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Research Article

Prevalence of Low Birth Weight and Associated Factors among Neonates in Public Hospitals, Addis Ababa, Ethiopia

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ABSTRACT

Background: The great majority of low birth weight births occur in low and middle income countries. Especially in the most vulnerable populations in Sub-Saharan Africa including Ethiopia.

Objective: Study was aimed to assess low birth weight and factors associated with low birth weight among neonates in public hospitals in Addis Ababa.

Method: Institution based cross-sectional study design was conducted to assess the prevalence and associated factors of low birth weight among newborn babies in public hospitals in Addis Ababa, Ethiopia. The data was collected using an interviewer-administered structured questionnaire. The collected data was cleared and entered into EPI info version 7 and 0 and then exported to SPSS version 20. Bi variate and multivariate logistic regression analyses were employed to identify associated factors with low birth weight. After bivariate regression analysis, variables with a P-value less than 0.2 were included in multivariable logistic regression. An unadjusted ratio with 95% CI was calculated to see the association of variable low birth weight at the sin significant value of P<0.05.

Result: The study was conducted among 369 mothers who had a new born baby. And in this study, the prevalence of low birth weight was 15.2% at 95% CI=(11.7-18.7). And residing in rural area AOR=2.50 95% CI=(1.078-5.148), birth interval <24 month AOR=2.531 95% CI=(1.422-0.4.507), pregnancy complication AOR=13.53095% CI=(6.080-30.105), ANC follow up (AOR=5.14 (95% CI=(1.260-21.017)). Gestational age AOR 7.446 (95% +CI=(3.104-17.862), sex of the new born AOR=3.24 (95% CI=(1.354-7.7561) were significantly associated factors.

Conclusion: The prevalence of low birth weight in this study was 15.2%, and it is lower than the national prevalence, and residential are, birth interval, pregnancy complications, ANC follow up, gestational age and sex of neonates were significantly associated with low birth weight.

Keywords: Low birth weight; Factors; Neonate; Birth interval; Pregnancy complications

Abbreviations: ANC: Anti Natal Care; APH: Anti Partum Hemorrhage; BMI: Body Mass Index; CI: Confidence Interval; EDHS: Ethiopian Demographic Health Survey; HTN: Hyper Tension; IFA: Iron Folic Acid supplementation; LBW: Low Birth Weight; MUAC: Middle Upper Arm Circumference; PROM: Premature Rupture Of Membrane; VLBW: Very Low Birth Weight; WHO: World Health Organization

INTRODUCTION

Birth weight is the first weight of the fetus or newborn obtained after birth. For live births, birth weight should preferably be measured within the first hour of life, before significant postnatal weight loss has occurred [1]. According to World Health Organization (WHO) defined, low birth weight is weight at birth less than 2500 g. LBW can be further subcategorized as

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Very Low Birth Weight (VLBW) and Extremely Low Birth Weight (ELBW) or Very Low Birth Weight (VLBW), which is less than 1500 g Extremely Low Birth Weight (ELBW), which is less than 1000 g [2-3]. It is a serious public health problem that has been linked to a substantial increase in the risk of mortality and morbidity [4]. Can be caused by either due to preterm birth (born before 37 weeks of gestation) or the infant being small for gestational age (slow prenatal growth rate) or a combination of both [5].

Birth weight is one of the important indicators to predict the future health and survival of newborn [6]. Infants with low birth weight are at higher risk of dying during their early months and years, in spite being born with LBW is generally recognized as a disadvantage for the infant and LBW infants are at higher risk of early growth retardation, infectious diseases, developmental delay and death during infancy and childhood [7,8].

Low birth weight is more common in developing than developed countries; a birth weight below 2,500 g contributes to a range of poor health outcomes. Those who survive have impaired immune function and increased risk of disease; they are likely to remain undernourished, with reduced muscle strength [9].

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 low birth weight include 28% in South Asia, 13% in Sub-Saharan Africa and 9% in Latin America [10]. According to the Ethiopian demographic and health survey, the prevalence of low birth weight in Ethiopia is 13% [11].

In Ethiopia under five mortality rate decreased from 91 deaths per 1,000 live births in 1990 to 43 per 1,000 in 2015. However, the decline in neonatal mortality from 1990 to 2015 was slower than that of post neonatal under five mortality [12]. In Ethiopia, low birth weight is a major public health problem since low birth weight is one of the leading causes of neonatal mortality and morbidity progress of sustainable development goals will be dependent on achieving high coverage of evidence based interventions that decrease low birth weight and improve survival of newborns.

MATERIALS AND METHODS

Study area and study period

Institution based cross-sectional study was conducted from November 1, 2021, to January, 2022 in Yekatit 12, Gandhi memorial and Ras desta Damtew hospital in Addis Ababa city and they were selected by simple random sampling methods. And Addis Ababa has 11 sub cities containing 117 Woredas at an altitude of 7,546 feet (2,300 meters). There are five hospitals owned by Addis Ababa health bureau, 4 by federal ministry of health, one is under the ministry of education (AAU), two by the defense force according to Addis Ababa city health office. Those three selected hospitals give delivery service and two of them except Ras Desta hospital have neonatal intensive care unit according the data of Human resource management of each hospital.

Source population

All newborn babies delivered in Addis Ababa city public hospital were the source population.

Study participant

All randomly selected newborn babies delivered in Addis Ababa city public hospital during the study period were included.

Inclusion criteria

All mothers who delivered live newborns during the study period were included in the study.

Exclusion criteria

Multiple births, mothers, or newborns in critical medical conditions were excluded.

Sample size determination

The sample size was calculated by using a single population proportion formula by taking the prevalence of LBW which was 32.1% (61) and margin of error=5%, confidence level=95%, and standard normal distribution value=1:96

The formula for a single proportion is determined as follow:

$$n=\frac{(Z\alpha/2)^2 \times p\,(1-p)}{D^2}$$

d=Marginal error.

p=Population proportion.

(32.1%) Proportion of low birth weight in Ethiopia [13].

α=Level of significance at 95% confidence interval.

Zα/2=Value under standard normal table for the given value of confidence level=1.96.

n=Final sample size will be (n)=335 and adding the considered nonresponse rate of 10%.

Therefore, n=335+10%=369. The total sample size is 369.

Sampling procedure

The study was conducted in three randomly selected public hospitals of Addis Ababa, Ethiopia, from November 2021 to January 2022. A total sample size of 369 newborn babies was selected from three health institutions. The numbers of newborn/mother pairs surveyed from each health institution were allocated proportionally based on the expected number of deliveries in the study period, which was estimated using the number of last one month in each health institution.

Data collection procedure

Data was collected by using a pretested, semi-structured questionnaire with an interview type of data collection method, medical record was cross-checked to confirm important variables such as patient obstetrics history and antenatal history. The question were prepared in English and translated into Amharic language. The interview was in Amharic language, a commonly used local language.

Data collectors and supervisors

Data collector and supervisor was trained for two days on the objective of the study, relevance of the study procedure during interviewing, confidentiality of client information, eligibility criteria, respondents right informed consent, and ways of approach during interview. Two nurses who are currently working in the hospital were used as data collectors. The data collection process was closely supervised, and the completeness of each questionnaire was checked daily by the principal investigator, and a logical checking technique was employed to identify errors. Finally, double data entry will be performed to check the consistency of the data.

Operational definition/and measuring scale

Low birth weight: Is weight at birth less than 2500 g.

Preterm birth: Delivery before 37 completed weeks of gestation.

Very low birth weight: Birth weight which is less than 1500 g.

Data entry and analysis

All filled questionnaire were checked for completeness, consistency, and accuracy. Data was cleaned and entered using EPI data (7.0) and then exported to version 20 SPSS software. Descriptive statics were used to determine frequencies, percentages, means (SD), (Tables, pie chart) 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 multivariate logistic regression for controlling the effect of confounders. Odds ratio with their 95% of CI was 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 and model fitness were checked by Hosmer lemeshow goodness of fit test.

RESULTS

Socio-demographic factors of respondents

A total of 369 new born baby mothers participated in the study constituting a response rate of 100%. More than half of the respondents (63.4%) were found in the age group of 20-35. More than three-quarters of the mother 342 (92.7%) were married and 52.6% of the mother were urban residence. Regarding maternal educational status, 140 (37.9%) of the respondents were primary education and almost half of them (49.9%) were house wives (Table 1).

Table 1: Socio-demographic factors of the mothers in Addis Ababa city public hospitals, Addis Ababa, Ethiopia, 2021/2022.

Variable N=369	Categories	Frequency (N)	Percent %
Age of the mother	<20	66	17.9
	20-35	234	63.4
	35-49	69	18.7
Maternal educational status	No formal education	69	18.7
	Primary education	140	37.9
	Secondary education	124	33.6
	University and above	36	9.8
Residence	Rural	175	47.4
	Urban	194	52.6
Marital status	Living alone	27	7.3
	Married	342	92.7

Mothers occupation	House wife	184	49.9
	Merchant	35	9.5
	Govt employee	107	29
Monthly income	Private	30	8.1
	Other	13	3.5
	<1500	81	22
	1501-6000	223	60.4
	>6001	57	15.4

Maternal factors

Half 187 (50.7%) of the respondents were prim parous and one hundred thirty (30.6%) of the respondents were multi parous. 241 (65.3%) of the respondents were categorized above or equal to two years with regard to birth interval and 128 (34.7%) of the respondent were below 24 month birth interval. 294 (79.7%) pregnancies were intended. 330 (89.4%) have no history of low birth weight. With regard to current pregnancy complication only 58 (15.7%) developed a complication. 347 (94.0%) of the mothers were having ANC follow-up. Of which 182 (49.3%) had four and above ANC follow-up (Table 2).

Table 2: Maternal factors of the respondent in Addis Ababa city public hospitals, Addis Ababa, Ethiopia, 2021/2022.

Variable (N=369)	Category	Frequency (N)	Percent (%)
Parity	None	69	18.7
	<=2	187	50.7
	>=2	113	30.6
Birth interval (in months)	<=24	128	34.7
	>24	241	65.3
Desirability of pregnancy	Yes	294	79.7
	No	75	20.3
Current pregnancy complication	Yes	58	15.7
	No	311	84.3
Types of pregnancy complication	None	311	84.3
	APH	18	4.9
	PROM	23	6.2
	PIH	17	4.6
History of low birthweight	Yes	39	10.6
	No	330	89.4
Medical illness for the current	Yes	15	4.1

Pregnancy	No	354	95.9
Types of medical illness	None	354	95.9
	Diabetes	9	2.4
	HTN	3	0.8
	HIV/AIDS and other	3	0.8
Malaria infection	Yes	20	5.4
	No	349	94.6
STI for the current pregnancy	Yes	8	2.2
	No	361	97.8
What type of STI infection	None	360	97.6
	Syphilis	4	1.1
	Gonorrhea	2	0.5
	Chancroid	3	0.8
Anemia for the current pregnancy	Yes	74	20.1
	No	295	79.9
ANC follow up	Yes	347	94
	No	22	5.7
Trimester of ANC follow up	1st	137	37.1
	2nd	191	51.8
	3rd	41	11.1
Number of ANC follow up	None	20	5.4
	1-3	166	45
	4+	182	49.3
IFA supplementation	Yes	329	89.2
	No	40	10.8

Number of IFA tablets	None	39	10.6
	<60	122	33.1
	60-90	159	43.1
Gestational age	>90	49	13.3
	<37	60	16.3
	>37	309	

Nutritional status and behavioral factors

249 (67.5%) of the mothers were counseled about dietary intake during antenatal care follow up. 222 (60.2%) of them took an extra meals during pregnancy. 359 (97.3%) of the respondents did not smoke during pregnancy. Regarding alcohol drinking, 350 (85.4%) of the respondents did not drink alcohol during their pregnancy. Additionally, 80 (4.9%) of the mothers had chewed chat during pregnancy (Table 3).

Table 3: Nutritional and behavioral factors of the respondents in Addis Ababa city public hospitals, Addis Ababa, Ethiopia, 2021/2022.

Variable (N=369)	Category	Frequency (N)	Percent (%)
Dietary counseling	Yes	249	67.5
	No	120	32.5
Additional nutrition during pregnancy	Yes	222	60.2
	No	147	39.8
Cigarette smoking	Yes	10	2.7
	No	359	97.3
Alcohol drinking	Yes	54	14.6
	No	315	85.4
Chat chewing	Yes	18	4.9
	No	351	95.1

Low birth weight and other health condition of newborns

Among the three hundred sixty nine newborns 213 (57.7%) were females and 156 (42.3%) were male newborn. 19 (5.1%) of the new born babies had visible birth defect. The prevalence of low birth weight among newborn babies in Addis Ababa city public hospitals was found 15.2% at 95% CI=(11.7-18.7) (n=369) (Figure 1).

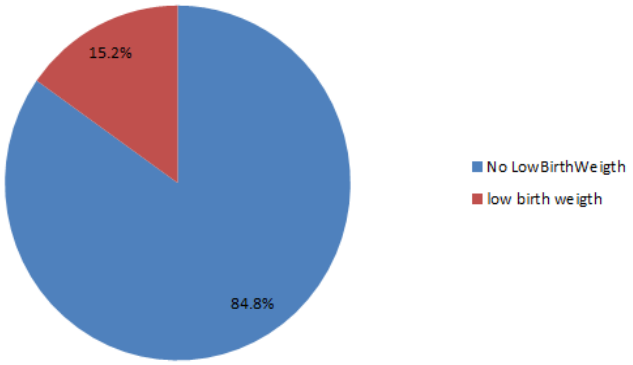


Figure 1: The prevalence of low birth weight among new born babies in Addis Ababa city public hospitals, Addis Ababa, Ethiopia 2021/22.

Factors associated with low birth weight

In multivariate logistic regression analysis, place of residence, pregnancy interval, pregnancy complications, gestational age, antenatal care, follow-up during pregnancy, and sex of the newborn baby were found to be independent predictors of low birth weight.

Residence of the mother was strongly associated with low birth weight; mothers living in rural areas were 2.5 times more likely to have LBW babies when compared to those mothers who lived in urban (AOR=2.50, 95% CI=(1.078-5.148)).

Mothers who had a pregnancy interval <24 month where 2.5 times more likely to have LBW babies when compared to those mothers >24 month pregnancy interval (AOR=2.531, 95% CI=(1.422-4.507)). Mothers who had a pregnancy complications were 13 times more likely to have LBW babies when compared to those mothers who do not have a pregnancy complications (AOR=13.530 95% CI=(6.080-30.105)). New born babies were 5 times higher to develop LBW in mothers who had no antenatal care during pregnancy when compared to mothers having antenatal care follow up (AOR=5.14 (95% CI=(1.260-21.017)) and who were delivered before gestational age of 37 weeks were 7 times higher to develop low birth weight when compared to babies born at gestational age of 37 weeks and more (AOR=7.446 (95%+CI=(3.104-17.862)). Additionally, female new born babies were three times more likely to have LBW than their male counter parts (AOR=3.24 (95% CI=(1.354-7.7561)) (Table 4) [14].

Table 4: Factors associated with low birth weight of neonates (n=369).

Variable (N=369)	Category	LBW		AOR (95% CI)
		Yes (%)	No (%)	
Residence	Rural	21 (12.0)	154 (88.0)	2.503 (1.078-5.148)*
	Urban	35 (18.0)	159 (82.0)	
Birth space (in months)	>24	30 (23.4)	98 (76.6)	2.531 (1.422-.4.507)*
	<=24	26 (10.8)	215 (89.2)	
Current pregnancy	Yes	32 (55.2%)	26 (44.8)	13.530 (6.080-30.105)*
Complication	No	24 (7.7%)	287 (92.3)	

ANC follow up	Yes	46 (13.5%)	296 (86.)	5.146 (1.260-21.017)*
	No	10 (37.0%)	17 (63.0)	
Gestational age	<37	25 (41.7%)	35 (58.3)	7.446 (3.104-17.862)*
	>=37	31 (10.0%)	287 (90.0)	
Sex of newborn	Female	44 (20.7%)	144 (92.3)	3.242 (1.354-7.7561)*
	Male	12 (7.7%)	169 (79.3)	

DISCUSSION

The finding of this study showed that 15.2% of newborns were birth weight <2500 g. Rural place of residence, birth interval <24 months, lack of ANC, follow-up, pregnancy complications, preterm birth (gestational age <37 weeks) and being female new born were significantly associated variables to LBW.

The prevalence of low birth weight was 56 (15.2%) at 95% CI=(11.7-18.7) This finding was consistent with studies conducted in Dessie town referral hospital which was Tigray referral hospital and studies conducted in Wolita Sodo teaching and referral hospital [15]. This similarity might be due to both reference population living in the same geographical area, study time and the same socioeconomic status.

The reported value is higher than the study finding done in Colombia 8.7%. Nigeria 6.3%. LBW in Burkina Faso, Ghana, Malawi, and Uganda ranges from respectively, 13.4%, 10.2%, 12.1%, and 10%. South West Iran 9.4%. This difference might be due to difference in study time, difference in socio economic, differences in the study population, sample size, and handling of potentially confounding variables.

However the prevalence of LBW in this was found to be lower than studies done in Wolita Sodo 15.8%, Harar 23.3%, Hadiya zone 17.4%, Wello 17.4%, Dire Dawa 21%, Dilla 34.1%, Ethiopia 17.3%, Gojjam 26.3%. This might be due to variation in characteristics of socio-demographic, economic, health care seeking behavior, study setup, study time, study population.

This study indicated a significant difference among urban and rural resident mothers regarding delivering a low birth weight babies. Mothers who reside in rural were higher odds of delivering a low birth weight babies compared to urban residents. This result is in line with studies done Tigraye city Northern Ethiopia. Studies conducted in Dilla town and a study conducted in Debre Tabor Hospital, Amhara regional state Ethiopia. And a studies conducted at hospitals in Kambata-Tembaro zone, southern Ethiopia. A possible reason would be people in rural live, a life characterized by greater hardship due to low infrastructure, harder physical work, and less access to basic services than the urban and it might also be due to the accessibility of health services, health information, and nutritional awareness which were more prominent as the women resided in urban areas than rural areas. In this study, a birth interval less than 24 months is the risk of low birth weight. This finding is supported by other studies conducted in the governmental hospitals of Wollo district Northern Ethiopia and a study done in Butajjra general hospital South Ethiopia and studies done at hospitals in Kambata-Tembaro zone, Southern Ethiopia. The reason could be due to the fact that short inter-pregnancy intervals might result in inadequate replacement of maternal nutrient stores depleted in the previous pregnancy.

The present study also showed that obstetric illnesses during the current pregnancy were associated with low birth weight. The result is in line with a study done in Jimma medical center South, Western Ethiopia. And a study conducted at Suhulu hospital shire, Tigray, Ethiopia and a studies conducted in Ayder comprehensive specialized hospital Northern, Ethiopia and a studies conducted on low birth weight and associated factors among singleton neonates born at Felege Hiwot referral hospital, North West Ethiopia. The possible explanation is that the mother who had more ANC follow-up may have their obstetric problems detected and treated or referred earlier.

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 Harar regional state public hospitals in Eastern Ethiopia and in the governmental hospital of Wollow district, Northern Ethiopia. And in A study done on the prevalence and associated risk factors of low birth weight among new born at Dilla town hospital in SNNPR, Ethiopia shows lack of antenatal care had more likely to deliver LBW than those who had antenatal care follow up and Ataye primary hospital North, Shewa Ethiopia. This is due to antenatal visits of the pregnant mothers, are essential as they provide chances for monitoring fetal wellbeing and allow timely intervention for feto-maternal protection. This may be described by the routine provision of nutritional and medical advice or care and supplementation offered during ANC visits.

Regarding newborns with gestational age less than 37 weeks were more likely to be delivered with low birth weight than those now born greater than or equal to 37 weeks of gestation. Therefore, a significant association were found between gestational age and birth weight. This result is in line with studies done in Felege Hiwot referral hospital, Tigray city, Northern Ethiopia, and a study conducted in Hadiya zone referral hospital. 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

that about one-third of low birth weight infants are caused by prematurity.

Moreover, female newborns were more likely to be low birth weight compared to male newborns. This study is comparable with studies done in Ataye primary hospital and a study conducted on prevalence of low birth weight and associated factors among women delivered in Debre Markos referral hospital, East Gojam, Ethiopia and a study conducted in Gonder town and studies conducted in Iran. 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.

CONCLUSION

This study shows that the prevalence of LBW in Addis Ababa town governmental hospital, Addis Ababa, Ethiopia, was found to be 15.2%.

It was found to be affected by rural place of residence, birth interval <24 months, lack of ANC, follow-up, pregnancy complications, preterm birth (gestational age <37 weeks) and being female new born and it is better to give more emphasis on focused antenatal care to ensure the risk of low birth weight is detected early and treated appropriately. Health care providers should undertake prevention strategies for preterm delivery.

LIMITATIONS OF THE STUDY

In this study, the inability to include mothers who delivered at home and private health facilities were not included, which might undermine the generalizing result to the general population.

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

The ethical clearance was obtained from institutional review board of KEA-MED university college and official letters was submitted to each respective health facility. After explaining the objectives of the study, informed written consent was obtained from all mothers, and anonymity and confidentiality of the data were kept. Respondents have the right not to participate or withdraw from the study at any stage, and all study methods were performed in accordance with the declaration of Helsinki.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

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

COMPETING INTERESTS

The authors declare that they have no conflicts of interest.

FUNDING

Not applicable.

AUTHOR CONTRIBUTIONS

C.G: Conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, software, visualization, writing original draft.

A.L: Conceptualization, formal analysis, methodology, resources, software, visualization, writing and original draft.

Y.M: Conceptualization, formal analysis, methodology, software, supervision, writing, review and editing.

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REFERENCES

1. Manual IC. Very low and extremely low birthweight infants. The regents of the university of California. 2004;65-68.
2. Blossner M, de Onis M, Pruss-Ustun A. Malnutrition: Quantifying the health impact at national and local levels. World Health Organization, 2005;43.
3. Sebayang SK, Dibley MJ, Kelly PJ, Shankar AV, Shankar AH, SUMMIT Study group. Determinants of low birthweight, small-for-gestational-age and preterm birth in Lombok, Indonesia: Analyses of the birthweight cohort of the SUMMIT trial. Trop Med Int Health. 2012;17(8):938-950.
4. Card AR. Nutrition on progress for children a report card on nutrition. UNICEF, 2006;4.
5. Atitwa EB. Socio-economic determinants of low birth weight in Kenya: An application of logistic regression model. 2015;4(6): 438-445.
6. Jember DA, Menji ZA, Yitayew YA. Low birth weight and associated factors among newborn babies in health institutions in Dessie, Amhara, Ethiopia. J Multidiscip Healthc. 2020:1839-1848.
7. Pinzon-Rondon AM, Gutierrez-Pinzon V, Madrinan-Navia H, Amin J, Aguilera-Otalvaro P, Hoyos-Martinez A. Low birth weight and prenatal care in Colombia: A cross-sectional study. BMC Pregnancy Childbirth. 2015;15:1-7.
8. Oladeinde HB, Oladeinde OB, Omoregie R, Onifade AA. Prevalence and determinants of low birth weight: The situation in a traditional birth home in Benin city, Nigeria. Afr Health Sci. 2015;15(4):1123-1129.
9. Adane T, Dachew BA. Low birth weight and associated factors among singleton neonates born at Felege Hiwot referral hospital, North West Ethiopia. Afr Health Sci. 2018;18(4):1204-1213.
10. Mekie M, Taklual W. Magnitude of low birth weight and maternal risk factors among women who delivered in Debre Tabor Hospital, Amhara Region, Ethiopia: A facility based cross-sectional study. Ital J Pediatr. 2019;45:1-6.
11. He Z, Bishwajit G, Yaya S, Cheng Z, Zou D, Zhou Y. Prevalence of low birth weight and its association with maternal body weight status in selected countries in Africa: A cross-sectional study. BMJ open. 2018;8(8):e020410.

12. Dilnessa T, Belete E, Tefera M. Prevalence of low birth weight and associated factors among new born babies in Ataye primary hospital, North Shoa, Ethiopia, 2018. Asian J Health Sci Medicine. 2020;18(3):1-1.
13. Lemlem GA, Mezen MK, Atinafu A, Abitew ZA. Maternal factors associated with low birth weight in governmental hospitals of Wollo district, Northeast Ethiopia: A cross sectional study. PAMJ-One Health. 2021;4(18):1-14.
14. Chanie H, Dilie A. Prevalence of low birth weight and associated factors among women delivered in Debre Markos referral hospital, East Gojam, Ethiopia, 2017. Prevalence. 2018;53.
15. Adhena T, Haftu A, Gebreegziabher B. Assessment of magnitude and associated factors of adverse birth outcomes among deliveries at Suhul hospital Shire, Tigray, Ethiopia from September, 2015 to February, 2016. Biomed J Sci Technol Res. 2017;1(7):2045-2052.