



## Pediatric Mortality at the Reference Health Centre of the Commune II of the District of Bamako (MALI)

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### Abstract

### Original Research Article

**Introduction:** Child and neonatal mortality remains a public health problem. In 2019, according to the WHO, 2.4 million newborns will die and 5.2 million children under the age of five. Complications associated with preterm birth, birth asphyxia/trauma, pneumonia, congenital anomalies, diarrhoea and malaria are the main causes of mortality in children under 5 years of age. The objectives of our study were to determine the mortality rate of children aged 0-15 years hospitalised in the department and to identify the most frequent causes. **Patients and Methods:** This was a retrospective, descriptive study from 1 January to 31 December 2017. It focused on the analysis of records of children aged 0-15 years who died in the paediatric ward. The inclusion criterion was any child aged 0 to 15 years who died in hospital in the paediatric ward during the study period. **Results:** During our study period, out of 418 hospitalised children, we recorded 19 deaths or 4.5%. According to the age groups, we noted a neonatal excess mortality (0 to 1 month) of 89.47%, an infant mortality of 5.26% and an infant-juvenile mortality of 5.26%. The male sex was the most represented with 52.63%, i.e. a sex ratio of 1.13. In our series, admissions were made directly 89.47%, the socio-economic conditions of the parents were not very favourable in 52.63%. Deaths were more frequent in July (31.57%). The mortality factors were mainly probable neonatal infections 26.31% followed by prematurity 21.05% and prematurity was the most lethal 18.18%. The delay in seeking care was early in 73.68%.

**Keywords:** Mortality, Paediatrics, Bamako, Commune II.

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## INTRODUCTION

Child mortality is a major international concern. (I. BASSE *et al.*, 2022) According to WHO, in 2019, an estimated 5.2 million children under the age of 5 died mostly from preventable or treatable diseases. Children aged 1-11 months accounted for 1.5 million of these deaths, while children aged 1-4 years accounted for 1.3 million deaths. Newborns (less than 28 days old) accounted for the remaining 2.4 million deaths and 500,000 older children (5-9 years old) died in 2019.

Complications associated with preterm birth, birth asphyxia/trauma, pneumonia, congenital anomalies, diarrhoea and malaria are the leading causes of death in children under five. Childhood infectious diseases and accidents and injuries, including drowning and road traffic injuries, are the leading causes of death in older children. (WHO 2020) In sub-Saharan Africa, despite a decline over the past 20 years, child mortality remains relatively high. (E. M TETTE *et al.*, 2016) In 2013, the highest infant and child mortality rates were recorded in African countries more precisely in Angola with

167.4%, Chad with 147.5% and Central African Republic with an estimated rate of 139.2%. (Kipp AM *et al.*, 2016) In Mali according to the DHS VI in 2018, for the period of 5 years preceding the survey, out of 1,000 children born alive, 54 died before their fifth birthday. The number of children who died before their fifth birthday was 101 out of 1,000 live births. There are no specific data on infant and neonatal mortality in Commune II. We initiated this work with the aim of knowing the mortality rate of children aged 0 to 15 years hospitalised in the department and to identify the most frequent causes.

## PATIENTS AND METHODS

The study took place in the paediatric ward of the Centre de santé de référence (CSRef) in commune II of the Bamako district. According to Mali's health sector policy, the health system is pyramidal, with the first level being the Community Health Centre (CSCoM), the second level being the Reference Health Centre (CSREF) and the third and fourth levels being the regional and national hospitals respectively. The CSREF is the first referral structure in commune II. The paediatric service receives patients referred from the CSCoM and the private structures of commune II. This was a retrospective, descriptive study from 1 January to 31 December 2017. It focused on the analysis of records of children aged 0 to 15 years who died in the paediatric department. The inclusion criterion was any child aged

0 to 15 years who died in hospital in the paediatric ward during the study period. For each file, we collected: socio-demographic data (age, sex, place of residence, month of hospitalisation, parents' residence), maternal identification variables (marital status, educational level, health insurance and socio-economic level), clinical variables (mode of admission, reasons for consultation, reasons for hospitalisation), duration of hospitalisation and presumed causes of death. The data were entered and analysed on IBM SPSS Statistical Software version 20 and processed on Word 2007 and Excel 2007.

Consent for the administration of the CSRef was obtained before starting the study.

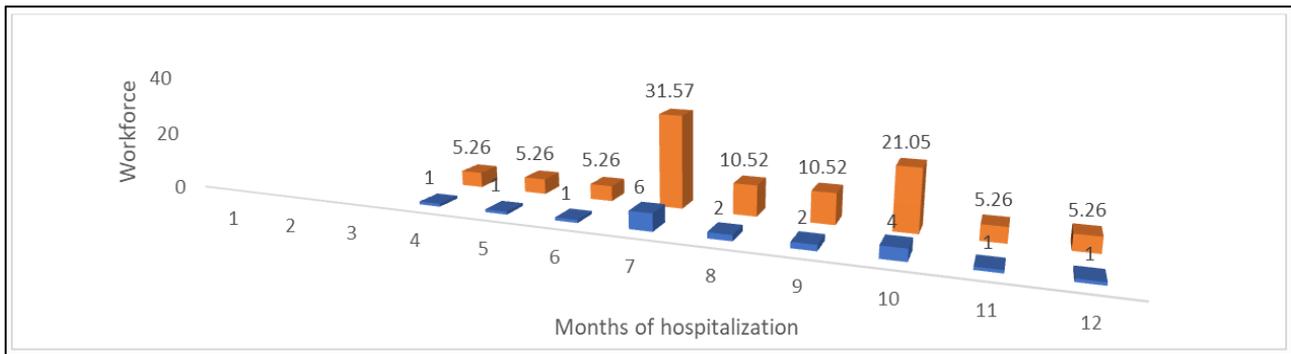
## RESULTS

During our study period from January to December 2017, 418 children were hospitalized, we recorded 19 deaths or a rate of 4.5%. The male sex was the most represented with 52.63% with a sex ratio of 1.13. The majority of the patients' parents lived outside the commune II with 52.63%. In our study, the social conditions were not very favourable in 52.63%, the mothers of the deceased children were married in 78.94%, were in primary school in 84.21% and had no insurance in 89.47%. In our series, 89.47% of the deceased children were admitted directly to the ward, only 10.56% were referred (Table 1).

**Table 1: Socio-demographic characteristic**

Socio-demographic characteristics	Workforce	Percentage
<b>Age</b>		
0-1 month	17	89,47
2-11 months	1	5,26
12 - 59 months	0	0
6 - 10 years	0	0
11 - 15 years	1	5,26
<b>Sex</b>		
Male	9	52,63
Female	10	47,36
<b>Marital status</b>		
Married	15	78,94
Single	4	21,05
<b>Schooling</b>		
Enrolled in school	16	84,21
Not in school	3	15,78
<b>Economic socio level</b>		
Very low	10	52,63
Low	6	31,57
Medium	2	10,52
Good	1	5,26
<b>Reference</b>		
Yes	17	89,47
No	2	10,52

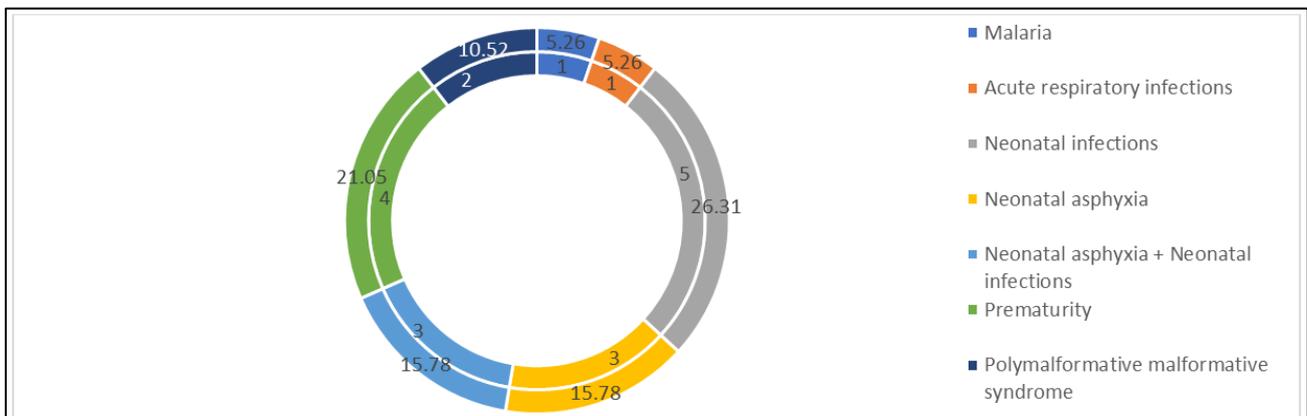
According to the period of death, children frequently died in July 31.57% (Figure 1).



**Figure 1: Months of hospitalization**

The main mortality factors were probable neonatal infections 26.31% followed by prematurity 21.05%. According to age groups, there was an excess of neonatal mortality (0 to 1 month) 89.47%, infant mortality 5.26% and child mortality 5.26%. Prematurity

was the most lethal 18.18% followed by poly malformative syndrome 15.38%. The delay in seeking care was early (within 24 hours) in 73.68% and the average length of hospitalization was 4.75 days.



**Figure 2: Mortality factors found in patients**

## DISCUSSION

In our study, 418 children were hospitalised in the paediatric ward with 19 deaths, i.e. an overall death rate of 4.5%. Our result was lower than those of (I. BASSE *et al.*, 2022) in Senegal 11% and (Félicitée Nguefack *et al.*, 2020) in Cameroon 11.3%, but remains high compared to the mortality rate in developed countries; in the USA in 2013 the infant mortality rate (IMR) was 6.0 per 1000 live births (LORENZ JM *et al.*, 2013). Moreover, this relatively low overall mortality hides a high neonatal mortality 89.47% of all deaths, higher than that of (I. BASSE *et al.*, 2022) 68%. This very high neonatal mortality could be explained by the lack of equipment for neonatology and the inexperience of the team as the neonatology unit was in its first year of operation. The male gender was in the majority in our study 52.63 as in (I. BASSE *et al.*, 2022) 56% and (M.L. RAKLOTOMAHEFA *et al.*, 2020) 57.9% and (N. SECK *et al.*, 2017). The socio-economic conditions were not favourable in 52.63%, our result is superposable to that of (I. BASSE *et al.*, 2022) 55%. According to the mode of admission 89.47% had come directly against 10.56% of reference. Our result differs from that of (SECK *et al.*, 2017) 41.5%. This situation could be explained by the presence of a gynec-

obstetric service in the health centre of commune II of Bamako and the fact that the vast majority of the structures of the commune send patients directly to the 3rd reference. In our series, the patients hospitalised had died. The majority of deaths occurred in July (31.57%) as did (I. BASSE *et al.*, 2022) 12.2% in July. On the other hand, (SECK *et al.*, 2017) found a higher mortality in October 38%. This could be explained by the frequency of deliveries during this period. The reasons for hospitalisation were dominated by respiratory signs 52.63% as in (I. BASSE *et al.*, 2022) 37.8%. The predominant factor related to mortality was probable neonatal infections 26.31% followed by prematurity 21.05% and perinatal asphyxia 15.8%. This distribution of mortality is the same as that provided by the WHO in relation to the distribution of causes of death (WHO 2020).

## CONCLUSION

Neonatal and infant/child mortality remains high in our context, particularly for newborns. The main causes remain neonatal infections, prematurity and perinatal anoxia. The reinforcement of the technical platform and the capacity of the personnel will make it possible to reduce the reduction.

**Conflicts of Interest:** The authors declare no conflicts of interest.

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