Death Rate Among Neonates Admitted to the Neonatal Care Unit at Pediatric General Hospital in Kirkuk City

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ABSTRACT

The newborn (neonatal) period which begins at birth and includes the first month of life is a highly vulnerable time for an infant, who Is completing many of the physiologic adjustments in all organ systems required for extrauterine existence at the same time the newborn Infant learns to respond to many forms of external stimuli. Neonatal death rate Is defined as the number of neonates admitted to the Neonatal Care Unit died during specific time period divided by the total number of neonates admitted at the same time period. A descriptive cross sectional study was done on neonates attending the Neonatal Care Unit (inpatient) at Genral Pediatric Hospital from the 15 of October 2014 to the 30m of December 2014 . The study included 65neonates, their age from the (15 24 hour - 28 days) after birth. Each neonate included in the study was assessed by a prepared questionnaire which included socio-demographic factors (name, age, gender, residence, antenatal, natal, and postnatal history), data collected by direct interview with patient's parents, then each patient was assessed for weight, gestational age, jaundice, bulging fontanell chest examination, and any gross anomalies . Regarding the age of presented cases, the highest percent was 46.13% with age 1-3 days group , but the lowest percent with 8-28 days age group (18.46%). Most of the study cases were females , 40 cases (61.53%). Most of the cases were from rural areas , 42 cases (61.53%). Most of the cases were illiterates 38 cases (58.46%) and age of all the mothers were 17-45 years age (100%) . Regarding the antenatal risk factors, bleeding risk factor 43.07%, the highest percent, followed by fever with 12.30%; about the natal risk factor , 9.2% the highest percent with PROM ; while In the post-natal risk factors , jaundice was present In about 32.31% , followed by 4.6 % with fit . The highest percent was Full term 83,2% , followed by preterm 7.69% . Most of the cases were have normal birth weight ,37 cases (56.92%). In regard to outcome , 76.92% of cases were discharged well while 23.07% died . Most of the cases died with sepsis (53.33%) followed by respiretory distress syndrome (46.66%). In regard to age of presentation shows the highest percent 33.3% was with 1-3 days age and most cases were females 30%. In regard to maturity, It is revealed that the highest number of deaths were with preterms (60%) , followed by 33.3% cases with extrem permaturity and in regard to birth weight, the babies with less than 1 kg were all died (100%) followed by normal birth weight (29.72%). Sepsis and RDS were an Important causes of neonatal mortality at the study cases . It is concluded that neonatal death rate was high at our neonatal care unit.**Methods:** _A descriptive cross_sectional study was done on neonates attending the Neonatal Care Unit (inpatient) at Genral Pediatric Hospital from the 1 st of October 2014 to the 30th of December 2014. Aim of The Study This study aimed to decrease the morbidity and mortality by detecting neonates at risk of death immediately after delivery

Keywords: Neonatal death rate, Neonatal Care Unit (inpatient), gestational age.

Introduction

Fetal and extrauterine life forms a continuum during which human growth and development are influenced by genetic , environmental , and social factors.(1)

The perinatal period Is most often defined as the period from the 28th wk of gestation to the 7 day after birth (additional definitions includeincludee the 20th wk agestation to the 7th day and the 20th wk of gestation to the 28th day) (1,2). The neonatal period Is defined as less than 28 days of life and may be further subdivided Into the very early(birth to less than 24 hr) , early(birth to less than7days), and late neonatal periods(7days to less than 28days) . The fetal mortality rate Is defined as the number of resident fetal deaths In a specified geographic area (country, state, county, etc.) divided by the number of resident live births plus resident fetal deaths for the same geographic area (for a specified time period, - usually a calendar year) and multiplied by 1,000. Number of resident fetal deaths/Number of resident live births + Number of resident fetal deaths) x1000 (4).

Neonatal death rate Is defined as the number of neonates admitted to the the Neonatal Care Unit died during specific time period divided by the total number of neonates admitted at the same time period (5) .

The postneonatal mortality rate is defined as the number of resident newborns dying between 28and 1 year of age In a specified geographic area (country, state, etc.) divided by the number of resident live births for

The same geographic area (for a specified time period, usually a calender year) and multiplied by 1000 Number of resident postneonatal deaths/Number of resident live births) x 1000 (1) The infant mortality rate Is defined as the number of resident newborns in a specified geographic area (country,state, etc.) dying under one year of age divided by the number of resident live births for the same geographic area (for a specified time period, usually a calender year) and multiplied by 1.000 (2) Number of resident Infant deaths/Number of resident live births) x 1,000. Perinatal mortality is Influenced by prenatal , maternal , and fetal conditions and by circumstances surrounding delivery such as placental insufficiency,intauterine infection,sever congenital anomalies,umbilical cord accident, abruptio placentae,and hydrops fetalis which affect fetal growth; while sever immaturity, respiratory distress syndrome, intraventricular hemorrahage,congenital anomalies,infection,necrotizing enterocolitis,and bronchopulmonary dysplasia increase mortality rates In preterm neonates (6)

In the other hand medical problems such as congenital anomalies,birth asphexia,birth trauma, infection, meconium aspiration syndrome,persistent pulmonary hypertension increase the mortality rate In fullterm neonates (7).

Objectives of The Study

Assess the distribution of study cases in regard to age of presentation ,sex ,and residence. .1

Clarify the antenatal ,natal ,and postnatal risk factors for neonatal death..2

Assess the distribution of study cases in regard to maturity and birth weight..3

Clarify the causes of death among the studied neonates..4

Patients And Methods

Setting Of The Study

This study was carried out at Neonatal Care Unit at General Pediatric Hospital in Kirkuk City which located about 350km north of Baghdad City , Iraq.

Design Of The Study

A descriptive cross_sectional study was done on neonates attending the Neonatal Care Unit (inpatient) at Genral Pediatric Hospital from the 1 st of October 2014 to the 30th of December 2014.

Study Sample

Before assessment of each neonate included in this study; acceptance from the father or the mother of the patient were taken. The study Included 65neonates,their age from the (15 24 hour - 28 days) after birth. Each neonate Included in the study was assessed by a prepared questionnaire (appendix1) which Included socio-demographic factors (name, age, gender, residence, antenatal, natal, and postnatal history), data collected by direct interview with patient's parents, then each patient was assessed for weight, gestational age, jaundice, bulging fontanell chest examination, and any gross anomalies. Weight was assessed by using digital scale while the neonate putted in supine position on a hard surface and the baby was calm and without clothes . Neonate considered extremely low birth weight when Its weight was <1kg , very low birth weight when Its weight was from 1-1.5kg , low birth weight when its weight was from 1.5-2.5kg , normal birth weight when its weight was >2.5kg , and overweight when its weight was >4.5kg.

Gestational age assessed by using Dubowitz criteria including assessment of neuromuscular and physical maturity.(2) Jaundice is assessed clinically by Kramer'S rule Inaddition to laboratory investigations including total serum bilirubin level assessment. Kramer's rule include assessing the jaundice in a well-lit room or In daylight at a window, by blanching the baby's skin with finger and observing the underlying skin colour. Jaundice appear first In the face and progress caudally to the trunk and extremities as jaundice may be as part of septicemia or kemictrus that It may leads to death(2) Antrerior fontanell was assessed by measuring Its size by calculating (width plus height) divided by two , also assessment included detecting neonates with bulging fontanells, depreesed fontenells, and tense fontenlls as bulging fontanelle may be a part of meningitis or Intra cranial hemerrhage which may leads to death In respiratory system the patient examined for signs of respiratory distress including bluish discoloration of the skin and mucus membranes(cyanosis), brief stop in breathing(apnea), grunting, nasal flaring, rapid shallow breathing, and the use Of accessory respiratory muscle(recession). Also examined for heart murmurs which are due to turbulance Of blood flow due to a defect or stenosis in a heart valve Also the patient examined for gross anomalies like osteogenesis imperfecta , spina bifida , polydactaly , syndactaly , congenital hip dysplasia , hydrocephalus , meningomyelocele , encephalocele microcephaly , anencephaly , cleft lip and palate , inguinal hernia , imperforated anus , ambigous genitelia , hypospedius ,and undesended testis, as these anomalies may be part of syndromes that not compatble with life.

Inclusion Criteria's

Neonates from I day to 28 days old age
Neonates whom completed the questionnaire and neonatal Examination

Statistical Analysis

The results of the study presented by tables and figures , and then analyzed by ANOVA system to assess Chi-square , p Values < 0.05 consider significant.

Results

The total number of cases were 65, females were 40 cases (61.53%) and males were 25 cases (38.46%) Table(1) : shows the distribution of cases according to the age of presentation, the highest percent was (46.13%) with 1-3 days age group , but the lowest percent was with 8-28 days age group (18.46%)

Table(1) : Distribution of the study cases according to the age of presentation .

Age	No.	%
1-3 days	30	46.13
4-7 days	23	35.38
8-28 days	12	18.46
Total	65	100

2. Figure (1) : shows the distribution of cases according to sex . Most of the cases were females , 40 cases (61.53%).

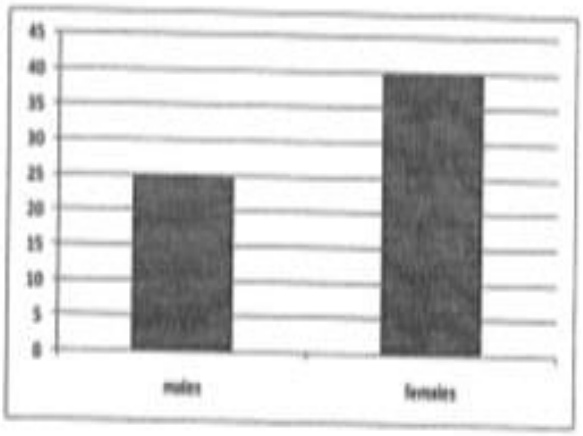


Figure (1) : Distribution of study cases according to sex.

3.Figure (2) : shows the distribution of cases according to residence , most of the cases were from rural areas , 42 cases (61.53%).

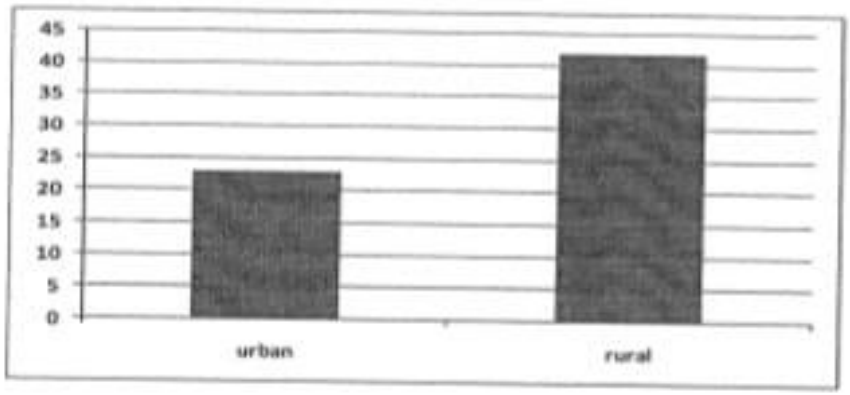


Figure (2) : Distribution of study cases according to residence.

4. Figure (3) : shows the distribution of cases according to educational levels of the mothers . Most of the mothers were illiterates 38 cases (58.46%).

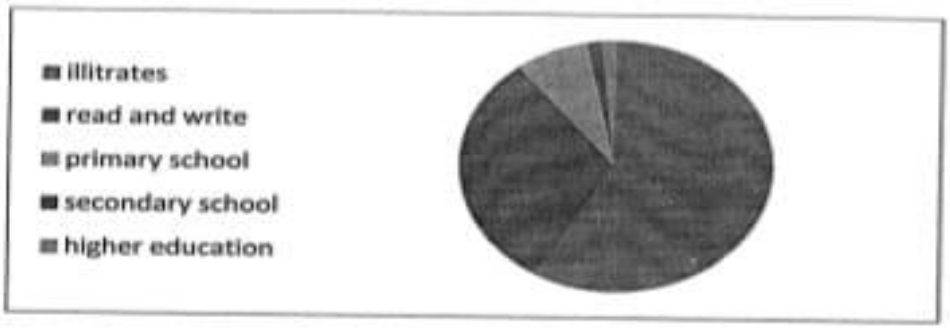


Figure (3) : Distribution of study cases according to the educational levels of the mothers.

Table (2) : Distribution of study cases according to mother age.

Mother age	No.	%
<16 years	0	0
17-45 years	65	100
>45 years	0	0
Total	65	100%

Table(3):Distribution of study cases according to antenatal risk factors

Antenatal risk factor	No.	%
bleeding	28	43.07
Smoking	0	0
Alcohol	0	0
Radiation	0	0
fever	8	12.30
Rash	0	0
Drugs	0	0
Other infection	0	0

Table (4) : Distribution of study cases according to natal risk factors.

Natal risk factor	No.	%
Prolonged labour	5	7.7
RROM	6	9.2

Table (5) : Distribution of study cases according to post-natal risk factors.

Post natal risk factor	No.	%
fit	3	4.6
Jaundice	21	32.3

Table (6) : Distribution of study cases according to maturity.

Maturity	No.	%
Extreme preterm	3	4.61
preterm	5	7.69
Full term	54	83.2
Post mature	3	4.61
Total	65	%100

Table (7) : Distribution of study cases according to birth weight.

Weight	No.	%
< 1000 gm	3	4.61
1001-1500 gm	5	7.69
1501-2500 gm	17	26.15
2501-4500 gm	37	56.92
More than 4500gm	3	4.61
Total	65	100%

Table (8) : Distribution of study cases according to exanimation.

Examination	No.	%
Tachypnea	32	49.23
Use of accessory respiratory muscle	32	49.23
Cyanosis	29	44.61
Heart murmur	2	3.07

Table (9) : Distribution of study cases according to outcome.

Outcome	No.	%
died	15	23.07
Discharge well	50	76.92
Total	65	100%

Table (10) : Distribution of study cases according to the cause of death .

Cause of death	No.	%
Respiratory distress syndrome	7	46.66
Sepsis	8	53.33
Total	15	100%

Table (11) : Distribution of study cases according to outcome in regard to age of presentation.

Regard to age	Outcome		Total
	well	Dead	
1-3 days	20(66.6%)	10(33.3%)	30(100%)
4-7 days	20(86.95%)	3 (13.04%)	23(100%)
8-28 days	10(83.3%)	2 (16.6%)	12(100%)
Total	50(76.92%)	15(23.07%)	65 (100%)

p-value > 0.05(not significant)

Table(12) : Distribution of study cases according to outcome in regard to sex.

sex	Outcome		Total
	Well	Dead	
male	22(88%)	3(12%)	25(100%)
female	28(70%)	12(30%)	40(100%)
Total	50(76.92%)	15(23.07%)	65 (100%)

p-value > 0.05(not significant)

Table(13) : Distribution of study cases according to outcome in regard to antenatal risk factors.

antenatal risk factor	Outcome		Total	p-value
	Well	Dead		
Bleeding.	20(71.4%)	8(28.5%)	28(100)	Less than0.05 (significant)
fever	6(75%)	2(25%)	8(100)	Less than0.05 (significant)

Table (14) : Distribution of study cases according to outcome in regard to natal risk factors.

Natal risk factor	Outcome		Total	p-value
	Well	Dead		
Prolonged labor	2(40%)	3(60%)	5 (100)	>0.05(not significant)
PROM	4(66.6%)	2(33.3%)	6(100)	>0.05(not significant)

Table (15) : Distribution of study cases according to outcome in regard to post-natal risk factors.

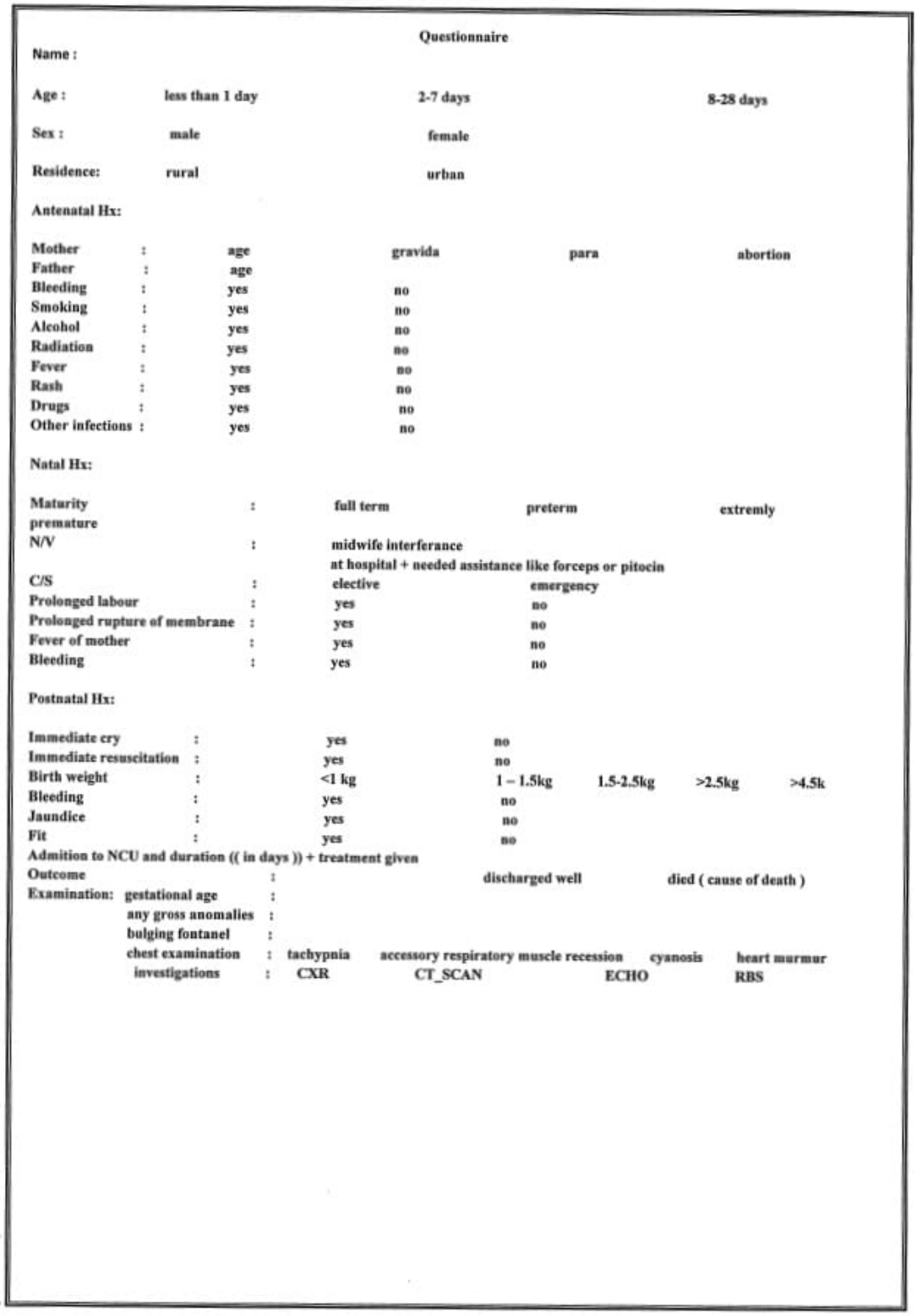
Post-natal risk factor	Outcome		Total	p-value
	Well	Dead		
Fit	1(33.3%)	2(66.6%)	3(100%)	>0.05(not significant)
Jaundice	18(85.7%)	3(14.2%)	21(100%)	>0.05(not significant)

Table (16) : Distribution of study cases according to outcome in regard to maturity .

Mutant	Outcome		Total	p-value
	well	Dead		
Extreme preterm	2(66.6%)	1(33.3%)	3(4.6%)	>0.05(not significant)
preterm	2(40%)	3(60%)	5(7.69%)	>0.05(not significant)
Full term	43(76.62%)	11(20.37)	54(83.2%)	>0.05(not significant)
Post mature	3(100%)	0(0%)	3(4.61%)	Less than 0.05 (significant)
Total	50(76.92%)	15(23.07%)	65(100%)	

Table (17) : Distribution of study cases according to to outcome in regard to birth weight .

Weight	Outcome		Total	p-value
	well	Dead		
< 1000 gm	0(0%)	3(100%)	3(4.61%)	Less than 0.05 (significant)
1001-1500 gm	4(80%)	1(20%)	5(7.69%)	Less than 0.05 (significant)
1501-2500	17(100%)	0(0%)	17(26.15%)	>0.05(not significant)
2501-4500	26(70.27%)	11(29.72%)	37(56.92%)	>0.05(not significant)
More than 4500	3(100%)	0(0%)	3(4.61%)	>0.05(not significant)
Total	50(76.92%)	15(23.07%)	65(100%)	



Questionnaire

Name :

Age : less than 1 day 2-7 days 8-28 days

Sex : male female

Residence: rural urban

Antenatal Hx:

Mother : age gravida para abortion
Father : age
Bleeding : yes no
Smoking : yes no
Alcohol : yes no
Radiation : yes no
Fever : yes no
Rash : yes no
Drugs : yes no
Other infections : yes no

Natal Hx:

Maturity : full term preterm extremly premature
N/V : midwife interferance
at hospital + needed assistance like forceps or pitocin
C/S : elective emergency
Prolonged labour : yes no
Prolonged rupture of membrane : yes no
Fever of mother : yes no
Bleeding : yes no

Postnatal Hx:

Immediate cry : yes no
Immediate resuscitation : yes no
Birth weight : <1 kg 1 – 1.5kg 1.5-2.5kg >2.5kg >4.5k
Bleeding : yes no
Jaundice : yes no
Fit : yes no
Admition to NCU and duration ((in days)) + treatment given
Outcome : discharged well died (cause of death)
Examination: gestational age :
any gross anomalies :
bulging fontanel :
chest examination : tachypnia accessory respiratory muscle recession cyanosis heart murmur
investigations : CXR CT_SCAN ECHO RBS

Discussion

Historically, the main focus ofstudies ofchildhood mortality has been the Infant and under-five years old mortality rates. Neonatal mortality (deaths days Of age) has received limited attention, although such deaths account for about 41% ofall child deaths. TO better assess the progress, we developd annual estimates for neonatal mortality rates (NMRs) and neonatal deaths for 193 countries from the period 1990—2011 with forecasts Into the future

(2)

Distribution ofstudy cases according to the age of presentation. In regard to distribution ofcases according to the age of presentation , most of the cases presents at the age of 1-3 days. This is goes with Dollfus C. study by which most ofneonatal eases died were presents at 1-3 days of life (5). On the other hand this results does not goes with Robertson PA.(6) By whichh most of the cases were presents after the first week of life . ms difference In the study results between the study cases and the Other studies might be due to the difference In the sample size. The age Of presentation Ofneonates with different problems is different according to the disease type, and even in the same disease the presenting age might differ as in case Of neonatal Sepsis Which may be divided Into very early onset sepsis (age ofpresentation 1-3 days) , early onset sepsis (age ofpresentation 3-7 days), and late onset sepsis (from the 7th day of age -28å day) and might extend to the third month of life. (S) The age ofpresentation ofneonatal problems also affected by difference in the birth weight and maturity as neonates with low birth weight and very low birth weight and neonates With prematurity and extreme prematurity have a high risk for mortality and morbidity as the immune. System is extremely compromised by either the underlying disease which makes the neonates pretern or low birth weight or due to immaturity Of the Immune system of neonate whichh makes the neonate liable for infection like gram negative sepsis due to low immunoglobuline M in the neonatal period(8).

Distribution of study cases according the sex

Most of the study cases were females. This is differ from several Other studies In that males were more liable for neonatal mortality and morbidity (I .The reason why males have had a higher mortality and rnorbidity than females was not completely understood and may be related to genetic differences due to the presence Oftwo X chrotnosome in females and one in males. This difference in the results between this study and the other above studies might be due to difference In the sample size.

Distribution of the study cases according to the residence

Most of the study cases were from rural areas. This Is similar to that reported by the WHO (I) In different countries . This may be due to the fact that mothers from rural areas were Of low social class with poor hygenes that make their babies liable for infections and may be due to poor medical survices at the village and were far from the city center that make the family either corne late to the center which increase mortality Of their babies or use Of septic techniques like midwife interference or use Of dangerious sustanses to treat their babies.

Distribution Of the study Cases according to the educational levels Of the mother

Most Of the mothers Of the study cases were Illiterate or read and write. ms Is also goes with the WHO report (l). The reason why most Of the mothers Of study cases were illiterate is that most Of the cases were from rural areas and for the same reasons above they are liable for a high mortality rates.

Distribution Of the study cases according to the maternal age

All the mothers were within 17-45 years age group (100%) and no mother Was under 16 or over 46 years Old. This differ from most Of the studies in Other countries (40, 41, 42, 43.44) in whichh mothers are at extrane ages (less than 16 years and more than 45 years) whichh carry a high risk for mortality and morbidity for there neonates due to different problems related to the reproductive system. Controlling Of several confounders, maternal age of less than 18 years carried a 41 % higher risk ofneonatal mortality compared with maternal age of 18—34 years. Previous studies reported similar findings (11). After adjustment of confounders, there Was a 53% excess risk Of neonatal modality among infants born to mothers In the youngest vs. oldest age category in Nepal (11). Higher risk Of neonatal mortality among adolescent women in our setting can be due to a number Of unmeasured factors. Previous studies have reported that preterm birth or small-for-gestational-age are possible mediating factors .Neither of which Was measured In our study. It

is also possible that perceived young mothers' inexperience regarding childcare works against the health and survival oftheir children .

Distribution Of the study cases according to the antenatal risk factors

Regarding the antenatal risk factors for neonatal mortality , bleeding Was the commenest risk factor encountered ,followed by maternal fever. Similar studies had been reported that maternal bleeding prenataly or during labour carry a high mortality rate for both the mother and her baby. Maternal bleeding carry a high risk of death for the mother as this could be a part Ofplacental Consumption Of coagulation factors or as part Of placenta Previa or It may increase maternal mortality especially if the mother was anemic before conception. Maternal bleeding carry a high perinatal or early neonatal death as this may be a cause ofbirth asphyxia as part Of premature sepration Of placenta which makes the baby pass through the birth process With no oxygen supplements. In addition, maternal bleeding may leads to Sever neonatal anemia which intum Increase the neonatal mortality rate due to decrease blood and oxygen supplements to the brain whichh intum leads to hypoxic ischemic encephalopathy ,also neonatal anemia may lead to neonatal heart failure whichh cause respiratory distress and respiratory failure Or leads to hydrops fetalis. Maternal fever carry a high risk of neonatal and post neonatal mortality as maternal fever might be a sign Of maternal chorioamnionitis in which the baby Swim in an Infected aminiotic fluid which leads to congenital pneumonia that leads to respiratory disress and respiratory failure and also maternal chorioamnionitis might leads to the development Of early Onset neontal sepsis which carry a high percent of neonatal mortality and morbidity. In addition ,maternal fever might leads to neonatal fever and heat exhaustion ,which if Increased to very high levels Can cause neonatal death either by dehydration or by denaturation Of brain cells especially ifthe neonatal fever increased more than 420 C.

Multivariate analyses had been found a number Ofproximate factors that associated with ncreased risk of necmatal death including,being of male gender, born to younger mothers (< 18 years Of age), and born within 2 years from the last birth.Also, neonates bom in winter seasons had an Increased risk Of death compared with those born in Other seasons. However,we found the protective role Of 'it isit is in the mothers who had been received two doses of It before birth. Contrary to the usual expectation, we had been found no evidence concerning institutonal delivery and the reduction of neonatal mortality in the overall sample. Becausee Of interaction between urban—rural residence and place of delivery, we used a separate multivariate model for the rural and urbul areas, which showed a higher mortality risk associated with delivery In govemment hospitals and health centers in the rural areas. We found no association between institutional cklivery and neonatal mortality In the urban areas. Women's education remained the single most important socioeconomic factor associated with neonatal mortality in the multivariate analyses. Regional variations In the risk Of neonatal mortality were also apparent, even after adjusting Of several maternal and childrelated factors. The gross effect ofurban—rural residence was erased In the multivariate analyses.

Distribution of the study cases according to the natal risk factors

Most Of the study cases present with prolonged rupture Ofmembranes followed by prolonged labour. This goes with many other Studies whichh stated that prolonged labour and PROM carry the highest rate of perinatal mortality and morbididy The prolonged rupture Of membranes more than 12 hours carry a high risk for mortality and morbidity for neonates as this might leads to early onset neotal sepsis by overgrowth Of bacteria In the birth canal that ascend to the respiratory system of the Baby leading to congenital pneumonia, also PROM might leads to perinatal asphyxia by compression of the baby within the birth canal due to low aminiotic fluid amount. On the other hand ,prolonged labour carry a high risk

ofperinatal mortality and morbidity due to birth asphyxia whch cause hypoxic ischemic encephalopathy due to the reduction in oxygen and blood supply to the brain Of the baby.

Distribution of the study cases according to the Postnatal risk factors

Most of the study cases had history of neonatal jaundice followed by neonatal fit. This Is goes with several other studies which shows that sever neonatal jaundice (kernicterus) and neonatal fit Were an important risk factors of perinatal mortality and morbidity.Kernicterus (bilirubin encephalopathy) was one of the commonest causes ofneonatal morbidity and even death of the affected neonates as it causes severe brain damage and cerebral palsy. Neonatal fit also carry a high risk of neonatal death becausee it leads to brain damage with cerebral palsy. It Is the result ofeither the prolonged duration ofhypoxia and hypoxemia due to perinatal asphexia that leads to brain damage or due to the underlying diseases of the brain itself that cause the fit includeincludeing infection such as meningitis , bleeding like intracranial hemorrhage , brain anomalies , or electrolyte imbalance like hypocalcemia. All these disorders carry a high risk ofmortality and morbidity .

Distribution of the study cases according to the maturity

Regarding maturity of the study cases, the highest percent was with full term neonates , followed by preterm babies. This result does not goes with other several studies which shows that the highest perinatal mortality was In preterm baby especially In extreme prematurity due to the fact that premature baby carry a high risk Ofmortality and morbidity

Due to immaturity Of Immune system which makes the baby liable fcr infection, also the immaturity of respiratory center might leads to respiretory failure . Also immaturity of the lungs leads to respiratory distress and respiratory failure . Inaddition ,preterm baby have Immature renal and hepatic systems which leads to metabolic abnormalities that may cause a high risk of neonatal morbidity and mortality Ms difference in the results between this study and the other studies above might be due to the difference In the sample size.

Distribution Of the study cases according to the birth weight

Most Of the study cases had normal birth weight followed by babies with low birth weight. Illis does not goes with several other studies which stated that most of neonatal problems Cecurs in low birth weight babies

The reason behind the high levels of morbidity and mortality in low birth weight babies is that most of the low birth weight babies were premature at the same time and so they are liable for the same problems of that ofa preterm baby . On the other hand, low birth weight babies also liable for Increased mortality rate due to the underlying diseases that leads to low birth weight like the presence Of congenital heart diseases .

This difference in the results between this study and the other studies atxwe might be due to differences In the sample size

Distribution Of the study cases according to examination

The exanimation of the study cases, shows highest percent of tachypnea respiratory muscle recession . The reason behind this finding is that the high percent Of those having tachypnea and accessory respiratory muscle recession were preterm whom are liable for respiratory distress due defect in surfactant synthesis.

Distribution of the study cases according to outcome

Although most of the study cases discharged well ; the death rate was 23.07%. This rate in comparisim with that of the developed countries like England (7%) (2) , Finland (8. I %) (l) , and Alabama study (8%) (4) is high.While on the Other hand ,this rate in comparisim with

that in Africa (25%) and other studies In China (24.4%) Is low. Ihis wide variations in the death rate between different Centers may be due to difference In the medical facilities between the developed and under developed countries with the difference in the clinical experience The number Of non-neonatal deaths in children under five had decreased markedly In the period 1993—1998, whereas the number ofneonatal deaths was relatively constant. The observed fluctuation in the age distribution Of child deaths In China between 1993 and 1998 appear to be predominantly driven by changes In the population Ofchildren under five, as estimated by the United Nations Population Division ,which is used to estimate child deaths under five. As the risk Of child death before the age of five had fallen, the proportion Ofchild death occuring in the neonatal period had increased. This increase is primarily a consequence ofdecreasing non-neonatal mortality in children under five from Infectious diseases such as measles, pneumonia, diarrhea, malaria, and AIDS, Globally, 41 % Of under-five deaths now occuring in the neonatal period. Over the period Of20 years between 1990 and 2009, the proportion Of global neonatal deaths that occurred in Africa Increased. Although Africa is now the region with the highest NMR, the proportion of under-five child deaths that are neonatal remains relatively low In Africa—the fraction increased from 26% to 29% between 1990 and 2009. This apparent anomaly reflects the fact that Africa accounts for approximately 90% Of child deaths due to malaria.

.Distribution Of the study cases according to the cause ofdeath

All the causes Of the death among studied neonates were due to sepsis and RIDS. This goes with Other study includeincludeing Rudan I In china which revealed the same results, This may be due to the poor aseptic technique that had been used at the neonatal care unit with defect In applying the universal precausion like the use of hand gel for washing Of hands and prophylactic use Of tetracycline eye ointment as prophylaxis against chlamydia and the use of gention violate for umbilical cleaning.l'his poor aseptic techniques leads to increased incidence of neonatal sepsis Occurance which leads to multiorgan failure and death . On the other hand, the high cost ofsynthetic surfactant and the non- experienced persons to install it, and the inavailability ofpediatric ventelators, all these reasons leads to increased mortality from RDS due to respiratory failure

The most recent systematic evaluation Of child causes ofdeaths is for year 2008 (4). Major causes ofneonatal deaths globally in 2008 were estimated to be complications Ofpreterm delivery (29%), asphyxia (23%), While sepsis and pneumonia were the major causes both contributing 25% Ofall neonatal deaths (4). Countries with lower NMR typically had higher proportions Of neonatal deaths caused by pteterm delivery complications and congenital anomalies (4) , and those with high mortality had around the half of neonatal deaths due to infections, which are eminently preventable or treatable,

(l)

Distribution of the study cases according to outcome In regard to age Of present Ne highest mortality were In neonates presented during the first 3 days of life. This goes with Dollfus C. study In which most ofneonatal cases died were presented at -3 days Of life (5). The reason behind the highest neonatal mortality and morbidity during the first 3 days of life is due to several factors mentioned above Distributi0n Of the study cases according to outcome In regard to sex : The highest mortality rate were In the females than males. This differs from several other studies In that males were more liable for reasons for this difference in the neonatal mortality between males and females were mentioned above It was confirmed that male children have a 38% higher risk Of death than frtnales during the neonatal period. Previous studies also confirmed this result, but with varying excess Odds . Contributing factors include immunodeficiency states, higher prevalence of respiratory and Other Infectious diseases, and congenital malformations Of the urogenital system

Distribution of the study cases according to outcome In regard to antenatal risk factors

Regarding the antenatal risk factors for neonatal mortality , bleeding was the commenest risk factor encountered followed by maternal fever . A similar studies also reported that maternal bleeding prenataly or during labour carry a high mortality rate for both mother and her baby. reason behind this relation between the maternal bleeding and fever and the high neonatal mortality and morbidity of their babies were mentioned above .

Distribution of the Study cases according to outcome In regard to natal risk factors

Most Of the study cases presents with prolonged labour followed by PROM . •ms goes with many Other studies whichh stated that PROM and prolonged labour carry the highest rate Ofperinatal mortality and morbididy Ille reasons of this relation between prolonged latx'ur and PROM and the high mortality and morbidity for neonates were mentioned above

Distribution Of the study cases according to outcome In regard to postnatal risk factors

Most of the study cases had a history of fit followed by history of sever neonatal jaundice. This is goes with several Other studies which shows that sever neonatal jaundice (kernicterus) and neonatal fit were an important risk factors Of perinatal mortality and reasons of this high neonatal mortality and morbidity due to jaundice and fit were mentioned above

Distribution of the study cases according to outcome In regard to maturity

The highest number Of deaths were With preterms (600/0) , followed by with extrem This results goes With several Other Studies (mentioned above) and the reasons Of this high mortality rates in preterms were mentioned above also

Distribution of the study cases according to outcome In regard to birth weight

The highest mortality was with neonates weighing less than 1 kg followed by normal birth weight neonates .This result goes with several other studies (mentioned above) and the reasons regarding the relation between low birth weight and high mortality rate was mentioned above also .

Conclusion

Most of the cases present In the first three days of life

Most of the cases were females.

Most of the cases were from rural areas with low educational level.

Maternal bleeding and fever carry a high risk for neonatal mortality as well as PROM, prolonged labour , fits and neonatal jaundice.

Most of neonatal deaths occur in preterm and low birth weight babies.

Sepsis and RDS were an important causes of neonatal mortality

Neonatal death rate was high at our neonatal care units

Recommendations

1.To the Ministry of Health

More concentration on the neonatal care units In different hospitals with more concentrations on the use of universal precausions to decrease neonatal mortality and morbidity. .a

More concentration on providing a training medical and nursing staff to each neonatal care unit by frequent training courses..b

2. To the Ministry of Higher Education and Researches:

More concentration on training of medical students especially on neonatal resuscetation

More researches needed regarding the risk factors of neonatal mortality for early detection of a high risk neonates. More concentration during assessment of this high risk group (the neonates) as this age group carry the highest mortality and morbidity rates as compared to other childhood groups.

References

World Health Organization. The Prevention of Perinatal Mortality and Morbidity. Geneva, Switzerland: WHO Technical Report Series; 2007. Report 457 .

Rush RW, Keirse MJ, Howat P, Baum JD, Anderson AB, Turnbull AC. Contribution of preterm delivery to perinatal mortality. BMJ.2006;2:965-968.

McCormick MC. The contribution of low birth weight to infant mortality and childhood morbidity. N Engl J Med.2004;312:82-90.

Institute of Medicine. Preventing Low Birthweight. Washington, DC: National Academy Press; 2008 ,ch 11: pp 34-45.

Dollfus C, Paletta M, Siegel E, Cross AW. Infant mortality: a practical approach to the analysis of the leading causes of death and risk factors. Pediatrics. 1990;86:176-183.

Morrison JC. Preterm birth: a puzzle worth solving. Obstet Gynecol. 1990;76(1 Suppl):pp5S-12S.

Robertson PA, Sniderman SH, Laros Jr RK. et al. Neonatal morbidity according to gestational age and birth weight from five tertiary care centers in the United States, 1983 through 1986. Am J Obstet Gynecol. 1992;166:1629-1641.

Hack M, Taylor HG, Klein N, Eiben R, Schatschneider C, MercuriMinich N. School-age outcomes in children with birth weights under 7508.

g. N Engl J Med.1994;331:753-759

Lee K-S, Kim BI, Khoshnood B. et al. Outcome of very low birth weight infants In industrialized countries: 1947-1987. Am J Epidemiol.1995;141:1188-1193.

Stoskopf B. Self-perceived health status and health-related quality of life of extremely low-birth-weight infants. JAMA.1996;276:453-459.

Saigal S, Feeny D, Rosenbaum P, Furlong W, Burrows E,10

Schendel DE, Stockbauer JW, Hoffman HJ, Herman AA, Berg CJ, Schramm WF. Relation between very low birth weight and developmental delay among preschool children without disabilities. Am J Epidemiol. 1997;146:740-749

0'Shea TM, Preisser JS, Klinepeter KL, Dillard RG. Trends in mortality and cerebral palsy in a geographically based cohort of very low birth weight neonates born between 1982 to 1994. Pediatrics. 1998;101:642-647.12

Richardson DK, Gray JE, Gortmaker SL, Goldmann DA, Pursley DM, McCormick MC. Declining severity adjusted mortality: evidence of improving neonatal intensive care. Pediatrics. 1998;102:893-899.

Kimberlin DF, Hauth JC, Owen J. et al. Indicated versus spontaneous preterm delivery: an evaluation of neonatal morbidity among infants weighing <1000 grams at birth. Am J Obstet Gynecol. 1999;180:683-689.14

Sutton L, Bajuk B.for the New South Wales Neonatal Intensive Care Unit Study Group. Population-based study of infants born at less than 28 weeks' gestation in New South Wales, Australia, in 1992-3. Paediatr Perinat Epidemiol. 1999;13:288-301.

Lawn JE, Cousens SN, Darmstadt GL, Bhutta ZA, Martines J, et al. (2006) 1 year after The Lancet Neonatal Survival Series-was the call for action heard? Lancet 367: 1541-1547.16

mortality Hill K, Thomas K, AbouZahr C, Walker N, Say L, et al. (2007) Estimates of maternal. worldwide between 1990 and 2005: an assessment of available data. Lancet 370: 1311-1319.17