Scientific Research Publishing

Open Journal of Pediatrics, 2026, 16(1), 144-157
https://www.scirp.org/journal/ojped
ISSN Online: 2160-8776
ISSN Print: 2160-8741

Low Birth Weight Newborns: Diagnostic Challenges and Management in African Hospital Settings

Idrissa Basse[1*], Aliou Abdoulaye Ndongo[2], Najah Fatou Coly[3], Hornella Bonning Noumen Petga[4], Emmanuel Aganze Bashi[1], Serigne Lamine Badji[5], Djibril Boiro[3], Lamine Thiam[6], Ndiogou Seck[7], Ndeye Ramatoulaye Diagne Gueye[1]

[1]Pediatrics Department, Diamniadio Children's Hospital, University of Thies, Thies, Senegal
[2]Pediatrics Department, Abass Ndao Hospital Center, University of Dakar, Dakar, Senegal
[3]Biology Department, Diamniadio Children's Hospital, University of Thies, Thies, Senegal
[4]Saint Jean of God Hospital, University of Thies, Thies, Senegal
[5]Amath Dansokho Hospital Center of Kedougou, Kedougou, Senegal
[6]Ziguinchor Regional Hospital Center, University of Ziguinchor, Ziguinchor, Senegal
[7]Saint Louis Regional Hospital Center, University of Saint Louis, Saint Louis, Senegal
Email: *idrissabasse@yahoo.fr

How to cite this paper: Basse, I., Ndongo, A.A., Coly, N.F., Petga, H.B.N., Bashi, E.A., Badji, S.L., Boiro, D., Thiam, L., Seck, N. and Gueye, N.R.D. (2026) Low Birth Weight Newborns: Diagnostic Challenges and Management in African Hospital Settings. *Open Journal of Pediatrics*, **16**, 144-157.
https://doi.org/10.4236/ojped.2026.161015

Received: December 26, 2025
Accepted: January 20, 2026
Published: January 23, 2026

Abstract

Introduction: Low birth weight (LBW) is a major public health issue in African countries. It is one of the main risk factors for neonatal morbidity and mortality. The aim of this study was to assess the epidemiological, diagnostic aspects, and the outcome of low birth weight newborns in a hospital setting. **Methodology:** This was a retrospective, descriptive, and analytical study conducted from January 2023 to June 2024. Statistical analysis was performed using the software Epi Info (version 7.2.2.6) and Microsoft Excel 2019. **Results:** The prevalence was 27.6% (n = 358). The average maternal age was 23.66 years. Most mothers were aged 19 years and younger (31.25%). First-time mothers were the most common (35.34%). There were multiple pregnancies in 29.04% of cases. Most mothers had fewer than 4 prenatal visits (63.84%) and gave birth to preterm newborns in 75.28% of cases. The most common maternal pathologies were anemia (49.57%) and hypertension (21.00%). Prematurity ($p < 0.0001$) and anemia ($p < 0.001$) were significantly associated risk factors for LBW. Among the newborns, most had a birth weight between 1500 and 2499 g (71.39%). The most frequent complications were hypothermia, jaundice, and infection, especially in patients with a weight < 1500 g. Enteral feeding was the most commonly used method (68.89%) and 20.83% benefited from the kangaroo method during hospitalization. Death occurred in 14% of cases. **Conclusion:** Most of the risk factors for LBW are modifiable. It is therefore necessary to prevent them by implementing

targeted health policies that would help reduce the occurrence of complications and the neonatal mortality rate.

Keywords

Low Birth Weight, Prematurity, Risk Factors

1. Introduction

Low birth weight (LBW), defined as a birth weight of less than 2500 grams at birth, is a major public health issue in developing countries. It is one of the main risk factors for neonatal mortality and the development of long-term complications [1]. According to the latest data from the World Health Organization (WHO), in 2020 approximately 15% of global births were low birth weight newborns, and they were 20 times more likely to die in the first weeks of life than those with normal birth weight [1] [2].

In Senegal, the prevalence of LBW was 17% in 2020 [3]. This phenomenon is exacerbated by socio-economic, nutritional, and environmental factors, notably maternal malnutrition, infections, and limited access to quality prenatal care. LBW is often associated with severe clinical conditions such as prematurity, neonatal infections, and respiratory disorders [4].

The diagnosis of LBW is mainly based on clinical and anthropometric criteria; however, screening technologies such as prenatal ultrasound can play a crucial role in identifying high-risk pregnancies. Despite advances in obstetric and neonatal care, low birth weight newborns continue to face major challenges in terms of management. Therapeutic strategies include appropriate nutritional support, respiratory monitoring, as well as care aimed at preventing infections and promoting growth [2] [5]. However, in the context of developing countries, limited access to neonatal intensive care equipment and medical resources in rural areas complicates the adequate management of these newborns [2].

Improved awareness, enhanced prevention of risk factors, and continuous training of healthcare personnel are essential to improve the survival rates of low birth weight newborns [2]. Accordingly, several initiatives have been implemented to strengthen prevention and treatment strategies, such as improving prenatal care and expanding emergency neonatal services in the most affected regions. It is within this context that we conducted this study in a region heavily affected by poverty and characterized by significant weaknesses in its health system. The general objective was to study the epidemiological, diagnostic, and outcome-related aspects of low birth weight newborns.

2. Methodology

2.1. Study Setting

Our study was conducted at the Pediatrics Department of the Amath Dansokho

Regional Hospital Center (CHRADK), located in the Kédougou region, 700 km from the capital of Senegal (Dakar), a region bordering Guinea and Mali.

The pediatrics department has a neonatology unit with a 40-bed capacity, a kangaroo care room, and an infant and child hospitalization unit.

2.2. Study Type and Period

This is a retrospective, descriptive, and analytical study conducted from January 2023 to June 2024 (18 months).

2.3. Study Population

- **Inclusion Criteria**

We included all newborns with a birth weight strictly less than 2500 g who were hospitalized in the pediatrics department during the study period.

- **Exclusion Criteria**

Patients whose records were incomplete or unusable, as well as patients whose parents did not consent to participate in the study, were excluded.

2.4. Data Collection

We established a data collection form containing the following parameters:

- **Sociodemographic Data:** mother's age, gravidity, parity, place of origin, length of hospitalization;
- **Perinatal Data:** prenatal care, mode and method of delivery, gestational age;
- **Clinical and Paraclinical Characteristics of the Newborns:** reasons for hospitalization, vital signs, clinical findings on examination, laboratory results;
- **Management:** feeding, weight gain, treatment of complications, kangaroo method.

These data were collected from patient records and hospitalization registers.

2.5. Data Analysis

Statistical analysis was performed using the software Epi Info (version 7.2.2.6) and Microsoft Excel 2019. Quantitative variables were described by means, standard deviations, as well as minimum and maximum values. Qualitative variables were presented as absolute frequencies and percentages. A binary logistic regression was used to explore associations between independent variables and the outcome measure. Results were considered statistically significant if the p-value was less than 0.05, with a 95% confidence interval (CI).

2.6. Ethical Considerations

Approval from the hospital's administration was obtained before starting the study.

Data collection was conducted while ensuring anonymity and confidentiality. Informed consent was obtained from the parents beforehand.

3. Results

3.1. Descriptive Study

3.1.1. Prevalence

During the study period, 1300 patients were registered in the pediatrics department. We included 359 patients with low birth weight (LBW), representing a prevalence of 27.61%.

3.1.2. Origin

In 58% of cases (n = 208), patients were from the hospital's maternity ward, 1.3% (n = 2) came from home, and the rest were from peripheral healthcare facilities.

3.1.3. Characteristics of Mothers

- **Maternal Age**

The average maternal age was 23.66 years, with a standard deviation of 5.97, ranging from 14 to 48 years. Mothers aged under 18 years represented 31%, those aged between 20 and 35 years accounted for 62%, and those over 35 years old represented 6.6%.

- **Gravidity**

The average gravidity was 3, with a standard deviation of 2.29, and ranged from 1 to 11 pregnancies. LBW was found in 146 cases (40.75%) in women with four or more pregnancies, and in 129 cases (36%) in primigravidas.

- **Parity**

The average parity was 2.92, with a standard deviation of 2.17, and ranged from 1 to 11 deliveries. LBW was found in 126 cases (35.34%) among primiparous women and in 118 cases (33%) in women with four or more children.

- **Maternal Diseases**

A particular maternal condition was observed in 15 cases (4.17%). Hypertension was present in 8 cases (2.2%), sickle cell disease in 5 cases (1.39%), and diabetes and HIV infection (Human Immunodeficiency Virus) in 1 case each (0.28%).

3.1.4. Data on Pregnancy and Delivery

- **Prenatal Care**

The average number of prenatal visits was 2.97, with a standard deviation of 1.56, and a range from 0 to 8 visits. 4% of mothers (n = 14) had no prenatal visits, and the majority of mothers had between 1 and 3 visits, accounting for 59.7% of cases.

In our study, 271 mothers (75.28%) received iron and folic acid supplements. Tetanus vaccination was administered to 260 mothers, with 85 of them (29.72%) receiving two doses. Malaria prophylaxis was given to 123 mothers, with 32 receiving three doses (26.02%).

- **Prenatal Screening Tests**

In our study, 80 mothers (22.22%) had a prenatal screening. Among the 80 mothers who underwent the tests, the average hemoglobin level was 9.31 g/dl, with a standard deviation of 1.63, ranging from 3.30 to 13 g/dl. Severe anemia (hemoglobin level < 7) was found in 3.7% of cases (n = 3), moderate anemia in 47.5% (n =

38), and mild anemia in 22% (n = 18).

Regarding the serological tests performed, the positivity rates were 15.63% for rubella, 3.74% for HBsAg, and 1.25% for HIV.

- **Ultrasound**

Ultrasound was performed on 271 mothers in the study. The average number of ultrasounds performed was 1, with a standard deviation of 0.54, and a range from 0 to 3 ultrasounds. Only one ultrasound was performed for 193 mothers (57.78%).

Multiple pregnancies were a notable feature, with 96 cases of twin pregnancies (35.42%) and 9 cases (0.3%) of triplets.

- **Pregnancy-Related Pathologie**

Pregnancy-related pathologies were noted in 120 cases, representing 33.42%. The most common pathologies were anemia (49.57%) and gestational hypertension (21%) (Table 1).

Table 1. Distribution of low birth weight infants (LBWI) according to associated pregnancy pathologies.

Pathologie	Frequency	Percentage (%)
Anemia	59	49.57
Gestational hypertension	25	21.00
Retroplacental hematoma	9	7.5
Preeclampsia	7	5.88
Malaria	4	3.36
Placenta previa	3	2.52
Threatened preterm labor	3	2.52
Intrauterine growth restriction	2	1.68
Gestational diabetes	2	1.68
Uterine pre-rupture syndrome	2	1.68
Third trimester bleeding (Metrorrhagia)	2	1.68
Eclampsia	1	0.84
Cord prolapse	1	0.84
Total		100.00

- **Gestational Term and Mode of Delivery**

The term of pregnancy was specified in 271 cases, representing 75.48%. Prematurity was observed in 75.28% of cases (n = 204), while post-maturity was found in 5% of cases (n = 13).

A cesarean section was performed in 53 patients, accounting for 14.72%.

3.1.5. Characteristics of the Newborns

- **Sex**

The sex of the newborn was specified in 324 cases, or 90.25%. There were 164 female newborns, representing 50.62% of the cases, and 160 male newborns, rep-

resenting 49.38% of the cases. The sex ratio was 0.98.

- **Reasons for Hospitalization**

Prematurity was observed in 223 newborns, or 61.9% of cases, followed by respiratory distress in 24% of cases (n = 88) and absence of crying in 13.6% of cases (n = 49) (Table 2).

Table 2. Distribution of low birth weight infants (LBWI) according to hospitalization reasons.

Hospitalization reasons	Frequency	Percentage (%)
Prematurity	223	61.94
Respiratory distress	88	24.44
Absence of crying	49	13.61
Fever	18	5.00
Infectious risk	17	4.72
Refusal to suckle	16	4.44
Jaundice	7	1.94
Vomiting	6	1.67
Anemia	5	1.39
Intrauterine growth restriction (IUGR)	5	1.39
Post-term delivery/Post-maturity	3	0.83
Amniotic fluid aspiration	3	0.83
Weight loss	3	0.83
Transfusion syndrome (Twin-to-twin)	3	0.83

The risk of infection was defined according to the criteria of France's ANAES (National Agency for Accreditation and Evaluation in Health) and local factors: contaminated umbilical cord, delivery in unsanitary conditions or at home.

- **Screaming and APGAR Score**

The presence of a cry was recorded in 248 newborns, or 68.89%. Absence of crying was noted in 72 cases, or 29.03%.

The average APGAR score at 1 minute was 6, with a standard deviation of 1.29, ranging from 2 to 10. The average APGAR score at 5 minutes was 8, with a standard deviation of 1.29, ranging from 4 to 10.

- **Birth Weight**

The average birth weight was 1724.7 grams, with a standard deviation of 459.7, ranging from 436 grams to 2951 grams. Newborns weighing less than 1000 g represented 7.22% of cases (n = 26), those weighing between 1000 g and 1499 g represented 21.39% (n = 76), and those weighing more than 1500 g represented 71.39% (n = 257).

- **Birth Length**

The average birth length was 43.32 cm, with a standard deviation of 6.25, and ranging from 27 to 80 cm. Length was less than 40 cm in 17.5% of cases (n = 20), between 40 and 45 cm in 34% of cases (n = 39), and between 45 and 50 cm in 42% of cases (n = 42).

- **Head Circumference (HC) at Birth**

Head circumference was recorded in 107 newborns, or 29.72%. The average head circumference was 29.64 cm, with a standard deviation of 3.19, and ranging from 20 to 45 cm. The head circumference was less than 30 cm in 46.7% of cases (n = 50), between 30 and 34 cm in 46.7% of cases (n = 50), and greater than 34 cm in 6.5% of cases (n = 7).

- **Intrauterine Growth Retardation (IUGR)**

In our study, 56 patients, or 15.56%, had intrauterine growth retardation (IUGR).

- **Clinical Examination Data**
  - **Vital Signs**

Hypothermia was noted in 210 cases, or 61.40%, and hyperthermia in 6.43% of cases (n = 22). Tachycardia was noted in 9% of cases (n = 33) and bradycardia in 1.67% (n = 6). For respiration, tachypnea represented 25% of cases and bradypnea 10% (n = 37). Hypoxia was present in 37% of cases (n = 124). Hypoglycemia was present in 7% of cases (n = 23) and hyperglycemia (glucose > 2 g) in 2% (n = 7).

  - **Physical Examination**

Signs of prematurity were noted in 178 newborns, or 49.44%; respiratory distress in 172 newborns (47%); abnormal neurological behavior in 114 cases, or 31%; and a malformation syndrome in 6 newborns, or 1.67%.

- **Biological tests**

The biological tests were performed in 234 cases, or 65.18%. A positive C-reactive protein (CRP) greater than 20 mg/l was found in 69 cases, or 19.17%. Anemia was present in 28 cases, and thrombocytopenia in 35 cases, representing 7.78% and 9.72%, respectively. Leukocytosis was present in 6.7% of cases (n = 18), and leukopenia in 5.6% of cases (n = 15). Hypernatremia was found in 0.83% of cases (n = 3), hyponatremia in 0.56% of cases (n = 2). Hyperkalemia was noted in 1 case (0.28%) and hypokalemia in 2 cases (0.56%).

- **Nutritional Management**
  - **Type of Feeding**

Low birth weight newborns were fed immediately in 291 cases, or 80.84%. Breastfeeding combined with premature infant formula was predominant in 68.89% of cases (n = 248) (Figure 1).

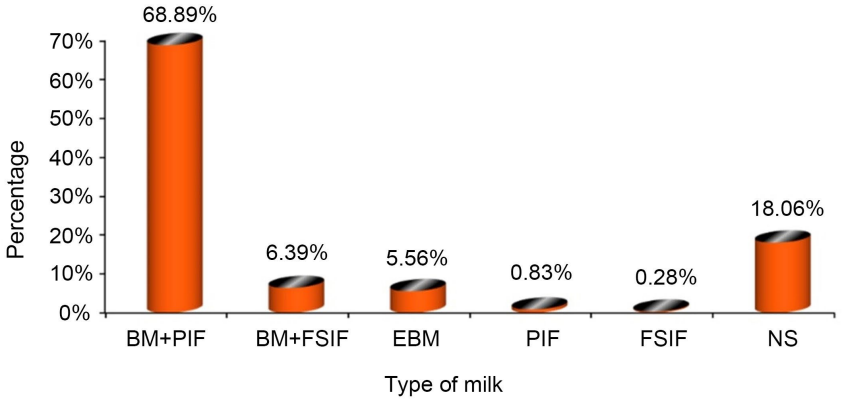

Figure 1. Distribution according to the type of feed.

- **Mode of Feeding**

Low birth weight (LBW) newborns were fed breast milk in addition to bottle-feeding in 110 cases, or 42.15%, via nasogastric tube (NGT) in 37.55% of cases (n = 98), with an initial intravenous infusion of 10% glucose serum in 8.4% of cases (n = 22), bottle feeding associated with NG tube in 3.45% of cases (n = 9), NG tube-breast and bottle feeding in 3% of cases (n = 8) and bottle feeding alone in 3% of cases (n = 8).

- **Kangaroo Care and Medication Management**
  - **Kangaroo Care**

Seventy-five LBW newborns (20.83%) benefited from kangaroo care.

  - **Oxygen Therapy and Phototherapy**

Oxygen was administered to 198 newborns (55% of cases).

LBW newborns presenting with jaundice received phototherapy in 15.56% of cases (n = 56).

  - **Antibiotherapy**

Antibiotics were started in 316 newborns, or 87.78% of cases. The most frequently used antibiotics were cefotaxime, gentamicin, and amikacin, administered in 87% (n = 316), 45% (n = 164), and 24% (n = 87) of cases, respectively. Cefixime, metronidazole, and imipenem followed with 14% (n = 50), 7% (n = 25), and 5% (n = 17) usage.

- **Evolution**
  - **Hospitalization Duration**

The average length of hospitalization was 5.13 days, with a standard deviation of 3.76, and ranging from 0 to 23 days. Hospitalization lasted less than 6 days in 76% of cases, between 7 and 13 days in 19.5% of cases, between 14 and 20 days in 4% of cases, and between 21 and 27 days in 0.68% of cases.

  - **Weight Evolution**

The average weight at discharge was 1616.6 g ± 428.5, with a median of 1633 g and a range from 1257.5 g to 1946 g. The average weight gain was 10 g/kg/day, with a median of 15 g/kg/day. Weight gain was better in newborns who received kangaroo care, with an average weight gain of 17 g/kg/day.

  - **Complications and Deaths**

In our study, 109 patients, or 30.28%, experienced complications. Jaundice was noted in 36 cases (33.03%), nosocomial infections in 22% (n = 21), severe apnea in 19% (n = 21), and septic shock in 2.75% (n = 3).

The overall mortality rate was 14.17% (n = 51).

3.2. Analytical Study

- Prematurity and birth weight

Prematurity affected 89.2% of patients weighing less than 1500 g compared to 50.6% of those weighing between 1500 - 2500 g. The analysis showed a significant difference (p = 0.01), confirming the close link between low birth weight and prematurity.

There was no statistically significant difference between the two weight groups regarding the mode of delivery and gravidity.

- **Feeding Type Supported**

Enteral feeding was provided in 25% of cases among newborns weighing less than 1500 grams, compared to 60.4% of those weighing between 1500 - 2500 grams. This difference was statistically significant with a p-value of 0.021, confirming a link between feeding type and newborn weight.

Evolution

We compared the group of newborns weighing less than 1000 g with those weighing more than 1500 g, and the group weighing between 1000 and 1499 g with those weighing more than 1500 g.

Anemia was observed in 11.8% of newborns weighing less than 1500 g, compared to 2% in those weighing between 1500 - 2500 g. This difference was significant (p = 0.03), indicating an increased risk of anemia in very low birth weight newborns.

Severe apneas affected 14.7% of newborns weighing less than 1500 g, compared to 2% of those weighing more. This difference was significant (p = 0.01), confirming the association of low birth weight with severe respiratory complications.

Nearly 15.7% of newborns weighing less than 1500 g experienced hypothermia, compared to 1.2% of those in the 1500 - 2500 g group. This difference was significant (p = 0.02), highlighting the thermal vulnerability of very low birth weight newborns.

Neonatal jaundice was reported in 16.7% of newborns weighing less than 1500 g, compared to 6.7% of those weighing between 1500 - 2500 g. This difference was significant (p = 0.008), suggesting an increased predisposition to bilirubin disorders in low birth weight infants.

In 12.7% of cases, newborns weighing <1500 g had a nosocomial infection, compared to only 1.6% of those weighing more. This difference was significant (p = 0.03), confirming the increased susceptibility to hospital-acquired infections in very low birth weight newborns (Table 3).

Table 3. Distribution of FPNs according to complications.

Variable	Category	<1000 g N (%)	1000 - 1499 g N (%)	1500 - 2499 g N (%)	p-value
Anemia	**Yes**	4 (15.4)	8 (10.5)	5 (2.0)	0.0318
	No	22 (84.6)	68 (89.5)	250 (98.0)	
Severe apnea	**Yes**	8 (30.8)	7 (9.2)	5 (2.0)	0.01
	No	18 (69.2)	69 (90.8)	250 (98.0)	
Hypothermia	**Yes**	12 (46.2)	4 (5.3)	3 (1.2)	0.02
	No	14 (53.8)	72 (94.7)	252 (98.8)	
Jaundice	**Yes**	2 (7.7)	15 (19.7)	17 (6.7)	0.008
	No	24 (92.3)	61 (80.3)	238 (93.3)	
Nosocomial infection	**Yes**	3 (11.5)	10 (13.2)	4 (1.6)	0.03
	No	23 (88.5)	66 (86.8)	251 (98.4)	

4. Discussion

4.1. Prevalence

In our study, low birth weight (LBW) was present in 27.6% of the newborns. This rate was almost identical to that found by Bagnan *et al.* in Cotonou (27%) [6]. However, it was higher than the rate found by Ramazani *et al.* in Kinshasa (13.01%) [7]. 208 cases of LBW were born in the maternity of the hospital, which could be explained by the hospital's status as a referral center but also by the difficult socio-economic conditions in the region.

4.2. Maternal Characteristics

- **Maternal Age**

The average maternal age was 23.66 years, which was lower than most of the studies found in the literature. For instance, Kain *et al.* found an average age of 26 years in Burkina Faso [8]. The age group of 19 years and younger was the most represented in our study, making up 31.25%. However, Ramazani *et al.* in Kinshasa reported a higher rate of older mothers (over 30 years), accounting for 26.1% [7]. This could be explained by the early marriages in rural areas where the median age for first marriage is 16.5 years. Adolescent mothers, who have not yet completed their growth, are more likely to give birth to low birth weight babies compared to adult mothers [3] [9].

- **Parity**

LBW was more frequent among primiparous women (35.34%). This result was consistent with the literature [7] [9] [10]. First-time mothers are at a higher risk of delivering low birth weight babies due to physiological factors, insufficient uterine adaptation, nutritional issues, and more frequent obstetric complications [7] [9].

- **Maternal Health Conditions**

In our study, hypertension was the most common maternal health condition, affecting 4.17% of the mothers. High blood pressure negatively affects placental growth by reducing blood flow to the placenta, which promotes low birth weight [11]. Diongue *et al.* found that the birth of a low birth weight newborn was significantly associated with maternal high blood pressure ($p < 0.001$) [10].

4.3. Pregnancy and Prenatal Care

- **Number of Prenatal Visits (CPN)**

In our study, 3.6% of mothers of LBW newborns had no prenatal visits. Data from other sub-regions reported much higher percentages. For instance, Ramazani *et al.* and Bwana *et al.* reported no prenatal visits in 59.2% and 45% of cases, respectively [7] [9]. The literature consistently shows that the proportion of LBW is significantly higher among mothers with inadequate prenatal care. Additionally, it is often noted that adolescent mothers receive insufficient and late prenatal care during pregnancy [12] [13].

- **Associated Pregnancy Pathologies**

In our study, 93.65% of mothers who underwent a complete blood count (CBC) had anemia. This result was higher than most reports in the literature. Elaabsi in Morocco found a much lower proportion (13.6%) [14]. Maternal anemia is strongly associated with an increased risk of LBW, particularly when it is severe or chronic during pregnancy. It compromises the supply of oxygen and nutrients to the fetus, thus affecting intrauterine growth [15] [16].

- **Type of Pregnancy**

Twin pregnancies were found in 96 cases (35.42%). Bwana *et al.* reported a lower proportion (4%) [9]. The literature indicates that women with multiple pregnancies are at higher risk of having low birth weight babies [8].

- **Term of Pregnancy**

Prematurity occurred in 75.28% of the cases. This result was higher than that found by Ramazani *et al.* in Kinshasa (70%) and Kain *et al.* in Burkina Faso (51.1%). Prematurity occurs when the fetus is still in a period of rapid growth in utero. An insufficient gestational age does not allow for normal fetal growth [9].

4.4. Characteristics of the Newborn

- **Apgar Score**

The proportion of LBW newborns with an Apgar score of 7 or higher at five minutes was 84.27%, while 15.28% had an Apgar score lower than 7. Kain *et al.* found an Apgar score lower than 7 in 4.2% of cases [8] which could be explained by differences in the availability of resuscitation resources between countries. LBW newborns are five times more likely to have a low Apgar score than those with normal birth weight [10].

- **Intrauterine Growth Restriction (IUGR)**

In our study, 56 patients (15.56%) presented with intrauterine growth restriction (IUGR). This result was lower than that found by Ramazani *et al.* in Kinshasa (29.2%) [7]. In the literature, it is described that in developing countries, where the incidence of LBW is high, the primary cause is fetal growth restriction [16].

- **Complications**

The main complications found in our study hypothermia, hypoglycemia, respiratory distress, and jaundice were reported in other African studies at similar rates. These complications are frequently present in LBW newborns and are often due to organ immaturity [7] [8] [17] [18].

4.5. Management

- **Nutritional Management**

In our study, LBW newborns were fed initially in 291 cases (80.84%). Breast milk combined with premature infant formula was the predominant method, accounting for 68.89% of the cases. Only 5.56% were fed exclusively with breast milk. This result was lower than Faye *et al.*'s study in Dakar, where 56.3% of LBW

newborns were exclusively breastfed [18]. The literature recognizes that breast milk is the ideal food for all newborns, including premature and low birth weight infants, due to its nutritional, biological, emotional, and socio-economic benefits for both the child and the family. The World Health Organization (WHO) recommends exclusive breastfeeding during the first six months of life [19].

- **Kangaroo Care**

In our study, 20.83% of LBW newborns benefited from kangaroo care during hospitalization. This result was higher than that reported in Burundi (11.04%) but lower than those reported in Benin (84.36%) and Uganda (80.86%) [20]. Kangaroo care has been shown to improve weight gain in LBW infants. As recommended by the WHO, this method should be practiced from birth without the need for prior incubation, as it improves survival, reduces infections and hypothermia, and promotes breastfeeding [19].

- **Weight Evolution**

In our study, LBW newborns showed moderate weight improvement during their hospital stay. The average weight gain was 10 g/kg/day, which was lower than the 15.3 ± 9.08 g/kg/day found by Faye *et al.* in Dakar [18]. The weight gain was better in newborns who received kangaroo care, with an average weight gain of 17 g/kg/day, which supports the WHO recommendation.

5. Conclusions

Low birth weight (LBW) remains a major public health issue, with multiple and often avoidable determinants. Our results align with findings from other developing countries, particularly in Sub-Saharan Africa, where factors such as multiple births, inadequate prenatal care, and maternal socio-economic status play a significant role. Limited access to healthcare in rural areas is a barrier not only to prevention but also to care, as illustrated by the low implementation of Kangaroo Mother Care (KMC) despite its proven effectiveness in resource-limited settings.

To reduce the incidence of LBW and improve neonatal survival in Senegal, it is imperative to:

- Strengthen prenatal care in rural areas for the early detection of high-risk pregnancies.
- Promote low-cost but impactful interventions, such as Kangaroo Mother Care, by involving more community health workers.
- Enhance continuous training for healthcare staff in nutrition and neonatal care.

The fight against low birth weight requires an integrated approach that combines improving women's living conditions with strengthening local healthcare systems.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding the publication of this article.

References

[1] World Health Organization (2024) Low Birthweight: Country, Regional, and Global Estimates. WHO.

[2] World Health Organization (2022) Recommendations on Interventions to Improve Preterm Birth Outcomes and Care for Low Birthweight Infants. InfoAllaitement.

[3] Agence Nationale de la Statistique et de la Démographie (ANSD) and Fonds des Nations Unies pour l'Enfance (UNICEF) (2025) Health Profile of Mothers, Newborns, and Children, Senegal. ANSD. https://ewene.org/wp-content/uploads/2025/01/FR_SENEGAL.pdf

[4] Institut National de la Santé et de la Recherche Médicale (INSERM) (2022) Prematurity and Low Birthweight: Current Status and Therapeutic Perspectives. INSERM. https://www.inserm.fr/dossier/prematurite/

[5] Médecins Sans Frontières (2009) Care for Newborns with Low Birthweight (< 2500 g). MSF. https://medicalguidelines.msf.org/fr/viewport/ONC/francais/10-5-soins-du-nouveau-ne-de-petit-poids-de-naissance-2500-g-51418378.html

[6] Aboubakar, M., Obossou, A.A.A., Tognifode, V.M., Eteka, C.A.S., Gnonlonfoun, D.D., Bagnan-Tonato, A., *et al.* (2021) Risk Factors of Low Birth Weight in Cotonou (Benin). *Obstetrics & Gynecology*, 11, 1-4.

[7] Ramazani Bongolu, B., Ramazani Tabora, J. and Shongo Onasaka, L. (2023) Prevalence and Factors Associated with Low Birthweight at the Provincial General Reference Hospital of Kinshasa. *African Journal of Gastroenterology and Hepatology*, **41**, 76-87.

[8] Kain, D.P., Zamane, H., Sawadogo, Y.A., Bonkoungou, P.E., Ouedraogo, C. and Thieba, B. (2022) Low Birthweight: Epidemiological Aspects and Neonatal Prognosis at CHU Bogodogo, Burkina Faso. *J SAGO*, **23**, 13-18.

[9] Kangulu, I.B., Ngoy, E.K., Nzaji, M.K. and Kalenga Mwenze, P. (2014) Facteurs de risque de faible poids de naissance en milieu semi-rural de Kamina, République Démocratique du Congo. *Pan African Medical Journal*, **17**, Article 220. https://doi.org/10.11604/pamj.2014.17.220.2366

[10] Diongue, M., Mangane, A., Bassoum, O., Leye, M.M.M., Diallo, I., Sougou, M., Tine, A., Diagne, M. and Seck, I. (2020) Study of Risk Factors for Low Birth Weight in the Kolda Health District in 2018 (Senegal). *RAMReS2S*, **1**, 180-190.

[11] Sato, N., Fudono, A., Imai, C., Takimoto, H., Tarui, I., Aoyama, T., *et al.* (2021) Placenta Mediates the Effect of Maternal Hypertension Polygenic Score on Offspring Birth Weight: A Study of Birth Cohort with Fetal Growth Velocity Data. *BMC Medicine*, **19**, Article No. 260. https://doi.org/10.1186/s12916-021-02131-0

[12] Blondel, B., Dutilh, P., Delour, M., *et al.* (1993) Pregnancy Outcomes in Women with Very Low Surveillance. *Bulletin épidémiologique hebdomadaire*, 83-84.

[13] Camara, B., Diack, B., Diouf, S., *et al.* (1996) Frequency and Risk Factors for Low Birthweight in the Guédiawaye District (Suburbs of Dakar, Senegal). *Médecine d'Afrique noire*, **6**, 260-265.

[14] Elaabsi, M., Loukid, M. and Lamtali, S. (2022) Cross-Sectional Study of Factors Associated with Low Birthweight in the Marrakesh Region (Morocco). *PAMJ One Health*, **9**, Article 7. https://www.one-health.panafrican-med-journal.com/content/article/9/7/full/

[15] Belete, N.K., Belete, A.G., Assefa, D.T., Sorrie, M.B. and Teshale, M.Y. (2025) Effects of Maternal Anemia on Low-Birth-Weight in Sub-Sahara African Countries: Systematic

Review and Meta-Analysis. *PLOS One*, **20**, e0325450. https://doi.org/10.1371/journal.pone.0325450

[16] Rizvi, S.A., Hatcher, J., Jehan, I. and Qureshi, R. (2007) Maternal Risk Factors Associated with Low Birth Weight in Karachi: A Case-Control Study. *Eastern Mediterranean Health Journal*, **13**, 1343-1352. https://doi.org/10.26719/2007.13.6.1343

[17] Cordeiro, R.C.O., Ferreira, D.M.D.L.M., Reis, H.D., Azevedo, V.M.G.D.O., Protázio, A.D.S. and Abdallah, V.O.S. (2022) Hypothermia and Neonatal Morbimortality in Very Low Birth Weight Preterm Infants. *Revista Paulista de Pediatria*, **40**, e2020349. https://doi.org/10.1590/1984-0462/2022/40/2020349

[18] Faye, P.M., Thiongane, A., Diagne-Guèye, N.R., Ba, A., Gueye, M., Diouf, S., *et al.* (2016) Les soins kangourou pour nouveau-nés de faible poids de naissance au centre hospitalier national d'enfants Albert-Royer de Dakar. *Archives de Pédiatrie*, **23**, 268-274. https://doi.org/10.1016/j.arcped.2015.12.010

[19] World Health Organization (2024) WHO Recommendations for Care of Preterm or Low Birthweight Infants. World Health Organization.

[20] Lawal, T.V., Lawal, D.I. and Adeleye, O.J. (2023) Determinants of Kangaroo Mother Care among Low-Birth-Weight Infants in Low Resource Settings. *PLOS Global Public Health*, **3**, e0002015. https://doi.org/10.1371/journal.pgph.0002015