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Original Quantitative Article

Factors associated with low birth weight in children of mothers participating in the Preschool Consultation in the Ibanda /Bukavu health district. Democratic Republic of Congo.

Factores asociados con el bajo peso al nacer en niños de madres que participan en la Consulta Preescolar en el distrito de salud de Ibanda, Bukavu. República Democrática del Congo.

Facteurs associés au faible poids à la naissance chez les enfants de mères participant à la Consultation Près Scolaire dans le District de Santé d'Ibanda, Bukavu. DR Congo.

Fatores associados ao baixo peso ao nascer em crianças de mães participantes da Consulta Pré-Escolar no Distrito de Saúde de Ibanda, Bukavu. RD Congo.

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Factores asociados con el bajo peso al nacer en niños de madres que participan en la Consulta Preescolar en el distrito de salud de Ibanda/Bukavu. República Democrática del Congo.

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ABSTRACT

Introduction: Babies born with low birth weight are standard and are defined by the WHO as having a birth weight of less than 2500 g. Therefore, identifying modifiable risk factors is necessary to achieve interventions that improve the survival of these children. This study aims to identify the factors associated with low birth weight in the Ibanda health district. **Methodology:** A case-control study of retrospective analysis was carried out on 213 mothers of children between one and a half and four months who attend preschool councils of health centers in Ibanda. The sample comprises 71 cases (birth weight <2500g) and 142 controls (birth weight≥2500g). Data were obtained in a questionnaire-based interview format. Data collection focused on maternal and child characteristics. **Results:** The significant factors associated with low birth weight in our study environment are: not attending prenatal care visits (OR=4.66; 95% CI: 1.45 - 14.99), a history of anemia in the mother during the 2nd or 3rd trimester (OR=3.99 95%CI: 1.73 - 9.19) and alcohol consumption during pregnancy (OR=3.7; 95% CI: 1.93–7.08). **Conclusion:** Our results are similar to those found in previous studies that focused on factors such as not using prenatal care, history of anemia in the mother in the 2nd or 3rd trimester, and alcohol consumption during pregnancy.

Keywords: Ibanda; Low weight; Associated factors.

RESUMEN

Introducción: *Los recién nacidos con bajo peso son frecuentes, y son definidos por la Organización Mundial de la Salud por tener un peso al nacer inferior a 2500 g. Por lo tanto, la identificación de los factores de riesgo modificables es necesaria para conseguir intervenciones que mejoren la supervivencia de estos niños.* ***Objetivo:*** *identificar los factores asociados al bajo peso en nacimientos del distrito sanitario de Ibanda.* ***Metodología:*** *Un estudio de casos y controles de análisis se llevó a cabo en 213 madres de niños entre un mes y medio y cuatro meses que frecuentan centros de salud de Ibanda. La muestra comprende 71 casos (peso al nacer <2500g) y 142 controles (peso al nacer ≥2500g). Los datos se obtuvieron a partir de la implementación de un cuestionario. La recolecta de datos se enfocó en las características maternas e infantiles.* ***Resultados:*** *Los factores significativos asociados al bajo peso al nacer en actual medio de estudio son: no asistir a las visitas de atención prenatal (OR=4,66; IC95%: 1,45 - 14,99), el historial de anemia en la madre durante el segundo o tercer trimestre (OR=3,99 IC95%: 1,73 - 9,19) y el consumo de alcohol durante el embarazo (OR=3,7; IC95%: 1,93–7,08).* ***Conclusión:*** *Los actuales resultados son similares a los encontrados en estudios previos que se centraron en factores como no realizar una adecuada atención prenatal, antecedentes de anemia en la madre en el segundo o tercer trimestre, consumo de alcohol durante el embarazo.*

Palabras clave: *Ibanda; Bajo peso; Factores asociados.*

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RÉSUMÉ

Introduction: *les nourrissons de faible poids à la naissance sont fréquents à terme et sont définis par l'OMS comme ayant un poids à la naissance inférieur à 2 500 g. Par conséquent, l'identification des facteurs de risque modifiables est nécessaire pour concevoir des interventions susceptibles d'améliorer la survie de ces enfants. Le but de cette étude était d'identifier les facteurs associés au faible poids à la naissance dans le district sanitaire d'Ibanda.* ***Méthodologie****: une étude cas-témoin d'analyse rétrospective a été menée auprès de 213 mères d'enfants âgés de 1 mois et demie à 4 mois fréquentant des conseils préscolaires dans divers centres de santé d'Ibanda. L'échantillon comprenait 71 cas (poids de naissance <2500 g) et 142 témoins (poids de naissance ≥2500 g). Les données ont été recueillies dans un format d'entrevue basé sur un questionnaire. La collecte de données s'est concentrée sur les caractéristiques maternelles et infantiles.* ***Résultats:*** *les facteurs significativement associés à l'insuffisance pondérale à la naissance dans notre milieu d'étude étaient: la non fréquentation des visites de soins prénatals (OR=4,66; IC95%: 1,45 - 14,99), l'antécédent d'anémie chez la mère au 2ème ou 3ème trimestre (OR=3,99 IC95%: 1,73 - 9,19) et la consommation de l'alcool pendant la grossesse (OR=3,7; IC95%: 1,93–7,08).* ***Conclusion:*** *nos résultats sont similaires à ceux retrouvés par les études antérieures qui ont mis l'accent sur les facteurs comme le non recours aux soins prénatals), l'antécédent d'anémie chez la mère au 2ème ou 3ème trimestre, la consommation de l'alcool pendant la grossesse.*

Mots-clés: *Ibanda; Insuffisance pondérale; Facteurs associés*

RESUMO

Introdução: *Bebês com baixo peso ao nascer geralmente são a termo, e a OMS define como aqueles com peso ao nascer inferior a 2.500 g. Isso tem graves consequências para o futuro dos recém-nascidos que sofrem dessa condição. Portanto, a identificação de fatores de risco modificáveis é necessária para projetar intervenções que possam melhorar a sobrevivência dessas crianças. O objetivo deste estudo é identificar os fatores associados ao baixo peso ao nascer no distrito de saúde de Ibanda.* ***Metodologia:*** *Foi realizado um estudo retrospectivo de casos e controles com 213 mães de crianças de 1,5 a 4 meses de idade que participaram de aconselhamento pré-escolar em vários centros de saúde de Ibanda. A amostra incluiu 71 casos (peso ao nascer <2500 g) e 142 controles (peso ao nascer ≥2500 g). Os dados foram coletados em um formato de entrevista baseado em um questionário. A coleta de dados concentrou-se nas características maternas e infantis.* ***Resultados:*** *Os fatores associados significativamente ao baixo peso ao nascer em nosso meio de estudo foram: não comparecimento às visitas de controle pré-natal (OR=4.66; IC 95%: 1.45 – 14.99), histórico de anemia na mãe no 2º ou 3º trimestre (OR= 3.99 IC 95%: 1.73 – 9.19) e consumo de álcool durante a gravidez (OR=3.7; IC 95%: 1.93-7.08).* ***Conclusão:*** *Os resultados são semelhantes aos encontrados em estudos anteriores que se concentraram em fatores como a falta de uso de cuidados pré-natais, histórico de anemia na mãe no 2º ou 3º trimestre, e consumo de álcool durante a*

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gravidez. O objetivo deve ser a detecção e o manejo de fatores modificáveis, cuidados pré-natais adequados e a implementação da prevenção primária e secundária da morbidade materna.

Palavras-chave: *Ibanda; Baixo peso; Fatores associados.*

INTRODUCTION

Birth weight is the first measurement of a newborn's weight immediately after birth. It is one of the few indicators available to assess the health status of newborns in developing countries [1]. Birth weight is one of the most critical developmental indicators and a significant determinant of newborns and infants' average growth, development, and survival [2]. Important food for maternal and fetal health and nutrition [3]. Low birth weight (LBW) means a birth weight less than 2500 g [4, 5]. Low birth weight infants constitute a significant public health problem due to their impact on childhood morbidity, mortality, and adult health. The causes of low birth weight are varied and can be genetic or environmental.

The prevalence of babies with low birth weight was 15% worldwide in 2015. This varies by country, from 7 in developed countries to 20 in some developing countries [6]. The prevalence of low birth weight infants varies by WHO region. Europe (8%); East Asia and the Pacific (8%); Latin America (9%); Sub-Saharan Africa (14%); South Asia (27%). In 2015, 20 million cases were recorded worldwide, of which 96.5 million occurred in developing countries [7]. By country, UNICEF reported 8% in the United States, 7% in Germany and France, and 6% in the Russian Federation [7]. In the Democratic Republic of the Congo, it was estimated at 11% in 2015 [7] but fell to 7.1% in 2017 [8]. Low birth weight infants are responsible for 60% to 80% of neonatal deaths worldwide [9]. Strong short-term associations between low birth weight and fetal and neonatal mortality and infant morbidity have been reported [10].

Infants whose birth weight is less than 2.5 kg are at greater risk of dying in infancy or developing psychomotor disorders later in life than infants with average birth weight. Babies with low birth weight had lower IQs than children with average weight [11]. Other studies have shown that children with low weight for their gestational age have a higher risk of developing type 2 diabetes in adulthood [12]. Low birth weight is a complex problem with severe implications for the future of newborns since it directly or indirectly affects infant morbidity and mortality. This means exploring modifiable etiologies to develop interventions that improve the life outcomes of these children. This study identified factors associated with low birth weight among newborns in Ibanda Health District, Bukavu City.

METHOD

Our research was carried out between September and December 2022 in the Ibanda urban health zone, Bukavu city, capital of South Kivu province, eastern Democratic Republic of Congo. The city of Bukavu, which extends over 60 km2, is located at -2.517° south latitude, 28.83° longitude and

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enjoys a humid mountain climate with average temperatures of 15°C in the rainy season (December to mid-May) and 25°C in the dry season (from mid-May to August). Bukavu is a mountain town with an altitude range between 1500 m (on Lake Kivu) and 2190 m [13]. The Ibanda health zone occupies an area of approximately 11.57 km2 and is divided into three districts and twelve cells; its population was estimated at 524,185 people in 2022 [14,15].

Population and sample: The study focused on mothers with children aged 6 to 10 weeks enrolled in preschool clinics in 17 health facilities in the health district. To calculate the sample size, the formula n= Z2 *p*(100-p) /i2 was used [16], where p is the expected prevalence rate of low birth weight, Z is the value associated with the risk of error, and i is the desired level of precision in the estimate. The smallest sample size was estimated at 101.58 with a prevalence of p=7.1% [8], a risk of error of 5% (Z=1.96), and a precision of 5%. We doubled this size to 203 mother-child pairs, i.e., 71 cases for 142 controls, to increase the statistical power of the tests and consider the impact of two controls per case.

Variables: The independent variables of the study included sociodemographic characteristics of the mother (age, level of education, marital status, religion, and occupation); your life choices (drugs, alcohol); their pregnancies and births (number of pregnancies, number of births, number of abortions, parity, prematurity, duration of pregnancy and space between pregnancies); low birth weight and prematurity.

Data collection: Cases were defined as any mother-infant pair in which the child was born weighing less than 2500 g, and infants weighing 2500 g or more served as controls. Data was collected at the health center level, first identifying cases and then searching for controls that looked like them. The questionnaire was administered indirectly as a guided interview, in which the interviewer asked the questions and recorded the participant's responses on the answer sheet. The survey collected information on factors related to prenatal care (frequency of visits and total number of visits), anemia, urinary tract infection, high blood pressure, and diabetes.

Data analysis: The relationships were examined using the Chi2 test at the 5% threshold after describing the qualitative and quantitative variables in percentages and mean. Data were analyzed using EPI-INFO software version 7.2.5. Relationships were examined using the Chi2 test at the 5% level. Each independent variable in the bivariate analysis was compared with the dependent variable, represented by newborn weight, after being dichotomized into total and average birth weights. Comparisons between cases and controls were used to identify factors associated with low birth weight, and the odds ratio (OR) 95% confidence interval was calculated. Independent factors significantly related to underweight in the bivariate analysis were tested using a logistic regression model at the same level.

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RESULTS

Sociodemographic data of the subjects.

Among the cases studied, the most numerous were children, children over three months old, and people in the top three positions in the fraternity. According to the mother, the highest proportions were among people aged 20 to 29, married, with a secondary education, Catholic, or working part-time. The results are presented in Table 1.

The genetic history of mothers

Most women had already given birth to at least three children and had between one and three children. Premature birth occurred in one in twenty pregnancies, and abortion occurred in 15% of cases. Only 40% of prenatal visits were carried out as planned. This information is presented in Table 2.

In comparison, the prevalence of NPF was higher among women in a marital relationship than among single women ($p = 0.02$). However, as shown in Table 3, parent's age, educational level, and professional status were not significantly associated with NPF.

No statistically significant differences regarding genetic and familial precursors exist between the exposed and non-exposed groups. However, these factors function as safeguards against insufficiency despite their unimportance. This is supported by the fact that when a mother has had a premature birth, there is a probability of 0.19 that the child will be born with insufficient development weight ($p = 0.035$). The results are presented in Table 4 below.

An episode of anemia in the second or third trimester of pregnancy increases the probability of having a low-weight child four times ($p = 0.001$). In comparison, alcohol consumption increases three and a half times (p 0.001). Table 5.

DISCUSSION

Genetic history of mothers.

Birth weight is a good indicator of maternal health and nutritional status, as well as survival, growth, health, and potential for psychosocial development [17, 18]. In the Democratic Republic of Congo, the prevalence of low birth weight was 7.1% nationally and 5.6% in South Kivu [8]. Our retrospective case-control study in the Maternal and Child Health Service did not allow us to determine this prevalence. The risk factors for low birth weight infants are well known, but studies have shown that they vary considerably by geographic location and population studied [19]. A bivariate analysis of this study revealed that between low birth weight and low educational level, narrow birth space, participation in prenatal care, and poor birth history. A statistically significant association was found. Body weight, parental history of premature birth, anemia, maternal alcohol consumption during pregnancy.

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Distribution of birth weight according to the characteristics of the subjects.

These results highlight the role of maternal biological and behavioral factors in the etiology of low birth weight in infants. Biological and social predictors such as maternal age, parity, marital status, and social class are often emphasized in the etiology of low birth weight [20]. In our study, the frequency of low birth weight babies was higher among mothers with short birth intervals (38.8%) than among mothers with regular birth intervals (20%). Physiologists agree that women need at least 18 months of rest after childbirth to allow their bodies to build up reserves to replenish pregnancy needs.

Bivariate and multivariate analysis of factors associated with low weight.

However, the short time to replenish reserves prevents women from doing so, leaving them exposed to the birth of children. Several studies have shown that illiteracy influences the development of health problems. Mainly because it is challenging to understand appointment information, medical consent forms, and health education documents, or they tend to rely more on the advice of family and friends than on doctor's orders, which often leads to complications [21]. In our study, the incidence of low birth weight babies was 55.3% among low-educated populations and 27.1% among high-educated populations. Other authors reported similar results and found that uneducated women were four times more likely to give birth to low birth weight babies than highly educated couples [22,23].

Studies have shown that babies born to first-time mothers weigh less than those born to multiparous mothers. The authors agree that the increased risk of low birth weight in adolescents compared to older women is due to the competing nutritional needs of the developing fetus and the young mother, as well as the inefficiency of placental functions at this stage of life [24]. Bwana K (2014) found that the prevalence of low birth weight was significantly higher among newborns of mothers under 20 years of age and gradually decreased with the woman's age [25]. This same observation was reported by Letaief (2001) in Tunisia [26]. However, in our study, older mothers had low birth weight births, 34.5% compared to 22.7% of mothers under 20 years of age, and the difference was not statistically significant. These non-significant differences may be related to sample fluctuations.

Another surprising result is the proportion of low birth weight babies among women who begin reproductive life (24.5%) compared to those who already have more pregnancies (34.5%). This result contradicts the conclusions of Luhete PK (2015). Babies born to first-time mothers were statistically lighter than those born to multiparous women [27]. Regarding the sex of the child, 34.5% of the boys in this study and 32.2% of the girls were underweight, but the difference was not statistically significant (p=0.770). On the other hand, Letaief M. et al. found that female sex was significantly associated with the occurrence of birth weight in a study conducted in the Monastir region of Tunisia between 1995 and 1997 [26].

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Regarding the use of prenatal care services, mothers who did not receive prenatal care were approximately five times more likely to give birth to a low birth weight child. Women's access to prenatal care allows them to monitor the progress of their pregnancy and detect and treat pregnancy-related medical problems. Prenatal care will also enable mothers to access preventive interventions such as prophylactic malaria treatment, anemia prevention through iron and folate, and nutritional education to prevent dietary deficiencies or excesses [27].

Prenatal care helps to detect and treat chronic diseases such as hypertension and anemia, provide nutritional advice during pregnancy, and prepare the family for childbirth [28]. They also effectively prevent several diseases, such as intestinal helminthiasis, vitamin A deficiency, neonatal tetanus, and maternal hygiene education [29]. Our results are similar to those found in other studies [22].

Bivariate and multivariate analysis of factors associated with low weight.

A higher proportion of low birth weight babies was observed in babies born to mothers who developed anemia during pregnancy. Anemia in pregnant women quadruples the risk of having low birth weight newborns. Physiologically, studies have shown that anemia-induced hypoxia causes intrauterine growth retardation, resulting in low birth weight [30]. Samira revealed that the risk of having a low birth weight birth rate was eight times higher in women who suffered from anemia during pregnancy than in women who did not suffer from it [31].

Other studies have found an association between maternal hypertension during pregnancy and the occurrence of low birth weight. However, this association between hypertension and low birth weight was not established in our study. This may suggest a minor hypertensive crisis in the mothers in our sample. However, Fatima observed that the proportion of children with low birth weight was higher (8.12%) among hypertensive mothers than among those with average blood pressure values (1.62%) [32]. Although not statistically significant, diabetes had a protective effect against low birth weight (OR = 0.39; p = 0.38).

On the other hand, this study also showed that obesity is a protective factor. This may be because obese women have a higher risk of developing high blood sugar and diabetes (gestational diabetes or type II diabetes)—increased fetal weight gain. Smoking after the fourth month of pregnancy was found to be a risk factor regardless of the number of cigarettes smoked per day, a finding consistent with previous studies. In this context, Fleisch et al. (2017) found that smoking during pregnancy was a factor associated with the risk of various obstetric complications, perinatal mortality, prematurity, and low birth weight [16].

CONCLUSIONS

Statistical analyses identified several factors associated with low birth weight, many of which are preventable, consistent with findings from previous research. These modifiable factors require implementing interventions capable of effectively countering this silent epidemic. One of the most

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urgent potential interventions is educating obstetricians on identifying these risk factors. Health workers and communities should strengthen messages to educate young people about the harmful effects of tobacco and alcohol on reproductive health, particularly the need for prenatal visits. Primary and secondary interventions to prevent maternal morbidity are a potential source of reducing the incidence of low birth weight and should be a priority for pregnancy management professionals.

INTEREST CONFLICT

No conflicts of interest declared.

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APPENDIX

Table 1: Sociodemographic characteristics of the subjects, Bukavu-RDC, 2023

Identification variables	Effective	Percentages
Child's age		
2 to 3 months	86	40.3
4 to 6 months	127	59.7
Child's gender		
Female	99	46.5
Male	114	53.5
Rank in siblings		
1 – 3	130	61
4 – 6	70	32.9
7 – 9	13	6.1
Low birth weight		
Yes	71	33.3
No	142	66.7
Mother's age		
16-19	22	10.3
20-29	138	64.8
30-39	44	20.7
40-49	9	4.2
Civil status		
Single woman	18	8.5
Married	169	79.3
Separated-Divorced	26	12.2
mother's education		
Primary	47	22.1
Secondary	116	54.5
Superior	50	23.5
Religion		
Catholic	111	52.1
Kimbanguiste	2	0.9

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Muslim	2	0.9
Non-practitioner	7	3.3
Protestant	81	38
Witnesses	10	4.7
Profession		
Sales	21	9.9
Public function	20	9.4
Independent	21	9.9
Housewife	46	21.6
NGO	17	8
Small businesses	88	41.3

Table 2: Reproductive history of respondents and attendance at CPN, Bukavu-RDC, 2023

Reproductive history assistance to the CPN	Effective	Percentages
Gestation		
Primipara	53	24.9
Pauciparous	100	46.9
Multiparous	60	28.2
Parity		
1-3 births	128	60.1
3-6 births	72	33.8
7-11 births	13	6.1
She has already had at least one abortion.		
Yes	32	15
No	181	85
Have you ever had a premature birth?		
Yes	11	5.2
No	202	94.8
The pregnancy was wanted		
Yes	177	83.1
No	36	16.9
The pregnancy came to term		

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Yes	211	99.1
No	2	0.9
CPN Assistance		
Yes	195	91.5
No	18	8.5
0-2 CPN	122	57.3
3-4 CPN	91	42.7

Table 3. Low birth weight/sociodemographic characteristics, Bukavu-DRC, 2023

Sociodemographic and reproductive characteristics of the subjects	PPN %	Normal weight %	Total	Chi2	p-value	OR	95%CI	PRAY	95%CI	p-value
Mother's age										
16 – 19 years	22.7	77.3	22	1.24	0.265	0.94	0.61-1.45			
20 to 39 years	34.5	65.5	191							
Gender of the infant										
Male	39	34.2	114	0.09	0.77	1.09	0.61-1.93			
Female	32	32.2	99							
Scholarship										
Primary	55.3	44.7	47	13.12	0.0003	3.33	1.70-6.50	2.08	1.04-4.32	0.048
Secondary+Sup	27.1	72.9	166							
Civil status										
Only	27.3	72.7	44	0.92	0.338	0.69	0.35-1.48			
marital union	34.9	65.1	169	1						
CPN Assistance										
No	72.2	27.8	18	13.38	0.0003	6.14	2.09-18.02	4.6	1.51-14.02	0.007
Yes	29.7	70.3	195	1						
Total	71	142	213							

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Table 4. Birth weight and reproductive and family history of women, Bukavu-DRC, 2023

Reproductive history and family history.	PPN	P.N.	Total	Chi2	p-value	OR	95%CI	PRAY	95%CI	p-value
	%	%								
Rank in siblings										
1st to 5th	33.5	66.5	185	0.021	0.886	1.06	0.45-2.49			
6th to 9th	32.1	67.9	28			1				
Gestation										
Primipara	24.5	75.5	53	2.46	0.117	0.57	0.28-1.15			
Multiparous	36.3	63.7	160			1				
Parity										
6 to 11 births	32.1	67.9	28	0.021	0.885	0.94	0.40-2.2			
1 to 5 births	33.5	66.5	185			1				
have had abortions										
Yes	46.9	53.1	32	3.11	0.078	1.97	0.92-4.22			
No	30.9	69.1	181			1				
Have had premature babies										
Yes	36.4	63.6		0.048	0.827	1.15	0.32-4.07			
No	33.2	66.8	202			1				
Desired pregnancy										
No	22.2	77.8	36	2.4	0.121	0.52	0.22-1.20			
Yes	35.6	64.4	177			1				
Interreproductive space										
Short	38.8	61.2	121	4.32	0.038	3.17	1.02-9.87	2.73	0.84-8.85	0.094
Acceptable	20	80	20			1				
PPN in the relative										
Yes	11.5	88.5	26	6.33	0.012	0.22	0.07-0.78	0.19	0.04-0.89	0.035
No	36.4	63.6	187			1				
Prematurity in the relative.										
Yes	58.3	41.7	24	7.61	0.006	3.24	1.36-7.73	2.9	0.90-9.39	0.074
No	30.2	69.8	189			1				

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Table 5: Results of the bivariate and multivariate analysis of factors associated with low birth weight/Women's morbidity during pregnancy, Bukavu-RDC, 2023

Morbidity during pregnancy	PPN	Normal weight	Total	Chi 2	p-value	GOLD	95%CI	PRAY	95%CI	p-value
	%	%								
Malaria in the 2nd or 3rd trimester				1.97	0.16	1.52	0.84-2.72			
Yes	39.2	60.8	79							
No	29.9	70.1	134							
Anemia in the 2nd or 3rd trimester				8.89	0.003	3.11	1.44-6.69	3.99	1.73-9.19	0.001
Yes	58.1	41.9	31							
No	29.3	70.7	181							
STIs in the 2nd or 3rd trimester				1.96	0.161	1.54	0.84-2.81			
Yes	36.8	63.2	80							
No	27.5	72.5	133							
High blood pressure during pregnancy				2.03	0.154	1.63	0.83-3.20			
Yes	42.2	57.8	45							
No	31	69	168							
Diabetes				0.77	0.379	0.39	0.04-3.41			
Yes	16.7	83.3	6							
No	33.8	66.2	207							
Alcohol during pregnancy				15.14	0.0001	3.33	1.79-6.20	3.7	1.93-7.08	0.000
Yes	44.8	55.2	116							
No	19.6	80.4	97							
Self-medication				3.25	0.073	1.79	0.94-3.39			
Yes	43.4	56.6	53							
No	30	70	160							

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To the editorial committee of the Medical and Life Sciences Journal

Article title: Factors associated with low birth weight in children of mothers participating in the Preschool Consultation in the Ibanda /Bukavu health district. Democratic Republic of Congo.

Name of author(s): Vincent Witumbula-Katambwe, Angélique Ruchinga, Prudent Mituga-Ngabe, Fideline Nabintu-Tchombe, Alice Bulambo-Kulilwa, Victor Kubali-Mwisa

The authors of this work undertake to comply with the following standards:

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Authors' contribution

Vincent Witumbula Katambwe and Angélique Ruchinga are the article designers and literature design.
Mituga Ngabe Prudent and Nabintu Tchombe Fideline, field data collectors.
Alice Bulambo Kulilwa, analyzed the data.
Kubali Mwisa Victor, article format for publication.