Prevalence and Determinants of Low Birth Weight in Abha City, Ksa

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Abstract: Low birth weight babies have been defined by W.H.O as weight at birth of less than 2.5 kg. It contributes substantially to neonatal, infant and childhood mortality as well as morbidity. Across the world neonatal mortality is 20 times more likely for low birth weight babies compared to heavier babies (> 2.5 kg). The World Health Organization has estimated that annually 24 million LBW infants are born in developing countries. As the prevalence of LBW infants is around 5% in many industrialized countries, it changes between 5-30% in underdeveloped or developing countries. One of the goals of the 1990 World Summit for Children was to reduce the prevalence of low birth weight to less than 10% by the year 2000. However, this remains a formidable challenge to-date. Objectives: To estimate the prevalence of low birth weight among babies registered in the primary health care centers in Abha city and to identify the factors that determines Low Birth Weight among these babies. Subjects and methods This study followed a cross-sectional design. It was conducted in Abha City, which is the capital of Aseer Region in Saudi Arabia. Results: 18.8"% of the studied babies had LBW. The present study showed that birth weight was significantly associated with level of utilization of antenatal care. Maternal age is an important risk factor related to birth weight of the neonate. Mothers less than 20 years of age had increased proportion of LBW babies. LBW was more common in female babies as compared to male babies. working mothers are at increased risk of having LBW infants, Mothers had previous abortion, preeclampsia, hypertension or anemia had LBW babies. Conclusion: It is concluded from this study that young maternal age, maternal work, poor antenatal care, maternal anemia, and pregnancy induced medical ailments have strong association with low birth weight. To overcome these problems, the mother and child health care services should receive special attention and mothers must be encouraged to attend the PCCCs regularly for antenatal care.
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1. Introduction

Children's health is to a great extent determined by factors that operate in utero, well before they are born. (1) Birth weight (BW) is the most important determinant of perinatal, neonatal, and post-neonatal outcomes.(2).Poor growth during the intrauterine period increases the risks of perinatal and infant mortality and morbidity throughout life(3). Low birth weight (LBW) is responsible for 60% of the infant mortality in the first year of life and it carries a 40-fold increase in the risk of neonatal mortality during the first month(4). Low birth weight is defined as a birth weight of a live born infant of less than 2,500 g. regardless of gestational age and is associated with a range of both short- and long-term adverse consequences. (5)

Infants born LBW are at risk to develop acute diarrhea or to be hospitalized for diarrhoeal episodes at a rate almost two to four times greater than their normal birth weight counterparts(6). Infants who are LBW risk contracting pneumonia or acute lower respiratory infections (ALRI) at a rate almost twice that of infants with normal birth weight; and more than three times greater if their weight is less than 2000 g.(7). LBW is also implicated as a contributor to impaired immune function which may be sustained throughout childhood (8).

Low birth weight is a risk factor for malnutrition, growth retardation, failure to thrive and cognitive impairment. Low birth weight is also a risk factor for atherosclerosis, renal disease, non-insulin dependent diabetes mellitus, asthma, hypertension, obesity, psychological stress and hepatoblastoma.(9).

Although about one-half of all LBW infants in industrialized countries are born preterm (<37 wk gestation), most LBW infants in developing countries are born at term and are affected by intrauterine growth restriction that may begin early in pregnancy (10).

The World Health Organization has estimated that annually 24 million LBW infants are born in developing countries. As the prevalence of LBW infants is around 5% in many industrialized countries, it changes between 5-30% in underdeveloped or developing countries (11)

According to current available data from 111 countries, Yemen has the highest percentage of LBW (32%); it is lowest in Albania, which also is a developing country. It is 5% in Denmark and 6% in Italy. The figure stands at 19% for Pakistan, 22% for

Sri Lanka and 30% for India and Bangladesh. This is in sharp contrast to neighboring China (6%) and Iran (7%).(12).

Causes of IUGR are complex and multiple, Growth will be retarded *in utero* if the placenta is abnormally small or blocked causing insufficient nutrients to reach the fetus. The maternal environment is the most important determinant of birth weight, and factors that prevent normal circulation across the placenta cause poor nutrient and oxygen supply to the foetus, restricting growth. These factors may include maternal undernutrition, anaemia, and acute and chronic infections (such as sexually transmitted diseases and urinary tract infections). Also associated with IUGR are maternal disorders such as renal diseases and hypertension. Cigarette smoking and pre-eclampsia cause the highest relative risks for IUGR in industrialized countries, while alcohol and drug use may also restrict foetal growth (13).

Low socio-economic status is the underlying cause of low birth weight. Other causes include maternal diseases like antepartum hemorrhage, cervical incompetence; adolescent pregnancies; short birth intervals; intrauterine infections; congenital malformations. Also it has been documented that there is increased risk of low birth weight among young mothers (<20 years) as compared to mothers above 20 years (14).

Multiple gestations are high risk pregnancies, which may be complicated by pre-maturity, low birth weight infants, preeclampsia, anemia, postpartum hemorrhage, intrauterine growth restriction, neonatal morbidity and high perinatal, neonatal and infant mortality. The rate of multiple gestation pregnancies has grown exponentially over the last few decades and is responsible for the steady increase in the rate of low birth weight infants. As a group, infants of multiple gestation pregnancies have higher mortality and morbidity than singleton pregnancies. The increase in adverse outcomes is related to the increased risk of preterm delivery and low birth weight, and not to the multiple gestation itself (15).

Gebremariam (16) found that younger maternal age, maternal short stature, late antenatal visits and complicated pregnancies were significantly associated with low birth weight. Less than 4 antenatal visits, coffee or tea intake during pregnancy, and repeated abortions as risk factors of LBW. Pre-term labor, premature rupture of membrane and close birth spacing, as risk factors of LBW (17).

One of the goals of the 1990 World Summit for Children was to reduce the prevalence of low birth weight to less than 10% by the year 2000. However, this remains a formidable challenge to-date. It is therefore encouraging that the international public health community has begun to increase its attention toward these four million infants who die each year and the many more that survive with a diminished quality of life. Low birth weight is a reasonable well-defined problem caused by factors that are potentially modifiable and the costs of preventing them are well within reach, even in poor countries (18).

Objectives:

1- To estimate the prevalence of low birth weight among babies registered in the primary health care centers in Abha city.
2- To identify the factors that determines Low Birth Weight among these babies.

2.Subjects and methods:

This study followed a cross-sectional design. It was conducted in Abha City, which is the capital of Aseer Region in Saudi Arabia.

In this study all babies who were delivered alive and registered in the primary health care centers in Abha city during one year period from !st January 2010 to 31th December 2010 were considered.

The data was obtained from the Case Records of Mothers of Babies registered in the primary health care centers. Records with insufficient Information were excluded.

The neonates divided into two groups according to the birth weights recorded in the health records. All LBW neonates were classified as the case group, while those whose birth weight exceeded 2,500 g served as the control group. In total, 3280 mothers and babies were included. Preterm and multiple babies were excluded.

Data for both groups of infants were listed in a special questionnaire that included maternal and delivery data, as well as data about the newborn. Variables such as age, body mass index (BMI), mother's body weight and height, presence of serious disease(s) before delivery, antenatal care, complications during pregnancy, smoking and working status and educational level of the mother, route of delivery, gender of the neonate and were carefully retrieved from the medical records of the mother and neonate. Births that occurred at < 37 weeks were classified as preterm. Neonatal birth weight < 2,500 g was classified as LBW.

Data was analyzed using the Statistical Package for the Social Sciences version 20 (SPSS,20). Frequencies and percentages were computed to present the categorical response variables like sex of baby, antenatal booking status, age, parity, working status, inter pregnancy interval and anemia. Chi-square test was applied to compare the categorical response variables between case and control groups. A p-value < 0.05 was considered to be statistically significant.

3. Results:

As table (1) shows, only 14.1% of births were born by cesarian section. About half of babies mothers (47.3%) attended the primary health care centers three times or more for antenatal care. Most of mothers were in the age group 20-35 years. The minimum age was 16 years and the maximum age was 45 years with the mean age was 27.67 years. About one third (27.3%) of the studied mothers were primigravida. About half of the studied babies (49.3%) had birth interval more than three years. As regard the birth order, about one third (27.4%) were the fifth child or more. More than half of the babies (51.2%) were males. More than three fourths (77.6%) of the studied mothers were house wives.

Table(1): Description of the study population

Characteristics	No.	%
Birth weight		
Normal	2664	81.2
LBW	616	18.8
Route of delivery		
Normal	2816	85.9
Cesarean section	464	14.1
No. of antenatal visits		
Nill	616	18.8
Inadequate (1-2)	1112	33.9
Adequate (3 or more)	1552	47.3
Maternal age		
Less than 20 years	88	2.7
20 -35 years	2696	82.2
More than 35 years	496	15.1
Range (years)	16-45	
Mean±SD (years)	27.67±5.840	
Birth interval (years)		
Primigravida	896	27.3
< 1	360	11.0
1–3	408	12.4
> 3	1616	49.3
Birth order		
1^{st}	896	27.3
$2^{nd} – 4^{th}$	1488	45.3
$\geq 5^{th}$	896	27.4
Fetal sex		
Male	1680	51.2
Female	1600	48.8
Mother work		
House wife	2544	77.6
Working	736	22.4
Total	3280	100

Table (2) shows that more than one third (36.8%) of the mothers had previous abortion and 27.3% of them had previous low birth weight. Only 3.2% of the mothers had preeclamsia and 2.0% of them complained of DM during pregnancy. Few of the mothers had hypertension, bleeding and urinary tract infection during pregnancy (3.4, 4.1 and 4.6%) respectively. More than one third of the mothers (33.4%) had anemia during pregnancy and about one fifth of them (20.7%) exposed to second hand smoking.

Table (2): Factors influencing the birth weight

Characteristics	No.	%
Previous Abortion		
Yes	1208	36.8
No	2072	63.2
previous LBW		
Yes	896	27.3
No	2384	72.7
Preeclampsia		
Yes	104	3.2
No	3176	96.8
Diabetes Mellitus		
Yes	64	2.0
No	3216	98.0
Hypertension		
Yes	112	3.4
No	3168	96.6
Bleeding		
Yes	136	4.1
No	3144	95.9
Urinary tract		
Infections	152	4.6
Yes	3128	95.4
No		
Anemia		
Yes	1096	33.4
No	2184	66.6
Second hand smoking		
Yes	680	20.7
No	2600	79.3
Total	3280	100

Table (3) Shows that 18.8% of the studied babies had LBW. Less than half of low birth weight babies (45.5%) born by cesarian section, while only 6.9% of normal birth weight born by cesarian section. The difference was statistically significant (*P*=.000).

The difference between LBW and NBW as regard of number of anenatal visits was statistically significant (*p*=.027). 11.7% of low birth weight babies were born to mothers less than 20 years of age while only 0.6% of the normal birth children born to mothers less than 20 years. The difference was statistically significant (*P*=.000).

54.5% of babies with birth interval less than one year were low birth weight while only 0.9% of NBW had birth interval less than one year, the difference

was statistically significant (*p*=.000). As regard the birth order there was statistically insignificant difference between LBW and NBW babies (*P*=.073). More than half of babies with LBW (58.4%) their mothers were working compared to only 14.1% of NBW their mothers were working, the difference was statistically significant (*P*=.000).

Table (3): Risk factors for low birth weight

Characteristics	No (%)		*p*. value
	LBW	NBW	
Route of delivery Cesarean section	280(45.5%)	184(6.9"%)	.000
No. of antenatal visits Nill Inadequate (1-2) Adequate (3 or more)	208(33.8%) 248(40.2%) 160(26%)	408(15.3%) 864(32.4%) 1392(52.3)	.027
Maternal age less than 20 years 20 -35 years more than 35 years	72(11.7%) 432(70.1%) 112(18.2%)	16(0.6%) 2264(85.0%) 384(14.4%)	.000
Birth interval (years) < 1 1–3 > 3	336(54.5%) 80(13.0%) 8(1.3%)	24(0.9%) 328(12.3% 1608(60.4%)	.000
Birth order 1st 2nd – 4th ≥ 5rd	192(31.2%) 248(40.3%) 176(28.5%)	704(26.4%) 1240(46.5%) 720(27.1%)	.073
fetal sex male female	264(42.9%) 352(57.1%)	1416(53.2%) 1248(46.8%)	.032
Mother work House wife Working	256(41.6%) 360(58.4%)	2288(85.9%) 376(14.1%)	.000

T able (4) shows that 42.9% of LBW babies mothers had previous abortion while 35.4% of NBW babies mothers had previous abortion, the difference was statistically significant (*P*=.000). About half of the mothers of LBW babies (45.5%) had previous LBW compared to 23.1% of NBW mothers, the difference was statistically significant (*P*=.032). !3.0% of mothers of LBW babies had preeclamsia during pregnancy while only 0.9% of NBW mothers had preeclampsia, the difference was statistically significant (*P*=.000). The difference between LBW and NBW as regard DM was statistically insignificant (*P*=.069). !5.6% of mothers of LBW babies had hypertension during pregnancy compared to only 0.6% of mothers of NBW babies, the difference was statistically significant (*P*=.000). 19.5% of mothers of LBW babies had bleeding during pregnancy compared to only 0.6% of mothers of NBW babies and the difference was statistically significant (*P*=.000). As regard urinary tract infections, 23.4% of mothers of LBW babies complained of UTI compared to only 0.3% of mothers of NBW babies and the difference was statistically significant (*P*=.000). About two thirds (64.9%) of mothers of LBW babies had anemia during pregnancy while 26.1% of mothers of NBW babies had anemia, the difference was statistically significant (*P*=.000).

Table(4): cont. Risk factors for low birth weight

Characteristics	No.(%)		*P*.Value
	LBW	NBW	
Previous Abortion Yes No	264(42.9% 325(57.1%)	944(35.4%) 1720(64.6%)	.000
previous LBW Yes No	280(45.5%) 336(54.5%)	616(23.1%) 2048(76.9%)	. 032
Preeclampsia Yes No	80(13.0%) 536(87.0%)	24(0.9%) 2640(99.1%)	.000
Diabetes Mellitus Yes No	32(5.2%) 584(94.8%)	32(1.2%) 2632(98.8%)	069
Hypertension Yes No	96(15.6%) 520(84.4%)	16(0.6%) 2684(99.4%)	.000
Bleeding Yes No	120(19.5%) 496(80.5%)	16(0.6%) 2648(99.4%)	.000
Urinary tract Infections Yes No	144(23.4%) 472(76.6%)	8(0.3%) 2656(99.7%)	.000
Anemia Yes No	400(64.9%) 216(35.1%)	696(26.1%) 1968(73.9%)	.000

4. Discussion:

In our study, 18.8"% of the studied babies had LBW. A study in Riyadh, 2004 shows that the prevalence of LBW in all deliveries at KKUH was 11.3% (19). Other studies in Taif region, KSA showed that the prevalence of LBW was 13.6% (20)

The rate of caesarean section was much higher in the LBW births (45.5%) than in

the NBW births (6.9%). Delivery by caesarean section was seen more frequently in LBW infants and this indicated once more that LBW infants were more prone to morbidity and mortality. This was consistent with the results of a study in Turkey which shows that the caesarian section route was higher in LBW than NBW babies (21).

The present study showed that birth weight was significantly associated with level of utilization of antenatal care (*p*<0.027). 33.8% of mothers who did not receive proper antenatal care delivered LBW babies while only 15.3% who did not receive any antenatal care delivered LBW. This result was consistent with an Indian study which shows that birth weight was significantly associated with level of utilization of antenatal care (22).

Maternal age is an important risk factor related to birth weight of the neonate. The relationship between maternal age and birth weight was significant when compared for mothers below and above 35 years of age. Mothers less than 20 years of age had increased proportion of LBW babies. This result supports previous studies mentioning teenage pregnancy as a risk factor(23).

54.5% of babies with birth interval less than one year were of low birth weight while only 0.9% of NBW had birth interval less than one year, the difference was statistically significant, these results are in agree with the results of a study in Iran (24). In our study, there was a difference between LBW and NBW babies as regard the birth order(31.4 & 26.2%) respectively, but this difference was statistically insignificant (P=.073). Other studies showed that the birth order play a significant role in LBW (23- 25).

LBW was more common in female babies as compared to male babies (57.1% vs 42.9%) and this was consistent with another study in Pakistan which shows that

LBW was more common among female babies (26) but the same sex distribution have been seen in many studies.(27,28).

Our study also demonstrated that working mothers are at increased risk of having LBW infants, a finding that was also reported in Nobile *et al.*'s study (29). However, Dickute *et al.* reported that maternal unemployment during pregnancy significantly increases the risk of bearing infants with LBW.(30).

Our study showed that LBW was more common in babies whose mothers had previous abortion, this result was agreed by Golestan *et al.* study(24), But another study demonstrated that no significant difference between previous abortion and LBW (31). The present study also demonstrated that LBW was common in babies whose mothers had previous low birth weight babies, this is agreed by

Joshi etal study in India (22).

The present study also demonstrated that maternal preeclampsia significantly increases the risk of LBW in infants, which was in agreement with findings from other studies.(32,33).

Hypertension causes blood vessel stenosis in some pregnant women, which may result in neonates with LBW. The adverse effect of hypertension on birth weight was also observed in two other studies.(24,32) The blood pressure of pregnant women should be monitored during pregnancy, for their own health and the health of their foetus.

Our study showed that the difference between LBW and NBw babies as regard DM was statistically insignificant and this was also demonstrated by other studies(24,31). Another study showed that DM is a risk factor for LBW

The present study demonstrated that mothers complained of bleeding during pregnancy give birth to LBW babies, Also, Maternal anemia has been related to Low birth weight, These results were agreed by Yadav etal who found a significant difference between LBW and NBW babies as regard ante partum hemorrhage (31). Mothers with Urinary tract infection were more risky to give birth of LBW babies, This is agreed by other study (24).

Conclusion:

It is concluded from this study that young maternal age, maternal work, poor antenatal care, maternal anemia, and pregnancy induced medical ailments have strong association with low birth weight. To overcome these problems, the mothers must be encouraged to attend the PCCCs regularly for antenatal care.

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References:

1- Wilcox AJ, Skaeven R. Birth weight and perinatal mortality: The effect of gestational age. Am J Public Health 1992;82:378-83.
2- Maloni JA, Cohen AW, Kane JH. Prescription of activity restriction to treat high risk pregnancies. Journal of Women's Health 1998;7(3):351-8.
3- Sprague AE. The evolution of bed rest as a clinical intervention. Journal of Obstetric, Gynecologic, and Neonatal Nursing 2004;33(5):542-9.
4- Hanedan S. SSK. Bakırköy Dogumevi, Kadın ve Çocuk Hastalıkları Egitim Hastanesi, Uzmanlık Tezi. Modifiye Wigglesworth sınıflaması ile perinatal mortalitenin 21659 dogumda degerlendirilmesi. 2000.
5- World Health Organization. International Classification of Diseases, Ninth revision, Vol. 1 Geneva, World Health Organization, 1987.
6- Victora CG, Barros FC, Kirkwood BR, Vaughan JP (1990). Pneumonia, diarrhea, and growth in the first 4 y of life: a longitudinal study of 5914 urban Brazilian children. American Journal of Clinical Nutrition 52:391-396.
7- Fonseca W, Kirkwood BR, Victoria CG, Fuchs SR, Flores JA, Misago C (1996) Risk factors for childhood pneumonia among the urban poor in Fortaleza, Brazil: a case-control study. Bulletin of the World Health Organization 74:199-208.
8- Chandra RK (1999) Nutrition and immunology: from the clinic to cellular biology and back

again. Proceedings of the Nutrition Society 58(3):681-683
9- Godfrey KM, Barker DL. Fetal nutrition and adult dise-ase. Am J of Clin Nutr 2000; 71: 1344-52.
10- Villar J, Belizan JM. The relative contribution of prematurity and fetal growth retardation to low birth weight in developing and developed societies. Am J Obstet Gynecol 1982;143:793–8.
11- Basso O, Olsen J, Christensen K. Low birth weight and prematurity in relation to paternal factors: a study of recurrence. Int Epidemiology. 1999;28:695-700.
12- UNICEF. The state of World's Children 2005 for UNI-CEF. Oxford: Oxford University Press 2005: 104-45.
13- Henriksen T (1999) Foetal nutrition, foetal growth restriction and health later in life. Acta Paediatrica 429S:4-8.
14- Simiyu DE.Morbidity and mortality of low birth weight infants in the new born unit of Kenyatta National Hospital, Nairobi. East Afr Med J. 2004 Jul; 81(7):367-74.
15- Kilsztajn S, Rossbach A, do Carmo MS, Sugahara GT. Prenatal care, low birth weight and prematurity in Sao Paulo State, Brazil, 2000] Rev Saude Publica. 2003 Jun; 37(3):303-10
16- Gebremariam A. Factors predisposing to low birth wei-ght in Jimma Hospital south western Ethiopia. East Afr Med J 2005; 82 (11): 554-8.
17- Rahman S, Talat A. An analytic study of risk factors for frequency of small for gestational age (SGA) and appropriate for gestational age (AGA) low birth weight babies in Peshawar Pakistan. J Postgrad Med Inst 2007; 21 (1): 3-9.
18- Tema, T. Prevalence and determinants of low birth weight in Jima zone, Southwest Ethiopia. East African Medical Journal 2006, 83, 366-371.
19- Sameer Abdullah,The Prevalence and Relationship between Periodontal Disease and Pre-term Low Birth Weight Infants at King Khalid University Hospital in Riyadh, Saudi Arabia. The Journal of Contemporary Dental Practice 2004, 6 (2): 212-217.
20- Khalid A. Madani, Hassan A. Nasrat, Low Birth Weight in Taif Region, Saudi Arabia. Eastern Mediterranian Health Journal 1995,1,47-54.
21- Emel Altuncu, Sultan Kavuncuoğlu, The Incidence Of Low Birth Weight In 5000 Liveborn Infants And The Etiology Of Fetal Risk Factors. Marmara Medical Journal 2006;19(2);46-51.
22- Joshi H S, Srivastava P C, Risk Factors for Low Birth Weight (LBW) Babies and its Medico-Legal Significance. J Indian Acad Forensic Med 2007, 32(3).971-976.
23- Fariha Anjum,1 Tahir Javed, Maternal Risk Factors Associated With Low Birth Weight: A Case Control Study. Annals 2011, 17. (3) 223-227.
24- Golestan M, Akhavan Karbasi S, Fallah R, Prevalence and risk factors for low birth weight in Yazd, Iran. Singapore Med J 2011; 52(10): 730-733.
25- Louangpradith Viengsakhone1,2, Yoshitoku Yoshida1. Harun-Or-Rashid1. Factors Affecting Low Birth Weight At Four Central Hospitals In Vientiane, Lao Pdr Nagoya J. Med. Sci. 2010, 72. 51 ~ 58.
26- Afshan Bhatti, Shabnam Naz,. Najia Bhatti. Maternal Risk Factors Associated With Low Birth Weight Babies. Medical Channel 2010. 16,(.2):241-250.
27- Aziz M,Jabbar A,Wadood AA,Khattak MI. Birth weight of term, appropriate for gestational age neonates in Pakistan. The PROFESSIONAL 2003; 10(3): 1-5.
28- Som S, Pal M. Effects of socioeconomic and Biological variables on birth weight in Madhya Pradesh, India. Mal J Nutr 2004; 10(2): 1
29- Nobile CG, Raffaele G, Altomare C, Pavia M. Influence of maternal and social factors as predictors of low birth weight in Italy. BMC Public Health 2007; 7:192.
30- Dickute J, Padaiga Z, Grabauskas V. Maternal socioeconomic factors and the risk of low birth weight in Lithuania. Medicina (Kaunas) 2004; 40:475-82.
31- Yadav DK,1 Chaudhary U,2 Shrestha N3. Risk Factors Associated with Low Birth Weight. J Nepal Health Res Counc 2011 Oct;9(19):159-64.
32- Roudbari M, Yaghmaei M, Soheili M. Prevalence and risk factors of low-birth-weight infants in Zahedan, Islamic Republic of Iran. East Mediterr Health J 2007; 13:838-45
33- Nekatibeb G, G/Mariam A. Analysis of birth weight in Metu Karl hospital: South West Ethiopia. Ethiop Med J 2007; 45:195- 202.J.E. SIZA. Risk factors associated with low birth.

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