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ORIGINAL RESEARCH

Low Birth Weight and Associated Factors Among Newborn Babies in Health Institutions in Dessie, Amhara, Ethiopia

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Background: Globally, more than 20.5 million infants are born with low birth weight, and the majorities were from Asia and Africa. Even though efforts were made to reduce low birth weight worldwide, it remains a global public health problem, especially in sub-Saharan Africa.

Objective: To assess low birth weight and associated factors among newborn babies in health institutions in Dessie, Amhara, Ethiopia.

Methods: An institution-based cross-sectional study was conducted among 358 newborn/mother pairs from March 1 to April 15, 2017, in Dessie town health institutions. The data were collected using a semi-structured interviewer-guided questionnaire. The numbers of newborn/mother pairs surveyed from each health institution were allocated proportionally, and systematic random sampling was used to select the respondents. Epi-info version 7.0 was used for data entry, and Statistical Package for Social Sciences version 20 was used for the analysis. Multivariate logistic regression with adjusted odds ratios and 95% confidence intervals were used to identify significantly associated variables with low birth weight.

Results: In this study, the prevalence of low birth weight was 15.6%. Maternal age <20 years (AOR: 3.78, 95% CI, 1.02–13.97), rural residence (AOR: 3.49, 95% CI, 1.48–8.24), having antenatal care follow-up (AOR: 3.79, 95% CI, 1.08–13.23), gestational age <37 weeks (AOR: 3.82, 95% CI, 1.55–9.42), and females (AOR: 3.37, 95% CI, 1.17–9.72) were significantly associated with low birth weight.

Conclusion: The proportion of LBW in this study is comparable to the estimated global prevalence. Maternal age, residence, antenatal care, gestational age, and sex were significantly associated variables with low birth weight. Therefore, special attention should be given to antenatal care services and preventive strategies for preterm delivery.

Keywords: birth weight, low birth weight, non-low birth weight, newborn, Ethiopia

Introduction

According to the World Health Organization (WHO), low birth weight (LBW) is a birth weight of < 2500 grams irrespective of gestational age.[1] Overall, it is estimated that 17.5% of births worldwide are LBW.[2] In 2015, an estimated 20.5 million live births were LBW, and 91% were from low and middle-income countries, mainly Southern Asia (48%) and sub-Saharan Africa (24%).[2]

Newborns with LBW are more likely to die prematurely compared to normal birth weight newborns. Some epidemiological observations revealed that infants born under-weight are 20 times more likely to die compared with normal-weight

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babies.[3,4] Likewise, LBW babies experience more morbidity, both in the short and long term. Among these, respiratory distress, sleep apnea, heart problems, jaundice, anemia, chronic lung disorders, mental retardation, and cerebral palsy are the morbidities related to LBW newborns.[5,6]

Major risk factors associated with LBW are young mothers (< 20 years), maternal body mass index < 18 kg/m2, rural residence, non-pregnant weight, primipara, previous histories of adverse birth outcomes, preterm delivery, history of delivering a preterm or small baby, premature rupture of membranes, maternal hypertension during pregnancy, anemia during pregnancy, presence of chronic medical illness, access to media (Television and Radio), lack of formal education, absence of antenatal care (ANC) follow-up, low socioeconomic status, prenatal exposure to ambient inhalable particle, and indoor parental smoking.[4,7–14]

Even though efforts were made to reduce the incidence of LBW worldwide, it remains a global public health problem, especially in sub-Saharan Africa.[15] In low-income countries where insufficient resources are allocated for health care services, the burden of LBW constitutes a significant public health issue. Likewise, in Ethiopia, LBW is a major public health problem. Even though only 14% of children in Ethiopia are weighted, different studies showed that the prevalence of LBW ranges from 6.3% - 32.1%.[3,9,16–18]

Globally, there is a 30% reduction plan in the number of LBW live births compared to a baseline set in 2006–2010.[19] To achieve this plan, epidemiological data on the magnitude and associated factors of LBW had a significant contribution to plan maternal and newborn care services.[7] However, there is no study conducted in this regard in Dessie town health facilities. Therefore, this study aims to assess LBW and associated factors among newborn babies in Dessie town health institutions.

Methods

Study Setting, Design and Period

An institution-based cross-sectional study was conducted from March 1 - April 15, 2017, in Dessie town health institutions. Dessie town is the capital city of the South Wollo zone, which is located 401km away from Addis Ababa and 480 km from Bahir Dar. In Dessie town, there is one public referral hospital, three health centers, and three private hospitals that provide maternal health services, and all these institutions were included in the study.

Source and Study Population

The source population was all newborn/mother pairs delivered in Dessie town health institutions, and the study population was all randomly selected newborn/mother pairs delivered in Dessie town health institutions from March 1 - April 15, 2017.

Exclusion Criteria

Newborn babies whose mother suffered from severe medical or surgical condition, twin delivery, and unknown last menstrual period with absent ultrasound evidence were excluded from the study.

Sample Size Determination and Procedure

The sample size was calculated using a single population proportion formula with the assumption of 32.1% prevalence of LBW babies at birth in Ethiopia with a 95% confidence interval and 5% marginal error.[18]

$$n = (Z/2)2 \times p(1-p)/d2 = (1.96)2 \times (0.321) \times (0.679)/(0.0025) = 335$$

By considering a 10% non-response rate, the final sample size was 369 newborn/mother pairs. There are seven (four governmental and three privates) health institutions in Dessie town which provides delivery services. The numbers of newborn/mother pairs surveyed from each health institution were allocated proportionally based on the expected number of deliveries in the study period, which was estimated using the number of last six months' delivery in each institution.

The Proportional allocation was calculated using the following formula:

$$nj = \frac{n}{N} Nj$$

where:

nj = Sample size of the jth health institution

n= total sample size

Nj = number of newborn babies delivered at jth health institution in the study period

N = Total number of newborn babies delivered in all health institutions in the study period.

Finally, respondents were selected systematically (k=3) based on the sequence of delivery until the required sample size was obtained (Figure 1).

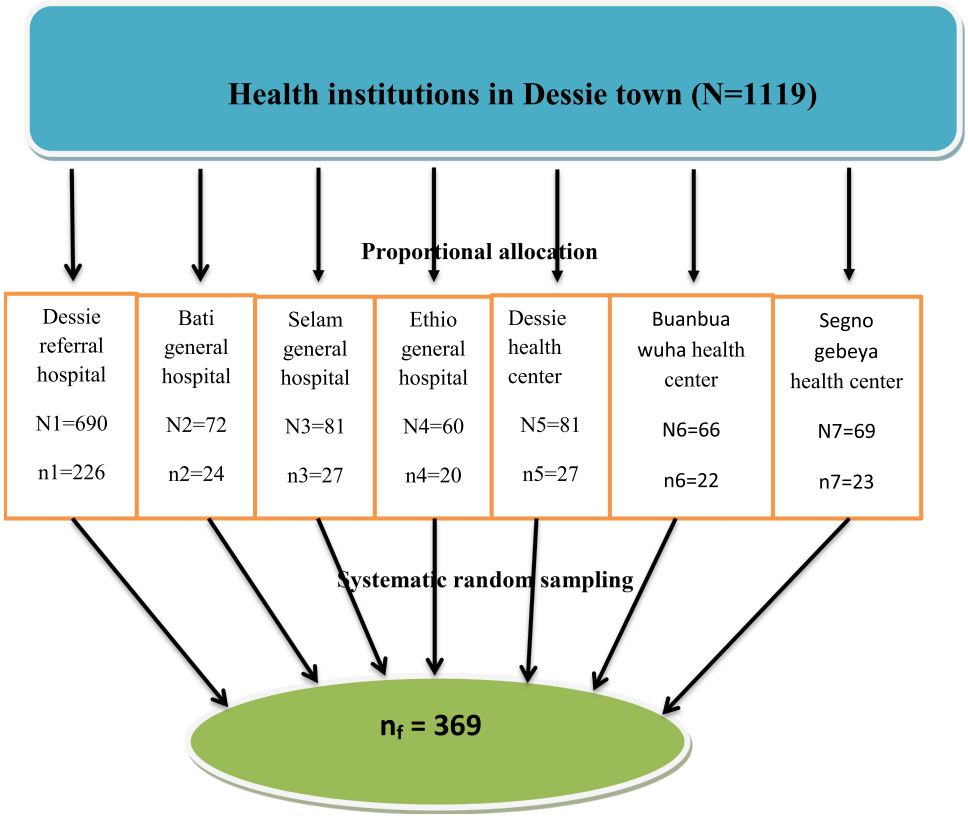

Figure 1 Schematic presentation of sampling procedure in Dessie town health institutions, Ethiopia, 2017 (N=358).

Operational Definitions (Others)

Birth Weight

The first weight of the newborns, which was measured within 24 hours of birth.

LBW

Birth weight < 2500 grams.[1]

Gestational Age

The duration of pregnancy from conception to delivery, which was determined by last menstrual period or ultrasound evidence.

Pregnancy Complications

Health problems that occur during pregnancy (antepartum hemorrhage (APH), premature rupture of membrane (PROM), pregnancy-induced hypertension (PIH), etc.).

Anemia During Pregnancy

Haemoglobin (Hb) level <11g/dl.[20]

Dietary Counseling

Nutrition related advice provided to pregnant mothers by the health professionals.

Data Collection Tool and Procedure

The data were collected using a semi-structured and pre-tested interviewer-guided questionnaire that was adopted and modified from the studies conducted in the Ethiopian demographic health survey, Ethiopia, Algeria, and Ghana.[9,16,21,22] The questionnaire comprises five sections: (I) sociodemographic factors, (II) maternal reproductive characteristics, (III) nutritional and behavioral factors, (IV) newborn factors, and (V) the outcome variable (LBW). The weight of the newborn was measured using a similarly calibrated balanced Seca scale and recorded to the nearest 100 g. Mothers were interviewed in the post-natal ward, and medical records were also reviewed to obtain variables such as maternal obstetric and antenatal care history. The data were collected by seven trained midwives and supervised by two BSc midwives.

Data Quality Assurance

The questionnaire was first prepared in English and translated to Amharic, then back-translated to English by two language experts. One day training was given for data collectors and supervisors. Moreover, a pretest was conducted in 5% (19) of the final sample size in Boro Meda

Hospital. Furthermore, continuous supervision and daily checking were conducted by supervisors and principal investigators.

Data Processing and Analysis

The data were checked for completeness, cleaned, coded, and entered into EPI info version 7.0, and then exported to Statistical Package for Social Sciences (SPSS) software version 20 for analysis. Frequency, proportion and summary statistics were used to describe the study population. Bivariate logistic regression was used to assess the association of independent variables with the outcome variable, and variables that had a p-value < 0.2 were further analyzed using multivariate logistic regression. Finally, odds ratios (ORs) with 95% CIs were computed, and variables with a p-value < 0.05 were considered as significantly associated variables. The model fitness was checked with the Hosmer and Lemeshow goodness-of-fit test (p= 0.435).

Ethical Consideration

Ethical clearance was obtained from Addis Ababa University College of Health Sciences, School of Allied Health Sciences, and official letters were submitted to each respective health facility. After explaining the objectives of the study, informed written consent was obtained from all mothers, and anonymity and confidentiality of the data were kept. Respondents have the right not to participate or withdraw from the study at any stage, and all study methods were performed in accordance with the Declaration of Helsinki.

Result

Sociodemographic Factors of Respondents

A total of 358 newborn/mother pairs were participated in the study, constituting a response rate of 97%. The mean age and standard deviation of the mothers were 28.45 ± 6.2 years, and 70.7% were age groups from 20–34 years. The majority of mothers (58.9%) were Muslims in religion, and 79.1% were Amhara in ethnicity. More than three-quarters of the mothers (80%) were married, 78.8% were urban residents, and 42.5% were housewives. Regarding maternal educational status, 27.4% of the respondents were unable to read and write (Table 1).

Table 1 Socio-Demographic Factors of Mothers in Dessie Town Health Institutions, Ethiopia, 2017 (N=358)

Variables	Number (%)		
	LBW	Non-LBW	Total
Age of the mother			
< 20	9 (2.5)	39 (10.9)	48 (13.4)
20–34	35 (9.8)	218 (60.9)	253 (70.7)
35–49	12 (3.3)	45 (12.6)	57 (15.9)
Religion			
Muslim	44 (12.3)	167 (46.6)	211 (58.9)
Orthodox	11 (3.1)	169 (47.2)	130 (36.3)
Protestant	1 (0.3)	16 (4.4)	17 (4.7)
Ethnicity			
Amhara	46 (12.8)	237 (66.2)	283 (79.1)
Tigre	8 (2.2)	53 (14.8)	61 (17.0)
Oromo	2 (0.6)	12 (3.3)	14 (3.9)
Maternal educational status			
Not read and write	25 (7)	73 (20.4)	98 (27.4)
Read and write	9 (2.5)	50 (14)	59 (16.5)
Primary education	10 (2.8)	111 (31)	121 (33.8)
Secondary & above	12 (3.3)	68 (19)	80 (22.3)
Residence			
Rural	20 (5.6)	56 (15.6)	76 (21.2)
Urban	36 (10.1)	246 (68.7)	282 (78.8)
Marital status			
Single	17 (4.7)	54 (15.1)	71 (19.8)
Married	39 (10.9)	248 (69.3)	287 (80.2)
Mothers occupation			
Farmer	17 (4.8)	47 (13.1)	64 (17.9)
Merchant	9 (2.5)	73 (20.4)	82 (22.9)
House wife	24 (6.7)	128 (35.8)	152 (42.5)
Gov't employee	6 (1.7)	54 (15.1)	60 (16.8)

Maternal Medical and Reproductive Characteristics

One hundred thirty-five (37.7%) respondents were primiparous, and the majority (59.7%) of mothers had a birth interval of ≥ 24 months. Two hundred eighty-four (79.3%) of the pregnancies were intended, and only 52 (14.2%) had current pregnancy complications. Ten (2.8%) respondents had a history of LBW, 309 (86.3%) had ANC follow-up, and 301 (84.1%) had taken iron and folic acid (IFA) supplementation during pregnancy. Additionally, 6.4%, 1.4%, and 2.5% of mothers had anemia, malaria, and sexually transmitted infections during pregnancy, respectively (Table 2).

Table 2 Maternal Medical and Reproductive Characteristics in Dessie Town Health Institutions, Ethiopia, 2017 (N=358)

Variable	Number (%)		
	LBW	Non-LBW	Total
Parity			
1	18 (5.0)	117 (32.7)	135 (37.7)
2–3	29 (8.1)	163 (45.5)	192 (53.6)
≥ 4	9 (2.5)	22 (6.2)	31 (8.7)
Birth interval (in months)			
≤ 24	22 (8.7)	80 (31.6)	102 (40.3)
> 24	16 (6.3)	135 (53.4)	151 (59.7)
Desirability of pregnancy			
Yes	36 (10)	248 (69.3)	284 (79.3)
No	20 (5.6)	54 (15.1)	74 (20.7)
Current pregnancy complication			
Yes	16 (4.4)	35 (9.8)	51 (14.2)
No	40 (11.2)	267 (74.6)	307 (85.8)
Types of pregnancy complication			
APH	3 (5.9)	7 (13.7)	10 (19.6)
PROM	3 (5.9)	9 (17.6)	12 (23.5)
PIH	10 (19.6)	19 (37.3)	29 (56.9)
History of LBW			
Yes	1 (0.3)	9 (2.5)	10 (2.8)
No	55 (15.4)	293 (81.8)	348 (97.2)
Chronic medical illness			
Yes	3 (0.8)	3 (0.8)	6 (1.7)
No	53 (14.8)	299 (83.5)	352 (98.3)
Types of chronic medical illness			
TB	1 (16.7)	1 (16.7)	2 (33.4)
HIV	2 (33.3)	2 (33.3)	4 (76.6)
Malaria during pregnancy			
Yes	-	5 (1.4)	5 (1.4)
No	56 (15.6)	297 (83)	353 (98.6)
STI during pregnancy			
Yes	4 (1.1)	5 (1.4)	9 (2.5)
No	52 (14.5)	297 (83)	349 (97.5)
Anemia during pregnancy			
Yes	14 (3.9)	9 (2.5)	23 (6.4)
No	79 (22.1)	256 (71.5)	335 (93.6)
ANC follow-up			
Yes	39 (10.9)	270 (75.4)	309 (86.3)
No	17 (4.8)	32 (8.9)	49 (13.7)
Trimester of ANC follow-up			
1st	7 (2.3)	107 (34.6)	114 (36.9)
2nd	16 (5.2)	159 (51.4)	175 (56.6)
3rd	5 (1.6)	15 (4.9)	20 (6.5)
Number of ANC follow-up			
1–3	9 (2.9)	84 (27.1)	93 (30.1)
4+	19 (6.1)	197 (63.8)	216 (69.9)
IFA supplementation			
Yes	40 (11.2)	261 (72.9)	301 (84.1)
No	16 (4.5)	41 (11.4)	57 (15.9)
Number of IFA tablets			
< 60	14 (4.7)	160 (53.1)	174 (57.8)
60–90	9 (3)	118 (39.2)	127 (42.2)

(*Continued*)

Table 2 (Continued).

Nutritional Status and Behavioral Factors

Three hundred thirty (92.2%) mothers were counseled about dietary intake, and 290 (81%) of them took extra meals during pregnancy. Nine (2.5%) mothers smoked cigarettes, 19 (5.3%) had drunk alcohol, and 31 (8.7%) had chewed khat during pregnancy (Table 3).

Newborn Factors

The majority (63.4%) of newborns were females, 282 (78.8%) were gestational age ≥ 37 weeks, and 5 (1.4%) newborn babies had a visible birth defect (Table 4). The prevalence of LBW among newborn babies in Dessie town health institutions was 15.6% (95% CI: 12.3% −19.8%) (Figure 2).

Factors Associated with LBW

In the bivariate analysis, the age of the mother, residence, marital status, parity, birth space, desirability of pregnancy, current pregnancy complication, anemia, having ANC follow-up, IFA provision, gestational age, dietary counseling during ANC visit, khat chewing, and sex had a p-value < 0.2. These variables were further analyzed using multivariate logistic regression, and the result showed that the age of the mother, residence, gestational age, having ANC follow-up, and sex of the newborns were significantly associated with LBW.

Table 3 Nutritional and Behavioral Factors of Mothers in Dessie Town Health Institutions, Ethiopia, 2017 (N=358)

Variables	Number (%)		
	LBW	Non-LBW	Total
Dietary counseling			
Yes	45 (12.6)	285 (79.6)	330 (92.2)
No	11 (3.1)	17 (4.7)	28 (7.8)
Additional nutrition during pregnancy			
Yes	39 (10.9)	251 (70.1)	290 (81.0)
No	17 (4.7)	51 (14.3)	68 (19.0)
Cigarette smoking			
Yes	2 (0.6)	7 (1.9)	9 (2.5)
No	54 (15.1)	295 (82.4)	349 (97.5)
Alcohol drinking			
Yes	6 (1.7)	13 (3.6)	19 (5.3)
No	50 (14)	289 (80.7)	339 (94.7)
Khat chewing			
Yes	10 (2.8)	21 (5.9)	31 (8.7)
No	46 (12.8)	281 (78.5)	327 (91.3)

Table 4 Newborn Factors of LBW in Dessie Town Health Institutions, Ethiopia, 2017 (N=358)

Variables	Number (%)		
	LBW	Non-LBW	Total
Gestational age			
< 37	24 (6.7)	52 (14.5)	76 (21.2)
≥ 37	32 (8.9)	250 (69.9)	282 (78.8)
Sex			
Female	43 (12)	184 (51.4)	227 (63.4)
Male	13 (3.6)	118 (33)	131 (36.6)
Visible sever defect			
Yes	-	5 (1.4)	5 (1.4)
No	56 (15.6)	297 (83)	353 (98.6)

Mothers aged < 20 years old were 3.78 times more likely to deliver LBW newborns than 20–34 years old mothers (AOR: 3.78, 95% CI, 1.02–13.97), and mothers lived in a rural area were 3.49 times more likely to deliver LBW babies compared with mothers who had living in the urban area (AOR: 3.49, 95% CI, 1.48–8.24). Similarly, mothers who had no ANC follow-up during pregnancy were 3.79 times more likely to deliver LBW babies compared to mothers who had ANC follow-up (AOR: 3.79,

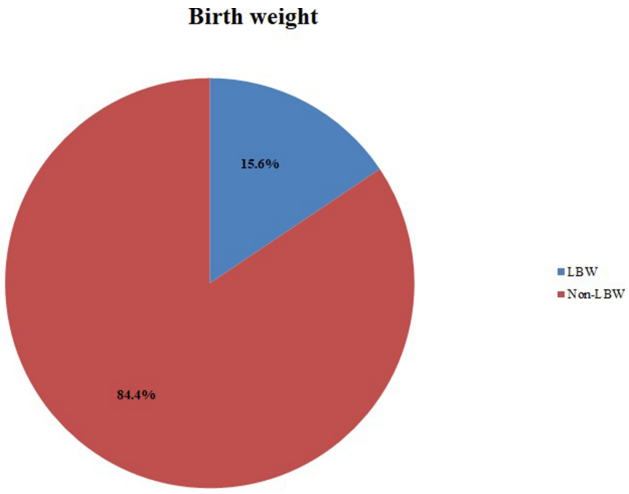

Figure 2 The prevalence of LBW among newborn babies in Dessie town health institutions, Ethiopia, 2017 (N=358).

95% CI, 1.08–13.23). Newborn babies who were delivered before the gestational age of 37 weeks were 3.82 times more likely to be LBW compared to babies born in the gestational age of ≥ 37 weeks (AOR: 3.82, 95% CI, 1.-55–9.42). Finally, female newborn babies were 3.37 times more likely to be LBW than male newborns (AOR: 3.37, 95% CI, 1.17–9.72) (Table 5).

Discussion

The finding of this study showed that 15.6% of newborns were birth weight < 2500 g. The age of the mother < 20 years, residing in rural areas, preterm delivery (< 37 weeks), attending ANC follow-up, and female sex were significantly associated variables to LBW.

The prevalence of LBW was 15.6% (95% CI: 12.3% −19.8%). This finding was consistent with studies conducted in Gondar referral hospital (17.1%), Tigray (14.6%), a systematic review and meta-analysis in Ethiopia (17.3%), Kenya (12.3%), and the estimated global (17.5%) and sub-Saharan African countries LBW prevalence (16.4%).[2,9,12,13,23] The reported value is higher than the study findings of Tigray (6.3% and 9.9%), Nigeria (6.3%), Iran (6.3%), China (2.8%), and the regional estimates of Central Asia (6%), Eastern Asia (6%), Western Asia (10.9%), and Latin America and Caribbean (8.8%).[2,11,14,17,24] However, the prevalence of LBW was lower than studies conducted in Bahir Dar (21.2%), Uganda (25.5%), India (28.61%), and the regional estimates of LBW in Southern Asia (32.3%).[2,3,25,26] This difference might be due to the socioeconomic, seasonal, and geographical variation, which might result in

Table 5 Binary and Multivariate Analysis of Factors Associated with LBW in Dessie Town Health Institutions, Ethiopia, 2017 (N=358)

Variable	LBW		COR [95% CI]	AOR [95% CI]	P-value
	Yes (%)	No (%)			
Age of the mother					
< 20	9(16.1)	39(12.9)	1.44(1.6–3.22)	3.78(1.02–13.97)*	0.047
20–34	35(62.5)	218(72.2)	1	1	
35–49	12(21.4)	45(14.9)	1.66(0.80–3.45)	1.15(0.40–3.33)	0.12
Residence					
Rural	20(35.7)	56(18.5)	2.44(1.30–4.50)	3.49(1.48–8.24)*	0.04
Urban	36(64.3)	246(81.5)	1	1	
Marital status					
Single	17(30.4)	54(17.9)	2.00(1.05–3.80)	1.10(0.40–3.08)	0.961
Married	39(69.6)	248(82.1)	1	1	
Parity					
1	18(32.1)	117(38.7)	1	1	
2–3	29(51.8)	163(54.0)	2.66(1.06–6.68)	2.33(0.51–10.75)	0.454
≥ 4	9(16.1)	22(7.3)	2.30(0.96–5.49)	3.88(0.60–25.02)	0.227
Birth space (months)					
≤ 24	22(57.9)	80(37.2)	2.32(1.15–4.68)	2.18(0.92–5.19)	0.09
> 24	16(42.1)	135(62.8)	1	1	
Desirability of pregnancy					
Yes	36(64.3)	248(82.1)	1	1	
No	20(35.7)	54(17.9)	2.55(1.37–4.75)	1.49(0.57–3.91)	0.585
Pregnancy complication					
Yes	16(28.6)	35(11.6)	3.05(1.55–6.01)	2.67(0.86–8.28)	0.15
No	40(71.4)	267(88.4)	1	1	
Anemia during pregnancy					
Yes	14(60.9)	9(39.1)	3.19(1.28–7.93)	0.87(0.17–4.56)	0.80
No	79(23.6)	256(76.4)	1	1	
ANC follow-up					
Yes	39(69.6)	270(89.4)	1	1	
No	17(30.4)	32(10.6)	2.55(1.24–5.24)	3.79(1.08–13.23)*	0.048
IFA provision					
Yes	40(71.4)	261(86.4)	1	1	
No	16(28.6)	41(13.6)	2.55(1.31–4.96)	0.66(0.19–2.31)	0.53
Gestational age					
< 37	24(42.9)	52(17.2)	3.29(1.78–6.10)	3.82(1.55–9.42)*	0.001
≥ 37	32(57.1)	250(82.8)	1	1	
Dietary counseling					
Yes	45(80.4)	285(94.4)	1	1	
No	11(19.6)	17(5.6)	4.10(1.80–9.31)	0.66(0.13–3.41)	0.65
Khat chewing					
Yes	10(17.9)	21(7.0)	2.91(1.29–6.57)	1.77(0.52–6.04)	0.30
No	46(82.1)	281(93.0)	1	1	
Sex of the new-born					
Female	43(76.8)	184(60.9)	2.12(1.09–4.11)	3.37(1.17–9.72)*	0.018
Male	13(23.2)	118(39.1)	1	1	

Notes: *Statistically significant at p value < 0.05 with 95% CI.

discrepancies in health service utilization and the nutritional status of mothers.

Mothers aged < 20 years old were 3.78 times more likely to deliver LBW newborns than 20–34 years old. Likewise, studies conducted in Hosanna town, Gondar, Mekelle, and a systematic review and meta-analysis in Ethiopia showed similar findings.[10,23,25,27] These might be because having a birth at an early age had a higher risk of delivering a baby with LBW.[28] Pregnant teens are more likely to develop pregnancy-related high blood pressure and anemia, which will lead to preterm labor and delivery. Additionally, young women had less awareness of pregnancy-related problems and less likely to seek medical care as early as possible.[29]

Mothers who reside in rural areas had 3.49 higher odds of delivering LBW babies compared to urban residents. Studies conducted in Bahir Dar, Hosanna, Tigray, and Ghana reported similar findings.[3,5,9,21] The possible reason might be the greater hardship due to poor infrastructures, hard physical work, and less access to basic health services in rural areas. Additionally, there will be lower accessibility for health information, health services utilization, and nutritional awareness in rural areas.[30,31]

The odds of LBW were 3.79 times higher in mothers who had no ANC follow-up compared to mothers who had ANC follow-up. This result is comparable with studies conducted in Bale zone hospitals, the University of Gondar, Hosanna town, and Mekelle.[5,10,13,27] There will be a chance for monitoring of fetal wellbeing and timely intervention of feto-maternal problems when there is an ANC visit. Additionally, there will be routine nutritional and medical advice, as well as the provision of supplementations during ANC visits.

Newborns delivered in < 37 weeks of gestation were 3.82 times more likely to be LBW than those who were delivered in ≥ 37 weeks. Similar findings were reported from studies conducted in Dangla Ethiopia, a systematic review and meta-analysis in Ethiopia, Kenya, Uganda, Nepal, and India.[12,23,25,32–34] Gestational age plays a significant role in determining infants' birth weight. Prematurely (< 37 weeks) delivered newborns are at a higher risk of LBW.[15,28,35]

Finally, female newborns were 3.37 times more likely to be LBW compared to male newborns. This study is comparable with studies done in Kenya and India.[12,32] The possible explanation would be female fetuses are insulin resistant than boys; as a result, they would not use glucose properly as males do during the intrauterine period.[36]

Limitations of the Study

Factors like intrauterine infection during pregnancy, placental abnormalities, pre-pregnancy weight, indoor environmental factors, outdoor air pollution, climatic factors, and seasonal variation were not addressed in this study. Additionally, this study will be subjected to recall bias.

Conclusion

The reported proportion of LBW in this study is comparable with the estimated global prevalence. Age of the mother < 20 years, rural residence, absence of ANC follow-up, gestational age < 37 weeks, and being female were significantly associated variables with LBW. Therefore, the Zonal health bureau and health care providers should have special attention to ANC services and preventive strategies for preterm delivery giving due attention to rural residing mothers.

Abbreviations

ANC, antenatal care; AOR, adjusted odds ratio; BSc, Bachelor of Science; CI, confidence interval; IFA, iron and folic acid; LBW, low birth weight; SPSS, Statistical Package for Social Sciences; WHO, World Health Organization.

Data Sharing Statement

The data used to support the findings of this study are available from the corresponding author upon request.

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Disclosure

The authors declare that they have no conflicts of interest.

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