Assessment of Some Factors related to Admission of the Neonates to Neonatal Intensive Care Unit and their outcome at Al-Kut Hospital In Wassit Governorate

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Abstract:

Objective: In order to assess the some factors related with the admission of the neonates to neonatal intensive care unit, moreover to find out the relationship between these factors and outcome of the neonates.

Methodology: A retrospective review of record / cross sectional study was conducted in Al-Kut hospital at Wassit governorate among a sample of women under 34 years of age during the period from 1st of January 2015 to end of February 2015. Data collection was done by using a hospital records that includes all the information.

Results: The results showed that the mean(±SD) values of age for Neonates was (٢٦,١٢ ±0 .093weeks), and the   mean(±SD) values of weight for Neonates was (2.9809± 0.03616 kg). The majority of neonates admission to the NICU because of respiratory distress syndrome, they have accounted more than half . Correlation analysis of results, showed that there was significantly positive correlation between birth type and other risk factors for the neonates. Also, it was observed from the results that there was significantly positive correlation between birth type with causes of admission and causes of death in NICU.

Recommendations: One of the main recommendations of the study are improvement the health and nutrition of mothers and provision of reproductive health services especially obstetric care and postpartum care at the right time for both mothers and newborns. In addition to enhancing the links between the different levels of care in health facilities.

.**Key words : the neonates; neonatal intensive care , The neonatal mortality**

Introduction

The admission of the neonates to the hospital especially   in the   NICU considerable health , social and economic burden, not only on the family, but also on the community[1]. Interestingly, Worldwide

forty-one percent of children die during the neonatal period[2] which is a critical and vulnerable period[3,4]. Unfortunately, all the deaths except one percent occur in underdeveloped countries [5]. The neonatal mortality is a key determinant of health and well-being of children [6].

There are several factors that affect the neonatal mortality and morbidity and these factors vary from one country to another as well as it varies from region to region within the same country[7], due to several interrelated factors, such as health system, social and economic characteristics and other conditions[8]. The impact of neonatal mortality on childhood survival is evident so, thus reduction in neonatal mortality will reflect positively on that[6]. Know the diseases and understanding the causes for the admission of the neonates to the NICU that would determine the appropriate and effective interventions to avoid similar situations in the future[9]. subsequently, this study aimed to assess the some factors related with the admission of the neonates to NICU, moreover to find out the relationship between these factors and outcome of the neonates.

Methodology:

At the beginning of the study was obtained a preliminary approval ethical to conduct study from the director of hospital that was involved in the study and the Wassit Health Directorate. The study was a retrospective / across sectional study , it was be conducted at Al-Kut hospital in Wassit governorate from 1st of January 2015 to end of February 2015. The study sample was composed of 651 women admissions at Al-Kut hospital. Hospital records for 2014 have been adopted for this purpose, that involved information regarding: age of the mother, birth type (single, twins), sex of neonates (male, female and hermaphrodite), methods of delivery (normal and C. section) , gestational of age (<٣٧ weeks and >٣٧ weeks), weight at birth, neonates survival (alive and died), the causes of inpatient neonates, and causes of neonates death.

Statistical Package for Social Sciences (SPSS) version 20 software was used to generate the interface for inputting the data from the data sheet. Tables (Frequencies, Percentages) and arithmetic mean with standard deviation, and pearson correlation for more than one parameter were used to test the results. The main limited of the study is inability to get some information, such as educational and economic level of the parents and other.

Results: Table (1) shows the mean (±SD) values of data for neonates (age, weight). The results revealed that the mean(±SD) values of age for neonates was (٢٦،١٢ ±0 .093 hours), and the mean(±SD) values of weight for neonates was (2.9809± 0.03616 kg).

Table (1): The mean (±SD) values of data for Neonates (age, weight).

	No.	**Mean ± SD (Range)**
Neonates' age	٦٥١	٢٦,١٢ ±0 .093
Neonates' weight	٦٥١	2.9809± 0.03616

Table (2) show the correlation of birth type with other risk factors (method of delivery, neonate's sex, gestational age and neonates survival) for the neonates. The results of this study revealed that there was significantly positive correlation between birth type and method of delivery, neonate's sex with birth type of neonates (P.C=-0.193, p<0.00), (P.C= 0.107, p<0.06) respectively. Also, there was significantly positive correlation between birth type and gestational age, neonates survival for the neonates P.C= -0.492-, p<0.000), (P.C= 0.226, p<0.000) respectively.

Table (2) Distribution of birth type of the neonates according to method of delivery, neonate's sex, gestational age and neonates survival with causes correlationship and comparison significance.

Risk factors Method of delivery	Birth type				Total	%	P.C	P-value
	Single	**%**	**Twin**	**%**				
Normal	١٢٩	٣٠,١٤	١١١	٤٩,٧٨	٢٤٠	٣٦,٩	*-0.193-	٠,٠٠٠
C- section	٢٩٩	٦٩,٨٦	١١٢	٥٠,٢٢	٤١١	٦٣,١		
Total	٤٢٨	١٠٠	٢٢٣	١٠٠	٦٥١	١٠٠		
neonates survival								
Alive	٣٦٨	٨٥,٩٨	١٥١	٦٧,٧١	٥١٩	٧٩,٧	*0.226	٠,٠٠٠
Died	٦٠	١٤,٠١	٧٢	٣٢,٢٩	١٣٢	٢٠,٣		
Total	٤٢٨	١٠٠	٢٢٣	١٠٠	٦٥١	١٠٠		
Neonate's sex								
Female	٢٩٢	٦٨,٢٢	١٢٩	٥٧,٨٥	٤٢١	٦٤,٧	0.107	٠,٠٠٠6
Male	١٣٦	٣١,٧٨	٩٣	٤١,٧٠	٢٢٩	٣٥,٢		
Hermaphrodite	٠	٠	١	٠,٤٥	١	٠,٢		
Total	٤٢٨	١٠٠	٢٢٣	١٠٠	٦٥١	١٠٠		
Gestational age								
<٣٧ weeks	٩٣	٢١,٧٣	١٦٨	٧٥,٣٤	٢٦١	٤٠,١	*-0.492-	٠,٠٠٠
>٣٧ weeks	٣٣٥	٧٨,٢٧	٥٥	٢٤,٦٦	٣٩٠	٥٩,١		
Total	٤٢٨	١٠٠	٢٢٣	١٠٠	٦٥١	١٠٠		

*Correlation is significant at the 0.01 level (2-tailed).   **P.C. = pearson correlation

Table (3) show the correlation of gestational age with other risk factors (method of delivery, neonate's sex, and neonates survival) for the neonates. The results of this study revealed that there was significantly positive correlation between gestational age and method of delivery, neonate's sex and neonates survival for the neonates P.C= 0.281, p<0.000), (P.C= -0.126-, p<0.001) (P.C= 0.316-, p<0.000) respectively.

Table (3) Distribution of gestational age of the neonates according to neonate's sex , method of delivery, and neonates survival with causes correlationship and comparison significance

Risk factors	Gestational age				Total	%	P.C	P-value
Neonate's sex	<٣٧ weeks	%	>٣٧ weeks	%				
Male	١٠٩	٤١٫٧٦	١٢٠	٣٠٫٧٧	٢٢٩	٣٥٫١٨	*-0.126-	٠٫٠٠١
Female	١٥١	٥٧٫٨٥	٢٧٠	٦٩٫٢٣	٤٢١	٦٤٫٦٧		
Hermaphrodite	١	٠٫٣٨	٠	٠	١	٠٫١٥		
Total	٢٦١	١٠٠	٣٩٠	١٠٠	٦٥١	١٠٠		
Methods of delivery								
Normal	١٣٩	٥٣٫٢٦	١٠١	٢٥٫٩٠	٢٤٠	٣٦٫٨٧	*0.281	٠٫٠٠٠
C- section	١٢٢	٤٦٫٧٤	٢٨٩	٧٤٫١٠	٤١١	٦٣٫١٣		
Total	٢٦١	١٠٠	٣٩٠	١٠٠	٦٥١	١٠٠		
neonates survival								
Alive	١٧٣	٦٦٫٢٨	٣٤٦	٨٨٫٧٢	٥١٩	٧٩٫٧	*0.316-	٠٫٠٠٠
Died	٨٨	٣٣٫٧٢	٤٤	١١٫٢٨	١٣٢	٢٠٫٣		
Total	٢٦١	١٠٠	٣٩٠	١٠٠	٦٥١	١٠٠		

*Correlation is significant at the 0.01 level (2-tailed).

Table(4) show the correlation of methods of delivery with neonate's sex. The results of this study revealed that there was significantly negative correlation between method of delivery and neonate's sex (P.C= -0.065-, p<0.097).

Table (4) Distribution of methods of delivery of the neonates according to Neonate's sex with causes correlationship and comparison significance

Neonate's sex	method of delivery				Total	%	P.C	P- value
	Normal	**%**	**C- section**	**%**				
Male	٩٣	٣٨,٧	١٣٦	٣٣,١	٢٢٩	٣٥,٢	٠,٠٦٥-	٠,٠٩٧
Female	١٤٦	٦٠,٨	٢٧٥	٦٦,٩	٤٢١	٦٤,٧		
Hermaphrodite	١	٠,٥	٠	٠	١	٠,١		
Total	٢٤٠	١٠٠	٤١١	١٠٠	٦٥١	١٠٠		

It was observed from the table 5 that the highest frequency of causes to admission to the NICU ٥٤,٨٤% was respiratory distress syndrome, followed by birth asphyxia ٢٥,١٣ %. In addition, the study shows that ٧,٥٣% of neonates admitted to the NICU with Birth trauma and Septicemia. And this table shows that the frequency of congenital anomalies in the neonates was ٥,٢٢%.

The proportion of gestation age of neonates under 37 was ١,٠٨% and the percentage of the neonates with low weight and neonatal jaundice was ٠,٦١%, while the percentage of the neonates with congenital pneumonia, meconium Aspiration syndrome, and haemorrhagic disorders of new born was ٠,١٥%, There was significantly positive correlation (P.C= 0.085, p<0.031).

Table (٥) Distribution of of birth type of the neonates according to causes of admission to the NICU with correlationship and comparison significance.

Causes of admission	Birth type				Total	%	P.C	P- value
	Single	**%**	**Twin**	**%**				
<٣٧ weeks	٥	١,١٧	٢	٠,٩٠	٧	١,٠٨	*٠,٠٨٥	٠,٠٣١
Low weight	٣	٠,٧٠	١	٠,٤٥	٤	٠,٦١		
CP	١	٠,٢٣	٠	٠	١	٠,١٥		
MAS	١	٠,٢٣	٠	٠	١	٠,١٥		
NJ	٣	٠,٧٠	١	٠,٤٥	٤	٠,٦١		
C.A	٢٣	٥,٣٧	١١	٤,٩٣	٣٤	٥,٢٢		
RD S	٢٢٣	٥٢,١٠	١٣٤	٦٠,٠٨	٣٥٧	٥٤,٨٤		
Birth asphyxia	١٠٧	٢٥	٣٤	١٥,٢٥	١٤١	٢٥,١٣		
Septicemia	٢٢	٥,١٤	٢٧	١٢,١١	٤٩	٧,٥٣		
HD of new born	١	٠,٢٣	٠	٠	١	٠,١٥		
Birth trauma	٣٨	٨,٨٨	١١	٤,٩٣	٤٩	٧,٥٣		
Other disorders	١	٠,٢٣	٢	٠,٩٠	٣	٠,٤٦		
Total	٤٢٨	١٠٠	٢٢٣	١٠٠	٦٥١	١٠٠		

CP = Congenital pneumonia   MAS = Meconium Aspiration syndrome. NJ = Neonatal jaundice   .
C.A = Congenital anomalies.

RSD = respiratory distress syndrome.   HD = haemorrhagic disorders of new born.
*Correlation is significant at the 0.01 level (2-tailed).

The current study showed that higher percentage of causes to death in NICU was respiratory distress syndrome (33.33%) , Septicemia (24.20%), Birth asphyxia (14.32%) and congenital anomalies(13.64%). The frequency of gestation age of neonates under 37 was 5.3, birth trauma was 4.55 . While the lower percentage of causes to death in NICU was Low weight and Neonatal jaundice (0.75%). There was significantly positive correlation(P.C= 226, p<0.000   ).   (Table5).

Table (5) Distribution of of birth type of the neonates according to causes of deaths in NICU with causes correlationship and comparison significance.

deaths in NICU	Birth type				Total	%	P.C	P-value
	Single	**%**	**Twin**	**%**				
<٣٧ weeks	٥	٨,٣٣	٢	٢,٧٨	٧	٥,٣	*226	٠,٠٠٠
Low weight	١	١,٦٧	٠	٠	١	٠,٧٥		
Neonatal jaundice	١	١,٦٧	٠	٠	١	٠,٧٥		
CA	٩	١٥	٩	١٢,٥	١٨	١٣,٦٤		
RDS	١٩	٣١,٦٧	٣١	٤٣,٠٥	٥٠	٣٧,٨٨		
Birth asphyxia	١٤	٢٣,٣٣	٥	٦,٩٤	١٩	١٤,٤		
Septicemia	٨	١٣,٣٣	٢٢	٣٠,٥٥	٣٠	٢٢,٧٣		
Birth trauma	٣	٥	٣	٤,١٧	٦	٤,٥٥		
Total	٦٠	١٠٠	٧٢	١٠٠	١٣٢	١٠٠		

*Correlation is significant at the 0.01 level (2-tailed)

Discussion:

In this study, the correlation between some factors and the admission of the neonates to NICU, at Al-Kut hospital in Kut governorate was studied. A total number of delivery at kut hospital was 5024 (2665 male and 2359 female) among them the neonates admitted to NICU was 651 in 2014 which included in the study. females showed higher percentage than males, ٦٤,٦٧%, ٣٥,١٨ respectively. This is opposite with study done by C. N. Onyearugha et al, 2011 in Nigeria[10], they found that the male were 46(55.4%) and female were 37(44.6%).

The results of this study showed that the mean value of age for neonates was ٢٦،١٢ ±0 .093 hours. In a related study, Mamta Jajoo et al, 2015 in India[5] , they found that the mean value of age for neonates was 23.05±2.89 hours. The results of this study showed that the mother of neonates in the age group ≤30 was 62.5%. This results is similar to that reported by Yared Mekonnen et al, 2013 in Ethiopia[6], they found that the mother of neonates in the age group 18–34 years was over 78%.

respiratory distress syndrome was the first most prevalent risk factor for admitted of neonates to NICU found in this study with almost more half of the study population respiratory distress syndrome (٥٤،٨٤%). The second risk factor found in this study was birth asphyxia, the results of this study entailed that birth asphyxia was (٢٥،١٣%) in the neonates. Others risk factors, ٧،٥٣% of neonates with birth trauma and septicemia. Congenital anomalies in the neonates was ٥،٢٢% and the gestation age of neonates < 37 was ١،٠٨%. The percentage of the neonates with low weight and neonatal jaundice was ٠،٦١%, while the neonates with congenital pneumonia, meconium Aspiration syndrome, and haemorrhagic disorders of new born was ٠،١٥%.

Raghvendra Narayan, 2012 in India[9], found in his study that about half (54%) of neonates with neonatal jaundice. in contrast 13% of neonates were prematurity, while 12% with birth asphyxia. Only 5% of neonates have respiratory distress syndrome. Furthermore, 4% of neonates have

meconium Aspiration syndrome which is incomparable to what this study shows . Other study stated by C. N. Onyearugha et al,2011 in Nigeria[10], found that total neonates admitted to NICU were 457 . Among them 160 (35.0%) neonates have neonatal jaundice .

In respect to causes of death in NCU, this study showed that more than one third of neonates death because respiratory distress syndrome (37.88 %), followed by septicemia (22.73%), birth asphyxia (14.4%), congenital anomalies (13.64%), while 5.3% of neonates death with gestation age under 37weeks and 4.55 with birth trauma but only ٠،٧٥ % with low weight and neonatal jaundice.

This results is disagreement to that data from the survey conducted in 2013 done by Maartje M. et al, 2015 in Palestine[11], they found that more than one third of neonates death because preterm birth (39%), followed by congenital malformation/metabolic disorder (29%), Infections (19%). Other risk (11%) and birth complication (3.1%),

Conclusions:

1. The majority of births to mothers aged 30 and over years old and that there is high correlation between birth type and method of delivery, neonate's sex,

gestational age, neonates survival for the neonates. Also, there was significantly

positive correlation between gestational age and method of delivery, neonate's sex and neonates survival for the neonates.

2. Two main causes to admission of neonates to the NICU. First, respiratory distress syndrome, it accounted more than half, and the second, birth asphyxia, it accounted more than one quarter.

3. One third of causes to death in NICU was respiratory distress syndrome followed by Septicemia , it accounted nearly one quarter.

Recommendations:

1. Improvement the health and nutrition of mothers and provision of reproductive health services especially obstetric care, postpartum care and neonatal care at the right time for both mothers and newborns, which are essential to address the underlying reasons of infant mortality. In addition to strengthening the links between the different levels of care in health facilities.

2. The implementation of simple, low cost interventions during neonatal period in health centers, hospital and at home. This essential interventions include drying the baby and keep the warmth of the infant; and start breastfeeding as soon as possible after birth and to support the mother of the exclusive breastfeeding, and to give special attention to infants low birth weight, and diagnosis and treatment of neonatal health problems.

References:

1. Onyaye E. Kunle-Olowu, Oliemen Peterside, Oyedeji O. Adeyemi (2014). Prevalence and Outcome of Preterm Admissions at the Neonatal Unit of a Tertiary Health Centre in Southern Nigeria. Journal of Pediatrics, 4, 67-75.

2. Anil Thapa , Purusotam Raj Shedain , Bhuwan Paudel, Deepak Paudel (2013). Trends and determinants of neonatal mortality in Nepal further analysis of the Nepal demographic and health surveys 2001-2011, U.S. Agency for International Development, Nepal, Center for International Health, Ludwig Maximilians University, Munich , Ministry of Health and Population, Nepal.

3. Sajjad ur Rahman and Walid El Ansari2 (2012). Neonatal Mortality: Incidence, Correlates and Improvement Strategies.

4. World Health Organization (2014). WHO recommendations on Postnatal care of the mother and newborn (2013).

5. Mamta Jajoo, Kapil Kapoor, L. K. Garg, Vikas Manchanda1, S. K. Mittal (2015). To Study the Incidence and Risk Factors of Early Onset Neonatal Sepsis in an Out born Neonatal Intensive Care Unit of India. Journal of Clinical Neonatology , Vol. 4 , Issue 2.

6. Yared Mekonnen1, Biruk Tensou, Daniel S Telake, Tedbabe Degefie and Abeba Bekele (2013). Neonatal mortality in Ethiopia: trends and determinants. BMC Public Health, 13:483.

7.   Jihad Kazah (2000). Mortality Causes And Its Affecting Factors In The Neoborns Of NICU Of Children Hospital Of Damascus University. Damascus University. Journal for the health science , Vol. 16, No. 2.

8.   Nasratullah Ansari (2012). The causes of Neonatal Mortality in Afghanistan , (M.Sc.) Vrije Universiteit Amsterdam.

9. Raghvendra Narayan (2012). A study of the pattern of admissions and outcome in a neonatal intensive care unit at high altitude. Sri Lanka Journal of Child Health, 41(2): 79-81.

10. C. N. Onyearugha, B. N. Onyire and H. A. A. Ugboma (2011). Neonatal jaundice: Prevalence and associated factors as seen in Federal Medical Centre Abakaliki, Southeast Nigeria. Journal of Clinical Medicine and Research ,Vol. 3(3) pp. 40-45.

11. Maartje M. van den Berg, Haifa H. Madi, Ali Khader, Majed Hababeh, Wafa'a Zeidan, Hannah Wesley, Mariam Abd El-Kader, Mohamed Maqadma, Akihiro Seita (2015). Increasing Neonatal Mortality among Palestine Refugees in the Gaza Strip. journal.pone.0135092.

تقييم بعض العوامل المرتبطة برقود حديثي الولادة في وحدة العناية المركزة لحديثي الولادة وحالتهم عند الخروج من الوحدة في مستشفى الكوت في محافظة واسط

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الخلاصة:
الهدف: تهدف الدراسة لتقييم بعض العوامل المتعلقة بدخول حديثي الولادة لوحدة العناية المركزة لحديثي الولادة، ولمعرفة العلاقة بين هذه العوامل وحالة حديثي الولادة عند الخروج من الوحدة .
منهجية البحث: تم إجراء دراسة مقطعية بمراجعة السجلات في مستشفى الكوت في محافظة واسط . والتي شملت النساء دون ٣٤ سنة من العمر خلال الفترة من ١ كانون الثاني ٢٠١٥ إلى نهاية شباط ٢٠١٥. تم جمع البيانات و ذلك باستخدام سجلات المستشفى التي تشمل جميع المعلومات.
النتائج: أظهرت النتائج أن أمهات أن قيم المتوسط والانحراف المعياري لعمر حديثي الولادة كان (٢٦,١٢ ± ٠ .٩٣٩٣ أسبوعا)، وكان قيم المتوسط والانحراف المعياري لوزن حديثي الولادة (٢,٩٨٠٩ ± ٠,٠٣٦١٦ كجم). وكان غالبية الأطفال الراقدين في وحدة العناية المركزة لحديثي الولادة بسبب متلازمة الضائقة التنفسية، فقد شكلت أكثر من النصف. اظهر نتائج تحليل الارتباط وجود علاقة ايجابية معنوية بين نوع الولادة وعوامل الخطر الأخرى حديثي الولادة . كما لوحظ من النتائج وجود علاقة ارتباط معنوية بين طريقة الولادة مع أسباب الرقود وأسباب الوفاة في وحدة العناية المركزة.
التوصيات: إن من إحدى التوصيات الرئيسية للدراسة هي تحسين صحة الأمهات وتغذيتهن وتوفير خدمات الصحة الإنجابية، ولاسيما الرعاية التوليدية ورعاية ما بعد الولادة في الوقت المناسب لكل من الأمهات والمواليد . بالإضافة إلى تعزيز الروابط بين مختلف مستويات الرعاية في المرافق الصحية.