

Prevalence and Risk Factors of Low Birth Weight in Neonates Born in Tishreen University Hospital - Latakia

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Abstract: *Background:* Low birth weight is a public health problem of global prevalence with a significant impact on health in childhood and adulthood. *Objective:* The purpose of the current study is to determine the prevalence and risk factors of low birth weight in neonates born in Tishreen University Hospital- Latakia. *Methods:* In an Observational analytical cross-sectional study design included 711 neonates born at Tishreen University Hospital in Latakia over 1 year period from January 2020. Questionnaires were administered after the birth of the infant included gender, gestational age, order of pregnancy, maternal age, weight, work, education, Parental relationship, history of low birth weight, chronic disease, pregnancy complications, birth defects. *Results:* The results showed that the prevalence of low birth weight was 13.4%. There was a significant relationship between low birth weight with the Preterm, complications during pregnancy, Mother's age (<18 , ≥ 35 years), previous of Low birth weight, and smoking during pregnancy. The preterm (OR=9.6), complications during pregnancy (OR=4.5), mother's age (<18 , ≥ 35 year) (OR=3.2), previous of LBW (OR=2.9), and smoking during pregnancy (OR=2.5) were the most factors associated with low birth weight. *Conclusion:* The current study found a high prevalence of low birth weight associated with many factors including (The preterm, complications during pregnancy, Mother's age, previous of LBW, and smoking during pregnancy). The current study could be used as a preventative strategy to reduce the risk of low birth weight by prediction of risk factors.

Keywords: Low Birth Weight, Prevalence, Risk Factors, Latakia

1. Introduction

Low birth weight (LBW) is a worldwide public health problem that has a substantial influence on childhood and adult health. [1]. LBW is identified as a birth weight of less than 2500 grams reported within the first 60 minutes of life before an overt weight loss, irrespective of gestation age. [2] Premature birth (i.e., birth before 37 weeks of pregnancy), intrauterine growth restriction, or both can cause LBW. [3-6]. In around half of the instances, the causes of low birth weight are unknown, while in the other half, the causes are medical or social [7]. The incidence rates of LBW vary between countries with the highest incidence in Asia 17.3% compared to 13.7%, 7.2% in Africa and developed regions accordingly [8]. This varying may be due to health conditions, social conditions, economic conditions, malnutrition, and the level of education [9]. LBW may be due to factors related to either the fetus, placenta, mother or a variety of factors that lead to

poor nutrient transport through the placenta and a decrease in fetal growth. Mainly genetic factors explain up to 40% of the differences in birth weight [10]. There is no current research on LBW in latakia. Therefore, the goal of our recent study was to estimate the prevalence of low birth weight in neonates delivered at Tishreen University Hospital in Latakia, as well as the risk factors associated with it.

2. Material and Methods

2.1. Study Population

711 neonates born at the obstetrics department of Tishreen Hospital in Latakia, Syria, between January 2020 and January 2021 were recruited after receiving consent from the local research ethics committee. Congenital abnormalities and twins were among the exclusion criteria. For all individuals, informed written parental permission was

acquired.

2.2. Questionnaire and Examination

The doctors completed a self-administered questionnaire that was given to the study participants. The following information was recorded in order to collect data: demographic information (gender, gestational age, birth weight, number of previous pregnancies, place of residence, the relationship between parents, mother's age, educational level, work, history of birth LBW, doctor visits during pregnancy, nutritional supplements during pregnancy, chronic diseases in the mother, complications, and hospitalization during pregnancy, smoking during pregnancy, etc.).

2.3. Statistical Analysis and Study Design

An observational descriptive cross-sectional study; All statistical analyses were conducted with the use of the Statistical Package for Social Sciences (SPSS Version 20). Descriptive statistical parameters (mean, standard deviation, frequency, and percentage) were calculated for each quantitative variable. The significance of the difference

between different means (quantitative data) was tested using Fisher's exact test for the difference between two independent means, while different percentages (qualitative data) were tested using Pearson's Chi-square test. Interval confidence were used to determine the relationship for each of the variables. We calculated the prevalence rate. The data were assessed to be consistent with the normal distribution. Results were considered statistically significant with a p -value $< 5\%$.

3. Results

The study comprised 711 newborns, with 333 (46.8%) females and 378 (53.2%) males. 95 (13.4%) of the total number of newborns were LBW.

3.1. Socio-Demographic Characteristics

Comparison of socio-demographic features of the LBW and normal birth weight (NBW) groups; mother's age and place of residence (immigrant) were substantially higher in the LBW group ($p \leq 0.005$) (Table 1).

Table 1. Comparison of Socio-Demographic Characteristics between LBW and NBW groups.

variables	LBW N=95	NBW N=616	P-value
Mother's age (year)			
≥35, <18, n (%)	37 (38.9)	114 (18.5)	0.0001
18-34, n (%)	58 (61.1)	502 (81.5)	
Mother's weight (Kg)			
<50 kg	7 (7.4)	40 (6.5)	0.7
≥50 kg	88 (92.6)	576 (93.5)	
Mother's educational level			
Preparatory or less, n (%)	44 (46.3)	223 (36.2)	0.08
Secondary or more, n (%)	51 (53.7)	393 (63.8)	
Mother's work			
Yes, n (%)	18 (18.9)	139 (22.6)	0.4
No, n (%)	77 (81.1)	477 (77.4)	
Residence			
Expatriate, n (%)	42 (44.2)	167 (27.1)	0.001
City, n (%)	53 (55.8)	449 (72.9)	
Parents relative			
Yes, n (%)	30 (31.6)	168 (27.3)	0.3
No, n (%)	65 (68.4)	448 (72.7)	

LBW: Low birth weight, NBW: Normal birth weight.

3.2. Obstetric and Neonatal Related Factors

Smoking during pregnancy, not taking nutritional supplements during pregnancy, preterm delivery, problems and hospitalization during pregnancy, and history of LBW childbirth were all statistically considerable differences between the LBW and NBW groups ($p \leq 0.005$) (Table 2).

3.3. Factors Associated with Low Birth Weight

According to the findings of this study, the chances of LBW were about ten times higher in preterm gestational age than in those of full-term gestational age. [AOR=9.6; 95% (20.6- 2.7)]. LBW was nearly three times more prevalent

among mothers who had previously given birth to LBW babies compared to women who had never given birth to LBW baby. [AOR=2.9; 95% (1.5 – 5.4)]. Mothers who smoked during pregnancy were a 2.5 times higher risk of getting LBW compared to those who did not smoke during pregnancy [AOR=2.5; 95% (1.5 – 4.3)]. Mothers who (<18, ≥35) years of age were 3.2 times more likely to get LBW than mothers who (18-34) years of age [AOR=3.2; 95% (0.8 – 7.8)]. When compared to a mother who did not experience complications during pregnancy, a newborn from a mother who had pregnancy complications was 4.5 times more probably to be LBW. [AOR=4.5; 95% (1.9-11.2)].

Table 2. Comparison of obstetric and neonatal related factors between LBW and NBW groups.

variables	LBW N=95	NBW N=616	P-value
Pregnancy arrangement			
primiparity, n (%)	35 (36.8)	175 (28.4)	0.09
multipara, n (%)	60 (63.2)	441 (71.6)	
Chronic disease before pregnancy			
Yes, n (%)	11 (11.6)	44 (7.1)	0.1
No, n (%)	84 (88.4)	572 (92.9)	
history of LBW childbirth			
Yes, n (%)	16 (16.8)	40 (6.5)	0.0001
No, n (%)	79 (83.2)	576 (93.5)	
Smoking during pregnancy			
Yes, n (%)	24 (25.3)	72 (11.7)	0.002
No, n (%)	71 (74.7)	544 (88.3)	
Nutritional supplements during pregnancy			
Yes, n (%)	45 (47.4)	363 (58.9)	0.04
No, n (%)	50 (52.6)	253 (41.1)	
number of visits during pregnancy			
≤3	22 (23.2)	157 (25.5)	0.6
>3	73 (76.8)	459 (74.5)	
Gestation age			
<37 gestation week, n(%)	71 (74.7)	88 (14.3)	0.0001
>37 gestation week, n (%)	24 (25.3)	528 (85.7)	
Complications during pregnancy			
Yes, n (%)	59 (62.1)	182 (29.5)	0.0001
No, n (%)	36 (37.9)	434 (70.5)	
Hospitalization during pregnancy			
Yes, n (%)	47 (49.5)	48 (7.8)	0.0001
No, n (%)	48 (50.5)	568 (92.2)	
Gender of neonate			
Male, n (%)	51 (53.7)	327 (53.1)	0.9
Female, n (%)	44 (46.3)	289 (46.9)	

LBW: Low birth weight, NBW: Normal birth weight.

4. Discussion

There is no recent detailed information about the prevalence and risk factors of LBW in Latakia. However, several studies predict globally increase of LBW. [11]. The current study demonstrates the value of clinical and scientific studies usefulness in LBW infants and risk factors. 13.4% of them were born with low birth weight, possibly because the majority of the neonates came from low socioeconomic backgrounds and were treated at a free public health facility. This percentage does not reflect the real value of the problem, because the study was conducted in one center in Latakia. LBW frequency varies between 6.6% and 15.8% in different studies [12, 13]. A possible explanation of variation reports includes socio-economic conditions.

Our study revealed that the incidence of LBW was associated with a significant relationship with preterm birth, mother's age (≥ 35 , < 18) years, place of residence (immigrant), smoking of the mother during pregnancy, failure of the mother to take nutritional supplements during pregnancy, complications, and hospitalization of the mother during pregnancy, and history of LBW childbirth. These factors are associated with a risk ratio of LBW.

Preterm birth was the highest risk factor in the current study, as the percentage of premature newborns reached 74.7% of LBW newborns. This result is in concordance, Momeni et al

study and the Wannous et al study found an important inverse correlation between LBW and gestational age [14].

The current study showed that mothers with complications during pregnancy are more likely to born LBW children. The same finding in the study of Wannous et al study and Mohsen et al study. It may be due to the negative effect on transporting nutrients that is necessary for the growth of the fetus [13].

Momeni et al and Islam et al studies found that LBW was more common in young and old mothers which is in line with the findings of our research. [14, 15]. This can be explained by social factors and BMI deficiency in young mothers, while biological factors such as chromosomal abnormalities and pre-eclampsia that occurs at 35 years of age, may play a role in the increase in LBW in older mothers [15] It was noticed that LBW was linked to a history of LBW childbirth. The same finding in the study of Wannous et al study [13].

25.3% of LBW newborns in the current study were born to smoking mothers during pregnancy. This is similar to the results in the Islam et al study. A possible explanation is that smoking has an important negative impact and its association with many problems during pregnancy including problems with the placenta [15].

5. Conclusion

We conclude that there is a important prevalence of LBW

in our health center, which is a concerning matter for the newborn's overall health. The presence of LBW and premature, the mother's age, the frequency of complications and hospitalization during pregnancy, a history of LBW childbirth, and smoking during pregnancy are all warning flags that may indicate the presence of LBW. It is suggested that more research with bigger, multicenter samples be conducted.

Abbreviation List

LBW (Low birth weight)

WHO (World Health Organization)

NBW (Normal Birth Weight)

Conflicts of Interests

All the authors do not have any possible conflicts of interest.

Monetary Support

None

Contribution of Authors

Sample collection was developed and carried out by both authors. Dr. Noura Shoaib conducted the literature review, and both authors performed data analysis and read the final data.

References

- [1] Nzimurinda E, Nzayisenga J, Mureithi C, Habtu M. Prevalence and factors associated with low birth weight among neonates in Rwanda: a prospective cross-sectional study. *Life Res.* 2021; 4 (2): 16-24. doi: 10.12032/life2021-0401-0510.
- [2] Krueger R. B, Reed G. M, First M. B, Marais A, Kismodi E, Briken P. Proposals for paraphilic disorders in the International Classification of Diseases and Related Health Problems, eleventh revision (ICD-11). *Archives of sexual behavior.* 2017; 46 (5): 1529-1545. doi: 10.1071/SH17086.
- [3] Low birth weight: country, regional and global estimates. New York and Geneva: United Nations Children Education Fund and World Health Organization; 2004.
- [4] Corcoles-Parada M, Gimenez-Mateo R, Serrano-del-Pueblo V, Lopez L, Perez-Hernandez E, Mansilla F, et al. Born too early and too small: higher order cognitive function and brain at risk at ages 8–16. *Front Psychol.* 2019; 10: 1942. <https://doi.org/10.3389/fpsyg.2019.01942>.
- [5] Ahishakiye A, Abimana MC, Beck K, Miller AC, Betancourt TS, Magge H, et al. Developmental outcomes of preterm and low birth weight toddlers and term peers in Rwanda. *Ann Glob Health.* 2019; 85 (1): 147. <https://doi.org/10.5334/aogh.2629>.
- [6] Ratnasiri AWG, Parry SS, Arief VN, DeLacy IH, Halliday LA, DiLibero RJ, et al. Recent trends, risk factors, and disparities in low birth weight in California, 2005–2014: a retrospective study. *Matern Health Neonatol Perinatol.* 2018; 4: 15. <https://doi.org/10.1186/s40748-018-0084-2>.
- [7] Metgud C. S, Naik V. A, Mallapur M. D. Factors affecting birth weight of a newborn—a community based study in rural Karnataka, India. *PloS one.* 2012; 7 (7): e40040.
- [8] World Health Organization. (2019). UNICEF-WHO low birthweight estimates: levels and trends 2000-2015 (No. WHO/NMH/NHD/19.21). World Health Organization.
- [9] Figueiredo A. C, Gomes-Filho I. S, Silva R. B, Pereira P. P, Da Mata F. A, Lyrio A. O, et al. Maternal anemia and low birth weight: a systematic review and meta-analysis. *Nutrients.* 2018; 10 (5): 601-608. doi: 10.3390/nu10050601.
- [10] Martinson ML, Reichman NE. Socioeconomic inequalities in low birth weight in the United States, the United Kingdom, Canada, and Australia. *Am J Public Health.* 2016; 106 (2): 748–754. Doi: 10.2105/AJPH.2015.303007.1.
- [11] Bihoun B, Zango SH, Traore-Coulibaly M, Rouamba T, Zemba D, Tahita MC. et al. Low birth weight and prematurity in teenage mothers in rural areas of Burkina Faso. *J Preg Child Health.* 2017; 4 (1): 344-348. Doi: 10.4172/2376-127X.1000344.
- [12] Lake E. A, OlanaFite R. Low birth weight and its associated factors among newborns delivered at wolaitasodo university teaching and referral hospital, southern Ethiopia, 2018. *International journal of pediatrics.* 2019; 2499 (1): 5-9. Doi: 10.1155/2019/4628301.
- [13] Wannous S, Arous S. Incidence and determinants of low birth weight in Syrian government hospitals. *EMHJ-Eastern Mediterranean Health Journal.* 2001; 7 (6): 966-974. Doi: 10.26719/2001.7.6.966.
- [14] Momeni M, Danaei M, Kermani A. J. N, Bakhshandeh M, Foroodnia S, Mahmoudabadi, Z, et al. Prevalence and risk factors of low birth weight in the Southeast of Iran. *International journal of preventive medicine.* 2017; 8 (1): 12-18. DOI: 10.4103/ijpvm.ijpvm_112_16.
- [15] Islam M. M, Ababneh F, Akter T, Khan H. R. Prevalence and risk factors for low birth weight in Jordan and its association with under-five mortality: a population-based analysis. *Eastern Mediterranean Health Journal.* 2020; 26 (10): 1273-1284. DOI: 10.26719/emhj.20.096.