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ASSESSMENT OF LOW BIRTH WEIGHT AND ASSOCIATED FACTOR AMONG NEWBORNS AT GURAGE ZONE HOSPITALS, SOUTHERN ETHIOPIA, 2023

MPH THESIS

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Assessment of Low Birth Weight and Associated Factor among New born at Gurage Zone Hospitals, Southern Ethiopia, 2023

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ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
AOR	Adjusted Odd Ratio
CI	Confidence interval
C/S	Caesarean Section
EDHS	Ethiopian Demographic and Health Survey
IUGR	Intrauterine Growth Retardation
IFA	Iron and Folic Acid
LBW	Low Birth Weight
MICS	Multiple Indicators Cluster Survey
SDG	Sustainable Development Goal
SPSS	Statistical Package for Social Sciences
UNDP	United Nation Development Program
SNNPR	Southern Nation Nationality people's Representative
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization

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ABSTRACT

Introduction: More than 20 million infants worldwide, representing 15.5% of all births are born with low birth weight, of which 95.6% are in developing countries. In low-income countries, many low-birth-weight newborns often miss the chance for survival sooner or later. One of the key strategies to reduce infant mortality rates and improve child health is improving birth weight; however, low birth weight is significantly higher in Ethiopia. In Ethiopia, the magnitude of low birth weight among newborns is high and yet has been contributing a lot to neonatal morbidity and mortality.

Objective: The aim of this study was to assess the prevalence and associated factors of low birth weight among newborn in Gurage zone hospitals, South Ethiopia.

Methods and Materials: A hospital-based cross-sectional study design was conducted among 505 newborns in Gurage Zone hospitals. Data was collected using a structured, pre-tested interviewer-guided questionnaire that was prepared by reviewing similar literature and the Ethiopian Demographic Health Survey 2019. Six data collectors, who are diploma midwives, and three BSC midwife supervisors were recruited. Data were cleaned manually, coded, and entered into Epi Data Entry 4.6 and analyzed by SPSS version 24 statistical software. Bivariate and multivariate logistic regression analyses were used, and variables with a P value less than 0.2 were included in multivariable logistic regression. The adjusted odd ratio along with the 95% CI was calculated to see the strength of the association, and $P<0.05$ was taken as the level of statistical significance.

Results: A total of 505 newborns and their index mothers were planned to participate in the study. Among the planned, 496 completed the study with a response rate of 96.3%. The findings showed that 85 (17.1%), with a 95% CI of 13.9–20.4%, of the newborns had a low birth weight. Mothers with a previous low birth weight AOR = 3.15, 95% CI = 1.08, 9.21), chronic medical illness (AOR = 3.49, 95% CI = 1.09, 11.10), current pregnancy complication (AOR = 2.29, 95% CI = 1.24, 4.24), and being female (AOR = 2.13, 95% CI = 1.13–4.01) were significantly associated with low birth weight.

Conclusion: The prevalence of low birth weight among newborns was 85 (17.1%), with a 95% CI of 13.9–20.4%. We recommended that a high-risk approach be taken, and these women need to be monitored frequently and treated to prevent low birth weight.

Key words: low birth weight, newborn, associated factors, Gurage zone, Ethiopia

1. INTRODUCTION

1.1 Background

Birth weight is the first weight of the newborn obtained immediately after birth, within the first hour of life, before significant weight loss occurs after birth (1). According to the World Health Organisation (WHO), low birth weight (LBW) is a birth weight of < 2500 grams, irrespective of gestational age (2,3). LBW is a global public health challenge. Its high priority stems from the fact that it is the major determinant of infant morbidity and that it contributes significantly to the overall burden of childhood death. LBW has also been linked to the high prevalence of stunting seen in low-income countries and may be important in the aetiology of chronic dietary diseases such as obesity, diabetes, and cardiovascular diseases in adulthood (4).

According to the World Health Organisation, poor maternal nutritional status during pregnancy confers greater risk for LBW in developing countries (5). According to the 2016 Ethiopian demography and health survey, 12.3% of babies in Ethiopia had a low birth weight (6). So this high prevalence shows that the burden of low birth weight is still under question in Ethiopia. In Ethiopia, low birth weight accounts for about 4% of total deaths. The consequence of LBW is not limited to neonatal and infant mortality; it also results in physical and developmental health problems in subsequent childhood and adulthood (7,8).

Low birth weight leads to poor childhood growth and a higher incidence of adulthood chronic diseases like type 2 diabetes, hypertension, and cardiovascular disease. This indicates that LBW is a basement for the majority of adult chronic diseases. It also has long-term consequences like poor cognitive function, academic underachievement, and impaired behaviour. Moreover, LBW is a summary measure of multifaceted public health problems such as maternal malnutrition, ill-health and poor pregnancy- related health service utilisation (7,8).

Reducing low birth weight has long been recognised as a public health priority, and with the adoption of the Global Nutrition Targets in 2012, it is now a global commitment. During the 65th World Health Assembly (WHA), Member States endorsed the target of a 30 percent reduction in low birth weight globally between 2012 and 2025. However, reporting on progress remains a challenge. Reaching the low birth weight target would save lives and fuel the achievement of

other nutrition targets, such as those on reducing stunting, wasting, and other forms of malnutrition. Yet, today, the world is still far from achieving this objective (9,10).

1.2 Statements of the problem

New born birth weight is a major factor which determines vulnerability for risk of childhood illness and childhood survival. In Ethiopia, recent studies showed that the prevalence of LBW is 18%(11). In 2014, the World Health Organization (WHO) estimated LBW as a cause of 4.53% of under-five child mortality in Ethiopia. As a result, LBW creates a great burden on the political, social, economic, and healthcare systems in developing countries(5,12,13).

Low birth weight has long been used as an important public health indicator. Low birth weight is not a proxy for any one dimension of either maternal or perinatal health outcomes. Globally, the indicator is a good summary measure of a multifaceted public health problem that includes long-term maternal malnutrition, ill health and poor pregnancy health care(13,14).

On an individual basis, low birth weight is an important predictor of health; therefore, efforts must go into measuring it as accurately as possible at birth and organising and planning infant care accordingly. The smaller the baby, the more important it is to monitor his or her growth in the weeks after birth. This is particularly important for infants at high risk of poor feeding and inadequate growth. Countries should therefore be encouraged to ensure accurate and reliable weighing of infants as close to birth as possible(13).

To grow a healthy baby, mothers need good nutrition and rest, adequate antenatal care, and a clean environment. These ingredients for a healthy pregnancy can help prevent, identify, and treat the conditions that cause low birth weight and keep babies alive and thriving. A newborn's weight at birth is an important marker of maternal and foetal health and nutrition. Low-birth-weight newborns have a higher risk of dying in the first 28 days of life. Those who survive are more likely to suffer from stunted growth and a lower IQ(15). Additionally, the study suggests that higher dietary diversity, nutritional status before and during pregnancy, and maternal anthropometric characteristics may be protective of LBW in addition to socio-economic characteristics (16).

It is clear that low birth weight represents a heavy burden for healthcare services worldwide. In poorer countries where fewer resources are destined for healthcare, the direct, indirect, immediate, and later repercussions of low birth weight constitute a relevant public health issue.

However, the great majority of scientific evidence accumulated on this subject is generated in developed countries(17).

We lack adequate evidence on maternal factors that would potentially predict the birth outcomes of the newborn. This is also limited in South Ethiopia, particularly in the Gurage Zone, which is characterized by a diverse culture and dietary practices. Thus, the proportion of low birth weight in health facilities has been least documented in the south Ethiopian Gurage Zone. In the Gurage Zone, there is very limited evidence on child health and nutritional status predictors, particularly those associated with maternal health during pregnancy and childbirth. As far as my knowledge is concerned, previous studies about the prevalence and associated factors of LBW among new-born babies have not been conducted in the study area. Thus, the main aim of this study will be to estimate the proportion of low birth weight and associated factors among newborns in Gurage Zone Hospital, South Ethiopia. The findings might help local community-based interventions to improve birth outcomes and are also expected to add to existing knowledge.

1.3 Significances of the study

The study will provide useful information that will inform health facilities to prepare special care for LBW neonates because most die within 24 hours of delivery due to poor access to intensive care units and trained health care providers. So, this study will provide baseline data on the prevalence and associated factors of low-birth-weight newborns. The identification of possible factors for low birth weight in the area will have greater input for programmer managers and policymakers in designing, proper implementation, and evaluation of programmers on reduction of low birth weight and improvement of newborn care to achieve sustainable development goal (SDG) 3 of ensuring healthy lives and promoting well-being for all at all ages.

One of the significances of this study for the health profession is that it will assist in providing evidence-based practice on newborn care services that will improve the promotion, prevention, and curative care of mothers and newborn babies. Furthermore, the findings will contribute towards formulating locally appropriate interventions to prevent low birth weight.

2. LITRATURE REVIEW

2.1. Overview of low birth weight

There is visible variation in the prevalence of low birth weight across regions and within countries; however, the great majority of low birth weight births occur in low- and middle-income countries and especially in the most vulnerable populations (13). Regional estimates of LBW include 28% in South Asia, 13% in sub-Saharan Africa, and 9% in Latin America. It is worth noting that these rates are high, in spite of the fact that the data on LBW remains limited or unreliable, as many deliveries occur in homes or small health clinics and are not reported in official figures, which may result in an underestimation of the prevalence of LBW(1,4).

Reasons for low birth weight are multi-factorial but are related to either obstetrical factors like preterm birth (shortened gestation, <37 weeks), malnutrition, infection, illiteracy, chat chewing, cigarette smoking, alcohol drinking, malaria, short inter pregnancy intervals, or teenage pregnancy, which have been identified as modifiable risk factors for low birth weight(18,19). There are also other multiple causes of low birth weight, including early induction of labour or caesarean birth (for medical or non-medical reasons), multiple pregnancies, and chronic conditions such as diabetes and high blood pressure(20).

2.2. Prevalence of low birth weight

Globally, more than 20 million LBW infants are born. Among these, nearly half (48%) of the births occur in southern Asia. In sub-Saharan Africa, the number of LBW live births is estimated to have increased from 4.4 million in 2000 to 5 million in 2015(21).

The study done in developing countries by Demography and Health Surveys shows that overall prevalence of LBW was 15.9% (range, 9.0 to 35.1%)(22). Aanother study that was conducted in Burkina Faso, Ghana, Malawi, Senegal, and Uganda, the prevalence of low birth weight was 13.4%, 10.2%, 12.1%, 15.7%, and 10%, respectively(24).

According to the 2019 Ethiopian demographic health survey report, the prevalence of underweight children is 21%.(23). In Ethiopia, different studies have reported the prevalence of

LBW during different periods. A study done at a referral hospital in Hadiya Zone on the prevalence of low birth weight shows the prevalence was 12.7%(24). An institutional-based cross-sectional study done in the Kembata tembaro zone shows that 18% of newborns had a low birth weight(12). Another study done in Tigray, Northern Ethiopia, in 2015 shows the prevalence of LBW was found to be 14.6%(25). A study done on the prevalence of low birth weight at Jimma Medical Centre shows a total prevalence of low birth weight of 7.8%(26). Additionally, the study conducted in Bahir Dar Felege Hiwot Referral Hospital on the prevalence and associated factors shows the prevalence of low birth weight was 25.5%(27).

2.3 Associated factors of Low birth weight

2.3.1. Socio demographic factors

The study done in developing countries by Demography and Health Surveys shows maternal age, illiteracy, being female, residence, and socio-demographic status of mothers are significantly associated with low birth weight (22). Study on proximate low birth weight and associations among children under five years of age: Evidence from the 2019 Ethiopian demographic and health survey data shows that wealth index, region, residence, place of delivery, maternal age, religion, sex of the head of household, child sex, and maternal education are associated with proximate LBW(23).

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, inaccessibility to media (television and radio), lack of formal education, absence of antenatal care (ANC) follow-up, low socioeconomic status, prenatal exposure to ambient inhalable particles, and indoor parental smoking(5,8,28).

Research done on the incidence of low birth weight babies and associated factors among postpartum mothers at Felege Hiwot Referral Hospital shows that illiterate mothers had a higher rate of giving low birth weight deliveries than literate mothers, which is 73.7% (25). A study done on the prevalence of LBW at Jimma Medical Centre showed the sex of the newborn,

maternal residence, and maternal age were found to have statistically significant effects on LBW(26).

Another study done in Tigray shows that LBW was found to be affected by the rural place of residence. The qualitative part of this study found a strong influence of sociocultural beliefs on the nutritional intake of pregnant women. It particularly suggested the presence of prejudice towards animal products for fear of complications related to large babies during childbirth. Preference for nutritionally poor food items and missed timing of nutritious foods during pregnancy and childbirth were also prominent, accentuating the occurrence of low birth weight.(25).

2.3.2. Maternal and nutritional factors

A hospital based study in Nepal reported high risk of low birth weight baby for mothers who had three or fewer ANC visits and didn't comply with iron and folic acid supplementation(11,29).

Studies done in selected countries of Africa on the prevalence and associated factors of low birth weight shows that women who are underweight had increased odds of having LBW babies; however, the odds were statistically significant only for Senegal. In light of the findings, it is recommended to take special policy measures to promote universal access to antenatal care attendance among pregnant mothers and provide nutrition counselling at the same time to reduce the burden of being underweight(28,30).

A study done on prevalence, predictors of low birth weight, and its association with maternal iron status using serum ferritin concentration in rural Eastern Ethiopia implies that supplementations of IFA, time to health facilities, maternal MUAC, and maternal height were found to be significant contributors to LBW. The prevalence of LBW was higher among mothers who were undernourished (MUAC < 23 cm), stunted (height <145 cm), and female neonates. However, women who were supplied with iron and folic acid during pregnancy had a 45% decreased chance of delivering LBW neonates(31).

According to the study done on risk factors and adverse perinatal outcomes associated with low birth weight in northern Tanzania, mothers who had not counseled during pregnancy were significantly associated with delivery of low birth weight(32). A study done on maternally

associated factors of low birth weight in Tigray, Northern Ethiopia, also shows that mothers who did not get dietary counseling during pregnancy had a 3.5-times higher risk of low birth eight (25) . A study done at a referral hospital in Hadiya Zone on the prevalence of low birth weight identified that mothers who had anemia during pregnancy had nearly five times as high odds of having LBW babies as compared to those who had no anemia. In addition, the odds of being LBW in babies born preterm were four times higher when compared to babies born at term(24).

2.3.3. Maternal behavioural factors

According to a study done on risk factors and adverse perinatal outcomes associated with low birth weight in Northern Tanzania, smoking during pregnancy was significantly associated with the delivery of low-birth-weight newborns(13). Another study done in Negest Elene Mohammed Memorial General Hospital in Hossana town on the prevalence and associated factors of adverse birth outcomes among women attending maternity wards in 2016 shows that tobacco smoking has a significant association with low birth weight (33).

Risk factors for low birth weight in Bale zone hospitals, South-East Ethiopia: a case-control study shows the strong association between chat chewing and low birth weight. Mothers who had a history of chat chewing had a six-fold higher risk of low birth weight than those who had no history of chat chewing(19).

2.3.4. Fetal factors

Determinants of low birth weight in a block of Hooghly, West Bengal, showed that low birth was significantly more prevalent among females than males (61.6% vs. 38.4%) (34).

A cross-sectional analytic study conducted on factors associated with low birth weight among neonates born at Olkalou District Hospital, Central Region, Kenya, on 346 mothers and their respective newborn babies shows that female infants were independently associated with LBW(35).

2.4. Conceptual frame work

This conceptual framework was developed after reviewing the Ethiopian demographic health survey and different pieces of literature. The diagram shows the relationship between low birth weight and socio-demographic factors, maternal factors, nutritional factors, and newborn-related factors.

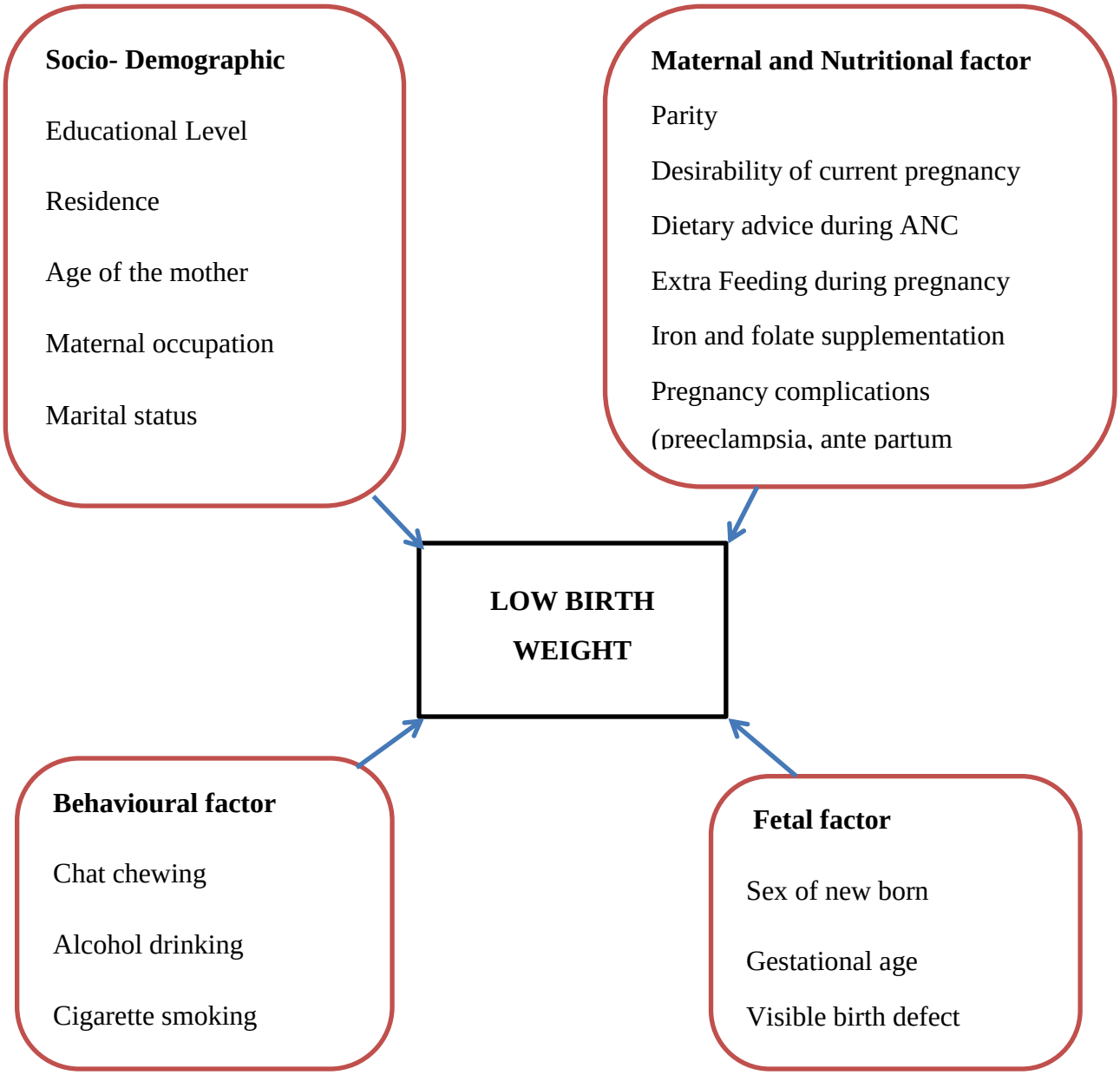


Figure 1: Conceptual frame work on low birth weight new-borns in Gurage zone hospitals, Southern Ethiopia, 2023. sources: (6,10,25,29)

3. OBJECTIVES

3.1 General objective

To assess the prevalence of low birth weight and associated factors among newborns in Gurage zone hospitals, Southern Ethiopia, from July 19 to August 19, 2023.

3. 2 Specific objectives

To determine the prevalence of low birth weight among newborns in Gurage zone hospitals, Southern Ethiopia, from July 19 to August 19, 2023

To identify factors associated with low birth weight among newborns in Gurage zone hospitals, Southern Ethiopia, from July 19 to August 19, 2023.

4. METHODS AND MATERIALS

4.1. Study area

The study was conducted in Gurage Zone hospitals. Gurage Zone is located 172km south of Addis Ababa, the capital of Ethiopia, and 202km from Hawassa, the capital of the south regional state. According to the 2014 E.C. population projection, the zone consists of a total population of about 1,007,660, with males at 498,792 (49.5%) and females at 508,868 (50.5%). Based on the health profile of the Gurage Zone Health Department, the zone has one comprehensive and one specialised hospital and eight primary hospitals that deliver routine preventive and curative health services to the community. Among these ten hospitals, both private-owned and governmental hospitals were included in this study. According to 30% of the representativeness of the sample, three hospitals are included and selected by the lottery method. Those hospitals are Butajira General Hospital, Atat Primary Hospital, and Wolkite University Referral Hospital of Gurage Zone.

4.2. Study design and period

Hospital based cross sectional study design was conducted from July -19 to August19, 2023

4.3. Source population and study population

4.3.1. Source population

The source population is all newborn babies delivered in Gurage Zone hospitals in the South Region of Ethiopia.

4.3.2. Study population

The study population was all eligibly mother with their newborn in selected hospitals in Gurage Zone, Southern Ethiopia, during the study period.

4.4. Eligibility criteria

4.4.1 Inclusion criteria

All Newborn babies with their mothers who are going to give live birth in selected Gurage zone hospital were included.

4.4.2 Exclusion criteria

Newborn babies whose mothers suffering from severe medical or surgical condition and twin delivery were excluded from the study.

4.5 Sample size determination

The sample size is calculated using a single population proportion formula. About 18% of the prevalence of low birth weight babies at birth in Kembata tembaro zone hospital is taken with a 95% confidence interval and a 5% marginal error (12).

$$n = \frac{za\ 2)2 * p\ (q)}{w2}$$

$$n = \frac{za\ 2)2 * p\ (1-p)}{w2}$$

n= (1.96)2*0.18(1-0.18)/(0.05)2

n=227

By considering the design effect of 2 and the non-respondent rate of participants, 10% of the sample size is added, which is 46. So the sample size was 500 newborns**.** Then the sample size for specific objective 2 has been calculated by Epi-info version 7, and the largest value has been taken, which were 505. So the final sample size is 505.

Where, n=the required sample size

w=margin of error between the sample and population=5%=0.05 Z=standard normal distribution value at 95% confidence level

$Z_{1-\alpha/2}$=standard deviation in standard normal distribution value at α = 5% which is 1.96 for 95% confidence interval

P =Prevalence low birth weight at birth in Kembata tembaro zone hospitals (18 %) from the previous study conducted in Ethiopia (8).

Table 1: Sample size calculation for different factors associated low birth weight

Variable	% of outcome in non-exposed	AOR	CI	Power	Sample size by adding 10% for non-response rate	Reference
Dietary advice during pregnancy	13	1.9	95%	80	198	(13)
Planned pregnancy	15.4	2	95%	80	435	(32)
Birth interval	14.6	1.9	95%	80	387	(32)
ANC follow up	10.4	2.3	95%	80	505	(32)

4.6 Sampling procedure

There are a total of seven governmental and three private hospitals that provide delivery services in Gurage Zone hospitals. Among these ten hospitals, according to 30% representativeness, three hospitals are selected by the lottery method. Total sample sizes of newborn babies were selected from these three hospitals. All new-born babies from those three hospitals that were delivered during the study period and who met the full inclusion criteria were considered for the study. Since there were not sufficient numbers of newborns during the study period, all newborns were selected consecutively without living any interval if they were eligible for the study. The numbers of newborn babies were allocated proportionally to each hospital from the total average number of deliveries for the study period from all hospitals. A list of participating mothers and their newborn pairs was obtained from the average number of deliveries in each hospital in the last month and the sampling frame of the delivery flow.

The Proportionate allocation is done by the formula:

Where; n_j , is sample size of the j^{th} hospital, n is total sample size

N_j i8 population size of the j^{th} hospital

n_j n

N N_j\N = Total number of new-borns delivered per month in hospital.

N =N1 (WRH=255) + N2 (BGH=550) = N3 (ATPH=91) = 896, and

n =505 which is the total sample size which is taken from specific sample

By calculating the sample size for each hospital, sample size for WRH=505*255/896=144,

For BGH 550*505/896=310. ATPH, 505*91/896 = 51 for

So, the total sample size for each hospital was proportionally allocated as seen above.

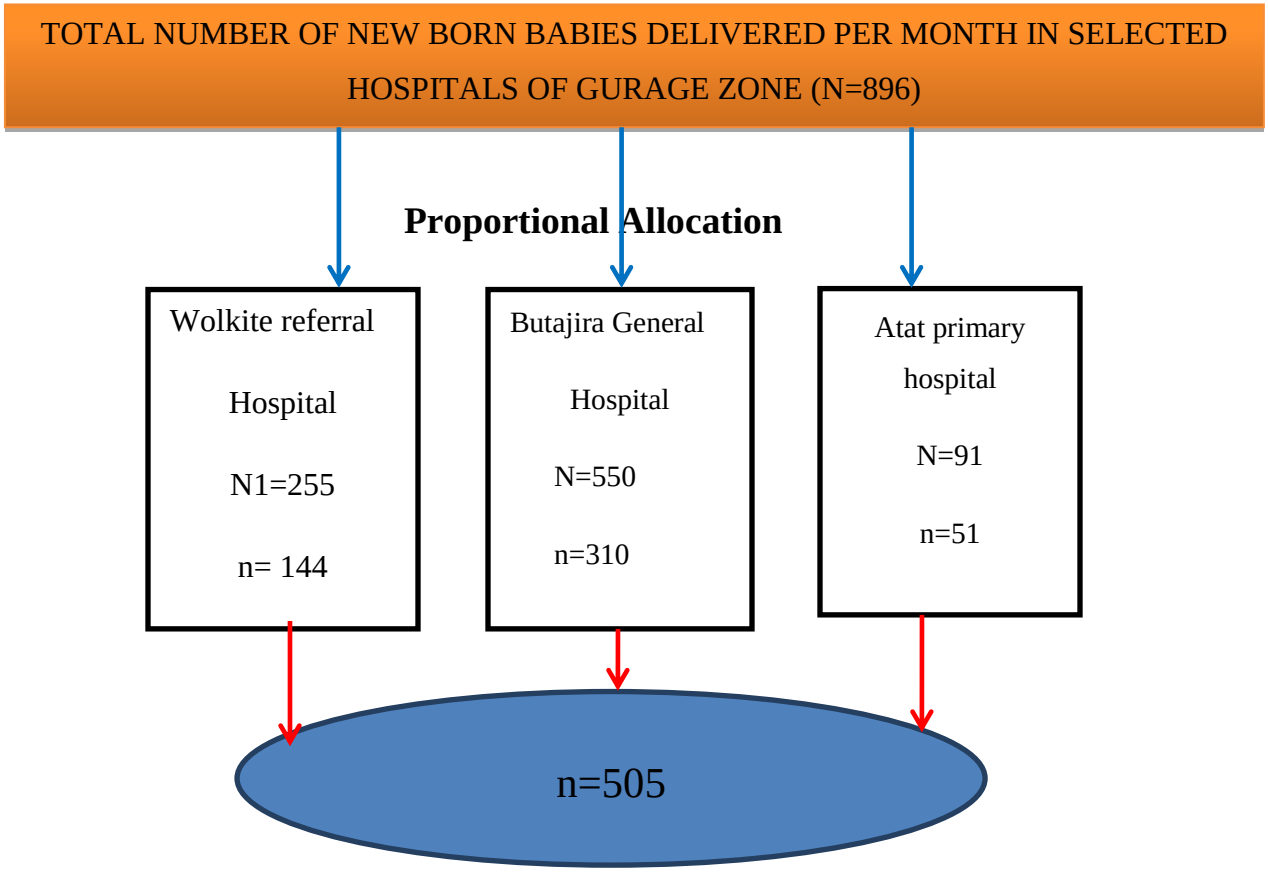


Figure 2: Diagrammatic presentation of sampling procedure for the prevalence and associated factors of low birth weight among new-borns at Gurage zone hospitals

4.7 Study variables

4.7.1 Dependent variables

Low birth weight

4.7.2. Independent variables

Socio-demographic factors

- Maternal Educational level
- Residence
- Age of the mother
- Maternal occupation
- Marital status

Maternal factors of the respondent

- Parity
- Pregnancy interval of previous birth
- Malaria during pregnancy
- Pregnancy complications (preeclampsia, ante partum haemorrhage, PROM
- ANC follow up
- History of low birth weight

Nutritional status and behavioural factors

- Dietary advice during ANC
- Extra-meal during pregnancy
- Iron and foliate supplementation
- Alcohol drinking,
- Cigarette smoking
- Chat chewing.

Neonatal factors

- Sex of the new-born baby
- Gestational age
- Visible birth defect

4.8 Operational definitions/definition of terms

New-born babies: -The babies age from birth to 24 hour postpartum.

Baby birth weight: - Baby birth weight is the first weight of the newborn obtained immediately after birth. It is measured within the first 24 hour of life before significant postnatal weight loss has been occurred by using a calibrated weight scale(19,26).

Normal birth weight: The new born infant weight greater than 2500 grams and less than 4000 grams(5).

Low birth weight: -The neonate birth weight less than 2,500 grams (up to and including 2,499 grams).

Birth interval: -Birth interval is defined as the length of time between two successive live births(5).

Parity: The number of live births the mother had previously.

Prevalence of low birth weight:-the number of low birth weight in percentage from the total live births.

4.9 Data collection tool and procedures

The data were collected using a pre-tested interviewer-guided questionnaire that was prepared by reviewing similar literature and the Ethiopian Demographic Health Survey 2019 (23). The data were collected soon after birth, before maternal hospital discharge after 24 hours. Medical records are cross-checked to confirm important variables such as patients' obstetric history and antenatal history. Six data collectors, who are diploma midwives, and three BSC midwife supervisors were recruited. Two data collectors were assigned to each hospital, and one supervisor was assigned to three hospitals. The data collectors and supervisors were trained for one day on the objectives of the study, relevance of the study, procedures during interviewing, confidentiality of client information, eligibility criteria, respondents' rights, informed consent, and ways of approaching the interview.

4.10 Data quality assurance

The questionnaire is prepared in English, translated to Amharic, and back translated to English by two language experts to check for consistency. The tool is adopted and modified from a study conducted in Ethiopia, Tigray, Nepal, and selected African countries, which was passed through peer review for the validity of the instrument and published (6,10,25,29). A similar calibrated weight scale that has measurement accuracy for the weight of the newborn was used, and the reliability of the bean balance was checked before using the instrument for data collection. Both supervisors and data collectors closely followed the data collection process. One week before the actual data collection to evaluate the clarity of questions, validity of the instrument, and reaction of respondents to the questions, a pretest was conducted by 5% of the study population at Mercy Primary Hospital. Maintenance of privacy and confidentiality of the respondents as well as good communication skills between respondents and interviewers that were gained through training sessions of both data collectors and supervisors contributed to the quality of the study. Every day, all questionnaires were reviewed and checked at the end of the data collection period, and any errors were corrected accordingly with the supervisor and data collector.

4.11 Data processing and analysis

All filled-out questionnaires were checked for completeness, consistency, and accuracy and entered into EPI Data 4.6, then exported to SPSS software version 24 for data analysis. Frequency, proportion, and summary statistics (table, pie chart, and bar graph) were used to describe the study population in relation to the relevant variables. Bivariate multiple logistic regressions were used to check for variables having an association with the dependent variables. Multi-collinearity was assessed before logistic regression using the variance inflation factor (VIF). The decision criterion for excluding variables from the regression model was set out as those with VIF values greater than 10. The goodness of fit of the regression model was tested by applying the Hosmer and Lemeshow chi-square test. Then those variables found to have a p-value less than 0.2 were checked for fitness in multiple-variable logistic regressions for controlling the effect of confounders. Odds ratios with their 95% CI were computed and variables with p-values less than 0.05 in the multiple logistic regression models were considered to be significantly associated with the dependent variable.

4.12. Ethical consideration

Ethical clearance was obtained from Wolkite University College of Health and Medical Sciences School of Al Health Sciences Department of Public Health, and official letters were written to respective hospitals. Verbal consent was obtained from each participant's anonymity, and confidentiality was kept. Respondents have the right not to participate in or draw from the study at any stage.

5. RESULTS

5.1. Socio-demographic factors of respondents

A total of 505 newborns and their index mothers were planned to participate in the study. Among the planned, 496 completed the study with a response rate of 96.3%. The mean age of mothers was 27.98 years (SD = 5.65), and more than half of the respondents (309) (62.3%) were found within the age group of 20–29. Nearly half of the participants, 225 (45.4%), were followers of the Muslim religion, and three-quarters of the respondents, 272 (75.0%), were of the Gurage ethnicity. Regarding maternal educational status, 150 (30.2%) of the mothers had secondary education or above. Half of the respondents, 248 (50.0%), were housewives, and the majority of them, 468 (94.4%), were married. About two-thirds of the mothers, 311 (62.7%), were urban residents. (Table 2)

Table 2: Socio-demographic characteristics of newborns with their index mothers in Gurage zone hospitals, Southern Ethiopia, 2023 (n=496)

Variables	Categories	Total Number	Birth weight Status	
			LBW, No (%)	NBW, No (%)
Age of the mother	<20	17	6(35.3)	11(64.7)
	20-29	307	59(19.2)	248(80.8)
	30-39	148	17(11.5)	131(88.5)
	>40	24	3(12.5)	21(87.5)
Religion	Muslim	225	34(15.1)	191(84.9)
	Orthodox	211	31(14.7)	180(85.3)
	Protestant	48	15(31.3)	33(68.8)
	Catholic	12	5(41.7)	7(58.3)
Ethnicity	Gurage	372	66(17.7)	306(82.3)
	Amhara	29	2(6.9)	27(93.1)
	Wolayeta	30	12(40.0)	18(60.0)
	Oromo	43	3(7.0)	40(93.0)
	Others*	22	2(9.1)	20(90.9)
	Un able and write	118	35(29.7)	83(70.3)

Maternal educational status	Read and write	80	6(7.5)	74(92.5)
	Primary education	148	29(19.6)	119(80.4)
	Secondary education and above	150	15(10.0)	135(90.0)
	Un able and write	40	17(42.5)	23(57.5)
Husband educational status	Read and write	108	18(16.7)	90(83.3)
	Primary education	140	29(20.7)	111(79.3)
	Secondary education and above	208	21(10.1)	187(89.9)
Residency	Rural	183	42(23.0)	141(77.0)
	Urban	313	43(13.7)	270(86.3)
Marital status	Single	6	2(33.3)	4(66.7)
	Married	468	81(17.3)	387(82.7)
	Widowed	3	1(33.3)	2(66.7)
	Divorced	19	1(5.3)	18(94.7)
Occupation	Farmer	68	17(25.0)	51(75.0)
	Merchant	30	7(23.3)	23(76.7)
	House wife	248	29(11.7)	219(88.3)
	Government employed	90	21(23.3)	69(76.7)
	Others¥	60	11(18.3)	49(81.7)

Others*: Tigrie, Gamo others¥: private employee, students

5.2. Maternal factors of the respondent

Among the total number of mothers enrolled in the study, 219 (44.2%) had a history of previous births having 2–3 babies. Most of the respondents, 228 (46.0%), were categorized as having a two-year birth interval. The majority of the pregnancies, 474 (95.6%), were intended. With regard to current pregnancy complications, 326 (65.7%) of the mothers developed complications such as antepartum hemorrhage, prolonged rupture of membrane, pregnancy-induced hypertension, and others. From the total respondents, 50 (10.1%) had a history of previous low birth weight, and 70 (14.1%) mothers had chronic medical illnesses like diabetes mellitus, hypertension, tuberculosis, and others. (Table 3)

Table 3: Maternal factors of newborns with their index mothers in Gurage zone hospitals, Southern Ethiopia, 2023 (n=496)

Variables	Categories	Total Number	Birth weight Status	
			LBW, No (%)	NBW, No (%)
Number of previous births	1	138	29(21.0)	109(79.0)
	2-3	219	40(17.8)	180(82.2)
	4-5	107	14(13.2)	92(86.8)
	≥6	32	2(6.3)	30(93.8)
Birth interval	No previous baby	128	23(18.0)	105(82.0)
	< One year interval	10	6(60.0)	4(40.0)
	Two year interval	228	41(18.0)	187(82.0)
	≥Three year	130	15(11.5)	115(88.5)
Desirability of pregnancy	Yes	474	83(17.5)	391(82.5)
	No	22	2(9.1)	20(90.9)
Previous history of low birth weight	Yes	49	13(26.5)	36(73.5)
	No	447	72(16.1)	375(83.9)
Pregnancy Complication	Yes	326	43(13.2)	283(86.8)
	No	170	42(24.7)	128(75.3)
Maternal medical illness	Yes	70	4(5.7)	66(94.3)
	No	426	81(19.0)	345(81.0)
Malaria during pregnancy	Yes	10	3(30.0)	7(70.0)
	No	486	82(16.9)	404(83.1)
STI current pregnancy	Yes	18	5(27.8)	13(72.2)
	No	478	80(16.7)	398(83.3)
Anaemia current pregnancy	Yes	35	5(14.3)	30(85.7)
	No	461	80(17.4)	381(82.6)
Gestational age	<37 Wks	138	55(39.9)	83(60.1)
	> 37 wks	358	30(8.4)	328(91.6)
ANC visits	Yes	475	81(17.1)	394(82.9)
	No	21	4(19.0)	17(81.0)

Iron/folate intake	No	25	9(36.0)	16(64.0)
	Yes	471	76(16.1)	395(83.9)

NBW: Normal birth weight LBW: Low birth weight No: Number

5.3. Maternal Nutritional status and Behaviour factors

Most of the mothers 297(59.9%) were counselled about dietary intake during antenatal care follow-up. More than half 281 (56.7%) of them took an extra meal during pregnancy. Only 3 (0.6%) of the respondents smoked cigarettes during pregnancy. Regarding alcohol intake, 28 (5.6%) of the respondents drank alcohol during their pregnancy. Additionally, 4 (0.8%) of the mothers had chewed during pregnancy (Table 4)

Table 4: Maternal Nutritional status and Behaviour factors of newborns with their index mothers in Gurage zone hospitals, Southern Ethiopia, 2023 (n=496)

Variables	Categories	Total Number	Birth weight Status	
			LBW, No (%)	NBW, No (%)
Dietary intake	Yes	297	50(16.8)	247(83.2)
	No	199	35(17.6)	164(82.4)
Extra feeding	Yes	281	38(13.5)	243(86.5)
	No	215	47(21.9)	168(78.1)
Smoking cigarettes	Yes	3	1(33.3)	2(66.7)
	No	493	84(17.0)	409(83.0)
Alcohol intake	Yes	28	8(28.6)	20(71.4)
	No	468	77(16.5)	391(83.5)
Chewing chat	Yes	4	2(50.0)	2(50.0)
	No	492	83(16.9)	409(83.1)

NBW: Normal birth weight LBW: Low birth weight No: Number

The majority (475; 95.8%) of the respondents had ANC follow-up during their last pregnancy, of which more than two-thirds (342; 68.9%) had four or more ANC follow-ups (Figure 3).

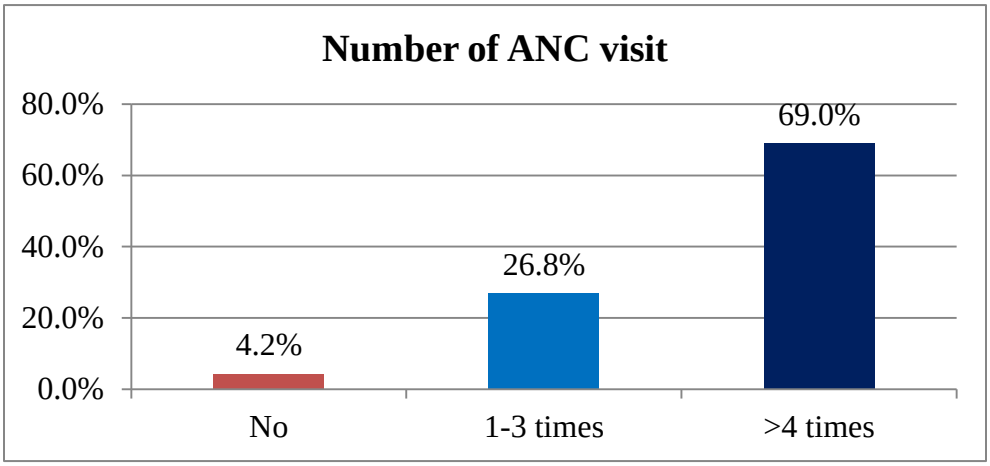


Figure 3: Number of ANC visit among low birth weight newborns at Gurage zone hospitals, Southern Ethiopia, 2023 (n=496)

5.4. Newborn related factors

More than half, 255 (51.4%) of the newborns were female. About 22 (4.4%) of the newborn babies had visible congenital birth defects. In this study, two-thirds (66.5%) of the participants were of term gestational age (Figure 4).

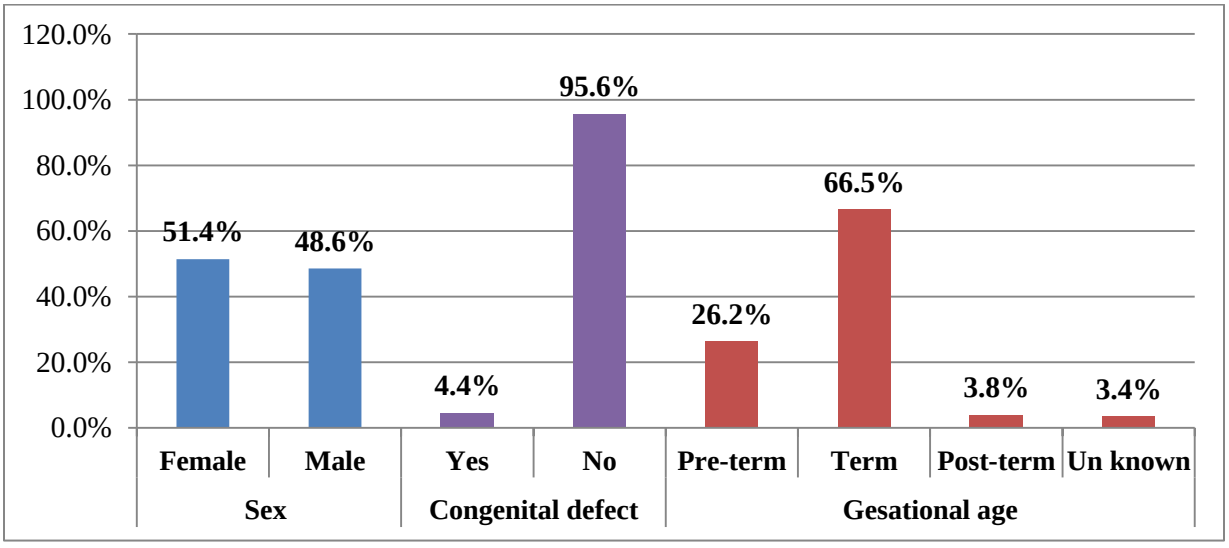


Figure 4: Figures on sex, congenital defects, and gestational age among newborns in Gurage Zone hospitals, Southern Ethiopia, 2023 (n=496)

The prevalence of low birth weight among the total newborns with their index mothers in Gurage zone hospitals was 85 (17.1%). (Figure 5)

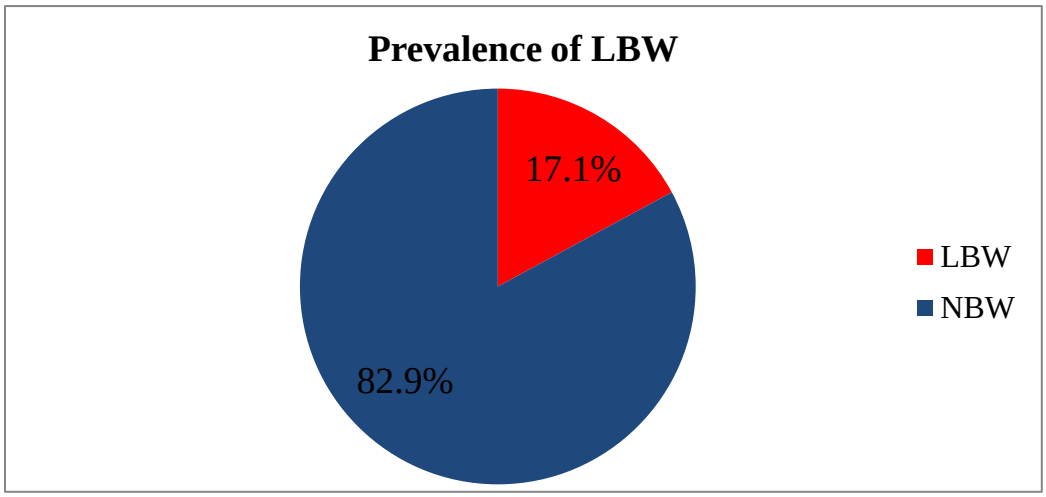


Figure 5: prevalence of LBW among newborns in Gurage zone hospitals, Southern Ethiopia, 2023 (n=496)

5.5. Factors associated with low birth weight new-borns

In the bivariate logistic regression, variables with a p value of ⩽0.20 were candidates for multivariable logistic regression analysis. Accordingly, as shown in Table 5 below, there are bi-variate regressions associated with the crude odds ratios (COR) of low birth weight newborns, such as religion, maternal educational status, residence, previous LBW, antenatal care (ANC) follow-up, pregnancy complications, chronic maternal illness, iron and folate intake during pregnancy, extra feeding during pregnancy, sex, and congenital anomalies.

In multivariable logistic regression, having previous low birth weight, pregnancy complications, chronic maternal illness, and being female were found to be determinants of low birth weight among newborns at a p-value below 0.05 with a 95% CI.

In this study, mothers with a previous low birth weight were 3.15 times more likely to develop low birth weight than mothers who had no history of previous low birth weight (AOR = 3.15, 95% CI = 1.08, 9.21, p = 0.036).

The odds ratio of chronic medical illness was also a significant predictor of low birth weight. Mothers who had chronic medical illness were 3.49 times at a higher risk of giving low-birth-weight newborns (AOR = 3.49, 95% CI = 1.09, 11.10, p = 0.034) when compared with mothers who had no chronic medical illness.

Pregnancy complications were significantly associated with low birth weight. Mothers who had pregnancy complications during their current pregnancy were 2.29 times as likely to give birth to low-birth-weight newborns (AOR = 2.29, 95% CI = 1.24, 4.24, p = 0.008) when compared with mothers who had no pregnancy complications during their current pregnancy.

According to this study, female newborns were 2.13 times more likely to have a low birth weight than their male counterparts (AOR = 2.13, 95% CI = 1.13–4.01, p = 0.019).

Table 5: Factors associated with low birth weight on newborns with their index mothers in Gurage zone hospitals, Southern Ethiopia, 2023 (n=496)

Variables	Categories	Birth Weight Status		COR (95% CI)	AOR (95%CI)	P-value
		LBW, No (%)	NBW, No (%)			
Religion	Muslim	34(15.1)	191(84.9)	4.01(1.20-13.38)	2.59(0.70-9.55)	0.153
	Orthodox	31(14.7)	180(85.3)	4.15(1.24-13.89)	3.55(0.96-13.19)	0.059
	Protestant	15(31.3)	33(68.8)	1.57(0.43-5.77)	1.02(0.24-4.36)	0.975
	Catholic	5(41.7)	7(58.3)	1	1	
Maternal education	Un able write	35(29.7)	83(70.3)	0.26(0.14-.51)	0.72(0.27-1.97)	0.528
	Read & write	6(7.5)	74(92.5)	1.37(0.51-3.68)	2.89(0.91-9.21)	0.071
	Primary education	29(19.6)	119(80.4)	0.46(0.23-.89)	0.72(0.29-1.82)	0.490
	Above secondary	15(10.0)	135(90.0)	1	1	
Residence	Rural	42(23.0)	141(77.0)	0.54(0.33-0.86)	0.53(0.28-1.01)	0.057
	Urban	43(13.7)	270(86.3)	1	1	
Previous LBW	Yes	13(26.5)	36(73.5)	0.53(0.27-1.05)	3.15(1.08-9.21)	**0.036***
	No	72(16.1)	375(83.9)	1	1	

ANC	No	4(19.0)	17(81.0)	0.78(0 .25-2.41)	1.12(0.34-3.81)	0.863
follow up	1-3	28(21.1)	105(78.9)	0.69(0.41-1.15)	1.28(0.62-2.64)	0.509
	>4	53(15.5)	289(84.5)	1	1	
Pregnancy	Yes	43(13.2)	283(86.8)	2.16(1.35-3.47)	2.29(1.24-4.24)	**0.008***
complication	No	42(24.7)	128(75.3)	1	1	
Chronic	Yes	4(5.7)	66(94.3)	3.87(1.37-10.94)	3.49(1.09-11.10)	**0.034***
illness	No	81(19.0)	345(81.0)	1	1	
Iron/folate	No	9(36.0)	16(64.0)	0.34(1.15-0.80)	0.44(0.17-1.13)	0.087
intake	Yes	76(16.1)	395(83.9)	1	1	
Extra	Yes	38(13.5)	243(86.5)	1.79(1.12-2.86)	1.49(0.77-2.89)	0.234
feeding	No	47(21.9)	168(78.1)	1	1	
Sex	Female	33(12.9)	222(87.1)	1.85(1.15-2.98)	2.13(1.13-4.01)	**0.019***
	Male	52(21.6)	189(78.4)	1	1	
Congenital	Yes	7(31.8)	15(68.2)	0.42(0.17-1.07)	1.12(0.38-3.28)	0.843
anomaly	No	78(16.5)	396(83.5)	1	1	

* = Statistically significant at p value <0.05 with 95% CI

Hosmer and Lemeshow test=0.548

6. DISCUSSION

Birth weight is an important indicator of the health status of newborns, and it is a principal factor that determines their physical, survival, and developmental stages. It also indicates the past and present health status of the mother(2,24).

In this study, the prevalence of low birth weight among newborns in Gurage zone hospitals in southern Ethiopia was 17.1%, with a 95% CI of 13.9–20.4%, measured as LBW at the time of birth. This study, which was consistent with studies conducted in the Kembata tembaro zone, shows that 18% (12) and in South western Ethiopia (17.88%)(36). The finding is higher than the study findings of Jimma hospital(26), Tigray(25) and Addis Ababa(9) which were 10.2%, 14.6 % and 13.1% respectively. According to the Ethiopian Demographic Survey 2016, 12.3% of newborns weighed less than 2,500 grams(6). WHO and UNICEF estimated the prevalence of LBW at about 15.5% worldwide, 15% in sub-Saharan Africa, and 11% in Kenya (5). Another study done in India showed the prevalence of LBW was 11%(3) and in Nepal was 15.3%(24). This discrepancy might be due to differences in study areas, study designs, inclusion and exclusion criteria, or the institutions' health service delivery systems. Moreover, mothers with multiple pregnancies were included in those studies, which may overestimate the prevalence.

However, the prevalence of LBW was found to be lower than studies done inn Jimma (37), Bahir Dar Felege Hiwote Referral hospital (27) and Dilla, Southern Ethiopia(30) which were 22.5%, 25.5%, and 34.1% respectively. This might be due to the number of health professionals and training for health professionals, prenatal care for pregnant mother’s supplementation of micronutrients (iron and folic acid) for pregnant women, ANC follow-up, and socio-demographic variations. Another possible explanation for this difference might be due to time variation and /or a difference in the nutritional status of the mother.

In this study, mothers with a previous history of LBW had three times higher odds of delivering LBW neonates than mothers who did not have a previous history. This result is similar to the study conducted in Dangla, Northwest Ethiopia(38), in Kenya(39), Nigeria(20) and Japan(40). This might be due to the fact that women with a previous history of LBW had higher odds of delivering LBW neonates than women who did not have a previous history. Another explanation

is that this may be due to the fact that mothers with previous low birth weights may have had maternal complications that may persist in the next offspring throughout the childbearing period.

The odds of having low-birth-weight newborns were found to be three times higher in mothers with a history of chronic medical illnesses than in mothers without a history of chronic medical illnesses. This finding was in line with the studies conducted in Tigray, northern Ethiopia (25), in Jimma hospital(26), a study done in Tanzania (41), and a study done in India(3). This could be due to the increased risk of pregnancy complications and lack of medical check-ups for chronic illnesses strictly during pregnancy that may go unrecognised, leading to negative outcomes for the foetus in the womb.

Mothers who had pregnancy complications during their current pregnancy were twice as likely to higher birth to LBW newborns when compared with mothers who had no pregnancy complications during their current pregnancy. This finding is consistent with the study done at the Felege Hiwot referral hospital in Ethiopia(27), in Tigray, Northern Ethiopia (25), in Jimma hospital(26) and in India(3). In this study, mothers who encountered pregnancy-related health problems during their current pregnancy were at higher risk of delivering a low-birth-weight baby than mothers who didn't. This result is similar to a study done in India that showed mothers with any health problem during pregnancy were two times more likely to give low-birth-weight babies(42).

According to this study, female newborns were two times more likely to have LBW than their male counterparts. This study is comparable with studies done in Kenya district hospitals (5), India tertiary care hospital (3) and in a public-hospital at Turkey(43). The birth weight of male infants is generally higher than that of female infants. This difference starts after 28 weeks of gestation. Although the exact mechanism impacting the difference in birth weight is unknown, it might be due to androgen activities or the Y chromosome, which carries genetic material for foetal growth. As a result, male infants could have higher intrauterine growth and birth weight than their female counterparts(44). Another explanation would be that female foetuses are more insulin resistant than boys, so females would not use glucose as properly as males during the intrauterine period(45).

So the implication of this finding is closely associated with foetal and neonatal mortality and morbidity, inhibited growth and cognitive development, and non-communicable disease later in life. Low-birth-weight infants are about 20 times more likely to die than heavier infants.

7. STRENGTH AND LIMITATION

7.1. Strength of the study

The main strength of this study was taking birth weight within 1 hour after birth.

7.2. Limitation of the Study

Factors like income status, pre-pregnancy weight, multiple births, and other unmentioned factors that might be associated with LBW were not addressed in this study.

Inability to include mothers who delivered at home.

The study was conducted with a cross-sectional study design, so it does not show a cause-and-effect relationship.

8. CONCLUSION AND RECOMMENDATION

8.1. CONCLUSION

The study indicated that the prevalence of low birth weight among newborns in Gurage zone hospitals in southern Ethiopia was 17.1%, with a 95% CI of 13.9–20.4%. Factors associated with LBW were previous LBW, current pregnancy complications, chronic maternal illness, and being female.

8.2. RECOMMENDATIONS

According to the findings from this study, the following recommendations have been suggested to different stakeholders;

8.2.1. For health workers

Health care providers might screen and consulate pregnancy-complication mothers who are at risk of having infants with LBW and ensure that women have access to essential health information on the causes of low birth weight.

Health professionals could undertake prevention strategies for previous low-birth-weight pregnancies. Health professionals should give special attention to chronic maternal illness mothers to get adequate rest and an additional diet, and making antenatal services available and accessible timely to all pregnant women is recommended to minimize the prevalence of low birth weight.

8.2.2. For Ministry of health and Gurage health service organizations

Governmental and non-governmental organizations working on maternal and child health should focus on identified factors in order to tackle the problem of LBW

8.2.3. For researchers

Researchers who are interested in conducting community-based studies on low-birth-weight newborns are also needed to identify the effects of seasonal variations in nutrition on the effects of birth outcomes.

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10. ANNEXES

Annex I: Consent form

WELKITE UNIVERSITY

COLLEGE OF HEALTH AND MEDICAL SCIENCES

DEPARTMENT OF PUBLIC HEALTH

QUESTIONNAIRE FOR ASSESSMENT OF PREVALENCE AND ASSOCIATED FACTORS OF LOW BIRTH WEIGHT AMONG NEWBORNS IN GURAGE ZONE HOSPITAL, SOUTHERN ETHIOPIA, FROM JULY 19 TO AUGUST 19 2023

INTRODUCTION

Hello!! dear participants, this questionnaire is prepared by Aleminesh Mekibib, Masters of public health in nutrition student in Wolkite university in the field of public health officer to assess the prevalence and associated factors of low birth weight among newborn babies Gurage Zone Hospitals, South Region, Ethiopia from July19 to August 19/2023. The aim of this study is to determine the prevalence of low birth weight and to identify the possible associated risk factors for newborns in Gurage zone hospitals, Southern Ethiopia that will provide base line data to find possible solutions. During the study your response will be kept confidentially, there is no name identified or anonymity will be kept and there will be no any visible risk with you and your newborn baby for your participation. There is no payment for your participation but we greatly thank for your participation and you have the right to refuse from participation at any time. Are you voluntary to participate?

1. Yes

I have understand the above information and I am volunteer to participate in a study conducted on low birth weight and associated factors in Gurage zone hospital, Southern Ethiopia, from June19 to August 19/2023.

1. Signature ---------- Date----------

Data collector's signature---------- Date -------

2. **No** if not voluntary please stop here.

If you are voluntary to participate in the study; we kindly request you to provide your genuine response for the interview. Thank you for your volunteer participation!!!

Annex II: English version questioner

This is a data collection format to assess the prevalence and associated factors of low birth weight among newborns in Gurage zone hospital, Southern Ethiopia.

Name of Data collector: ----------Date: ----------Qualification: ----------

Data Collector agreement

"I certify that I have filled the questionnaire in accordance with the training that is given to me and instructions stated in it. I have confirmed that the information in it is correct."

Signature---------- Date----------

Name of the hospital: ----------

Record number (code):----------

Checked by supervisor for completeness; Supervisors Name: ----------Signature-----

Part 1: Demographic and socio-economic characteristics of the mother

Q.no.	Questions	Choice for response	Code
101	Age of the mother at delivery	----------	
102	Religion	1. Muslim 2. Orthodox 3. Protestant 4. Catholic 5. Others, specify_____	
103	Ethnicity	1. Gurage 2. Amhara 3. wolayeta 4. Oromo 5. Other, Specify ------	
104	Maternal Educational status	1. Un able and write 2. Read and write 3. Primary education 4. Secondary education & above	

105	Husband educational status	1. Un able and write 2. Read and write 3. Primary education 4. Secondary education & above	
106	Where is your residence?	1. Rural 2. Urban	
107	Marital status	3. Single 4. Married 5. Divorced 6. Widowed	
108	What is your occupation?	1. Farmer 2. Merchant 3. Housewife 4. Government employed 5. If Other specify_____	

2.Maternal factors			
201	Number of previous births (include term and premature deliveries)	1. 1 2. 2-3 3. 4-5 4. >=6	
202	What is the pregnancy interval of the previous birth? (months)	----------	
203	Desirability of pregnancy	1. Yes 2. No	
204	Previous history of low birth weight	1. Yes 2. No	
205	Did you have pregnancy complication during the current pregnancy?	1. Yes 2. No	

206	If yes for question no.205, what type of pregnancy complication?	1. APH 2. PROM 3. PIH 4. Mention if any_____	
207	Did you have chronic medical illness during pregnancy?	1. Yes 2. No	
208	If yes for question number 207, what type of illness? (Hint.TB,HIV, DM,)	Mention_____	
209	Did you have malaria infection during the current pregnancy?	1. Yes 2. No	
210	Did you have STI during the current pregnancy which is confirmed?	1. Yes 2. No	
211	If yes for question no.210, what type of infection?	1. Syphilis 2. Gonorrhea 3. Chancroid 4. Other, specify._____	
212	Did you have anemia for the current pregnancy that is confirmed with health care personnel?	1. Yes 2. No	
213	Gestational age of current pregnancy at delivery (in weeks)	----------	
214	Did you have ANC visits for the current pregnancy?	1. Yes 2. No	
215	Which month of pregnancy did you start ante natal visits? (record in weeks)	----------	
216	Number of ANC visits attended	----------	
217	Iron/folate intake during pregnancy?	1. Yes 2. No	
218	If yes for question no. 217 how many tablet have you ever taken?	1. <60 tablets 2. 60-90 tablets 3. >90 tablets	

Part 3:Maternal Behavior and Nutritional factors			
301	Have you ever advised about dietary intake during ANC follow up?	1. Yes 2. No	
302	Did you take extra feeding during pregnancy?	1. Yes 2. No	
303	Were you smoking cigarettes during the current pregnancy?	1. Yes 2. No	
304	Were you taking alcohol during the current pregnancy?	1. Yes 2. No	
305	Were you chewing chat during the current pregnancy?	1. Yes 2. No	
	Part 4:Newborn Factors		
401	Birth weight of live birth baby (gm.)	----------	
402	Sex of the newborn	1. Female 2. Male	
403	Visible congenital defect	1. Yes 2. No	

Annex III: Amharic version የ ፍቃደኝነ ት ሚ ጋገ ጫቅፅ

ወልቂጤ ዩኒቨርሲቲ ፣ህክምና እና ጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና ሳይንስ ትምህርት ክፍል በጉራጌ ዞን ሆሰፒታል ክብደታቸው ከትክክለኛው (2.5 ኪ.ግ) በታች ሆነዉ የሚወለዱ ህጻናትና የሚያጋልጡ ተዛማጅ ምክንያቶችን ከሰኔ እስከ ሀምሌ 2015 ዓ.ም ለማጥናት የተዘጋጀ አማርኛ መጠይቅ

መግቢያ

ጤና ይስጥልኝ ! ዉድ ተሳታፊዎች ይህ መጠይቅ የተዘጋጀዉ በወልቂጤ የህብረተሰብ ጤና ሳይንስ ትምህርት ክፍል የ2ኛ አመት የስርዐተ ምግብ ተመራቂ ማስተርስ ተማሪ በሆኑት በወ/ሮ አለምነሽ መክብብ ሲሆን ጥናቱም ጉራጌ ዞን ላይ በሚገኙ ሆሰፒታሎች ክብደታቸው ከትክክለኛው(2.5 ኪ.ግ) በታች ሆነዉ የሚወለዱ ህጻናትና የሚያጋልጡ ተዛማጅ ምክንያቶችን ከሀምሌ 12 እስከ ነሃስ 12 2015 ዓ.ም ለማጥናት ነው።

በዚህ ጥናት ላይ በመሳተፍዎም ሆነ መጠይቁን በመመለስዎ የተዘጋጀ ክፍያ የለም ነገር ግን ከዚህ ጥናት የሚገኘው መረጃ ለጨቅላ ህፃናት ጤና ደህንነት እና እንክብካቤ ለመስጠት እንዲሁም ልዩ ትኩረት ለመስጠት እና ለችግሩ የመፍትሄ እርምጃ መዉሰድ ለሚሹ ሀጋዊ አካላት ትልቅ አስተዋጽኦ አለዉ። በመጠይቁ ላይ ስምዎትን አይጠየቁም ። እንዲሁም መልሶቻችሁ በምስጢር ስለሚያዙ በምንም አይነት መንገድ ጉዳዩ ለማይመለከታቸዉ አካላት አይገለጽም በዚህ ጥናት በመሳተፍዉ በልጅዉ ወይም በእርስዉ ላይ የሚደርስ ጉዳት የለም። የእርስዎ በዚህ ጥናት ላይ መሳተፍ በፍላጎትዎ ላይ የተመሰረተ ነው። መጠይቁን ሙሉ ለሙሉ ያለመሙላት ወይንም የማቋረጥ መብትዎም የተጠበቀ ነዉ።

በጥናቱ ዉስጥ ለመሳተፍ ፈቃደኛ ነዎት? 1. አዎፈርማ_____ቀን _____

የመጠይቁ ሰብሳቢ ፊርማ_____ቀን

_____

1. አዎ

2. አይደለሁም ---- እባክዎን

እዚህ ጋር ይቁሙ በጥናቱ ዉስጥ ለመሳተፍ ፈቃደኛ ከሆኑ ትክክለኛ የሆነ መልስ እንዲሰጡን በትህትና እንጠይቃለን።

ስለትብብርዎ በቅድሚያ እና መሰግናለን !!!

Annex IV: Amharic version ቃለ ማኪይቅ

የመረጃ ሰብሳቢዉ ስምምነት

የመረጃ ሰብሳቢዉ ስም: ---------- ቀን: ----------

የሆስፒታል ስም: ----------

መረጃዎቹን በመመሪያዎቹና በሰለጠንኩት ስልጠና መሰረት መሙላቴን እና ትክክለኛነታቸዉን አረጋግጣለሁ:: ፊርማ---------- ቀን----------

የተቆጣጣሪው ስም----------ፊርማ----------

ክፍሌ 1: የእናት ግላዊና ማህበራዊ ገጽታ

ተ.ቁ	ጥያቄዎች	ምርጫ የቀረቡ ምላሾች	መለያ
101	እድሜሽ ስንት ነዉ?	----------	
101	ሃይማኖትሽ ምንድን ነዉ?	1. መስሊም 2. ኦርቶዶክስ 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላ ካለ ይጠቀስ----------	
103	ብሄርሽ ምንድን ነዉ?	1. አማራ 2. ትግሬ 3. ኦሮሞ 4. ወላይታ 5. ሌላ ካለ ይጠቀስ----------	
104	የትምህርት ደረጃሽ ስንት ነው?	1. ማንበብ እናመጻፍ የማትችል 2. ማንበብ እና መጻፍ የምትችል 3. የመጀመሪያ ደረጃ 4. ሁለተኛ ደረጃ እና ከዚያ በላይ	

105	የባለቤትሽ የትምህርት ደረጃ ስንት ነው?	1. ማንበብ እናመጻፍ የማትችል 2. ማንበብ እና መጻፍ የምትችል 3. የመጀመሪያ ደረጃ 4. ሁለተኛ ደረጃ እና ከዚያ በላይ	
106	መኖሪያሽ የት ነዉ?	1. ገጠር 2. ከተማ	
107	የትዳር ሁኔታ	1. ግላዊ/ብቸኛ 2. ያገባች 3. የተፋታች 4.የሞተባት	
108	የእናትየዋ የስራ ደረጃ/አይነት	1. አርሶ አደር 2. ነጋዴ 3. የቤት እመቤት 4. የመንግስት ሰራተኛ 5. ሌላ ካለ ይጠቀስ---	
ክፍል 2፡ስለ እናትየዋ የጽንስ እና ማህጸን ሁኔታዎች			
201	ስንት ልጆች ወልደሻል?	----------	
202	በአሁኑ እና ከዚህ በፊት በወለድሽዉ ልጅ መካከል ያለው የጊዜ ልዩነት ምን ያክል ነው? (በወር ይጠቀስ)	----------	
203	ያረገዝሽውን ልጅ ፈልገሽው እና አቅደሽው ነው ?	1. አዎ 2. አይደለም	
204	በአሁኑ እርግዝናሽ ጊዜ እርግዝናውን ተከትሎ ያጋጠመሽ የጤና እክል ነበር?(በእርግዝና ጊዜ ደም መፍሰስ፣ምጥ ሳይጀምር የእንሽርት ዉሃ መፍሰስ፣እርግዝና ተከትሎ የደም ግፊት መጨመር፣ሌላ ካለ ይጠቀስ)	1. አዉ 2. የለም	

205	ለተራ ቁጥር 204 መልስሽ አወ ከሆነ ምን አይነት የጤና ችግር ነበር?	1. አዎ 2. የለም	
206	ከዚህ በፊት ክብደቱ ዝቅተኛ (ከ2.5 ኪ.ግ በታች) የሆነ ልጅ ወለደሰሻል?	1. አዎ 2. የለም	
207	በአሁኑ እርግዝናሽ ያጋጠመሽ አጠቃላይ የጤና እክል ነበር?(ቲቢ፣ኤች አይ ቪ፣ከፍተኛ የደም ግፊት በእርግዝና	1. አዎ 2. የለም	
208	ለተራ ቁጥር 207 መልስሽ አወ ከሆነ ምን አይነት የጤና ችግር ነበር?	----------	
209	በአሁኑ እርግዝናሽ የወባ በሽታ ይዞሽ ነበር?	1. አዎ 2. የለም	
210	በአሁኑ እርግዝናሽ በጤና ባለ ሙያ የተረጋገጠ የአባላዘር በሽታ ታመሽ ታውቂያለሽ? (ቂጥኝ፣ጨብጥ፣ከርክር፣ሌላ ካለ ይጠቀስ)	1. አዎ 2. የለም	
211	ለተራ ቁጥር 210መልስሽ አወ ከሆነ ምን አይነት የጤና ችግር ነበር?	----------	
212	በአሁኑ እርግዝናሽ በጤና ባለ ሙያ የተረጋገጠ የደም ማነስ እንዳለብሽ ተነግሮሻል?	1. አዎ 2. የለም	
213	በስንት ወርሽ ነው የወለድሽው?	----------	
214	በእርግዝናሽ ወቅት የጽንስ ክትትል ነበረሽ	1. .አዎ 2. የለም	
215	የ214ኛዉ ጥያቄ መልስሽ አዎ ከሆነ በአረገዝሽ በስንተኛ ወርሽ ላይ ነው ክትትል የጀመርሽው?	----------	
216	በአጠቃሊይ ስንት ክትትል ነበረሽ?	--------	
217	በእርግዝናሽ ወቅት ለደም ማነስ የአይረን ፎስፌት እንክብልች ወስደሽ ነበር?	1. አዎ 2. የለም	

218	የ 213ኛው ጥያቄ መልስወ አዎ ከሆነ ምን ያህል እንክብሎችን ወስደሻል?	----------	
ክፍል 3፡የእናት ስነ-ባህሪ እና የአመጋገብ ሁኔታን በተመለከተ			
301	በጽንስ ክትትልሽ ወቅት ስለ አመጋገብሽ ምክር ተሰጥቶሽ ነበር?	1. አዎ 2. የለም	
302	በአሁኑ እርግዝናሽ ጊዜ ከእስካሁኑ አመጋገብሽ ተጨማሪ ምግብ ተመግበሻል?	1. አዎ 2. አይደለም	
303	በእርግዝናሽ ወቅት ሲጋራ ታጨሻለሽ ነበር?	1. አዎ 2. የለም	
304	በእርግዝናሽ ወቅት አልኮል ትጠጭ ነበር?	1. አዎ 2. የለም	
305	በእርግዝናሽ ወቅት ጫት ትቅሚ ነበር?	1.አዎ 2.የለም	
Part 4: **የህፃኑ ሁኔታ**			
401	የህፃኑ ክብደት	----------ግራም	
402	የህጻኑ ጾታ	1. ሴት 2. ወንድ	
403	በአይን የሚታይ ተፈጥሪዊ ችግር	1.አዎ 2.የለም	