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**Original Research Article**

# Low Birth Weight in the Gynecology-Obstetrics Department of the Commune I Reference Health Center in the District of Bamako

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**Abstract:** Low birth weight is an important public health indicator because of the strong association between birth weight and infant mortality and morbidity. The objectives were to determine the frequency of low birth weight, to describe the sociodemographic characteristics, to determine the risk factors associated with low birth weight and to determine the neonatal prognosis in the gynaecology and obstetrics department of the reference health center in Commune I of the Bamako district. ***Material and Methods:*** This was a cross-sectional, descriptive and analytical study in the department from 31 December 2020 to 30 June 2022. We carried out exhaustive sampling, taking into account all live newborns with a low birth weight. All newborns born in the department weighing between 500g and 2499g during the study period were included. ***Results:*** We recorded 4,292 births, 180 of which were low birth weight, giving an overall incidence rate of 4.2%. Of the 180 low birth weight babies, we found 111 cases of prematurity (61.7%) and 69 cases of hypotrophy (38.3%). We found that the proportion of low birth weight babies was higher in the young mothers in our study, at 60.5% for the under-19 age group. Our study showed that the extreme ages of the mother were a factor favouring or even predisposing to the occurrence of low birth weight. We noted a high frequency of primiparous women (38.7%) followed by multiparous women (32.5%). Other maternal risk factors included hypertension (8%) and a body mass index of less than 18.5% kg/m2 in 41.2% of cases. Half of the new borns (47.8%) weighed between [1501-2000g]. Among the transferred newborns, 53.3% received kangaroo mother care and 6.8% of the newborns died during the first thirty days of life. We recorded a mortality rate of 6.8%. ***Conclusion:*** Low birth weight is a public health problem because of its high prevalence and its harmful consequences, especially for infants.

**Keywords:** Low birth weight, kangaroo mother, neonatal prognosis.



## INTRODUCTION

In developing countries, around 80% of low birthweight is attributable to intrauterine growth retardation due to maternal malnutrition [1]. In developed countries, on the other hand, preterm birth is the leading cause of low birthweight, accounting for 70% [2]. The incidence of low birth weight in industrialised populations is 6 to 7% of newborns [3]. Screening for low birth weight is usually carried out during pregnancy using foetal biometry, which in principle enables these pregnancies to be monitored appropriately.

In developing countries, unlike in industrialised countries, low birth weight is usually diagnosed at the time of delivery, due to poor pregnancy monitoring and the absence of antenatal consultations.

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In Africa, the incidence of low birth weight is higher, at between 10 and 20%, two-thirds of whom are newborns with intrauterine growth retardation [4]. In Morocco, Saïd Bassel *et al.,* found a prevalence of low birth weight of 5.3% in the maternity ward of the Mohammedia provincial hospital [5].

In Côte d'Ivoire, Asse K *et al.,* found 15.8% of low birth weight at the Bouaké University Hospital [6].

In essential care strategies for newborns, the management of at-risk populations occupies an important place [7].

Because of the vulnerability of these newborns, and the seriousness of the complications in terms of morbidity and mortality, we initiated this study at the reference health center in Commune I of the Bamako district in order to help describe the factors associated with low birth weight.

## MATERIALS AND METHODS

Our study took place in the gynaecology and obstetrics department of the referral health center in Commune I of the Bamako district. This is a 2nd level referral facility in Mali's health pyramid. This was a cross-sectional, descriptive and analytical study in the department from 31 December 2020 to 30 June 2022.

The objectives were to determine the frequency of low birth weight, to describe the socio-demographic characteristics, to determine the risk factors associated with low birth weight and to determine the neonatal prognosis. We included all live births in the department during the study period with a birth weight of 500g-2499g. Data were entered using Word and Excel office 2020 software. Data analysis was performed using SPPS version 2020 software. Statistical tests used were the chi2 test and Fischer's Exact test with a significance level of P less than 0.05.

## RESULTS

During the study period, 4292 births were recorded, including 4112 normal-weight births and 180 low-birth-weight babies, giving an overall frequency of 4.2%.

**Table I: Distribution of patients according to socio-demographic characteristics**

| Sociodemographic characteristics | Number (N= 160) | Percentage (%) |
|---|---|---|
| **Maternal age (years)** | | |
| ≤19 | 62 | 38,7 |
| 20-35 | 48 | 30 |
| >35 | 50 | 31,3 |
| **Mother's profession** | | |
| Housewife | 104 | 6 5 |
| Public servant | 14 | 8,6 |
| Saleswoman / shopkeeper | 16 | 10 |
| Pupil / Student | 9 | 5,6 |
| Housekeeper | 7 | 4,4 |
| **Matrimonial status** | | |
| Married | 42 | 26,2 |
| Unmarried | 118 | 73,8 |

- 61.9% of patients had no more than three (3) antenatal visits.

**Table II: Distribution of patients according to obstetrical history**

| Obstetrical History | Number (N= 160) | Percentage (%) |
|---|---|---|
| **Number of pregnancies** | | |
| Primigeste (zero pregnancy) | 62 | 38,7 |
| Paucigeste (1 to 3 pregnancies)<br>Multigeste (4 to 5 pregnancies) | 14<br>32 | 8,7<br>20 |
| Large multigeste ((≥ 6 pregnancies) | 52 | 32,5 |
| **Nombre de parité** | | |
| Primiparous (no childbirth) | 62 | 38,7 |
| Paucipare (2 to 3 parities) | 14 | 8,7 |
| Multipare (4 to 5 parities) | 32 | 20 |
| Large multiparous (≥ 6 parity) | 52 | 32,5 |

- The average gestational age was 8, with extremes of 1 and 15 pregnancies.
- The average parity was 7, with extremes of 1 and 13 parities.

**Table III: Distribution of newborns by age from pregnancy to birth**

| Age from pregnancy to birth (in weeks of amenorrhoea) | Number | Percentage (%) |
|---|---|---|
| 28-34 week of amenorrhoea | 8 | 4,5 |
| 34-36 week of amenorrhoea | 103 | 57,2 |
| ≥37 week of amenorrhoea | 69 | 38,3 |
| Total | 180 | 100 |

NB: - The pregnancy was single in 88.9% of cases
- The majority of our patients gave birth vaginally (88%)

**Table IV: Distribution according to maternal risk factors associated with low birth weight**

| Maternal risk factors associated with low birth weight | Number | Percentage (%) |
|---|---|---|
| No prenatal consultation | 11 | 6,9 |
| Under 19 years old | 62 | 38,7 |
| Arterial hypertension | 13 | 8,1 |
| Diabetes | 4 | 2,5 |
| Suspicion of urinary infection | 104 | 65 |
| Anemia | 7 | 4,4 |
| BMI ≤ 18.5 kg /m² | 66 | 41,2 |
| Twin pregnancies | 20 | 13 |

**Table V: Distribution of newborns by birth weight**

| Birth weight (in grams) | Number | Percentage (%) |
|---|---|---|
| (900-1200) | 2 | 1,1 |
| (1200-1500) | 8 | 4,4 |
| (1500-2000) | 86 | 47,8 |
| (2000-2499) | 84 | 46,7 |
| Total | 180 | 100 |

**Table VI: Relationship between age group and newborn birth weight**

| Age bracket (years) | | Birth Weight (in grams) | | | | Total |
|---|---|---|---|---|---|---|
| | | (900-1200) | (1200-1500) | (1500-2000) | (2001-299) | |
| | ≤19 | 0 | 0 | 52(60.5%) | 8(9.5%) | 60(33,3%) |
| | 20-35 | 0 | 6(75%) | 4(4.6%) | 70(90.5%) | 80(44,5%) |
| | >35 | 2(100%) | 2(25%) | 30(34.9%) | 6(7.2%) | 40(22,2%) |
| Total | | 2(100%) | 8(100%) | 86(100%) | 84(100%) | 180(100%) |

Pearson Fisher = 22.086 ddl = 6 P = 0 .000

*There is a significant relationship between maternal age and low birth weight*

**Table VII: Relationship between parity and newborn birth weight**

| Parity | | Birth weight (in grams) | | | | Total |
|---|---|---|---|---|---|---|
| | | (900-1200) | (1201-1500) | (1501-2000) | (2001-2499) | |
| | Primiparous | 1(50%) | 1(12.5%) | 26(30.2%) | 34(40.5%) | 62(34,4%) |
| | Paucipare | 0 | 0 | 2(2.3%) | 12(14.3%) | 14(7,8%) |
| | Multipare | 1(50%) | 2(25%) | 20(23.3%) | 20(23.8%) | 43(23,9%) |
| | Large multiparous | 0 | 5(62.5%) | 38(44.2%) | 18(21.4%) | 61(33,9%) |
| Total | | 2(100%) | 8(100%) | 86(100%) | 84(100%) | 180(100%) |

Pearson Fisher =19,912 ddl = 9 P = 0.000

There is a significant relationship between parity and low birth weight

# DISCUSSION

In our study, the overall incidence of low birth weight was 4.2%. This rate is close to that reported by Saïd Bassel and Coll [5] who found 5.3% low birth weight in the maternity ward of the Mohammedia provincial hospital in Morocco in 2012, but lower than that of Dansoko FC [8] who reported 8.49% low birth weight. This difference may be explained by the improvement in the health situation in relation to the implementation of national health programmes for pregnant women (prevention and management of malaria, prevention and management of anaemia in pregnant women).

- **Socio-Demographic Characteristics:**

We found that the proportion of low birth weight was higher among young mothers in our study, or

38.7% for the age group under 19 years. This result differs from that of Diarra A [9] who reported 46.05% for maternal age under 19 years. Many studies on low birth weight have shown that the mother's extreme age is a factor that favours or even predisposes to the occurrence of low birth weight [10,11].

Among the antecedents found, arterial hypertension was the most common with 26.2%.

Less than four antenatal consultations were carried out in 61.9% of cases. This result differs from that of Diarra A [9] who noted that 44.2% of cases had less than four antenatal consultations. This could be explained by certain factors such as primiparity, low socioeconomic status, and failure to follow the prenatal consultation schedule (except for pregnancies ending in premature delivery).

Primiparity and very high multiparity are thought to favour the occurrence of low birth weight. In our study, we found that 38.7% of primiparous women compared with 32.5% of very multiparous women. This result is close to that of Mariko A. [12] who found 37.1% primiparous versus 24.7% grand multiparous. Other authors have made the same observation, although Padonous G [13], Gold F *et al.*, [14], Evelt Charles *et al.*, [15] and Kayasta *et al.*, [16] only found that large multiparity was a risk factor for low birth weight. In our series, the high frequency of primiparous pregnancies could be explained by the fact that most first pregnancies occur in adolescence. The role of parity in the birth of a low birth weight baby has been asserted by several authors, who sometimes take into account the mother's age and parity at the same time, deducing that as the mother's age increases, so does the birth weight of the children [17-19].

- **Clinical Characteristics**

We noted that the majority of our newborns (57.2%) were born in pregnancies with a gestational age of between 34 and 36 weeks' amenorrhoea. The most frequent maternal risk factors were age less than 19 years (38.7%), suspected urinary tract infection (65%), body mass index less than 18.5kg/m² (41.2%) and arterial hypertension (8.1%). In our study, 8.8% of patients had not received antimalarial prophylaxis during pregnancy. Our rate is lower than that of Diarra A. [9] who observed a rate of 23%. The majority of our patients gave birth vaginally (89.4%) and 10.6% by caesarean section. The number of fetuses was single in 88.9% compared with 11.1% of multiple pregnancies, a result similar to that of Diarra. I [20] who found that 89.37% of pregnancies were singletons compared with 10.53% of twin pregnancies.

Half of the newborns weighed between [1501-2000g], with 47.8%. This is in contrast to the weight reported by Cissé A [2000 - 2499g] or 83.10% [21]. This difference could be explained by the fact that intrauterine growth retardation during pregnancy may be due to the mother's predisposition to certain pathologies affecting metabolism, such as arterial hypertension, obesity and diabetes.

This study showed that there is a relationship between maternal age and low birth weight. Many studies have shown that extreme maternal age is a factor favouring the occurrence of low birth weight (Pearson Fisher = 22.086 ddl = 6 P = 0.000) [10, 11].

We found 61.7% prematurity and 38.3% hypotrophy; this result is superimposed on that of Diarra. I [20] who found 65.78% prematurity and 34.22% hypotrophy.

- **Neonatal Prognosis:**

In our study, 95.6% of newborns were transferred to neonatology, 61.7% for prematurity and 38.3% for hypotrophy. Of the newborns transferred, 53.3% received kangaroo mother care and 6.8% of the newborns died during the first thirty days of life. This rate is lower than most of the rates reported by certain authors Bonkoungou P., in 1995, found 37.62% at the Centre National Hospitalier Universitaire de Cotonou [22]; Pr Traoré F.D [23], found 38.8% at the national reference neonatology unit in the paediatrics department of the CHU Gabriel Touré.

Our low neonatal mortality rate can be explained by the fact that we are a 2nd referral unit, and newborns with a poor prognosis are referred to the neonatology unit of the Gabriel Touré CHU department. Neonatal asphyxia was the most frequent cause of death, accounting for 50% of cases. This rate is higher than that of Coulibaly B [24] who found 16.7%. This high rate could be explained by insufficient surveillance of the mother and foetus during labour, late diagnosis of acute foetal distress, and the association of maternal pathologies with pregnancy.

## CONCLUSION

Low birth weight is a public health problem because of its high prevalence and its harmful consequences, especially for infants.

**Conflict of Interest:** This article is not subject to any conflict of interest.

## REFERENCE

1. WHO/WHO/WAR (World Health Organization/West Africa Region): Improving maternal nutrition in Africa. 2001. Available at: http://www.afro.who.int/notepress/french/2001/pr2001021203.html.
2. Demmouche A: Low birth weight at the Sidi Bel Abbes obstetrics and gynaecology hospital (western Algeria). The Community Coalition for the

Prevention of Low Birthweight, Causes of low birthweight. 2003. http: // www.Successby6ottawa.ca/Ibwfpn/francais/causes _of_Ibw.html.
3. Dembélé, S. (2023). *Etude de l'hypotrophie foetale au Centre Santé de Référence de la Commune V du district de Bamako* (Doctoral dissertation, USTTB).
4. WHO (World Health Organisation) : World Health Report 1998. Genève. OMS.
5. Saïd Bassel et Coll. Prevalence and factors associated with low birth weight in the maternity ward of the provincial hospital of Mohammedia-Morocco in 2012.
6. Ka, Asse, K.V. & Aka, Yenan, J. (2016). Low birth weight at the University Hospital of Bouaké (Ivory Coast): Retrospective study of 179 cases in 2016.
7. OMS (Organisation Mondiale de Santé). Essential newborn care: Report of a technical working group. WHO/FRH/96.13.
8. Dansoko, F.C. (2010). Low birth weight, aetiological factors and immediate foetal prognosis at the Commune IV reference health center in the Bamako district. *Medical thesis 2010*, M501
9. Diarra, A. (2011). Low birth weight, aetiological factors and immediate foetal prognosis at the comme I reference health center in the district of Bamako. *Medical Thesis 2011*, M209.
10. Mlle. HANANE, I. (1980). Low Birth Weight - Prematurity - Hypotrophy Epidemiology - *Risk Factor in Marrakech*. 98p
11. Letaief, M, Soltani. M. S, Ben, Salem, K. & Béchir. (2001). A Epidemiology of low birth weight in the Tunisian Sahel. *Santé publique* ; 4(13): 359 -66.
12. Mariko, A. (2018). Low birth weight in the paediatric ward of the Csref CV in the district of Bamako. *Medical thesis 2018*, M144
13. Padonous, G. (2014). Low birth weight, prematurity and intrauterine growth retardation: risk factors and consequences on growth from birth to 18 months of life in Beninese newborns. *Medical thesis, Benin*. 228p.
14. Gold, F., Carbonne, B. & Gold, F. (2000). Foetus and low-weight newborn. *Masson, Paris*, 1-15. 2-225-85707p.
15. Evelt, Charles., Olbeg & Yvan, Désino. Risk factors for low birth weight. Philip Bulletin from the Paediatrics Department of the University Hospital of Haiti 2(1p).
16. Kayastha, S. &Tuladhar, H. (2007). Study of low birth weight babies in Nepal Medical College. *Nepal Med Coll J*; 9(4):266- 269.
17. Valman, H.B. & Pearson, J.F. (1980). What the foetus feels? Br Med J; 280: 233–4.
18. Klein, P., Teissier, A. & Renaud, R. (1989). Interpretation of biological and hormonal changes during normal and pathological pregnancy. *Rév Prat*; 39:423 –9
19. Fournie, A., Laffitte, A. & Parant, O. (1999). Changes in the maternal organism during pregnancy. *Encycl. MedChir (Elsevier, Paris) Gynaecology-Obstetrics*, 5-008-A-10.
20. Diarra, I. (2010). Low birth weight, aetiological factors, immediate foetal prognosis at the Banconi community health centre in Commune I of the Bamako district. *Medical thesis 2010*. 10M151
21. Cissé, A. Low birth weight babies in 2010-2011: medical thesis. 79p N°176.
22. Bonkoungou, P. (2022). Breeding premature babies in urban tropical environments: 101 cases from the neonatology unit of the Cotonou CNHU Benin Dissertation DES ped. 1995, n0393, 59V of the District of Bamako Thesis in Medicine 2022 22M12.
23. Traoré FD et col. Mali's national reference neonatology unit: a status report", Santé Publique2014/1 (Vol. 26), 121p. 115-121
24. Coulibaly, B. (2022). S Low birth weight: Epidemiological aspects and early neonatal prognosis at the Commune I Reference Health Center These Mali. 22M16

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