ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF ALLIED HEALTH SCIENCES

DEPARMENT OF NURSING AND MIDWIFERY

PREVALENCE AND ASSOCIATED FACTORS OF LOW BIRTH WEIGHT AMONG NEWBORN BABIES IN DESSIE TOWN HEALTH INSTITUTIONS AMHARA REGION, ETHIOPIA, 2017

PRINCIPAL INVESTIGATOR: DESALEGN ABEBAW (BSc)

RESEARCH THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCE, SCHOOL OF ALLIED HEALTH SCIENCES, DEPARTMENT OF NURSING AND MIDWIFERY FOR PARTIAL FULFILLMENT OF MASTERS OF SCIENCE IN PEDIATRICS AND CHILD HEALTH NURSING.

JUNE, 2017

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ADVISORS: 1. MR. ZELEKE ARGAW (MSc, BSc, RN)

2. MR DANIEL MENGISTU (MSC, BSC, RN)

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SCHOOL OF NURSING AND MIDWIFERY GRADUATE STUDIES

I hereby certify that I have read and evaluated this research entitled prevalence and associated factors of low birth weight among newborn babies in Dessie town health institutions Amhara region, Ethiopia, 2017 prepared under my guidance by Desalegn Abebaw.

Desalegn Abebaw	_____	_____
Principal Investigator	Signature	Date

I recommend that it is submitted as fulfilling the requirements of research thesis.

_____	_____	_____
Advisor	Signature	Date
_____	_____	_____
Advisor	Signature	Date

As a member of the MSc thesis Open Defense Examination, I certify that I have read and evaluated the thesis prepared by Desalegn Abebaw and examined the candidate. I recommend that the thesis be accepted as fulfilling the thesis requirements for the degree of Master of Science in Pediatric and Child Health Nursing.

_____	_____	_____
Examiner	Signature	Date

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LIST OF ACRONYMS AND ABBREVIATIONS

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

ABSTRACT

Introduction: Globally, more than 20 million infants are born with Low Birth Weight and a larger proportion of these concentrating in Asia and Africa. Africa has a reported incidence of 14.3 %.Children born with low birth weight are more likely to die prematurely compared to infants of normal birth weight. Likewise, these children experience more morbidity, both in the short and long term. Therefore, it is clear that low birth weight represents a heavy burden for healthcare services worldwide.

Objective: The aim of this study was to assess the prevalence and associated factors of low birth weight among newborn babies in Dessie town health institutions, Amhara region, Ethiopia.

Method: An institutional based cross sectional study design was conducted to assess the prevalence and associated factors of low birth weight among newborn babies in Dessie town health institutions. The data was collected using a semi-structured pre-tested interviewer guided questionnaire. Data was cleaned manually, coded and entered into Epi -info version 7 and analysed by SPSS version 20 statistical software.Bivariate and multivariate logistic regression analyses were employed to identify associated factors for low birth weight.After bivariate regression analysis, variables with P value less than 0.2 were included in multivariable logistic regression. Adjusted odd ratio along with 95% CI was calculated to see strength of association and $P<0.05$ was taken as level of statistical significance.

Result: Data were collected from 358 mothers who had new born babies with 97% response rate. In this study the prevalence of LBW was 15.6%. Maternal age AOR:3.78,95% CI,(1.02,13.97),residing in rural area AOR: 3.49, 95% CI, (1.48,8.24), ANC follow up AOR: 3.79, 95% CI (1.08, 13.23), gestational age AOR:3.82 95% CI,(1.55,9.42) Sex AOR:3.37,95% CI,(1.17,9.72)were found to be predictor of low birth weight.

Conclusion and Recommendation: The prevalence of low birth weight in this study was high. With regard to this high LBW prevalence, there is need for health care providers in Dessie town health institutions to put more emphasis on Focused ANC to ensure risk of LBW is detected early and treated appropriately.

Key words: low birth weight, associated factors, Dessie town, North East Ethiopia

1. INTRODUCTION

1.1 Background

The World Health Organization defines Low Birth Weight is a birth weight of less than 2500 gram irrespective of the gestational age of the newborn. Low birth weight represents a condition that results in significant impacts in healthcare systems, particularly in developing countries. Even though the efforts made in reducing incidences of LBW worldwide, the problem of LBW remains global health problem, especially in sub-Saharan Africa(1). Globally, more than 20 million infants are born with Low Birth Weight (LBW) and a larger proportion of these concentrating in Asia and Africa(2). Africa has the higher incidence of low birth weight although the report is highest in Asia which is eighteen point three percent. This becomes particularly alarming when an incidence of only 7% is reported for the more developed United Nations Regions(3).

Only less than five percent of children in Ethiopia are weighed at birth. This is not surprising because the majority of births do not take place in a health facility, and children are less likely to be weighed at birth in a non-institutional setting. According to the 2011 Ethiopian demography and health survey, 11 % of babies in Ethiopia were low birth weight.

In Ethiopia different studies have reported the prevalence of LBW in different periods. A hospital based mixed cross sectional study conducted in Tigray in 2015 shows that the prevalence of low birth weight was found to be 14.6 %(4).Another comparative cross sectional study done in Tigray in 2014 shows the prevalence of LBW was 9.9% and 6.3% in Axum and Laelay Maichew districts, respectively(5). According to the in-depth Analyses of the Ethiopian Demographic and Health Survey -2011(2) and a Hospital based cross-sectional study done in Bahir Dar Felege Hiwot hospital(6) shows the prevalence of low birth weight was 30% and 21.23% respectively. So these high prevalence shows that the burden of low birth weight is still under question in Ethiopia.

The prevalence of LBW assumes as a general indicator of morbidity and mortality of both mothers and children, and considers a significant determinant of social circumstances in the future. New born LBW babies face an elevated chance of higher rates of morbidity and mortality caused by infectious diseases in the neonatal, childhood and adulthood. Despite of the efforts

made in reducing incidences of LBW worldwide, the issue remains an ongoing policy concern for the global health although World Health Organization (WHO) and United Nation Development Program (UNDP) are continuously addressing this issue through their developmental programs.

In Ethiopia, low birth weight is major public health problems. The achievement of sustainable development goals is strongly influenced by progress in reducing neonatal deaths. Since low birth weight is one of the leading cause of neonatal mortality progress of sustainable development goal will be dependent on achieving high coverage of evidence-based interventions that halt Low birth weight and improve survival of these newborns. In general, epidemiological data on the magnitude and risk factors of low birth weight are important for planning maternal and child health care services in developing countries(7).

1.2 Statement of the problem

Child's birth weight is a significant factor which determines vulnerability for risk of childhood illness and childhood survival. The incidence is estimated at more than 20 million births per year. Of these, 95.6% occur in developing countries, where 16.5% of newborn infants are of low birth weight, more than twice the percentage found in developed countries (7%)(6, 8). Some epidemiological observations revealed that infants born under-weight (less than2500gram)are approximately 20 times more likely to die than heavier babies(6, 8)**.**

In Ethiopia a study done in 2014 shows the prevalence of LBW was 32% which is higher than the studies done previously(9).Major risk factors for low birth weight are Maternal age, Poor maternal nutritional status, Non pregnant weight ,Parity , previous histories of adverse birth outcomes, anemia, Educational status, Lack of Antenatal care and Very low socioeconomic status(7, 8).

Children born with low birth weight are more likely to die prematurely compared to infants of normal birth weight. Likewise, these children 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 problems associated with low birth weight babies(10).There is also a greater vulnerability to infectious diseases due to a poorer immune response(11).

So, 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.

Therefore, the purpose of this study is to determine the prevalenceand associated factors of low birth weight among newborn babies in Dessie town health institutions.

1.3 Significant of the study

The study will provide useful information that will inform health facilities to prepare special care for LBW neonates because most dies within 24 hours of delivery due to poor access of intensive care units and trained health care providers. As far as my knowledge is concerned, previous studies about the prevalence and associated factors of LBW among newborn babies has not been conducted in the study area. So, this study will provide baseline data on the prevalence of newborn babies low birth weight.

The identification of possible factors for low birth weight in the area will have greater input to program managers and policy makers for designing, proper implementation and evaluation of programs on reduction of low birth weight and improvement of new born care to achieve sustainable development goal (SDG) 3 of ensuring healthy lives and promote well- being for all at all age.

One of the significance of this study for nursing profession is that it will assist to provide evidence based practice on newborn care services that will improve the promotive, preventive and curative care of mothers &newborn babies.

Furthermore, the findings will create awareness in the community about the problem and contribute towards formulating locally appropriate interventions to prevent low birth weight.

2. LITRATURE REVIEW

There is considerable 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. 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 remain 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(12).

Causes of low birth weight are multi-factorial, but are related to either obstetrical factors like preterm birth (Shortened gestation, <37 weeks), which directly contributes to 28% of neonatal death and intrauterine growth restrictions(13).Malnutrition, infection, illiteracy ,chat chewing, cigarette smoking, alcohol drinking, malaria ,short inter pregnancy intervals, teenage pregnancy have been identified as modifiable risk factors for low birth weight(14, 15).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(16).

2.1 Prevalence of low birth weight

A cross sectional study done in India on determinants of low birth weight from 253 newborns shows that 73 (28.8%) were low birth weight newborns the proportion being significantly more among females than the males (61.6%vs38.4%)(17).A study conducted on the prevalence and some associated factors in Iran on 461 newborn infants in which 221 boys (47.9%) and 240 girls (52.1%) shows that the prevalence of low birth weight was 6.7%(18).Another case control study done in Iran on the prevalence and associated factors of LBW shows the prevalence was 6.3%(19).A Cross Sectional Study done on the Prevalence and Factors Associated with Low Birth Weight among Teenage Mothers in New Mulago Hospital in Uganda shows the prevalence of LBW was 25.5%(16).In Bangladesh, the prevalence of low birth weight (LBW) is unacceptably high. A cross sectional descriptive study was carried out on 102 newborns to assess the proportion of LBW babies. . Results revealed that the proportion of LBW babies was 25.49% (n=26)(20). Another Multiple Indicators Cluster Survey (MICS) study done in Ghana on the prevalence of Low Birth Weight and Associated Maternal Factors on 10,963 samples shows that the prevalence of LBW was 9.2%(21).In addition to the Prevalence and determinants of low birth weight done in Nigeria in Benin city was 6.3%(22).A cross sectional analytic study done on Factors associated with low birth weight among neonates born at Olkalou District Hospital, Central Region, Kenya shows the prevalence of LBW was 12.3%(23).

The study done at University of Gondar referral hospital in Northwest Ethiopia on the Incidence and correlates of low birth weight shows that the incidence of LBW was 17.1%(24).

Maternal associated factors of low birth weight: a hospital based cross-sectional mixed study in Tigray, Northern Ethiopia in 2015 shows the prevalence of LBW was found to be 14.6 % (95 % CI = 12.56-16.61)(4).Additionally the study conducted in Bahir Dar Felege Hiwote Referral hospital on the prevalence and associated factors shows the prevalence of low birth weight was 25.5%(6)

A facility based cross sectional study conducted on the Prevalence and associated Factors of Adverse Birth Outcomes among Women Attended Maternity Ward at Negest Elene Mohammed Memorial General Hospital in Hosanna Town, SNNPR, Ethiopia shows the prevalence of LBW was 32 (9.8%)(10).

A comparative cross sectional study on The Prevalence and factors associated with low birth weight in Axum and Laelay Maichew Districts, North Ethiopia shows the prevalence of low birth weight was 9.9% and 6.3% in Axum and Laelay Maichew districts, respectively(5).

Prevalence and Determinants of Small Size Babies in Ethiopia Results from in-depth Analyses of the Ethiopian Demographic and Health Survey -2011.this In-depth analysis of the Survey data set was conducted using representative data collected from all regions in the country and An average of 30.3% of Ethiopian babies were reported as small at birth by moms and a non-linear but declining trend was observed during the study periods(2).

Institutional based cross sectional study on Adverse birth outcomes among deliveries at Gondar University Hospital, Northwest Ethiopia shows that the prevalence of low birth weight was 11.2%(7).

EDHS 2011 data shows that 11 percent babies weighed less than 2.5 kilograms. As noted, a mother‘s subjective assessment of the size of the baby at birth, in the absence of birth weight, may be useful. Mothers reported 21 percent of all live births in the five years preceding the survey than average. Nearly three children of every ten born to mothers residing in Afar (30 percent), Amhara (28 percent), Somali (26 percent), and Gambela (27 percent) were reported as very small at birth(5).

2.2 Associated factors of Low birth weight

2.2.1 Demographic and socio-economic factors

According to a cross sectional study conducted on maternal associated factors in Pakistan shows that mothers with low level of education and low weight were at the greater risk of producing low birth weight babies as compared to those who had high level of education. Furthermore, mothers with less than 18 years of age and those aged 35 or more had more risk of low birth weight outcomes. mothers with low socio-economic status were at higher risk of low birth weight children(25).

According to the study done in India on an epidemiological factors affecting low birth weight, it was observed that the incidence of low birth weight babies was higher in mothers with lower educational and socioeconomic status and there was a statistically significant association between the two. Maternal age was an important factor in low birth weight babies and the incidence of low birth weight decreased with increase in maternal age and the association was statistically significant ($p<0.01$).However, the low birth weight in relation to occupation was not statistically significant.(13).

According to a study done on Risk factors and adverse perinatal outcome associated with low birth weight in Northern Tanzania, Multivariate logistic regression showed female gender of baby was significantly associated with delivery of low birth weight infants (26).

Epidemiology of Low Birth Weight in the Town of Sidi Bel Abbes (West of Algeria): A Case-Control Study confirms there was a close association between low birth weight newborn and primary educated mothers(27).

Research done on the incidence of low birth weight babies and associated factors among postpartum mothers who gave birth at Felege Hiwote Referral hospital ,Bahirdar Ethiopia Illiterate mothers had higher rate of 28(73.7%) in giving low birth weight deliveries. Mothers who gave birth LBW neonate had significant association with rural residence 25(65.8%) with [AOR=5.09, 95% CI (2.01,12.85] (6).

The study done on the Prevalence and associated Factors of Adverse Birth Outcomes among Women Attended Maternity Ward at Negest Elene Mohammed Memorial General Hospital in Hosanna Town, SNNPR, Ethiopia shows Being government employee

[AOR=4.5,95%CI(1.25,15.9)], rural residence [AOR=3.5,95%CI(1.57,7.93)] and age<20 years [AOR=4.9,95%CI(11.29,18.6)] were associated with low birth weight(10).

A cross-sectional mixed study design done on maternal associated factors of low birth weight in three zonal hospitals in Tigray, Northern Ethiopia conducted with 308 sample size, Residence of the mother was strongly associated with low birth weight, mothers residing in rural area were more than 4 times more likely to have LBW babies when compared to those mothers who live in urban (4).

Another study done on the prevalence of Low Birth Weight and Associated Maternal Factors in Ghana, The descriptive statistics show that mothers in rural areas tend to give birth to low birth weight children than women who live in urban areas(21).

According to the EDHS 2011 Low birth weight is more common among children of the youngest mothers, age less than 20 (13 percent) and older mothers, age 35-49 (17 percent),The birth weight of a child also varies by place of residence. Seventeen percent of births in rural areas, compared with 9 percent in urban areas, have a reported birth weight less than 2.5 kg. Children of mothers with no education were the most likely to be reported as very small birth weight. LBW has bivariate associations with mother's educational status and No association was found between LBW and mother's occupation(28).

2.2.2 Maternal factors

According to a cross sectional study conducted in Pakistan mothers with last pregnancy interval of less than 12 months were at higher risk of low birth weight children(25).Another study done in India on an epidemiological factors affecting low birth weight, The inter-pregnancy interval and the number of antenatal visits were having statistically significant association with low birth weight ($p<0.01$). Overall about 45.6% of the mothers were found anemic and about 48.05% of the anemic mothers delivered low birth weight babies and the association was statistically significant ($p<0.05$). Iron and folic acid supplementation during pregnancy also had a significant association with low birth weight ($p<0.05$). This data show significant positive effect of iron &folic acid supplementation during pregnancy(13).

According to the study done in Norway the investigator found no adverse effect of increasing parity on the odds of having a child with low birth weight at normative ranges; such effects only

manifest at extremely high parities nine or more children. At moderately high parities, the chance of low birth weight is actually lower than at very low parities(29).

Maternal Risk Factors Determining Birth Weight of Newborns: A Tertiary Care Hospital Based Study in India on 509 deliveries shows gestational age less than 37 weeks had higher risk of delivering low birth weight when compared with gestational age greater than or equal to 37 weeks(30).

Prevalence and Factors Associated with Low Birth Weight among Teenage Mothers in New Mulago Hospital: A Cross Sectional Study in Uganda shows the gestational age less than 37 weeks had higher risk of delivering low birth weight comparing with those who had gestational age of greater than or equal to 37 weeks [AOR 3.302; P = 0.00001](16).

A study conducted on Factors associated with low birth weight among neonates born at Olkalou District Hospital, Central Region, Kenya shows premature births (OR=3.65, 95%C.I. =1.31-10.38) had higher risk of low birth weight than term births(23).

According to a study done on Risk factors and adverse perinatal outcome associated with low birth weight in Northern Tanzania, Multivariate logistic regression showed maternal anemia (RR 1.7; 95% CI 1.4–2.2) and being delivered preterm (RR 2.0; 95% CI 1.8–2.3) were significantly associated with delivery of low birth weight infants (26).

Epidemiology of Low Birth Weight in the Town of SidiBel Abbes (West of Algeria): A Case-Control Study confirms the close association between low birth weight newborn and prematurity, primi-parity, short inter-pregnancy interval and delayed of first antenatal visit(27).

A Cross Sectional Study conducted on the Prevalence and Factors Associated with Low Birth Weight among Teenage Mothers in New Mulago Hospital shows young maternal age and ANC attendance were not associated with LBW(16).low birth weight has bivariate with use of antenatal care facilities and gestational age. *(28).*

Research done on the incidence of low birth weight babies and associated factors among postpartum mothers who gave birth at Felege Hiwote Referral hospital ,Bahirdar Ethiopia showed Inter Pregnancy Interval had no significant association on the Low Birth Weight(6).

The study done on the Prevalence and associated Factors of Adverse Birth Outcomes among Women Attended Maternity Ward at Negest Elene Mohammed Memorial General Hospital in Hosanna Town, SNNPR, Ethiopia shows lack of antenatal care [AOR=3.2,95%CI(1.27,8.06)] was associated with low birth weight(10).

A cross sectional study design done on the Incidence and correlates of low birth weight at University of Gondar referral hospital in Northwest Ethiopia mothers with lack of ANC follow up during pregnancy had 5.68 times being low birth weight than those mothers who had ANC follow up(24).

According to a case–control study conducted in Bale zone hospitals, South-East Ethiopia on Risk factors for low birth weight mothers with absence of antenatal care had 3 times more likely to give low birth weight than those who had antenatal care (AOR = 2.9; 95 % CI = 1.23–6.94)(15).

2.2.3 Nutritional status factors

According to a cross-sectional study done on Risk factors and adverse perinatal outcome associated with low birth weight in Northern Tanzania, Multivariate logistic regression showed mothers who had not counseled during pregnancy (RR 1.3; 95% CI 1.2–1.6)was significantly associated with delivery of low birth weight(26).A study done in Ethiopia on adverse birth outcomes among deliveries at Gondar university hospital in 2014 shows nutritional counseling and additional diet during the current pregnancy had strong association with low birth weight(7).

Another study conducted on the Incidence and correlates of low birth weight at a referral hospital in Northwest Ethiopia shows nearly half (46.2%) of women said they were given dietary counseling during the current pregnancy and 57.7% were taking additional nutrients during pregnancy(24).

Maternal associated factors of low birth weight: a hospital based cross-sectional mixed study in Tigray, Northern Ethiopia also shows those mother who did not get dietary counseling during pregnancy had 3.5 times higher risk of low birth weight(4).

2.2.4 Maternal behavioral factors

According to a study done on Risk factors and adverse perinatal outcome associated with low birth weight in Northern Tanzania, Multivariate logistic regression showed smoking during pregnancy (RR 1.9; 95% CI 1.0–3.5) was significantly associated with delivery of low birth weight infants (26).another study done in Negest Elene Mohammed memorial general hospital in hosanna town on the prevalence and associated factors of adverse birth outcomes among women attended maternity ward in 2016 shows that tobacco smoking has significant association with low birth weight(10).

Risk factors for low birth weight in Bale zone hospitals, South-East Ethiopia: a case–control study shows the strong association of chat chewing and low birth weight. Mothers who had history of chat chewing had 6 times higher risk of low birth weight than those had no history of chat chewing (AOR = 6.4; 95 % CI = 2.42–17.10)(15).

2.2.5 Fetal factors

Determinants of low birth weight in a Block of Hooghly, West Bengal: A multivariate analysis Study showed that being low birth was significantly more among females than the males (61.6% vs. 38.4%)(17).

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 with their respective newborn babies shows that female infants (AOR=3.37, 95%C.I.=1.14-10.00)were independently associated with LBW and ten (3.1%) of the newborns were with visible birth defect(23).

A study done on the Prevalence and associated Factors of Adverse Birth Outcomes among Women Attended Maternity Ward at Neges tElene Mohammed Memorial General Hospital in Hosanna Town, SNNPR, Ethiopia shows that from 327 pregnant mothers 6 (1.8%) were with visible sever defect(10).

.The highest prevalence of LBW (14.3%) in Africa is alarming when an incidence of only 7% is reported for the more developed United Nations Regions(3).many conducted research reported that prematurity, anemia and inadequate food intake during pregnancy, and lack of antenatal care (ANC) follow up were associated factors of LBW(7).

2.3. Conceptual framework

This conceptual framework was developed after reviewing Ethiopian demographic health survey and different literatures. The diagram shows the relationship between low birth weight with socio – demographic factors, maternal factors, nutritional factors and fetal factors (4, 6, 10, 23, 31).

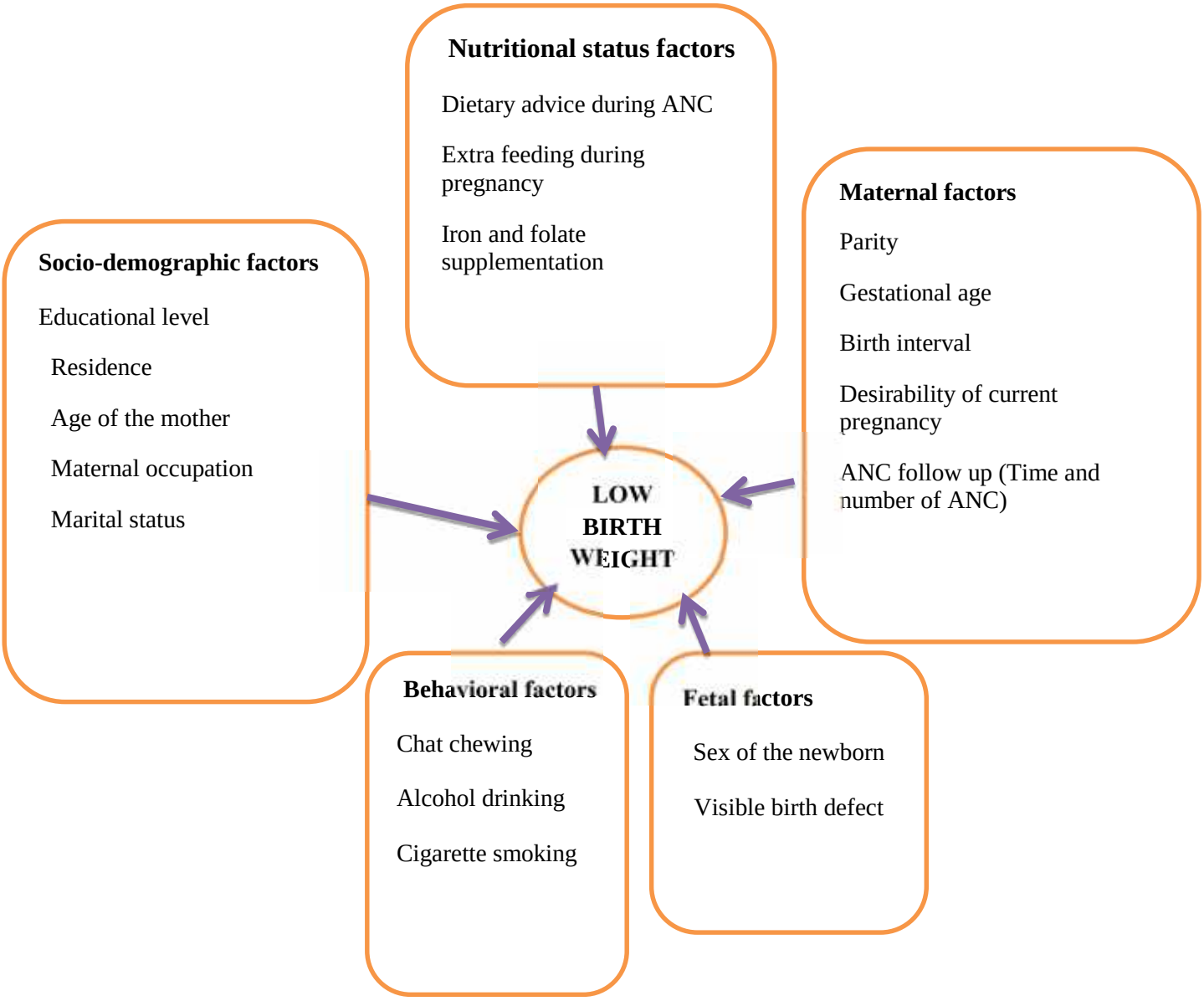

Figure 1:- Conceptual frame work shows the linkage between LBW and associated factors in Dessie town, Amhara region, Ethiopia 2017(N = 358).

3. OBJECTIVES

3.1. General objective

To assess the prevalence of low birth weight and associated factors among newborn babies in Dessie Town health institutions, Amhara region, Ethiopia from March 1 to April 15,2017.

3.2. Specific objectives

To determine the prevalence of low birth weight among newborn babies in Dessie town health institutions Amhara region, Ethiopia, from March 1 to April 15, 2017.

To identify associated factors of low birth weight among newborn babies in Dessie town health institutions Amhara region, Ethiopia, from March 1 to April 15, 2017.

4. METHODOLOGY

4.1 Study area

Dessie town is the capital city of south wollo zone which is located 401km away from Addis Ababa, the capital city of Ethiopia and 480 km from Bahirdar, the capital city of Amhara regional sate. It lies at an altitude of 8,100 feet (2,470meters). The City has surface area of about 15.08 km^2Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), Dessie city has a total population of 151,174, of whom 72,932 are men and 78,242 are women. Languages spoken include Amharic (94.89%), Tigrigna (3.79 %), and the remaining 0.67% spoke other languages. There is one public referral hospital, three health centers and three private hospitals in which all of the institutions provide delivery services in the city.

4.2. Study design and period

An institutional based cross sectional study design was conducted from March 1 to April 15,2017

4.3. Source population and study population

4.3.1. Source population

The source population was all newborn babies delivered in Dessie town health institutions, Amhara region, Ethiopia.

4.3.2. Study population

All randomly selected newborn babies delivered in Dessie town health institutions, Amhara region, Ethiopia during the study period.

4.4 Eligibility criteria

4.4.1 Inclusion criteria

All Newborn babies with their mothers who have given live birth in Dessie town health institutions are included.

4.4.2 Exclusion criteria

Newborn babies whose Mothers suffering from severe medical or surgical condition, twin delivery, mothers with unknown last menstrual period (LMP) with the absence of ultrasound evidence at the time of study period were excluded from the study.

4.5. Sample size determination

Sample size is calculated using single population proportion formula. 32.1% prevalence of small size babies at birth in Ethiopia from 2014 study was taken with 95% confidence interval and 5% marginal error(9).

$$n = \frac{(z\alpha/2)2 * p\,(q)}{w2}$$

$$n = \frac{(z\alpha/2)2 * p\,(1-p)}{w2}$$

$$n = \frac{(1.96)2[0.321(1-0.321)]}{0.0025}$$

n=335

By considering 10 % none response rate of participants we add 10 % of the sample size which is 34. So the final sample size will be **369** Newborns.

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}-α/2=standard deviation in standard normal distribution value at α = 5% which is 1.96 for 95% confidence interval

P =Prevalence of small size baby at birth in Ethiopia (32.1 %) from the previous study conducted in Ethiopia(9).

4.6. Sampling procedure

There are a total of seven (four governmental and three private)health institutions in Dessie town that provide delivery services. Total sample sizes of 369 newborn babies were selected from the seven health institutions.

All new born babies from the seven health institutions that were delivered day and night during the study period were considered for the study. The numbers of newborn babies surveyed from each health institutions were allocated proportionally to total average number of deliveries for the study period from all health institutions. List of participating mother newborn pairs were obtained from the last one month average number of deliveries in each health institution and sampling frame of delivery flow. Then Participants were selected in every 3 newborn babies by using systematic random sampling technique until the required sample size were obtained and the starting newborn babies were selected by simple random sampling method.

The Proportionate allocation was done by the formula: $n_j = \frac{n}{N} N_j$

Where;$n_j$is sample size of the j^{th} health institution

N_j is population size of the j^{th} health institution

N = Total number of newborn babies delivered per month in all health institutions. N = N1(DRH=690)+N2(BGH=72)+N3(SGH=81)+N4(EGH=60)+N5(DHC=81)+N6(BWHC=66)+N7(SGHC=69)=1119 and n =369 which is the total sample size.

By calculating the sample size for each health institutions, the sample size for DRH was 369*690/1119=226, sample size for BGH=369*72/1119=24, for SGH =369*81/1119=27, for EGH=369*60/1119=20,for DHC=81*369/1119=27,for BWHC=66*369/1119=69*369/1119=23.

So the total sample size for each health institution was proportionally allocated as seen above.

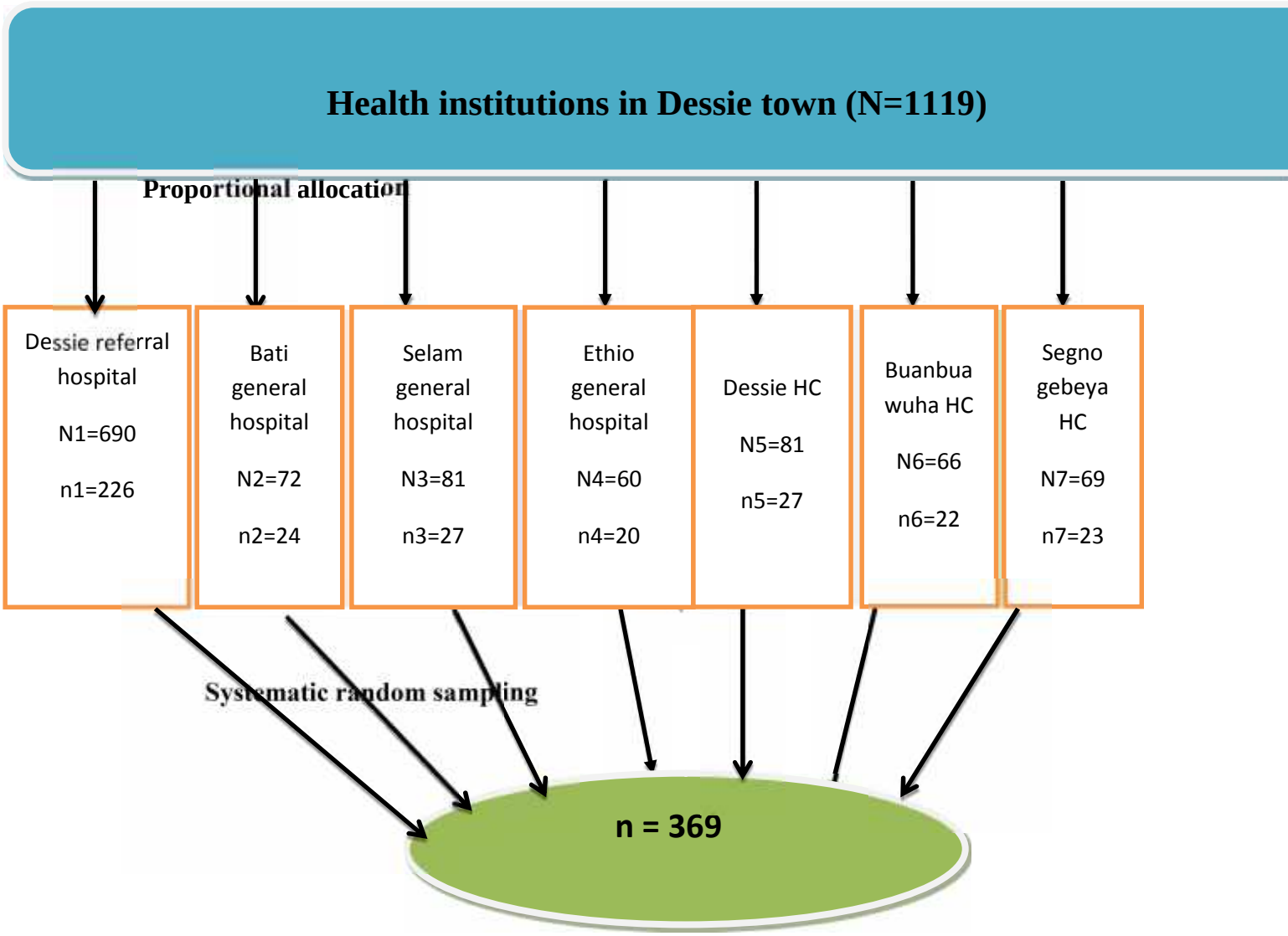

Figure 2:- schematic presentation of sampling procedure for the prevalence and associated factors of low birth weight among newborn babies in Dessie town health institutions.

4.7. Study variables

4.7.1 Dependent variables

Low birth weight

4.7.2 Independent variables

Demographic and Socio-economic factors

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

Maternal factors of the respondent

- Parity
- Pregnancy interval of previous birth
- Malaria during pregnancy
- Pregnancy complications
- Desirability of current pregnancy
- Anemia during pregnancy
- STI during current pregnancy
- History of low birth weight
- ANC follow up
- Time of initiation of ANC
- Number of ANC
- Gestational age

Nutritional status and behavioral factors

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

Neonatal factors

- Sex of the newborn baby
- Birth weight of newborn baby
- visible birth defect

4.8. Operational definitions/definition of terms

Newborn 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.

Normal birth weight: The newborn infant weight greater than 2500 grams and less than 4000 grams.

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.

Gravidity: -The number of pregnancy the mother had including ectopic pregnancy, abortion, still birth and the current pregnancy.

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 was collected using a semi-structured pre-tested interviewer guided questionnaire which was prepared by reviewing similar literatures and Ethiopian demographic health survey 2011.Medical records were cross checked to confirm important variables such as patients' obstetric history and antenatal history. Seven data collectors who are diploma midwives and two BSC midwife supervisors were recruited.one data collector was assigned for each health facility. The data collectors &supervisor 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' right, informed consent, ways of approach during interview.

4.10. Data quality assurance

The questionnaire was prepared in English and translated to Amharic, and back translated to English by two language experts to check for consistency of the questionnaire. The tool was adopted and modified from a study conducted in Ethiopian demographic health survey, Tigray, Algeria and Ghana which was pass through peer review for validity of the instrument and published(4, 21, 27, 32).

Similar measuring calibrated weight scale that has measurement accuracy for the weight of the new born was used and reliability of the bean balance was checked before using the instrument for data collection. Both supervisor and data collectors were closely followed for the data collection process. Before the actual data collection pretest was conducted by 5% of the study population at Boro Meda Hospital three weeks before the actual data collection to evaluate the clarity of questions and validity of the instrument and reaction of respondents to the questions. Maintenance of privacy and confidentiality of the respondents as well as good communication skills between respondents and interviewer that was gained through training session of both data collectors &supervisors will contribute for the quality of the study. Every day all questionnaires were reviewed and checked at the end of data collection period and any errors was corrected accordingly with supervisor and data collector.

4.11. Data processing and analysis

All filled questionnaires were checked for completeness, consistency, accuracy and entered in to EPI data (7.0) then export to SPSS software version 20 for data analysis. Frequency, proportion, and summery statistics (table, pie chart and bar graph) were used to describe the study population in relation to the relevant variables. Bivariate logistic regression was used to check variables having association with the dependent variables. Then those variables found to have p-value less than 0.2 were fitted to multiple logistic regressions for controlling the effect of confounders. Odds ratio with their 95% of CI will be computed and variables having p-value less than 0.05 in the multiple logistic regression models were considered as significantly associated with the dependent variable.

4.12. Ethical consideration

Ethical clearance was obtained from Addis Ababa University College of health sciences school of allied health sciences department of Nursing and Midwifery and official letters were written to respective department heads. Verbal consent was obtained from each participant's anonymity and confidentially was kept. Respondents were having the right not to participate in or with draw from the study at any stage.

5. RESULT

5.1 Socio-demographic factors of respondents

A total of 358 new born baby/mother pairs participated in the study constituting a response rate of 97%. The mean age of mothers was 28.45 years (SD=6.2) and more than half of the respondents (70.7%) were found within the age group of 20-34.By religious affiliation about two hundred eleven (58.9 percent of women) are Muslims and majority of the mothers 283(79.1%) were Amhara in ethnicity. More than three quarter of the mothers 278 (80%) were married and seventy six point three percent of the mothers were urban residence. Regarding maternal educational status, 98(27.4%) of the respondents were unable to read and write and almost half of them were housewives (**Table 1).**

Table 1: Socio-demographic factors of the mothers in Dessie town health institutions Amhara region, Ethiopia 2017/18.

Variable N=358	Categories	Frequency (N)	Percent %
Age of the mother	<20	48	13.4
	20-34	253	70.7
	35-49	57	15.9
Religion	Muslim	211	58.9
	Orthodox	130	36.3
	Protestant	17	4.7
Ethnicity	Amhara	283	79.1
	Tigre	61	17.0
	Oromo	14	3.9
Maternal educational status	Not read and write	98	27.4
	Read and write	59	16.5
	Primary education	121	33.8
	Secondary & above	80	22.3
Residence	Rural	76	21.2
	Urban	282	78.8
Marital status	Single	71	19.8
	Married	287	80.2
Mothers occupation	Farmer	64	17.9
	Merchant	82	22.9
	House wife	152	42.5
	Gov't employee	60	16.8

5.2 Maternal factors of the respondent

More than half 192(53.6%) of the respondents were multiparous. One hundred thirty five (37.7%) of the respondents were primiparous. One hundred fifty one (59.7%)of the respondents were categorized above or equal to two years from two hundred fifty three respondents with regard to birth interval. Two hundred eighty four (79.3%) of the pregnancies were intended. With regard to current pregnancy complication only 49(13.7%) developed complication. Three hundred forty eight (97.2%) have no history of low birth weight. Three hundred nine (86.3%)) of the mothers were had ANC follow up. Of which 208 (70%) had four and above ANC follow up **(Table 2).**

Table 2: Maternal factors of the respondents in Dessie town health institutions, Amhara region, Ethiopia, 2017/18.

Variable (N=358)	Category	Frequency(N)	Percent (%)
Parity	1	135	37.7
	2-3	192	53.6
	>=4	31	8.7
Birth interval (in months)	<=24	102	40.3
	>24	151	59.7
Desirability of pregnancy	Yes	284	79.3
	No	74	20.7
Current pregnancy complication	Yes	49	13.7
	No	309	86.3
Types of pregnancy complication	APH	9	18.4
	PROM	11	22.4
	PIH	29	59.2
History of low birth weight	Yes	10	2.8
	No	348	97.2
Medical illness for the current pregnancy	Yes	6	1.7
	No	352	98.3
Types of medical illness	TB	2	33.3
	HIV	4	76.7
Malaria infection	Yes	5	1.4
	No	353	98.6
STI for the current pregnancy	Yes	9	2.5
	No	349	97.5
Anemia for the current pregnancy	Yes	23	6.4
	No	335	93.6
ANC follow up	Yes	309	86.3
	No	49	13.7
Trimester of ANC follow up	1st	110	37.0
	2nd	168	56.6
	3rd	19	6.4
Number of ANC follow up	1-3	89	30.0
	4+	208	70.0
IFA supplementation	Yes	301	84.1
	No	57	15.9
Number of IFA tablets	<60	160	57.8
	60-90	117	42.2
Gestational age	<37	76	21.2
	>37	282	78.8

More than half of pregnant mothers 168(56.6%) had begun antenatal care follow up in the second trimester (**Figure 3).**

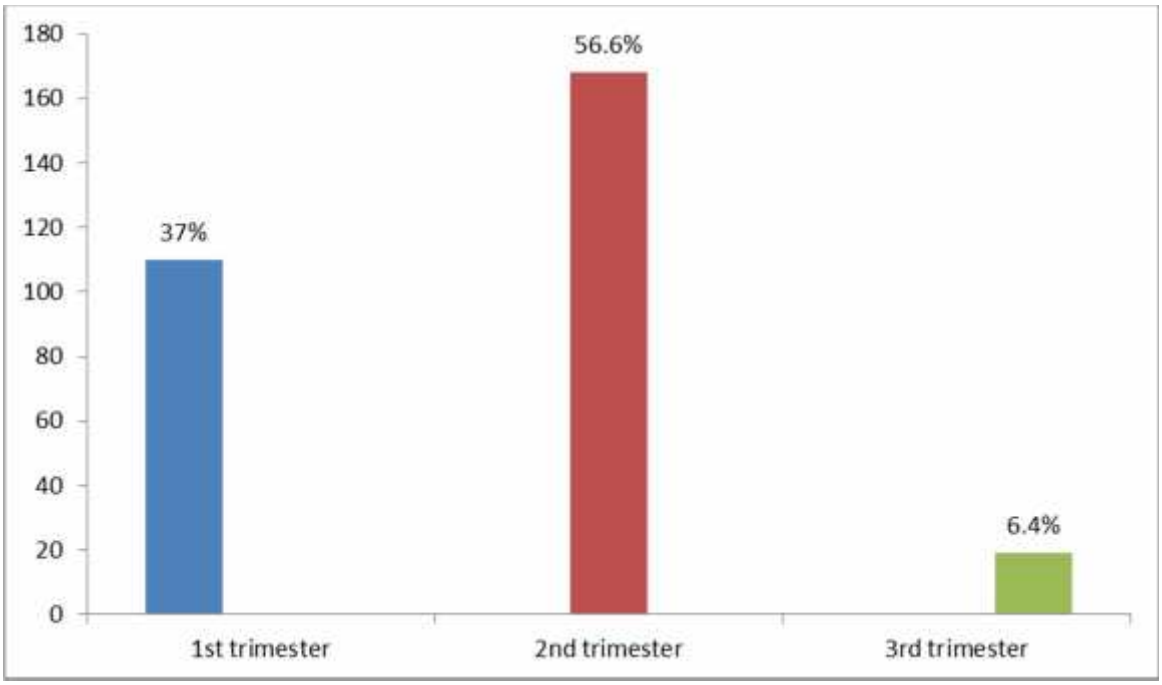

Figure 3: Trimester at which mothers began ANC follow up in Dessie town health institutions Amhara region, Ethiopia 2017/18

About 309(86.3%) of respondents had ANC follow up during their last pregnancy and more than three quarter of them were supplemented with iron folic acid during their antenatal follow up(Figure 4).

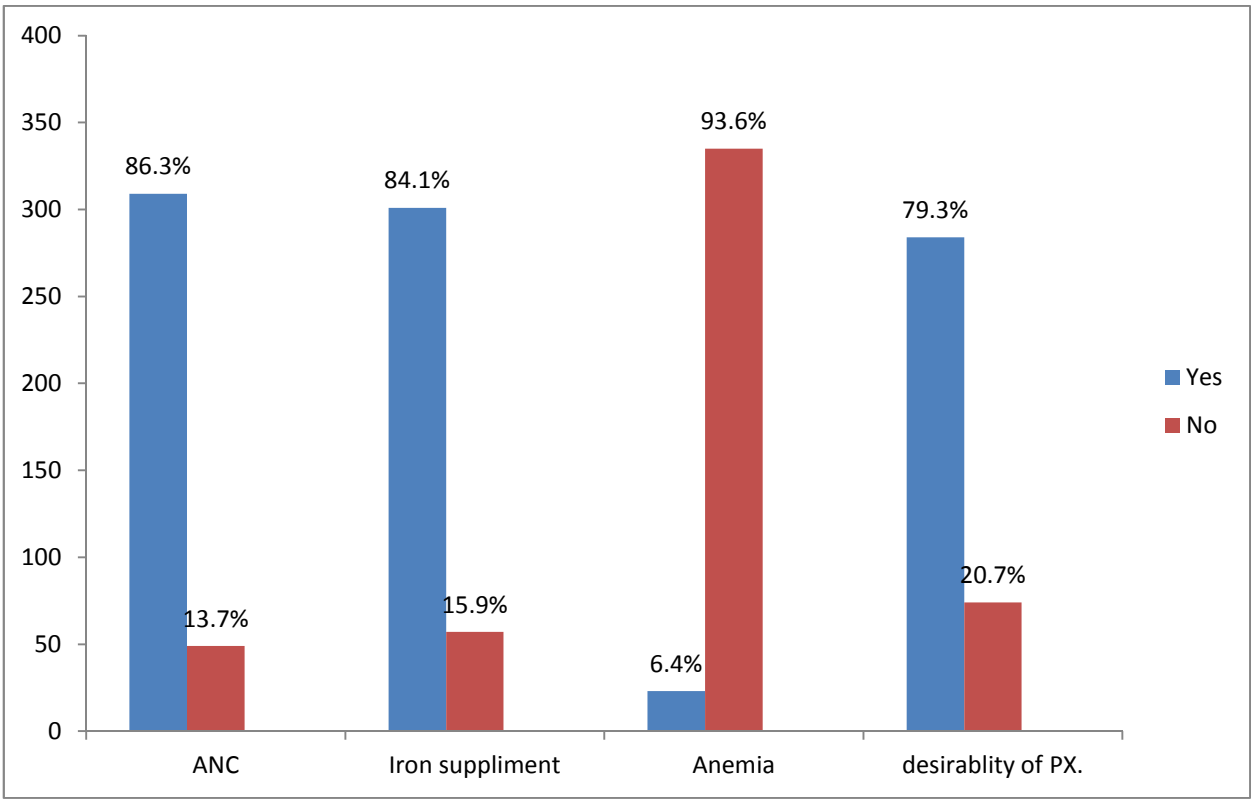

Figure 4: Maternal related factors of respondents in Dessie town health institutions, Amhara, Ethiopia, 2017/18

5.3 Nutritional status and Behavioral factors

Three hundred thirty (92.2%) of the mothers were counseled about dietary intake during antenatal care follow up. Two hundred ninety (81%) of them took extra meal during pregnancy.

Three hundred forty nine (97.5%) of the respondents did not smoke during pregnancy. Regarding alcohol drinking three hundred thirty nine (94.7%) of the respondents did not drink alcohol during their pregnancy. Additionally thirty one (8.7%) of the mothers had chewed chat during pregnancy (**Table 3).**

Table 3: Nutritional and behavioral factors of the respondents in Dessie town health institutions, Amhara region, Ethiopia 2017/18.

Variables(N=358)	**Categories**	**Frequency(N)**	**Percent (%)**
Dietary counseling	Yes	330	92.2
	No	28	7.8
Additional nutrition during pregnancy	Yes	290	81.0
	No	68	19.0
Cigarette smoking	Yes	9	2.5
	No	349	97.5
Alcohol drinking	Yes	19	5.3
	No	339	94.7
Chat chewing	Yes	31	8.7
	No	327	91.3

5.4 Newborn factors

Among three hundred fifty eight newborns 227 (63.4%) were females. Only 5 of the newborn babies had visible birth defect (**Table 4).**

Table 4: Newborn factors of LBW in Dessie town health institutions Amhara region, Ethiopia 2017/18.

Variables(N=358)	**Category**	**Frequency (N)**	**Percent (%)**
Birth weight in gm.	<2500	56	15.6
	>=2500	302	84.4
Sex	Female	227	63.4
	Male	131	36.6
Visible sever defect	Yes	5	1.4
	No	353	98.6

5.5 Low birth weight prevalence

The prevalence of low birth weight among new born babies in Dessie town health institutions was found 15.6% (n=56)(Figure5).

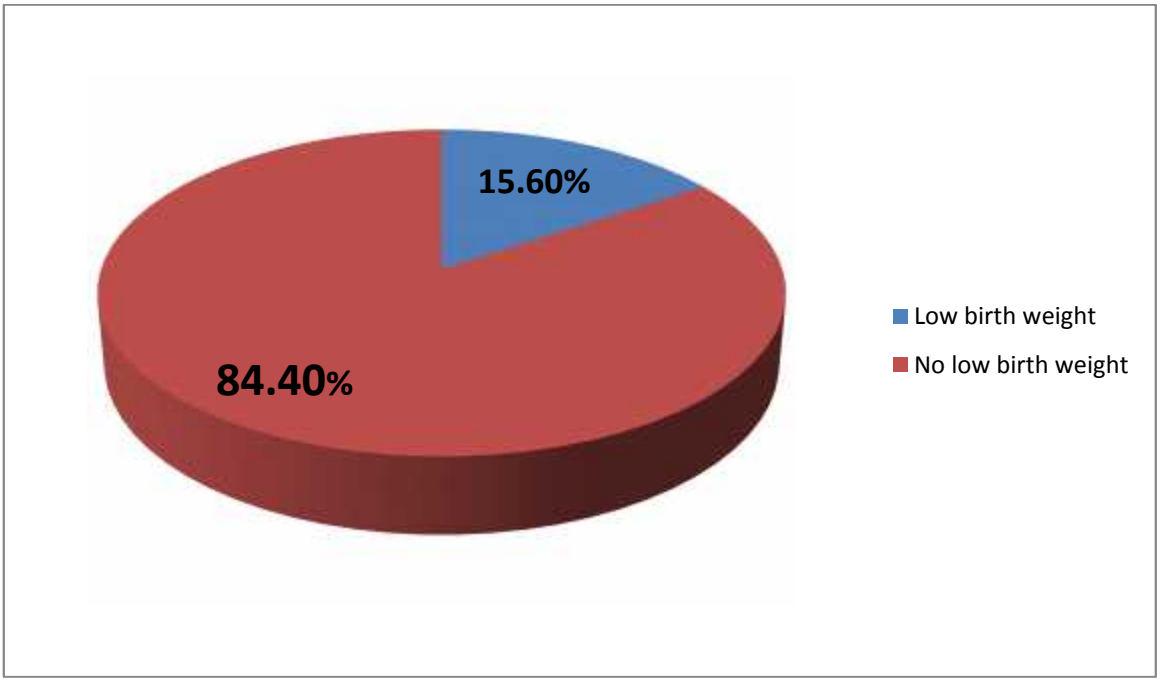

Figure 5: The prevalence of low birth weight among new born babies in Dessie town health institutions Amhara region, Ethiopia 2017/18.

5.6 Binary and multivariate analysis of factors associated with low birth weight

In the bivariate analysis any possible confounders were not controlled and assessing the independent effects of the covariates was difficult. So, enter method of logistic regression technique was used to assess the independent effect of explanatory variables on low birth weight. Model fit was checked by Hosmer-Lemeshow goodness-of-fit test.

Multivariate logistic regression analysis age of the mother, place of residence, gestational age, Antenatal care follow up during pregnancy and sex of the newborn baby were found to be independent predictor of low birth weight.

Maternal age was significantly associated with low birth weight; maternal age <20 years old is 3.78 times more likely to deliver low birth weight when compared with age between 20 and 34 (AOR=3.78(95%CI=1.02-13.97)).

Residence of the mother was strongly associated with low birth weight; mothers living in rural area were 3.49 times more likely to have LBW babies when compared to those mothers who live in urban (AOR = 3.49 (95 % CI =1.48,8.24)).

New born babies were 4 times to develop LBW in mothers who had no antenatal care during pregnancy when compared to mothers having antenatal care follow up (AOR = 3.79 (95 % CI = 1.08, 13.23)).

Newborn babies who were delivered before gestational age of 37 weeks were 4 times higher to develop low birth weight When compared to babies born at gestational age of 37 weeks and more (AOR = 3.82 (95 % +CI = 1.55, 9.42)). Additionally female new born babies were three times more likely to have LBW than their male counter parts (AOR=3.37(95% CI=1.17, 9.72))**.**

Table 5: Binary and multivariate analysis of factors in relation to low birth weight (n=358).

Variable	Category	LBW		COR [95 % CI]	AOR [95 % CI]
		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)*
	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)
Residence	Rural	20(35.7%)	56(18.5%)	2.44(1.30-4.50)	3.49(1.48-8.24)*
	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)
	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)
	>=4	9(16.1%)	22(7.3%)	2.30(0.96-5.49)	3.88(0.60-25.02)
Birth space (in months)	<=24	22(57.9%)	80(37.2%)	2.32(1.15-4.68)	2.18(0.92-5.19)
	>24	16(42.1%)	135(62.8%)	1	1
Desirability of	Yes	36(64.3%)	248(82.1%)	1	1
pregnancy	No	20(35.7%)	54(17.9%)	2.55(1.37-4.75)	1.49(0.57-3.91)
Current pregnancy	Yes	16(28.6%)	35(11.6%)	3.05(1.55-6.01)	2.67(0.86-8.28)
complication	No	40(71.4%)	267(88.4%)	1	1
Anemia for the current	Yes	14(60.9%)	9(39.1%)	3.19(1.28-7.93)	0.87(0.17-4.56)
pregnancy	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)*
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)
Gestational age	<37	24(42.9%)	52(17.2%)	3.29(1.78-6.10)	3.82(1.55-9.42)*
	>=37	32(57.1%)	250(82.8%)	1	1
Dietary counseling	Yes	45(80.4%)	285(94.4%)	1	1
during ANC	No	11(19.6%)	17(5.6%)	4.10(1.80-9.31)	0.66(0.13-3.41)
Chat chewing	Yes	10(17.9%)	21(7.0%)	2.91(1.29-6.57)	1.77(0.52-6.04)
	No	46(82.1%)	281(93.0%)	1	1
Sex of newborn	Female	43(76.8%)	184(60.9%)	2.12(1.09-4.11)	3.37(1.17-9.72)*
	Male	13(23.2%)	118(39.1%)	1	1

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

6. DISCUSSION

In the study the prevalence of low birth weight was56(15.6%) and in the multivariate Logistic regression model age of the mother, residing in rural area, not having antenatal care follow up, gestational age before 37 week at delivery and being female newborn were characteristics which were significantly associated with low birth weight.

Low birth weight observed in this study was consistent with studies conducted in Gondar referral hospital Northern Ethiopia which was 17.1%(24) and in Tigray which was 14.6 %(4). It is comparable to the average estimate of 16.5% LBW rate for many sub-Saharan countries(12).

The reported value is higher than the study finding done in Tigray, Hosanna Town, Kenya, Nigeria and Iran ranging from 6.3%-12.3%(5, 10, 19, 22, 23).The possible explanation between the variations might be the difference in geographical variation which might had difference in health service utilization and nutritional status of mothers during pregnancy**.** However the prevalence of LBW was found to be lower than studies done in Bahir Dar Felege Hiwote referral hospital on the prevalence of low birth weight and associated factors and in Uganda on the Prevalence and Factors Associated with Low Birth Weight among Teenage Mothers in New Mulago Hospital which was 25.5%(6, 16) and in India on morbidities and survival outcome of admitted low birth weight neonates in non-teaching district hospital SNCU which was 28.61 %(33).This difference might be due to socio-economic variations. This difference may be explained by the time gap between these studies and seasons of the year as birth weight may have seasonal variations.

This study shows that maternal age less than 20 years was identified as associated factors for low birth weight, and this finding was in line with other studies done in Hosanna town and Gondar Ethiopia (10, 24).The classic pattern in many developing countries is that infant girls born with LBW continue to experience growth failure during early childhood and perhaps adolescence, and are most likely to have children at an early age and thereby give birth to LBW newborns. Additionally this may be due to the fact that young for the first time pregnant mothers seek antenatal care, and less aware of problems related to pregnancy to seek medical care early as much as possible.

This study indicated a significant difference among urban and rural resident mothers with regard to delivering low birth weight baby. Mothers who reside in rural were higher odds of delivering

low birth weight baby compared to urban residents. This result is in line with studies done at Felege hiwot Hospital (6), at Negest Elene Mohammed Memorial General Hospital in Hosanna town (10), in Tigray on three zonal hospitals (4) and in Ghana (21).A possible reason would be, people in rural live a life characterized by greater hardship due to low infrastructures, harder physical work, and less access to basic services than the urban once. And it might also be due to the accessibility of health services, health information, and nutritional awareness which were more prominent as the woman resided in urban area than rural area.

The odds of no ANC follow up among mothers who delivered LBW babies were higher than those who had normal weight babies. This result is in line with studies done in Bale zone hospitals in southern Ethiopia and University of Gondar in Northern Ethiopia(15, 24) and on A study done on the prevalence and associated risk factors of adverse birth outcomes among women attended maternity ward at Negest Elene Mohammed memorial general hospital in Hosanna town ,SNNPR, Ethiopia shows lack of antenatal care had more likely to deliver LBW than those who had antenatal care follow up(10). This is due to Antenatal visits of the pregnant mothers are very important as they provide chances for monitoring the fetal wellbeing and allow timely intervention for feto-maternal protection. This may be described to the routine provisions of nutritional and medical advice or care and supplementations offered during ANC visits.

Regarding newborns with gestational age less than 37 weeks were more likely to be delivered low birth weight than those new born greater than or equal to 37 weeks of gestation. So, significant association is found between gestational age and birth weight. This result is in line with studies done in Kenya, Uganda and India (16, 23, 34). Gestational age plays an important role in determining infants' birth weight. Infants who are delivered prematurely (less than 37 weeks) are at higher risk to have low birth weight infants. The World Health Organization estimated about one third of low birth weight infants is caused by prematurity.

More over female newborns were more likely to be low birth weight comparing to male newborns. This study is comparable with studies done in Kenya Olkalou District Hospital and India Tertiary Care Hospital(23, 30).The possible explanation would be that female fetuses are insulin resistant than boys so that females would not use glucose properly as males during the intrauterine period(35).

Limitation of the study

- Factors like intrauterine infection during pregnancy, issues related to placental abnormalities, pre pregnancy weight and other unmentioned factors which might be associated with LBW were not addressed in this study.
- Inability to include mothers who delivered at home.
- The study was conducted with cross sectional study design so it does not show cause and effect relationship.

7. CONCLUSION AND RECOMMENDATIONS

7.1. Conclusion

This study shows that the prevalence of LBW in Dessie town health institutions of south Wollo zone, Amhara region, Ethiopia was found to be 15.6%.

It was found to be affected by age of the mother, rural place of residence, lack of ANC follow up, preterm birth (gestational age <37 weeks) and being female.

7.2. Recommendation

For health care provider & managers

- It is better to give more emphasis on focused antenatal care to ensure risk of low birth weight is detected early and treated appropriately.
- Health care providers should undertake Prevention strategies for preterm deliveries.
- The regional health bureau should strengthen the newly focused goal oriented ANC service utilization as it can improve birth outcomes.

For south Wollo zone & Dessie city health office

- Since the prevalence of LBW in the study area was more prominent in rural areas than their urban counter parts, special emphasis should be given in strengthening efforts on availability of basic health services and promoting education on nutrition during pregnancy especially at rural areas.
- Monitoring and evaluation about the effectiveness of focused antenatal care program & its challenges should be done.

For researchers

- Community based further studies are also needed to identify the effects of seasonal variations of nutrition on the effects of birth outcome.

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9. ANNEXES

9.1 Information sheet

***Title of Research*:** Prevalence and associated factors of low birth weight among newborn babies in Dessie town health institutions, Amhara region, Ethiopia, June, 2017.

***Institution*:** Addis Ababa University, College of Health Sciences, School of Allied Health Sciences, Department of Nursing and Midwifery (Graduate Program)

Name of sponsor: Addis Ababa University

***Principal Investigator*:** Desalegn Abebaw (BSc.)

Mobile: +251 910190847

E-mail: dabebaw8@gmail.com

***Advisor*:** 1.Zeleke Argaw (MSc, BSc, RN)

Mobile: +251 911 478796

E-mail: zelekeargawm@yahoo.com

2. Daniel Mengsitu (Msc,Bsc,RN)

Mobile: +251911119597

***Background Information*:** Low birth weight represents a condition that results in significant impacts in healthcare systems, particularly in developing countries. Children born with low birth weight are more likely to die prematurely compared to infants of normal birth weight. Likewise, these children experience more morbidity, both in the short and long term. Therefore the purpose of this study is to assess the prevalence and associated factors of low birth weight among newborn babies in Dessie town health institutions, Amhara region, Ethiopia from February 30 to April15/2017.

9.2 Consent form

ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES SCHOOL OF ALLIED HEALTH SCIENCES DEPARMENT OF NURSING AND MIDWIFERY

QUESTIONNAIRE FOR ASSESSMENT OF PREVALENCE AND ASSOCIATED FACTORS OF LOW BIRTH WEIGHT AMONG NEWBORN INFANTSIN DESSIE TOWN HEALTH INSTITUTIONS,AMHARA REGION,ETHIOPIA FROM FEBRUARY 30 TO April15/2017

INTRODUCTION

Hello!! dear participants, this questionnaire is prepared by Desalegn Abebaw, Masters of science student in Addis Ababa university in the field of pediatrics and child health nursing to assess the prevalence and associated factors of low birth weight among newborn babies in Dessie town health institutions, Amhara region, Ethiopia from February30 to April15/2017. 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 the health institutions of Dessie town, Amhara region, 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 the health institutions of Dessie town Amhara region ,Ethiopia from February 30 to March 30/2017

2. 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!!!

9.3 English version questioner

This is a data collection format to assess the prevalence and associated factors of low birth weight among newborn babies in Dessie town health institutions.

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 health facility: ----------

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. Others	
103	Ethnicity	1. Amhara 2. Tigre 3. Oromo 4. 4.Other ------	
104	Maternal Educational status	1. Not read and write 2. Read and write 3. Primary education 4. Secondary education and above	
105	Where are you living?	1. Rural 2. Urban	
106	Marital status	3. Single 4. Married 5. Divorced 6. Widowed	
107	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. 1.Yes 2. 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?	----------	
208	If yes for question number 207, what type of illness? (Hint.TB,HIV, DM,)	----------	
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	
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 antenatal 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. 217how 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:NewbornFactors		
401	Birth weight of live birth baby (gm.)	----------	
402	Sex of the newborn	1. Female 2. Male	
403	Visible congenital defect	1. 1.Yes 2. 2.No	

የፍቃደኝነት ማረጋገጫ ቅፅ

አዲስ አበባ ዩኒቨርሲቲ ፣ ጤና ሳይንስ ኮሌጅ

የጤና ሳይንስ ትምህርት ቤት

የነርሲንግ እና ሚድዋይፈሪ ትምህርት ክፍል

በደሴ ከተማ ጤና ተቁዋማት ክብደታቸው ከትክክለኛው (2.5 ኪ.ግ) በታች ሆነዉ የሚወለዱ ህጻናትና የሚያጋልጡ ተዛማጅ ምክንያቶችን ከመጋቢት 25 እስከ ሚያዚያ 25 2009 ዓ.ም ለማጥናት የተዘጋጀ አማርኛ መጠይቅ

መግቢያ

ጤና ይስጥልኝ ! ዉድ ተሳታፊዎች ይህ መጠይቅ የተዘጋጀዉ በአዲስ አበባ ዩኒቨርሲቲ የነርሲንግ እና ሚድዋይፈሪ ትምህርት ክፍል የ2ኛ አመት የህፃናት ህክምና እና ህፃናት ጤና ተመራቂ ማስተርስ ተማሪ በሆኑት በአቶ ደሳለኝ አበባው ሲሆን ጥናቱም ደሴ ከተማ በሚገኙ ጤና ተቁዋማት ክብደታቸው ከትክክለኛው(2.5 ኪ.ግ) በታች ሆነዉ የሚወለዱ ህጻናትና የሚያጋልጡ ተዛማጅ ምክንያቶችን ከመጋቢት 25 እስከ ሚያዚያ 25 2009 ዓ.ም ለማጥናት ነው፡፡

በዚህ ጥናት ላይ በመሳተፍዎም ሆነ መጠይቁን በመመለስዎ የተዘጋጀ ከፍያ የለም ነገር ግን ከዚህ ጥናት የሚገኘው መረጃ ለጨቅላ ህፃናት ጤና ደህንነት እና እንክብካቤ ለመስጠት እንዲሁም ልዩ ትኩረት ለመስጠት እና ለችግሩ የመፍትሄ እርምጃ መዉሰድ ለሚሹ ህጋዊ አካላት ትልቅ አስተዋጽኦ አለዉ፡፡ በመጠይቁ ላይ ስምዎትን አይጠየቁም ፡፡ እንዲሁም መልሶቻችሁ በምስጢር ስለሚያዙ በምንም አይነት መንገድ ጉዳዩ ለማይመለከታቸዉ አካላት አይገለጽም በዚህ ጥናት በመሳተፍወ በልጅወ ወይም በእርስወ 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. አዎ ፊርማ _____ ቀን _____

የመጠይቁ ሰብሳቢ ፊርማ_____ ቀን _____

2. አይደለሁም ---- እባክዎን እዚህ ጋር ይቁሙ

በጥናቱ ዉስጥ ለመሳተፍ ፈቃደኛ ከሆኑ ትክክለኛ የሆነ መልስ እንዲሰጡን በትህትና እንጠይቃለን፡፡

ስለትብብርዎ በቅድሚያ እናመሰግናለን !! !

9.4 አማርኛ መጠይቅ

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

የመረጃ ሰብሳቢዉ ስምምነት

‘መረጃዎቹን በመመሪያዎቹና በሰለጠንኩት ስልጠና መሰረት መሙላቴን እና ትክክለኛነታቸዉን አረጋግጣለሁ::

ፊርማ---------- ቀን----------

የጤና ጣቢያዉ/ሆስፒታል ስም: ----------

የተቆጣጣሪው ስም----------ፊርማ----------

<u>ክፍሌ 1: የእናት ግላዊና ማህበራዊ ገጽታ</u>

ተ.ቁ	ጥያቄዎች	ምርጫ የቀረቡ ምላሾች	መለያ
101	እድሜሽ ስንት ነዉ?	----------	
101	ሃይማኖትሽ ምንድን ነዉ?	1. ሙስሊም 2. ኦርቶዶክስ 3. ፕሮቴስታንት 4. ሌላ ካለ ይጠቀስ----	
103	ብሄርሽ ምንድን ነዉ?	1. አማራ 2. ትግሬ 3. ኦሮሞ	
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 የማይችል 2. ማንበብ እና መጻፍ የሚችል 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. አወ 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	1. አወ 2. የለም	

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

	እንክብልች ወስደሽ ነበር?		
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. አወ 2. የለም	
302	በአሁኑ እርግዝናሽ ጊዜ ከእስካሁኑ አመጋገብሽ ተጨማሪ ምግብ ተመግበሻል?	ነ. አወ 2. አይደለም	
303	በእርግዝናሽ ወቅት ሲጋራ ታጨሻለሽ ነበር?	1. አወ 2. የለም	
304	በእርግዝናሽ ወቅት አልኮል ትጠጭ ነበር?	1. አወ 2. የለም	
305	በእርግዝናሽ ወቅት ጫት ትቅሚ ነበር?	1.አወ 2.የለም	
Part 4: **የህፃኑ ሁኔታ**			
401	የህፃኑ ክብደት	----------ግራም	
402	የህጻኑ ጾታ	1. ሴት 2. ወንድ	
403	በአይን የሚታይ ተፈጥሯዊ ችግር	1.አወ 2.የለም	