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Investigating the Prevalence of Low-Birth-Weight Infants in Shar-Ara Hospital, Kabul, Afghanistan during 2023

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ABSTRACT

Background: Low birth weight (LBW) is a key determinant of neonatal survival and long-term development, and a critical indicator of maternal and child health. It is closely associated with increased risk of infant mortality and morbidity. We aimed to assess the prevalence of LBW among live births at Shar-Ara Hospital, Kabul, Afghanistan, during 2023.

Methods: This descriptive cross-sectional study was conducted at Shar-Ara Hospital, Kabul, Afghanistan, through retrospective review of records of infants born between January and December 2023. Of 1,406 live births, only complete and accessible records were included. Infants with normal weight (>2,500 g), macrosomia (>4,000 g), and stillbirths were excluded. Data were collected using a validated checklist from maternal and neonatal files. LBW classifications were: LBW (<2,500 g), VLBW (1,000–1,499 g), ELBW (<1,000 g), and preterm (<37 weeks).

Results: The overall prevalence of LBW was 8.3%. Among 117 analyzed cases, 102 (87.2%) were LBW, 5 (4.3%) were VLBW, and 10 (8.5%) were ELBW. The highest proportion of LBW was found among infants born to mothers aged 18–35 years (88.8%) and those born before 37 weeks of gestation (5.1%). Female infants accounted for 58.9% of LBW cases. Most pregnancies were singletons (87.1%), and 39.3% of LBW infants were born to first-time mothers. Vaginal delivery was the most common mode of birth (90.6%).

Conclusion: LBW was the predominant category among low-weight classifications. It was more frequent in female infants, among first-time mothers, and in preterm births to mothers aged 18–35 years.

Key words: Prevalence; Low birth weight infants; Afghanistan

Introduction

Birth weight is one of the most important indicators for assessing neonatal health. It plays a crucial role in determining an infant's chance of survival, risk of physical and mental complications, and overall health status [1]. The normal birth weight is 2500 to 3999 grams; a weight less than this is considered low weight, and a weight higher than this is considered overweight or macrocosmic [2]. The prevalence of

underweight in developing and developed countries was 5.16% and 7%, respectively [3].
In Iran, it varies from 1.19% to 4.6 [4, 5]. Physical and neurological issues, and even death [4, 5], due to greater sensitivity, less immunity, and increased infection, various diseases impose high costs on the family and society [6].
On the other hand, low birth weight (LBW) increases mortality, hearing problems, vision problems, cerebral palsy, mental retardation, and respiratory diseases [7]. Birth weight in newborns is affected by various maternal and environmental factors [8]. Based on evidence, maternal factors such as genetic, socio-cultural, demographic, medical, and behavioral status related to the mother directly and indirectly affect birth weight [9, 10]. The WHO defines LBW as a weight of less than 2,500 grams at birth, regardless of the gestational age [https://www.who.int/data/gho/indicator-metadata-registry/imr-details/low-birthweight-(-newborns-who-weigh-2.5kg)]. There are three types of LBW first; LBW (<2500gr), VLBW(<1500gr), and ELBW(<1000gr). There are some effective factors to becoming LBW are stated; premature that a baby born before 37 wk of full pregnancy, very premature which a baby born before 32 full weeks of pregnancy, and intrauterine growth restriction (IUGR); a baby whose fetal age is 37 wk or more at birth [11, 12]. In India, 20% of babies were born with (LBW), and this condition was more common in girls than in boys [13]. Balázs et al. reported a prevalence of 8.4% for underweight in their study performed in Hungary [14]. LBW remains a significant public health concern, particularly in low- and middle-income countries, due to its strong association with increased neonatal morbidity and mortality. Several factors have been identified as contributing to LBW, including [15]. in their analysis of the SUMMIT trial cohort in Lombok, Indonesia, showed that maternal undernutrition, anemia, and limited antenatal care are key contributors to LBW. Similarly, in Zimbabwe, low maternal education, poor prenatal care, and adverse obstetric history significantly increased the risk of LBW [16]. Studies by Iranian researchers have reported notable prevalence rates and identified key determinants such as maternal age, gestational age, and parity. These findings demonstrate the need for early interventions to reduce LBW and its consequences [17, 18]. Despite numerous studies on LBW, data regarding its prevalence and determinants in Kabul remain scarce. It is the first study conducted at this specific hospital on LBW and the findings are essential for informing local health planning and interventions. Therefore, we aimed to investigate the prevalence of LBW infants and identify associated factors at Shar-Ara Hospital in Kabul during 2023, to inform targeted strategies for improving neonatal outcomes.

Materials and Methods

Study Design

This study was conducted in 2023 at Shar-Ara Hospital, one of the busiest and most populous healthcare facilities in Kabul Province, the capital of Afghanistan. A cross-sectional descriptive design was employed.

Participants and Sample Size

The study population included all infants (n = 1,406) born at Shar-Ara Hospital in Kabul, Afghanistan, during the year 2023.

Data Source and Measurement

Data were collected using a structured checklist from the medical records of 1,406 newborns delivered at the Department of Obstetrics and Gynecology. The checklist included variables such as maternal age, infant gender, gestational age, birth weight, maternal parity, number of pregnancies, and mode of delivery.

Data Calculation and Analysis Methods

After data collection, the information was entered into Microsoft Excel and subsequently analyzed using SPSS ver. 26 (IBM Corp., Armonk, NY, USA). Frequencies and percentages were used to summarize the data, and the Chi-square test was applied to assess associations between variables.

Ethical approval

This retrospective study was conducted using existing hospital records of newborns. No direct contact was made with patients or their families, and no identifiable personal information was collected. Permission to access and analyze the data was obtained from the hospital's Ethics Committee. All data were handled anonymously and treated with strict confidentiality in accordance with ethical research standards.

Results

Overall, 1,406 newborn records were reviewed, among which 117 cases (8.3%) were identified as LBW infants (birth weight <2,500 gr). Most mothers were aged 18–35 years (88.9%). Female infants accounted for 59%, and 51.3% of births were preterm (<37 weeks). Detailed data with p-values are presented in the (Table 1). Most pregnancies were singleton (99.1%) and delivered vaginally (90.6%). First-time mothers accounted for the highest proportion (39.3%). Full details with p-values are provided in the (Table 2).

Table 1: Regarding mother's age, gender infants and gestational age

Variable		*Frequency*	*Percent*	*P-value*
Mother's age(yr)	Lower than 18	6	5.1	0.00
	Between 18 and 35	104	88.9	
	More than 35	7	6.0	
	Total	117	100.0	
Gender's infants	Female	69	59.0	0.052
	Male	48	41.0	
	Total	117	100	
Gestational age	Between 37 and 42 wk	57	48.7	0.78
	Lower than 37 wk	60	51.3	
	Total	117	100.0	

All analysis was by Cross-tabulation. Significance level was set at *P*-value <0.05.

Table 2: Information of Number of Pregnancies, Maternal Parity and Mode of delivery

Variable		*Frequency*	*Percent*	*P-value*
Number of Pregnancies	Singleton	116	99.1	0.000
	Twins	1	.9	
	Total	117	100.0	
Maternal parity	1	46	39.3	0.000
	2-3	41	35.0	
	More than 4	29	24.8	
	4	1	.9	
	Total	117	100.0	
Mode of delivery	Vaginal	106	90.6	0.00
	Cesarean	11	9.4	
	Total	117	100.0	

The division of LBW are illustrated as; LBW (< 2500 g) 102(87.2%), VLBW (1000–1499 g) 5(4.3%), ELBW (< 1000 g) 10(8.5%) (Table 3).

Table 3: Information about low-birth-wieght infants

Variable		*Frequency*	*Percent*	*Cumulative Percent*
Low-birth-weight infants	1500gr≤LBW<2500gr	102	87.2	87.2
	1000gr≤VLBW≤1499gr	5	4.3	91.5
	ELBW<1000gr	10	8.5	100.0
	Total	117	100.0	

Discussion

The overall prevalence of low birth weight (LBW) in this study was 8.3%. In comparison, a similar descriptive cross-sectional study conducted in Markazi Province, Iran, involving 2,016 newborns, reported a lower prevalence of 4.56% [18]. The relatively high prevalence of LBW observed in the current study may be attributed to several contributing factors, including inadequate access to healthcare services and poor socioeconomic conditions. Globally, LBW prevalence varies across regions. For example, in East Africa, the rate is reported at 13.7% [8]. in North Africa, 12.2%; South Africa, 14.2%; and West Africa, 15.2%. In the Americas, the prevalence is approximately 8.7%, while in Australia it stands at 6.4%. Among Asian countries, India reports a prevalence of 20.4%, Iran 10%, Pakistan 8%, and Bangladesh between 7% and 8% [8].

According to maternal age, the rate of LBW infants in this study was highest among mothers aged 18–35 yr (88.9%), followed by mothers over 35 yr (6.0%) and mothers under 18 yr (5.1%). A comparable study conducted in public and private hospitals in Iran reported similar trends, with LBW rates of 84% among mothers aged 18–35 yr, 12.3% among those over 35 yr, and 3.7% among mothers younger than 18 yr [12]. This similarity may be attributed to cultural factors and belief systems. Regarding infant gender, the present study found a higher incidence of LBW among female infants (59.0%) compared to male infants (41.0%), indicating a greater prevalence among girls. Several biological factors may contribute to this trend. For instance, female fetuses generally exhibit slower intrauterine growth rates, especially under stressful conditions. Additionally, hormonal and genetic influences—such as the role of estrogen—may affect fetal development and contribute to lower birth weights in females. A similar study conducted in Stoutest, Iran, reported comparable findings, with LBW incidence at 54.44% among girls and 44.5% among boys [19].

In terms of parity, the current study revealed the highest frequency of LBW among mothers experiencing their first birth (39.3%), while the lowest frequency was observed among mothers with four births (0.9%). This pattern may be attributed to psychological factors, as maternal stress and anxiety are typically higher during a first pregnancy, potentially affecting fetal development. In contrast, a similar study conducted in Iran, involving 5,102 infants, reported the highest incidence of LBW among first-time mothers at 10.2%, and the lowest among mothers with 2–4 births at 7.3% [20]. With respect to the mode of delivery, the highest rate of LBW in the present study was observed among infants born via normal (vaginal) delivery at 90.06%, while the lowest rate was among those delivered by cesarean section at 9.4%. This higher prevalence among vaginal deliveries

may be influenced by social and economic factors, as well as physiological and natural birth processes. A similar study conducted in Iran in 2014 reported comparable findings, with the highest prevalence of LBW among infants born through vaginal delivery at 62.6%, and the lowest among those delivered via cesarean section at 48.8% [21].

One key limitation of this study is its retrospective design, which relied on previously recorded data in hospital files. This may have introduced information bias due to incomplete or inaccurately documented records. Additionally, the absence of a control group (normal birth weight infants) limited the ability to perform comparative analysis or identify significant risk factors associated with low birth weight. Furthermore, since the study was conducted in a single hospital setting, the findings may not be generalizable to the broader population of Kabul or other regions of Afghanistan

Conclusion

The overall prevalence of LBW was 8.3% among the 117 newborns assessed. The most significant associated factor was prematurity, with 5.1% of infants born before 37 wk of gestation. These results underscore the critical role of fetal maturity in determining birth weight outcomes. It is recommended that healthcare providers and policymakers at Shar-Ara Hospital prioritize the enhancement of prenatal care services. Particular attention should be given to the prevention of preterm births, as a key strategy to reduce the incidence of LBW and improve neonatal health outcomes in the region.

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Conflict of Interest

The authors declare that there is no conflict of interests.

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