

Intra-Hospital Neonatal Mortality In Neonatology Unit Of North Kivu Provincial Hospitalat Eastern Democratic Republic Of Congo La Mortalite Intrahospitaliere Dans L' unite De Neonatologie Au Sein De L'hospital Provincial Du Nord-Kivu

Mashako RM⁽¹⁾, ; Ngbonda D⁽³⁾ ; Alworong'a JP⁽⁴⁾ Shindano E⁽⁶⁾. ; BitweM.R⁽⁵⁾
; Mashako KY⁽⁷⁾ et Nsibu NC⁽²⁾

⁽¹⁾-Assistant, institut supérieur des techniques médicales de Goma et médecin traitant au département de pédiatrie à l'hôpital provincial du Nord-Kivu.

⁽²⁾-Professeur, faculté de médecine à l'université de Kinshasa et médecin traitant au département de pédiatrie aux cliniques universitaires de Kinshasa.

⁽³⁾-Professeur, faculté de médecine à l'université de Kisangani et chef de département de pédiatrie aux cliniques universitaires de Kisangani.

⁽⁴⁾-Professeur, faculté de médecine à l'université de Kisangani et médecin traitant au département de pédiatrie aux cliniques universitaires de Kisangani.

⁽⁵⁾-Professeur, faculté de médecine à l'université de Goma et chef de département de pédiatrie à l'hôpital provincial du Nord-Kivu.

⁽⁶⁾-Professeur, faculté de médecine à l'université de Kindu et chef de département de pédiatrie à l'hôpital provincial du Kindu.

⁽⁷⁾-Assistant, institut supérieur des techniques médicales de Goma et Institut National de Recherche Biologique.
Auteur correspondant : MashakoMany,

Abstract

Introduction

Many countries in Sub-Saharan Africa including Democratic Republic of Congo still have high under-five mortality . Neonatal morbidity and mortality is still high in developing countries and is due primarily to negligence of female health, nutrition, deliveries by un-skilled personnel and poor antenatal care. The objectives of our study was to identify the neonatal pathologies on admission, characteristics of the neonates , socio- demographicmaternal profil , common causes and moment of neonataldeathin a neonatology unit at Eastern Democratic Republic of Congo.

Patients and Methods

This descriptive study was carried out at department pediatrics in neonatology unit of North- Kivu provincial Hospital at Eastern Democratic Republic of Congo; from 1st January 2010to 31December 2014. A total of 927neonates were admitted in neonatology unit during the study period; out of them 183 expired. These deaths were evaluated for newborn: age, gender, gestational age, birth weight, Apgar score, causes and moment of death. For maternal: Age, marital status, occupation, prenatal visit and level education

Results

Intra-hospital rate was 19,7 %. Out of 183 neonates 87.4% were low birth weight, 41.1 % males and 57.8 % females giving a sex ratio of 0.73., 28.4 % of the women were single mothersandthe mother's low level schooling was observed in 84,2 %.The main causes of neonatal deaths were: complications from prematurity 51.9 %, neonatal sepsis 27.9 %, neonatal asphyxia 07.7 %, and congenital malformations 07.7 %. Most deaths 80.9% occurred in neonates admitted during the early neonatal period with 21.9% in the first 24 hours

Conclusion

The neonatal mortality rate was high in preterm and low birth weight neonates. Measures to prevent neonatal mortality must be exercised with emphasis on skilled attendance at birth and appropriate care of preterm and low birth weight neonates.

Key words: Neonatal,mortality, Newborn, Survival

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I. Introduction

The World Health Organization (WHO) estimates that more than 3 million neonates worldwide die within the first months of life, with a similar number of stillbirths. The newborn die represents nearly 40% of all under-five child deaths. During the first month of life, more than a quarter of these deaths occur during the first 24 hours of life, and 75% within the first week [1]. Mortality in hospitalized neonates also vary from country to country: 13.1%, 28.3%, 26.5%, 34.2% in Burkina Faso, Togo, Ivory Coast, Guinea Conakry respectively [2-5], and in Kenya and Ghana the early neonatal mortality rate was respectively of 68/1000 live births and 16/1000 live births [6].

The Democratic Republic of Congo (DRC) ranks third among African countries with a high neonatal mortality rate more than 45 deaths per 1000 live births [7]. The objective of this study was to determine the neonatal pathologies on admission, the characteristic of newborns, maternal socio-demographic characteristics; identify the common causes and moment of neonatal death; which will serve as a basis in proposing interventions to curb it.

II. Patients And Methods

Study setting

It was a retrospective, descriptive study covering a period of forth years extending from 1st January 2010 to 31 December 2013 at the neonatology unit of the North – Kivu provincial Hospital in Pediatric department at Eastern Democratic Republic of Congo, which is one of the reference health facilities child health care in this region,. It receives patients from other parts of North – Kivu.

Inclusion and exclusion criteria

During our study period 183 deaths out of 927 neonates admitted to the neonatology unit. The admission files of all new borns: in-borns and out-borns who were hospitalized and died in the unit during the study period were studied. The following data was noted: Sex, gestational age, birth weight and Apgar score. The maternal variables studied were: age, marital status, level education, and prenatal visits.

All neonates who died on arrival or with empty or incomplete files were excluded from the study. We defined in-hospital neonatal mortality rate as the number of deaths occurring among admitted sick neonates over a given period expressed as a percentage [8].

Data analysis

The data obtained was analyzed with the SPSS 20.0 and Excel 2007 software. The results were expressed as percentages and averages. The Chi- squared test was used when necessary to assess significance and statistical significance was at a P value less than 0.05.

Ethical considerations

Authorization to carry out the study, and ethical clearance were obtained from the hospital authorities and the hospital ethics committee.

III. Findings

NEONATAL PATHOLOGIES ON ADMISSION:

Neonatal sepsis 45,9 % , prematurity 30,6 % ; birth asphyxia 17,2 % ; congenital malformations 3,2 % were neonatal pathologies noted on admission and

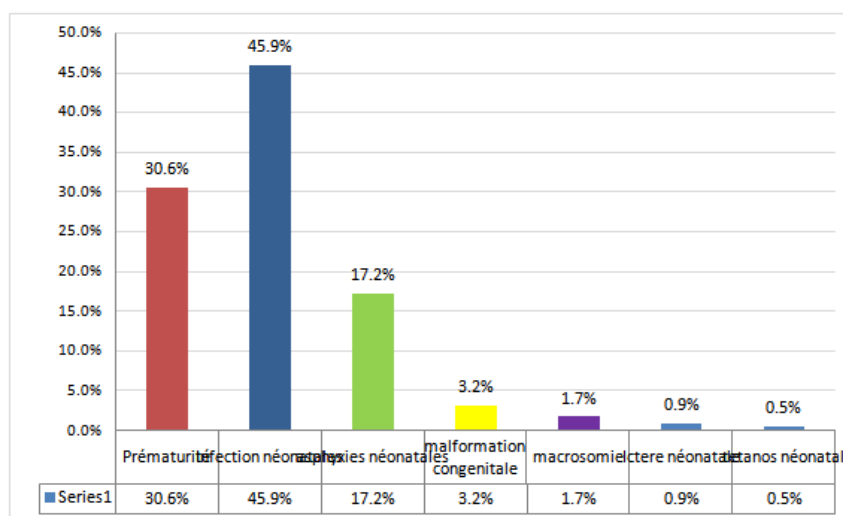


Figure N° 1 - Neonatal Pathologies On Admission

Tableau N°I. CHARACTERISTICS OF THE NEONATES

Characteristics N=183	%	
Admission Mode		
Referral 86	47	
No referral 97		53
Sex		
Male 77	41,1	
Female 106		57,9
Gestationnel Age(Weeks)		
<=37	143	78,1
>37	40	21,9
ApgarScore		
<=7	24	13,1
> 7	159	86,9
Birth weights		
<1000 gr	10	05,5
1000 – 1599 gr	57	31,1
1600 - 2400 gr	93	50,8
2500 gr et Plus	23	12,6

The sex distribution of the deceased neonates was 41.1 % males and 57.8 % females giving a sex ratio of 0.73. Concerning gestational age 78.1% were born at less than 37 weeks gestation; whereas 87.4 % had low birth weights <2500gms; 47 % was referral in admission.

Tableau N° II. SOCIO- DEMOGRAPHIC MATERNAL PROFIL

Profil N= 183	%	
Maternal age (year)		
< 18 56	28,4	
18 -35 113		62 ,8
36 et Plus 14	07,6	
Marital Status		
Single 52	28,4	
Married 129	75,5	
Divorced 02	01,1	
Level Education		
No level 23	12,6	
Primary 131	71,6	
Secondary 35	13,6	
University 04	02,2	
Occupation		
Menager 174		95,1
Shopping 03	0 1,6	
Official 06	03,3	

Neonatal mortality was highest in mothers 19- 35years of age 62,6 %, 28,4 % of the women were single mothers and the mother's low level schooling was observed in 84,2 %.

Tableau N° III. DISTRIBUTION OF CAUSES AND MOMENT OF NEONATAL DEATH

Variables N=183	%	
Period		
Ultra- early 40	21,9	
Early 108		59
Late 35	19,1	
Deaths Causes		
Prematurity 100	51,9	
Neonatal sepsis 51	27,9	
Neonatal asphyxia 14		07,7
Congenital Malformations 14		07,7
Jaunice 05	02,7	

The main causes of neonatal deaths were: complications from prematurity 51.9 %, neonatal sepsis 27.9 %, neonatal asphyxia 07.7%,and congenital malformations 07.7 %.Most deaths 80.9% occurred in neonates admitted during the early neonatal period with 21.9% in the first 24 hours.

IV. Discussion

MORTALITY RATE

The neonatal mortality rate is an indicator of the quality of the obstetrical and neonatal care in a setting; its evaluation permits the estimation of the quality of care. The evaluation of the efficacy of preventive measures put into place for the reduction of infant mortality can be done through the evaluation of the neonatal mortality rate over a period of time. During our study period 183 deaths out of 927 neonates admitted to the neonatology unit. The intra-hospital neonatal mortality, in this study was 19.83 % similar in Zimbabwe 19.3% [9]; but This is in contrast to the low rates observed in some developed countries: 0.38% and 0.35% in England and the United States respectively. [10,11]. Higher rates were noted in sub-Saharan countries Kenya 31.5% [12] and Mali 38.8% [13]. This could be due to poverty and ignorance prevailing in these countries which limit access to antenatal, intra-partum and postnatal care.

NEONATAL PATHOLOGIES ON ADMISSION:

Neonatal sepsis 45,9 % , prematurity 30,6 % ; birth asphyxia 17,2 % ; congenital malformations 3,2 % ; were neonatal pathologies noted on admission and associated with neonatal mortality. These pathologies had identified in others studies [14,15]. The rate of congenital malformations could be explained by the frequent lack of antenatal diagnosis, lack of a well-equipped poverty and inadequate antenatal care.

CHARACTERISTICS OF THE NEONATES

The majority of the dead babies were of the female sex 57,8 % with a sex ratio of 0.73. The female predominance amongst the dead neonates has also been described by several authors [16,17]. Other studies noted a male predominance [18,19]. Our results show that, neonates with birth weights lower than 2.5kg 87.4 % and a gestational age of less than 37 weeks 78,1 % had a much higher mortality rate than those born at term with normal weights. Eloundou and Bobossi-Serengbe [16,17], had similar results. The premature neonate has multiple organ immaturity and therefore faced with difficulties in adaptation to extra uterine life; this coupled with the poor living and working conditions in our country expose the fragile neonate fatal complications like hypothermia, digestive intolerance, infections, bleeding etc..

SOCIO-DEMOGRAPHIC MATERNAL CHARACTERISTICS

Neonatal mortality was highest in mothers 19- 35 years of age. Other authors observed that mortality was highest in neonates from mothers younger than 19 years and older than 35 years [15,21-23]. The reasons for the difference are not very clear. In our study 28.4 % of the women were single mothers. These results are in line with those obtained by Eloundou [10]. It can be hypothesized that the presence of a partner brings along financial, psychological and physical support to an expectant mother and her child. This could be a possible explanation for the more deaths of babies from single mothers. Marital protection may be peculiar to the neonatal period in Nigeria context because culturally, Nigerian mothers and their babies enjoy a lot of familial and other social supports in the first month after birth. Women who are in a union have husbands who provide money for care and give psychological/social support to their wives.

It was noticed that amongst all deceased neonates 70.5 % were delivered of women from poorly followed-up pregnancies. This suggests that inadequate follow up of pregnancies is largely responsible for neonatal deaths. Our findings are in line with those of other studies [21,22]. The irregular or poor follow up of pregnancies could be due to financial difficulties or simply ignorance and negligence on the part of these women. However it is thought that poverty directly contributes to neonatal mortality translated by the inability to carry out prenatal screening tests, necessary prophylactic measures and attend prenatal clinics. Regarding the relationship between the mother's schooling level and neonatal death, some authors have found that a lower number of years of schooling is a risk factor. [24, 25] whereas others have not observed any relationship between the variables [26,27] In the present study, the mother's low level schooling was observed in 84,2 %.

CAUSES AND MOMENT OF NEONATAL DEATH

Most deaths 80.9% occurred in neonates admitted during the early neonatal period with 21.9% in the first 24 hours. Early neonatal deaths have also been noted to be higher than deaths in the late neonatal period in other studies [29-32]. The early neonatal period is a delicate period because it is a period of transition between the intra-uterine and extra-uterine environment. At this age, the neonate is fragile with a weak immune status and body systems not quite adapted to the extra uterine environment, and therefore very susceptible to infections

which can be fatal. Prematurity was the cause of more half of neonatal death 51.9 %, neonatal sepsis 27, 9 %; asphyxia 7,7 % and congenital malformations 7,7 % . The similar results were observed by other authors. [31-34]. The North –Kivu provincial hospital has more incubators than any other hospital in these party of Democratic Republic of Congo and therefore receives premature neonates from all over the region, with most of them arriving in critical states due to poor and inadequate means of transportation. This can probably account for the increased deaths of pretermers in this study.

V. Conclusion

In our study, prematurity neonatal sepsis, birth asphyxia and congenital malformations were the major causes of neonatal deaths. Health education to pregnant women on adequate follow up of pregnancies should be reinforced. Health personnel in the delivery room and in the neonatology unit should be continuously trained on the management and prevention of the most frequent causes of deaths in this context, especially prematurity and neonatal sepsis. The hospital technical platform needs to be reinforced in both material and human resources to manage complex cases with malformations.

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