectively. In Kadhmia children hospital before and after 2015 the neonatal mortality proportions were 0.04 and 0.06, respectively. Trend neonatal mortality was parallel to number of incubators in both hospitals. Conclusion: Neonatal mortality was increasing with time in both studied hospitals. Conflict (eroding of health system, IDPs and violence) was the main cause of increase in neonatal mortality proportion.***

Keywords: neonatal mortality proportion, Iraq, conflict, health services

1. Introduction

The neonatal mortality is an index for neonatal care and directly reflects maternal and child health service.[1]In Iraq, the rapid changes occurred in the health sector during the last 6 decades (wars, change of regime and civil wars).[2-5]It was reported that in 1990s Iraq has the highest infant mortality rates in the world and it is attributed to the effect of wars and sanctions.[6,7]

The mentioned changes affect the quality of health service which is continued to deteriorate.[8-10] Recently, it was reported that the neonatal mortality was increasing with time in the second decade of this century[11]after a conflict established by occupation of 3 governorates by Islamic State of Iraq and Sham (ISIS), which was the impetus to carry this study.

This study was done to determine the effect of health services availability and readiness on neonatal mortality.

2. Materials and Methods

Two hospitals were selected from Baghdad. From hospitals in Al-Rusafa, Children's Welfare Teaching hospital (CWT) in Medical City was selected. Al-Kadhimiya children hospital (KC), was selected from hospitals in Al- Karkh.

Case records of the dead neonates in neonatal intensive care unit (NICU) before discharge for years 2012 to 2017were reviewed.The requested data were recorded neonatal death and admissions, number of doctors (specialist, junior, postgraduate trainee …etc., number of incubatorsfor the years 2012 to 2016.The data collection about the neonatal death was carried out for the period 1st October 30th December, 2017.

Data on health services were represented in number specialist pediatrician and incubators. Neonatal mortality proportions out of admission were calculated. The data were studied before and after 2015 as it was the year of establishment of camps for internally displaced people (IDPs) from governorates occupied by ISIS.

A Z test was carried out to examine the difference between two neonatal mortality proportions. The trend of neonatal mortality and numbers of specialists and incubators (e.g. to represent health services) with yearswere represented by regression lines. P value < 0.05 was considered to be statistically significant.

3. Results

Table 1 shows the distribution of neonatal deaths, admissions, and neonatal mortality proportions before and after 2015. In CWT, Neonatal mortality proportion before 2015 was 0.05 and that after 2015 was 0.07. In KC, the neonatal proportion before and after 2015 were 0.04 and 0.06, respectively. In CWT, neonatal mortality proportion after 2015 (0.07) was significantly higher than neonatal mortality proportion before 2015 (0.05) (Z = 6.2, p = 0.02). In KC, neonatal mortality proportion after 2015 (0.06) was significantly higher than neonatal mortality proportion before 2015 (0.04) (Z = 4.4, p = 003). Fig. 1 shows the trends of neonatal mortality in both studied hospitals through years of study. The Fig.1 shows also trends of number of incubators and number of specialist. In CWT, the neonatal mortality was increasing parallel to the increasing trend in numbers of incubators and specialists. In KC, the neonatal mortality was increasing parallel to the increase in number of incubators. The trend of neonatal mortality was increasing inversely number of specialists was decreasing.

Table 1: Distribution of neonatal deaths, admissions and proportions in the studied hospitals

Variable	Before 2015		After 2015	
	CWT	KC	CWT	KC
Neonatal death	233	159	414	270
admissions	4934	3751	5369	4143
proportion	0.05[1]	0.04[3]	0.07[2]	0.06[4]

Z test CWT 1 vs 2 = 6.2, p = 0.02
Z test KC 3 vs 4 = 4.4, p = 0.03

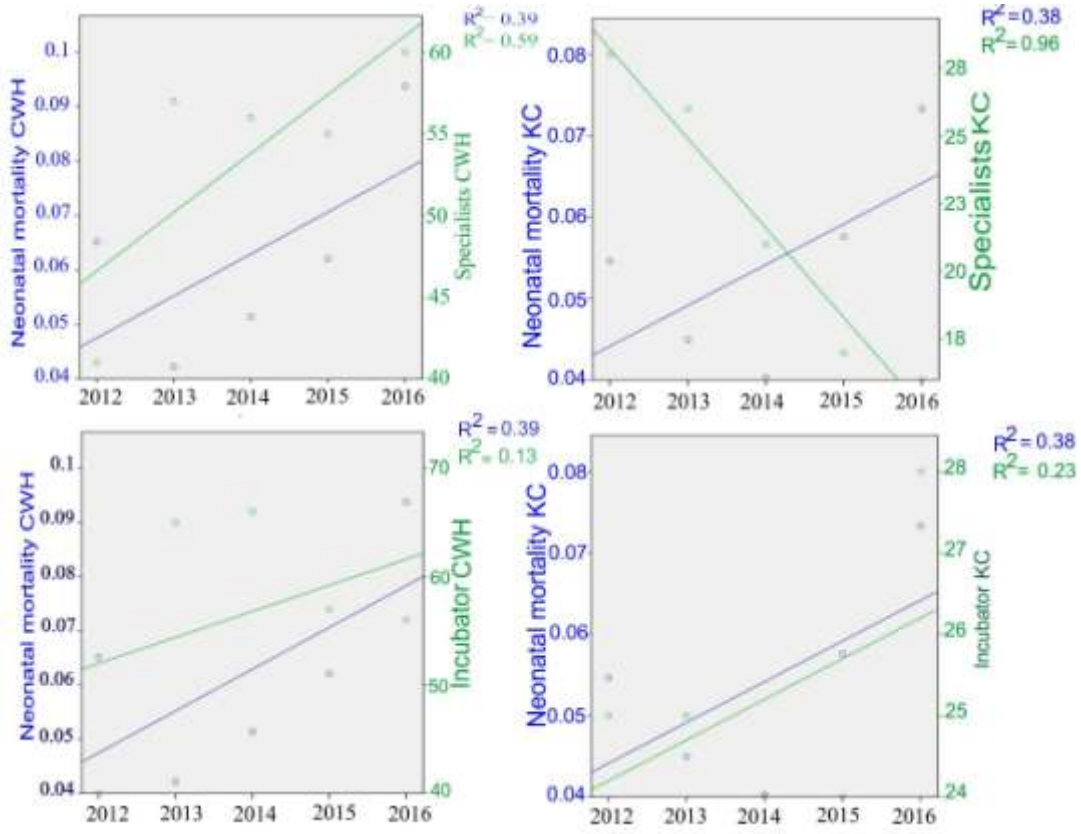

Figure 1: Trends of neonatal mortality proportions in the CWH and KC in relation to health services (number of specialist and incubators)

4. Discussion

This study showed that neonatal mortality was increasing by time. It is inconsistent with that of global report[12] which documented a decline in neonatal death by 11.7%. Even in post-armed conflict countries, neonatal death declined by 9.47%. The difference might explained by the fact that in Iraq, it was a war against terrorism (ISIS) and was not just an armed conflict.Reports documented that wars (international or civil wars) contribute for increase in neonatal mortality.[13,14] Armed conflicts cause breakdown in countries health care facilities.[15]

The finding of increasing mortality proportion with time might be explained by the high rate of nosocomial infection in hospitals. High rates of nosocomial infections in neonatal unit in teaching hospital was reported.[14] High rates of nosocomial infections explained by overload and difficulties in arrangingtimes forvisits, cleanness, antiseptic measures …etc. are product of insecurity and deterioration in health system in Iraq. Reports documented that health system in Iraq was badly eroded by wars, widespread violence, and civil war.[15]

Economic crisis (war against terrorism and drops of oil prices) might be another explanation for the finding of increasing neonatal mortality with time.[16]The economic crisis affects negatively the public expenditure on health which in turn affect services in the hospitals e.g. cleaning, antiseptic measures …etc. countries undergoing armed conflicts lead to shrinkage of health and humanitarian intervention.[15]

It was observed that neonatal mortality was increasing parallel to the increase in number of incubators in both hospitals. This finding might be explained by overload in admission in both hospitals which is in turn due to internal displacement population (IDPs). Iraq experienced huge IDPs in the 2nd decade of this century.[15] Migration to Baghdad from different governorates looking for jobs [16] might be an added factor for overload in the hospitals.

In addition to mentioned explanations for the finding, there are challenges in the neonatal Intensive Care Unit (NICU). One of the challenges is the rapid weight change of neonate's body. This change affects their nutrition demand and pharmacokinetics and pharmacodynamics properties of the drugs administered to the neonates.[17]for that there is a need for continuous calculation performed manually by neonatologists to determine the appropriate nutrition and drug dosage.Another challenge is the workflow in the NICU (engagement of several medical experts in management of neonates). It is unusual to practice such interdisciplinary team in Iraq. It might an added explanation for the finding.

The role for the nurse in NICU is a challenge too. The nurse is not following the specialist instruction, but to prepare manual charts and reports for the progress of neonate hourly. These reports are highly prone to human error which might be another explanation of the finding.

The study showed a decline in number of specialist in KC with time. This finding might be due administrative difficulties.

5. Conclusion

Neonatal mortality proportion was increasing with time in both studied hospitals. Conflict (eroding of health system, IDPs and violence) was the main cause of increase in neonatal mortality proportion.

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