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Prevalence of Prematurity in the Neonatology Unit of the Reference Health Centre of the Commune I of Bamako (Mali)

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Abstract **Original Research Article**

Prematurity is defined as any viable birth before the 37th week of amenorrhea (259th day), starting from the first day of the last menstrual period during our study period, 1006 newborns were hospitalised in the neonatology unit. In Africa, preterm infants are one of the leading causes of neonatal mortality and account for one fifth of all neonatal mortality cases. ***Materials and Method*:** This was a prospective descriptive study of premature newborns hospitalised at the commune I neonatology unit from July 2018 to June 2019. We included all premature infants hospitalized during the study period, whose records were usable. ***Result*:** In our study, we had a prevalence of 11.93%, the average maternal age was 24.26 years with extremes of 15 and 40 years. The majority of premature babies came from the maternity ward of the CSRéf 85%. The average birth weight was 1650 g, with a predominance of the 1500 to 1800 g range (45.84%). The average gestational age according to the Farr score was 33.89 days, with the most common gestational age range being 35-36 days, i.e. 43.33%. The most common complications were: probable neonatal infection 85%, followed by haemodynamic disorders 35% and respiratory distress 34.7%. The average length of hospital stay was 5.13 days, with extremes of 3 days to 90 days. In-hospital mortality was 7.5%, with respiratory distress being the most common cause of death (66.7%) followed by seizures (11.1%).

Keywords: Prematurity, Prevalence, Commune I, Bamako.

INTRODUCTION

Prematurity is defined as any viable birth before the 37th week of amenorrhea (259th day), beginning on the first day of the last menstrual period (American academy of pediatrics, 2005) According to the WHO, an estimated 15 million infants are born too early each year, or more than one in ten. Approximately 1 million children die each year from complications of premature birth. Many survivors face lifelong disabilities, including learning disabilities and visual or hearing problems. (WHO, 2023) In Africa, preterm infants are one of the leading causes of neonatal mortality and account for one-fifth of the estimated 4 million total neonatal deaths. Of those newborns who die in the first months of life each year, 98% of these deaths occur in developing countries, particularly in Asia and Africa. Africa has the highest neonatal mortality rate estimated at 45 deaths per 1,000 live births compared to 34 ‰ in Asia, 17 ‰ in Latin America and 5 ‰ in dev in 2015, according to the statistics of the paediatrics department of the CHU Gabriel TOURE, prematurity represented 16.29% of the most frequent pathologies in hospitalization with a lethality rate of 43.21%. (AMAPED) At the reference health centre of commune II, mortality was highest among newborns 89.47% and prematurity was the most lethal 18.18%. (Chaka K *et al.*, 2023) The objective of this study was to determine the prevalence of prematurity in the neonatology unit of the health centre of reference of the commune I of Bamako.

MATERIALS AND METHOD

Our study took place in the neonatology unit of the Centre de santé de référence (CSRéf) of the commune I of Bamako. According to the Malian health system, the health district of commune I is composed of one CSRéf, 12 community health centres (CSCOM), 3 religious centres and private health structures. In the event of complications of childbirth or illness among newborns in the maternity ward of the CSRéf, the community health centres of the commune, and the religious and private structures, they are admitted to the commune neonatology unit. This was a retrospective, descriptive study of premature newborns hospitalised at the commune I neonatology unit from July 2018 to June 2019. We included all premature infants who were hospitalised or consulted during the study period, whose records were usable. Full-term newborns were not included in the study. The data were collected on the basis of a previously developed survey form. The following parameters were filled in: Socio-demographic parameters of the mothers: (age, marital status, education level, employment, and marital status of the mother). Clinical parameters of the premature babies: (signs of morphological maturation using the Farr score, clinical signs). The fate of the newborn (healed, deceased, referrals). The information was analysed on SPSS version 2.5 and then entered into World 2016 software. Consent for the administration of the CSRéf was obtained before starting the study.

Operational definitions: (Cissouma A *et al.*, 2022)

- Eutrophic: a newborn whose weight is between the 10th and 90th percentile for its gestational age.
- Hypotrophic: a newborn whose weight is below the 10th percentile for its gestational age.
- Hypothermia: a drop in core temperature below homeostatic limits < 36°C.
- Respiratory distress: a clinical picture involving breathing difficulties and arterial blood oxygenation abnormalities.
- Neonatal death: number of deaths of live-born infants occurring in the first four weeks of life (28 days).
- Risk factors: factors that increase the risk of developing a disease.
- Complete prenatal work-up: haemoglobin/haematocrit, rhesus grouping, Emmel test, albumin-sugar, toxoplasmosis, rubella and HIV serologies, BW.

Infectious Criteria: According to the (Recommendations for good practice of the French Paediatric Society 2017)

- Maternal GBS colonisation during the current pregnancy (positive GBS screening report either by culture or by rapid PCR during the per-partum period, and/or GBS bacteriuria).

A history of neonatal GBS infection in a previous pregnancy

- Duration of rupture of membranes greater than 12 hours,
- Spontaneous and unexplained prematurity < 37 days' gestation,
- Maternal fever > 38.0°C per partum (or within 2 hours of delivery).

RESULTS

During our study period, 1006 neonates were admitted to the neonatal unit. The average maternal age was 24.26 years with extremes of 15 and 40 years. The average maternal age was 24.26 years with extremes of 15 and 40 years. 70.83% of the women were not in school, 99.2% were married and 88.5% were housewives. The majority of newborns were male (58%) with a ratio of 1.4. The average birth weight was 1650g, with a predominance of the 1500 to 1800g range (45.84%). The mean gestational age according to the Farr score was 33.89 SA with the extremes of 27SA+3d and 36SA+5d. The most represented gestational age range was 35SA-36SA+6d or 43.33% and the least represented was 22SA-27SA+6d or 0.83%.

Table 1: Distribution according to socio-demographic characteristics

Socio-demographic characteristics	Workforce	Percentage
Age range of mothers		
Under 18 years old	13	10,83
18-35 years old	101	84,17
Over 35 years old	6	5
Level of education of mothers		
Not in school	85	70,83
Educated	35	29,17
Marital status of parents		
Married	119	99,2
Single	1	0,8
Weight of premature newborns		
Less than 1500g	28	23,33
1500-1800g	55	45,84

Socio-demographic characteristics	Workforce	Percentage
Over 1800g	37	30,83
Sex of premature		
Male	70	58,33
Female	50	41,67
Age of premature newborns		
22SA-27SA+6days	1	0,83
28SA-32SA+6days	23	19,17
33SA-34SA+6days	44	36,67
35SA-36SA+6days	52	43,33

The majority of premature babies came from the CSRéf maternity hospital (85%) and nearly two thirds of premature babies (61.67%) were received in a hypothermic state. The most common complications were: probable neonatal infection 85% followed by haemodynamic disorders 35% and respiratory distress 34.7%.

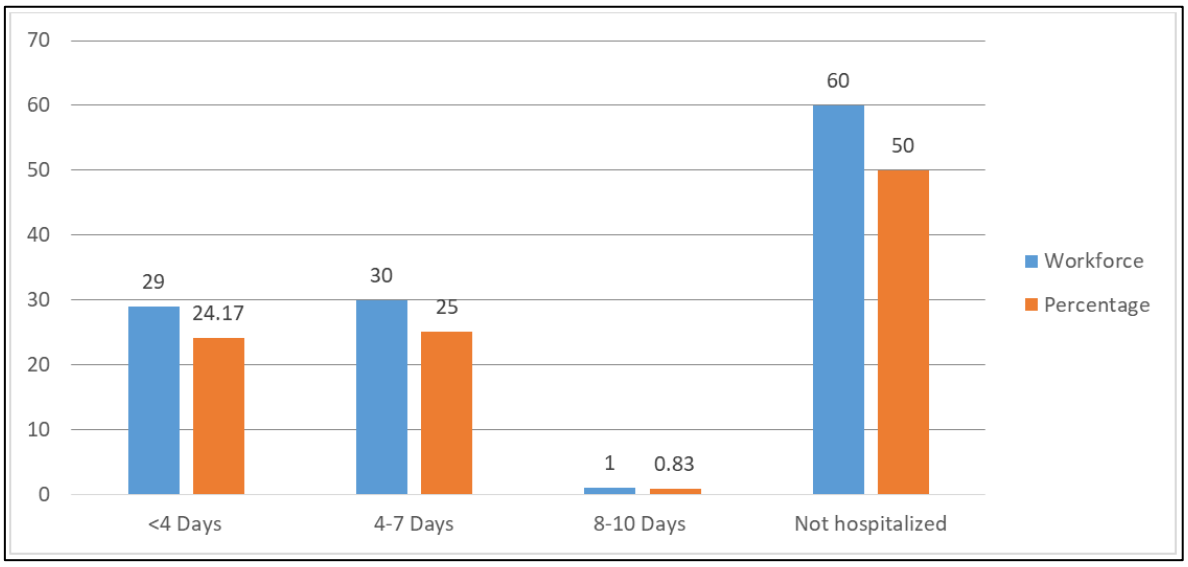

Figure 1: Distribution according to length of stay

The average length of hospital stay was 5.13 days, extremes 3 days - 90 days. Fifty percent (50%) of the preterm infants performed in-hospital KMS. In-hospital mortality was 7.5%, with respiratory distress being the most likely factor of death at 66.7% followed by convulsions at 11.1%.

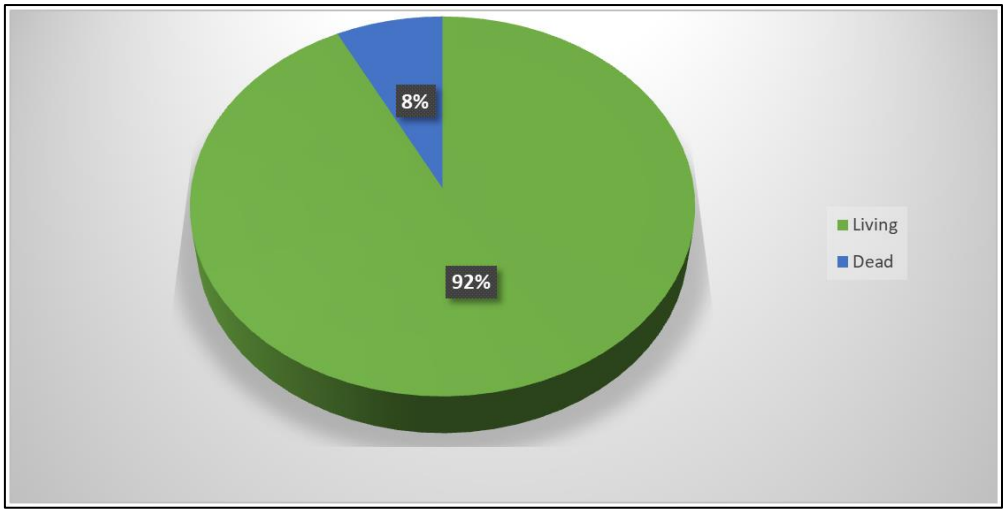

Figure 2: Distribution according to the fate of newborns

DISCUSSION

During the period of our study, the prevalence of premature babies admitted to the neonatal unit was 11, 93%. Our result is lower than that of (Sow A *et al.*, 2018) at the maternity hospital Grand YOFF 28.1%, (Cissouma A *et al.*, 2022) at the hospital of Sikasso 36.57% and that of (Yameogo WN *et al.*, 2022) at the hospital of Tengandogo in Burkina Faso 50.5%. This situation could be explained by the fact that our study site is a 1st level facility.

In our series, the average maternal age of the mothers was 24.26 years with a predominance of the 18 to 35 years age group (84.17%) and extremes of 15 and 40 years. Seventy-eighty-three percent of the mothers were not in school and 88.5% were housewives. Our result is almost superposable to that of (Diouf FN *et al.*, 2016) who found a predominance of the 20-34 age group, illiterate in almost half of the cases and without income generating activity for the most part. In our study, the vast majority of premature babies came from married couples 99.2%. Our results are identical to those of (N'diaye *et al.*, 2006) in Thiès 78%, whereas (Gueye M *et al.*, 2011) in Dakar found 44% to be single. In our series, 42.5% of mothers of our result is not comparable to those of (BARKAT A *et al.*, 2004) in Morocco who found that 76% of preterm infants did not have any prenatal consultation (ANC). According to WHO and UNICEF recommendations the minimum number of ANC is 4. Our result is not comparable to those of (Barkat A *et al.*, 2004) in Morocco who found that 76% of pregnant women had at least one ANC. The poor quality of ANC is a risk factor for neonatal mortality in preterm infants. This situation could be explained by the lack of information, insufficient financial means of the pregnant women who were housewives.85% of deliveries took place at the CSRéf maternity hospital. Our result is superimposed on that of (Cissouma A *et al.*, 2022) in which the majority of deliveries were carried out at the hospital maternity hospital 42.50%. This can be explained by the status of our study site as a primary referral facility. The majority of newborns were male, 58.33%. Our result is superimposed on that of (BOIRO D *et al.*, 2015) 50.1%.On the other hand (Diouf FN *et al.*, 2016) in Senegal found a female predominance. In our study, the predominant weight range was 1500 to 1800 g or 45.84% with an average birth weight of 1650g. Our result is superior to that of (Diouf FN *et al.*, 2016), who found the weight range 1000-1500g the most represented and that of (Cissouma A *et al.*, 2022) who found an average weight of1397, 83g. In our series, the mean gestational age according to the Farr score was 33.89 SA and the age range of 35SA-36SA+6d was in the majority, i.e. 43.33%. Our result is higher than that of (Cissouma A *et al.*, 2022) in whom 48.20% of the premature babies had a mean gestational age of 31.65 SA and 42.80% of the premature babies were between 33SA and 36SA gestational age and that of (Sonia F *et al.*, 2006) in whom the mean age was 32SA This situation could be explained by the second and third referral nature of these structures. Nearly two thirds of the premature babies (61.67%) were received with hypothermia. Our result is identical to that of (DIOUF FN *et al.*, 2016) with 62.7% of premature babies received in a hypothermia table. This situation could be explained by the poor working conditions and the lack of awareness of the risks that the premature baby runs. The most common complications were: probable neonatal infection 85% followed by haemodynamic disorders 35% and respiratory distress 34.7%.Our results are almost identical to those of (Cissouma A *et al.*, 2022) who also found neonatal infection as a major complication 43.20% followed by perinatal anoxia 25.20%. These findings are in line with the data in the literature according to which prematurity predisposes to the occurrence of neonatal infection with a vital prognosis.

The average length of stay was 5.13 days. Fifty percent (50%) of the preterm infants performed in-hospital KMS. Our result is lower than that of (Diouf FN *et al.*, 2016) in relation to the average length of hospitalisation which was 24 days with extremes of 3 days - 90 days; on the other hand, it was higher in relation to the passage to kangaroo care 10.9%.This situation could be explained by the fact that our structure is the first level of reference and does not receive extreme and very unstable cases. In our study, the live rate was 92.50% and we found 7.5% in-hospital mortality. Our result is largely inferior to that of (Cissouma A *et al.*, 2022) in Sikasso, (Diouf FN *et al.*, 2016) in Dakar (Sylla M *et al.*, 2015) who found respectively 43.20%, 50.3%, 43.21%.This situation could be explained by the character of first reference of our place of study and second and third reference of the structures of comparisons which receive the serious and extreme cases. Respiratory distress was the most noted probable factor of death, 66.7%, followed by convulsions 11.1%. Our result is similar to that of (Koko J *et al.*, 2002) in Gabon who found respiratory distress to be the primary reason for death at 60%.

CONCLUSION

Our study shows that prematurity is a reality in Commune I of Bamako. A correct and rigorous follow-up of pregnancies, the reinforcement of existing structures in terms of qualified personnel and technical means will allow the prevalence and mortality of prematurity to be reduced in the commune.

DECLARATION OF INTEREST

No conflicts of interest in relation to this article.

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