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Factors Associated With Delivery of Full-Term Low Birth Weight Babies among Women in Sidi-Salem City

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Abstract: **Low Birth Weight continues to remain a multifaceted socio- medical and public health problem worldwide, especially in the developing countries. It indirectly measures the health of the mother and the child as well as the success of maternal and child health programs. Objective: Identify the factors associated with delivery of full-term, low birth weight babies among women in Sidi Salem City. Settings: the post partum ward and Neonatal Intensive Care Unit of Sidi Salem Hospital. Results: full-term LBW was significantly associated with history of previous and current pregnancy complications. It also insignificantly had increased incidence with farming work, having extended family, living in crowded houses, multigravidity, multiparity, no or inadequate number of antenatal visits, and previous suffering from genital tract infection. In addition, full-term LBW was insignificantly increased with exposure to passive smoking and environmental pollutants as well as receiving drugs during pregnancy and lack of sleep Conclusion: full-term LBW was correlated with some socio-demographic, reproductive, life style and behavioral factors. Recommendations: Pregnant women should be encouraged to receive early, regular and high quality ANC to improve pregnancy outcomes and reduce the incidence of LBW. In-service education programs should be offered to maternity nurses about LBW to increase their ability to detect high-risk pregnant women.**

Keywords: **Full-Term Low Birth Weight Babies.**

I. INTRODUCTION

Low Birth Weight is defined as weight at birth of less than 2500 gram, irrespective of gestational age. It is primarily resulted from either prematurity (birth before 37 weeks of gestation) or Intrauterine Growth Restriction (IUGR) [(1)]. On the other hand, from the 121 million babies born worldwide every year, approximately 23 million suffer from LBW, especially in the developing countries. In Egypt, 16 % of babies were classified as LBW among those with a reported birth weight. However, it was noted that neonatal mortality is 20 times more likely for LBW babies, compared to normal birth weight [(2)].

Several factors are associated with LBW including socio-demographic factors such as low socioeconomic status of the family; maternal age (under 20 and above 35 years old); and low education. Poor reproductive history also play an important role in increasing the occurrence of LBW such as primiparity or multiparity over 4 times; short inter-pregnancy

interval; history of LBW; uterine or cervical abnormalities; abortion; stillbirth; early neonatal death; pregnancy complications; and maternal chronic illness [3].

In addition, LBW may result from problems during pregnancy such as unplanned pregnancy; inadequate antenatal care; anemia; antepartum hemorrhage; hypertensive disorders; gestational diabetes; multiple gestation; oligohydramnios; premature rupture of membranes and maternal infection. Moreover, some behavioral issues may lead to LBW such as burdensome duties; smoking; addiction; physical and mental stress; as well as preparedness of parents; mother's attitude to pregnancy; and marital satisfaction [4].

Infants with LBW are at a disproportionately higher risk of morbidity, mortality; poor growth, as well as impaired psychomotor and cognitive development [5]. During childhood, LBW is associated with higher probabilities of infection; malnutrition; handicapped conditions; mental deficiencies as well as problems related to behavior and learning. When LBW children become adults, they are more susceptible to type 2 diabetes mellitus; hypertension; stroke; as well as coronary heart disease and related disorders; in addition to other future chronic health problems [6].

In order to prevent LBW, its main associated, modifiable risk factors need to be identified and understood. The interrelationships between maternal, social and cultural risk factors that are attributed to the prevalence of LBW also need to be explored to gain effective and efficient interventions in reducing mother and child health problems. In addition, appropriate interventions will help reduce the incidence of LBW deliveries and improve neonatal survival outcomes [7].

However, the aim of this study was to identify the factors associated with delivery of full-term, low birth weight babies among women in Sidi Salem City.

II. MATERIALS AND METHOD

MATERIALS

Research Design:

A descriptive research design was utilized.

Setting:

The study was conducted at the post partum ward and neonatal intensive care unit of Sidi Salem Hospital affiliated to Ministry of Health in Sidi Salem City, Kafr El-Sheikh Governorate, Egypt.

Subjects:

A purposive sample of 240 postpartum women (120 with full-term, normal birth weight babies and 120 with full-term, low birth weight babies) were chosen from the aforementioned setting according to the following criteria:

- Available at the time of data collection.
- Willing to participate in the study.

The sample size of postpartum women with full-term babies was estimated by using the Epi-Info 7 program, where the following parameters were applied:

- Population size = 655/3 months
- Expected frequency = 50%
- Acceptable error = 10%
- Confidence coefficient =95%
- Minimum sample size = 84

Tool:

Factors associated with delivery of full-term, LBW babies structured interview schedule

It was as developed and used by the researchers to collect the necessary data; it entailed four parts:

Part I: Socio demographic data such as age, level of education, occupation, consanguinity, family type, current residence, crowding index, family income/month and house condition.

Part II:

- Reproductive history such as gravidity; pregnancy complications; parity; type of deliveries; labor complications; incidence of LBW; as well as no of abortion, dead children, and living children; in addition to use of contraceptive method/s.

- Maternal history of current pregnancy such as inter-pregnancy interval between last and current pregnancy; planning of pregnancy; as well as number and place of antenatal visits; in addition to receiving tetanus toxoid vaccination and supplements as well as occurrence of pregnancy complications and their types.

- Fetal history of current pregnancy such as number and sex of fetuses, as well as gestational age, birth order and type of delivery.

Part III: Medical/Gynecological and family history, which enclosed occurrence of medical, gynecological and family diseases and their types.

Part IV: Lifestyle and behavior during current pregnancy, which involved exposure to passive smoking and environmental pollutants; as well as drug intake and substance abuse; in addition to nutritional uptake as well as daily life activities, exercises, rest and sleep.

METHOD

The study was accomplished according to the following steps:

1. Approval was obtained from the Ethical Committee, Faculty of Nursing, Alexandria University.

2. Official letter from the Faculty of Nursing, Alexandria University was directed to the responsible authority of the study setting to take his permission to collect data after explaining the purpose of the study.

3. The study tool was developed by the researcher based on extensive review of recent and relevant literature.

4. Tool was tested for content validity by a jury of 5 experts in the field.

5. Tool was checked for their reliability by Cronbach's alpha test and the result was reliable (0.724).

6. A pilot study was carried out on 24 postpartum women; 12 with full-term normal birth weight babies and 12 with full-term low birth weight babies (excluded from the study sample) to test the feasibility of the study, ascertain relevance, clarity and the applicability of the tool as well as detect any problem peculiar to the statements as sequence and clarity that might interfere with the process of data collection. After conducting the pilot study, it was found that the sentences of the tool were clear and relevant; however, few words had been modified. Following this pilot study, the tool was revised, reconstructed and made ready for use.

7. Collection of data covered a period of 4 months, starting from the beginning of October 2018 till the end of January 2019, 4 days/week; 3-4 postpartum women /day.

8. Statistical analysis:

- The collected data were categorized, coded, computerized, tabulated and analyzed using Statistical Package for Social Sciences (SPSS) version 23 program.

- Cross tabulation was carried out to explore the relationships between variables.

- A descriptive and analytical statistics were used such as percentages; whereas Chi-square-test and Fisher Exact-test were used to find out the difference in the results at 0.05 level of significance.

Ethical consideration:

For each recruited subject the following issues were considered: securing the subjects' written informed consent, keeping their privacy and right to withdraw at any time as well as assuring confidentiality of their data.

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III. RESULTS

Table (I) shows the number and percent distribution of postpartum women according to their socio - demographic data. ***Occupation*** displayed that most of full-term normal BW and full-term LBW groups (95% & 95.83%) respectively were housewives. However, one-fifth (20%) of working latter group were farmers, compared to none of the working former group. ***Type of family*** also clarified that 60.83% of full-term LBW group had extended family, compared to 51.67% of full-term normal BW group. In addition, ***crowding index*** revealed that 72.5 % of full-term LBW group living in crowded houses, compared to 66.67% of full-term normal BW group.

Table (II) demonstrates the number and percent distribution of postpartum women according to their previous reproductive history. ***Gravidity*** elucidated that more than one-half (55.83%) of full-term LBW group had 2-3 pregnancies, compared to less than one-half (48.33%) of full-term normal BW group. ***Previous pregnancy complications*** were also reported by 18.39% of full-term LBW groups, compared to 2.38% of full-term normal BW group. Meanwhile, ***bleeding and PIH*** were reported by 18.75% of the former group, compared to none of the latter group. In addition, ***parity*** expounded that 58.33% of full-term LBW had 2-3 deliveries, compared to 50% of full-term normal BW group. Moreover, having ***male & female living children*** was reported by 57.50% of the former group, compared to 46.67% of the latter group. However, a statistically significant relationship was found between the two groups' occurrence of pregnancy complications (P=0.001).

Figure (1) illustrates the percent distribution of postpartum women according to the type of previously used contraceptive method/s. It was revealed that IUD was used by 25.88% of full-term LBW group, compared to 16.25% of full-term normal LBW group.

Table (III) clarifies the number and percent distribution of postpartum women according to their history of current pregnancy. ***No or less than 4 antenatal visits*** was reported by 9.16% of full-term normal BW, compared to 4.17% of full-term LBW groups. ***Occurrence of complications*** was also reported by all (100%) of full-term LBW group, compared to only 35.83% of full-term normal BW group. Meanwhile, ***PIH*** was reported by 30% of the former group, compared to only 6.98% of the latter group. In addition, ***3^{rd} – 6^{th} birth order*** was reported by 47.5% of full-term LBW group, compared to 35.83% of full-term normal BW group. However, a statistically significant differences were found between the two groups' occurrence of pregnancy complications (P=0.000) and their types (P=0.033).

Table (IV) illustrates the number and percent distribution of postpartum women according to their gynecological history. ***Gynecological diseases*** were reported by 22.50% of full-term LBW group, compared to 15.83% of full-term normal BW group. Meanwhile, infection was reported by 92.59% of the former group, compared to 73.68% of the latter group.

Table (V) presents the number and percent distribution of postpartum women according to their life style and behavior during current pregnancy. ***Nutritional intake*** revealed that more than two-fifths (44.17%) of full-term LBW group reported that they were sometimes eating adequate fiber-rich food or wholegrain cereal in breakfast, compared to less than two-fifths (36.67%) full-term normal BW group. In addition, 50.83% of the former group reported that they were eating canned fish one or more times /week, compared to 34.33% of the latter group. Moreover, 60.83% of full-term normal BW group reported daily intake of fresh fruits and natural juice, compared to 50% of full-term LBW group.

Exposure to passive smoking was reported by 59.17% of full-term LBW group, compared to 49.17% of full-term normal BW group. ***Exposure to environmental pollutants*** was also reported by (13.33% &10.83%) of normal BW and full-term LBW groups respectively. Meanwhile, 76.92% of the latter group reported daily & 3 or more times /week exposure, compared to 37.5% of the former group. In addition, ***drug intake*** was reported by 6.67% & 8.33% of full-term normal BW and full-term LBW groups respectively. Meanwhile, intake of anti-coagulants, anti-histamines (ranitidine) and anti-emetics drugs was reported by 50%, 20% & 10% respectively of the latter group, compared to 37.5%, 12.5% & 0% respectively of the former group.

Figure (2) sheds light upon the percent distribution of postpartum women according to their period of sleep/day during current pregnancy. Eight hours sleep was reported by 77.5% of full-term normal BW group, compared to 67.5% of full-term LBW group. Whereas, less than eight hours sleep was reported by 30.83% of the latter, compared to 22.5% of the former

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IV. DISCUSSION

Low birth weight is an important public health concern; it is an indicator of maternal health, nutrition, and poverty as well as quality and availability of ANC, in addition to perinatal, neonatal, infancy, childhood morbidity and mortality [8] **(Hailu & Kebede, 2018).** Factors contributing to LBW in developing countries include inadequate weight gain and hard physical work during pregnancy as well as lack of ANC, malnutrition, malaria and other infectious diseases, in addition to lower socioeconomic status, and short stature [9] **(Mahmoodi et al., 2015).**

Neonates with LBW, especially in developing countries, are more likely to be exposed to risks of cerebral palsy, mental retardation, neurological impairments, respiratory diseases, sudden infant death syndrome, and intensive care complications as well as high cost of care and treatment [10] **(Baghianimoghadam et al., 2015).** In addition, LBW is associated with long-term neurological and intellectual disorders as well as impaired language development, learning/behavioral problems and lower productivity. Moreover, it is pertaining to acute respiratory infection and diarrheal disease as well as increased risk of chronic diseases [11] **(Álvarez-Castaño et al., 2018).** Therefore, the aim of this study was to identify the factors associated with delivery of full-term, LBW babies among women in Sidi Salem City.

Socio-demographic factors

Nature of work, in the present study, elucidated that farmers were more likely to have full-term LBW than their counterparts, although the relationship was not statistically significant (Table I). This may be attributed to rural women's lack of access to and utilization of ANC, which render them more likely to experience LBW. It may also due to the fact that farming needs long standing and heavy lifting as well as exposure to organic dusts, which may impair fetal growth, and result in LBW.

The current finding is relatively concordant with a study done in California, USA, where it was reported that impaired fetal growth related to occupational long periods of standing and heavy lifting as well as exposure to organic dusts have been associated with an increased risk of LBW [12] **(Ehrenstein et al., 2015).** On the contrary, it contradicts a study implemented in Hamadan, Iran, where no significant difference was found between LBW and mothers' type of work [13] **(Nazari, et al., 2019).** The incongruity between the finding of this study and the present one may demonstrate large sample size (268 laboring women).

The results of the current study also revealed that ***women with extended family and living in crowded houses*** were more likely to have full-term LBW than their counterparts, although the relationship was not statistically significant (Table I). This is not surprising, since the proposition that the extended family encourages and facilitates high fertility has become widely accepted. This high fertility may be associated with adverse maternal and fetal pregnancy outcomes, including LBW. The present finding relatively corresponds with a cross-sectional study conducted in Andhra Pradesh, India, where it was indicated that women belonging to joint family were highly significantly more likely to have LBW [14] **(Sulakhe et al., 2019).**

Previous reproductive factors

It was found in the current study that the incidence of full-term LBW was somewhat higher among ***multigravidae and multiparae***, although the relationship was not statistically significant (Table II). This was expected, since they are more likely to have additional medical problems, which are known to influence fetal growth, resulting in LBW. This finding partly tallies with a study conducted in Sana'a, Yemen, where it was reported that 58% of multiparae with parity 2-4, delivered LBW single neonates, compared to 53.9% of their counterparts [15] **(Shuaib & Frass, 2017).** It is also partly congruent with a study fulfilled in Hyderabad, India, where it was demonstrated that the prevalence of LBW was more in multigravidae (32.11%), when compared to primigravidae (22.14%) [16] **(Sarika et al., 2020).**

The results of the present study also revealed that ***history of previous pregnancy complications (e.g., bleeding and PIH)*** were significantly associated with full-term LBW (Table II). This could be referred to as previous pregnancy complications may recur in the current pregnancy and lead to adverse outcomes, including LBW. This may also be interpreted as these complications contribute to fear, stress and anxiety, which have a negative impact on maternal bio-psychosocial adaptation to pregnancy, resulting in LBW. The current finding relatively suits a clinical study carried out in Utter Pradesh, India, where it was shown that women with bad obstetric history are more prone to develop LBW babies

[17] **(Mishra & Joshi, 2017).** However, it was reported that if woman had complications in a previous pregnancy, she may be more likely to have the same complications in the subsequent pregnancies [18] **(Stickler, 2018).**

In addition, ***sex of living children***, in the present study, demonstrated that women who have both male and female children were more likely to experience full-term LBW than those who have either male or female children, although the relationship was not statistically significant (Table II). This may be interpreted as these women may no longer desire more children, so, it is possible for them to experience unintended pregnancy due to limited contraceptive access or use. This unintended pregnancy is associated with adverse pregnancy outcomes, including LBW. The current finding relatively falls in line with a study conducted in Southwest Ethiopia, where it was detected that achieving the desired number of living children of both sexes was significantly associated with unplanned pregnancy and its consequent LBW [19] **(Gizaw et al., 2018).** It also relatively corresponds with a study performed in Sohag district, Upper Egypt, where it was discovered that the prevalence of unwanted pregnancies, and in turn LBW, was significantly higher in women who believed that they exceeds the ideal family size, including both boys and girls [20] **(Mohamed et al., 2019).**

Moreover, ***type of previously used contraceptive methods***, in the current study, clarified that women with Full-term LBW were more likely to report previous use of an IUD (Figure 1). This was anticipated since IUD could provoke PIDs that can result in long-term reproductive disability, which, in tern, may result in LBW [21] **(Pietrangelo, 2017).** The present finding relatively agrees with a retrospective cohort study on Taiwanese women following PID. The results indicated that women with PID significantly were 1.9 times more likely to develop LBW [22] **(Huang et al., 2019).**

Current reproductive factors

It was observed in the present study that the prevalence of full-term LBW was slightly higher among women with ***no or inadequate number of antenatal visits (<4),*** although the relationship was not statistically significant (Table III). This may be related to pregnant women's unawareness of the importance of ANC in the prevention of adverse birth outcomes, including LBW. The existing finding is congruent with a retrospective study completed in a rural district of Pakistan, where it was found that women with LBW in term pregnancies were more likely to attend less than 4 antenatal visits [23] **(Habib et al., 2017).**

The results of the current study also illustrated high significant association between experiencing full-term LBW and ***current pregnancy complications, particularly PIH*** (Table III). This was anticipated since PIH affects the arteries carrying blood to the placenta, leading to decreased utero-placental perfusion or blood, consequently, the fetus may receive inadequate blood, oxygen and nutrients, resulting in IUGR and LBW [24] **(Mayo Clinic Staff, 2020).** The present finding relatively corresponds with a prospective cohort study and a systematic review & meta-analysis conducted in Ethiopia, where pregnant women with PIH, were four times more likely to deliver babies with a higher risk of LBW, than their counterparts [25] **(Berhe et al., 2020)** [26] **(Getaneh et al., 2020).**

In addition, women with higher ***birth order,*** in the present study, experienced more full-term LBW than those with lower birth order, although the relationship was not statistically significant (Table III). This can be interpreted as with passage of time, mother's age and number of children increase, leading to the possibility of suffering from some health disorders or complications, which may in turn increase the chances of having LBW. The current finding is not compatible with a study performed in Abu Dhabi, United Arab Emirates, where it was discovered that LBW was associated with the first child order [27] **(Taha et al., 2020).** The disparity between this study and the present one may demonstrate different research settings and inclusion criteria as well as large sample size.

Gynecological factors

The results of the current study demonstrated that the incidence of full-term LBW was higher among women with ***previous gynecological diseases, especially genital tract infection***, although the relationship was not statistically significant (Table IV). This was expected since it was evidenced that LBW may be caused by genital infections such as syphilis, gonorrhea, bacterial vaginosis, and trichomoniasis [28] **(Nurturing Life's Nutrition Team, 2017).** The present finding tallies with a prospective study achieved in Manipal, India, where it was concluded that genital infection during late pregnancy was one of independent risk factors for LBW [29] **(Tellapragada et al., 2016).**

Lifestyle and behavior during current pregnancy

Nutritional intake, in the present study, revealed that full-term LBW was slightly more likely to be experienced by women who were eating canned fish, inadequate fiber-rich foods or wholegrain cereals, fresh fruits and natural juices, although the relationship was not statistically significant (Table V). This was anticipated since inadequate maternal nutrition during pregnancy may develop an unfavorable intrauterine environment, which is related to increased incidence of LBW [(30)] **(Lowensohn et al., 2016).**

The present finding relatively agrees with a cohort study done in Norway, where it was indicated that women's food that characterized by high intakes of processed food, high fat meat products, sugar, confectionaries, sweets, soft drinks, and unspecified or refined grains was correlated to increased risk of LBW [(31)] **(Englund-Ögge et al., 2019)**. Therefore, it was confirmed that the consequences of poor nutritional status and inadequate nutritional intake during pregnancy not only directly affects women's health status, but may also have a negative impact on early development of the fetus and birth weight [(32)] **(WHO, 2020).**

The results of the present study also expounded that the rate of full-term, LBW was higher among pregnant women who exposed to ***passive smoking***, although the relationship was not statistically significant (Table V). This is very serious as it was indicated that exposure to Environmental Tobacco Smoke (ETS) during pregnancy is associated with increased fetal complications and adverse birth outcomes, including decreased birth weight [(33)] **(Liu et al., 2018).**

The current finding relatively falls in line with an observational analytic study accomplished in Surabaya, Indonesia, and a systematic review finalized in Australia, where it was detected that passive smoking during pregnancy was significantly related to decreased birth weight [(34)] **(Ardelia et al., 2019)** [(35)] **(Gould et al., 2020).** On the other hand, it is not in harmony with a retrospective cohort study done in Puducherry, India, where no significant association was found between ETS exposure during pregnancy and LBW [(36)]***(Krishnamurthy*** **et al., 2018).** The discrepancy between this study and the present one may express different research design and large sample size (1043 pregnant women).

In addition, ***frequent exposure to environmental pollutants*** was more likely to be reported by women with Full-term LBW than their counterparts in the present study, although the relationship was not statistically significant (Table V). This is very dangerous, inhalation of air pollutants may adversely influence the in utero environment and impair fetal growth, leading to LBW [(37)] **(Hou, 2019).** The current finding is relatively comfortable with a study fulfilled in Ahvaz, Iran, where it was shown that there is a direct and significant relationship between exposure to different air pollutants and LBW [(38)] **(Sarizadeh et al., 2020).** It is also consistent with a Cohort study carried out in Xi'an city, China, where it was suggested that maternal exposure to high air pollution during the entire pregnancy, significantly reduced the term birth weight of newborn [(39)] **(Shang et al., 2020).**

Moreover, ***receiving drugs during pregnancy*** such as anti-emetics, Anti-coagulants and anti-histamines increased the incidence of full-term, LBW in the current study, although the relationship was not statistically significant (Table V). This is very critical because any drug taken during pregnancy has a potential teratogenic effect on the fetus, because it may be less able to metabolize the drug and get rid of it [(40)] **(Johns, 2020).**

The present finding is partly in line with an article, in which it was reported that although some ***antiemetic drugs*** (e.g., Vitamin B-6 & dopamine antagonists) are found to be safe for pregnant women, cannabis or marijuana drugs are not safe as they may affect the developing fetus, leading to LBW [(41)] **(Johnson, 2020).** It was also proved that oral anticoagulants (e.g., warfarin) can cross the placenta and cause embryopathy, which is characterized by IUGR and LBW [(42)] **(Wikipedia, the free encyclopedia, 2020).** In addition, it was declared that none of the available ***anti-histamines*** have been categorized as safe during pregnancy [(43)] **(Liang & Chao, 2020).**

Finally, ***lack of sleep*** were more likely to be reported by full-term LBW group than full-term normal BW one in the present study, although the relationship was not statistically significant (Figure 2). This was expected, since chronic sleep loss yields a stress-related hypothalamic– pituitary–adrenal axis and abnormal immune/inflammatory, reaction, which, in turn, may contribute to adverse pregnancy outcomes, including LBW [(44)] **(Palagini et al., 2014).** The current finding relatively conforms to a study fulfilled in Alexandria, Egypt, where it was concluded that the weight of the neonate was less than normal (< 2.5 kg) among 21.9% & 55.1% of mild and poor sleep quality groups respectively [(45)] **(Zaky, 2015).**

V. CONCLUSION

Based on the findings of the present study, it can be concluded that the incidence of full-term LBW was increased with farming work, having extended family, living in crowded houses, multigravidity, multiparity, having both sexes of living children, previous use of an IUD, no or inadequate number of antenatal visits, higher birth order, and previous suffering from genital tract infection. However, full-term LBW was significantly associated with history of previous and current pregnancy complications. The incidence of full-term LBW was also increased with eating canned fish as well as inadequate fiber-rich foods or wholegrain cereals, fresh fruits and natural juices, in addition to frequent exposure to passive smoking or environmental pollutants, receiving drugs during pregnancy and lack of sleep.

VI. RECOMMENDATIONS

Based on the findings of the present study, the following recommendations are suggested:

- There is a great necessity for improving the antenatal care, both in coverage and quality of services provided.
- Mass awareness should be created by utilizing mass media regarding early signs of maternal complications, smoking cessation, and essential FP practices to promote primary prevention of LBW.
- In-service education programs should be offered to maternity nurses about LBW to increase their ability to detect high-risk pregnant women.
- Pregnant women should be encouraged to receive early, regular and high quality ANC to improve pregnancy outcomes and reduce the incidence of LBW.
- Early detection and appropriate management of the risk-factors during routine ANC visits will help reduce incidence of LBW and related short-and long-term consequences.
- More studies are needed to determine the effect of young maternal age, excessive and insufficient physical activity as well as malnutrition and early pregnancy bleeding on birth outcomes, including LBW.

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APPENDICES - A

Table (I): Number and percent distribution of postpartum women according to their socio - demographic data

Socio - demographic data	Full-term normal BW group (120)		Full-term LBW group (120)		F / χ^2 (P)
	No	%	No	%	
Occupation:					
- Working	6	05.00	5	04.17	0.095
- Housewife	114	95.00	115	95.83	(0.758)
Type of work:	**(n=6)**		**(n=5)**		
- Employee	6	100.0	4	80.00	1.32
- Farmer	0	00.00	1	20.00	(0.251)
Type of family:					
- Nuclear	58	48.33	47	39.17	2.049
- Extended	62	51.67	73	60.83	(0.152)
Crowding index:					
- Not crowded (<2)	40	33.33	33	27.50	0.965
- Crowded (>2)	80	66.67	87	72.50	(0.326)

More than one response
χ^2 (P): Chi-Square Test & P for χ^2 Test
F (P): Fisher Exact test & P for F Test
*: Significant at P ≤0.05

Table (II): Number and percent distribution of postpartum women according to their previous reproductive history

Previous reproductive history	Full-term, normal BW group (120)		Full-term, LBW group (120)		F / χ^2 (P)
	No	%	No	%	
Gravidity:					
1	36	30.00	33	27.50	1.561
2-3	58	48.33	67	55.83	(0.458)
4-8	26	21.67	20	16.67	
Occurrence of pregnancy complications:	**(n=84)**		**(n=87)**		
- Yes	2	02.38	16	18.39	11.631
- No	82	97.62	71	81.61	(0.001)*
Type of pregnancy complications: #	**(n=2)**		**(n=16)**		
- Anemia	2	100.0	11	68.75	
- Infection	1	50.00	0	00.00	6.727
- Bleeding	0	00.00	3	18.75	(0.081)
- PIH	0	00.00	3	18.75	
Parity:					
1	41	34.17	33	27.50	1.745
2-3	60	50.00	70	58.33	(0.418)
4-6	19	15.83	17	14.17	
Sex of living children:					
- Males	31	25.83	24	20.00	2.843
- Females	33	27.50	27	22.50	(0.241)
- Males & females	56	46.67	69	57.50	

More than one response
χ^2 (P): Chi-Square Test & P for χ^2 Test
F (P): Fisher Exact test & P for F Test
*: Significant at P ≤0.05

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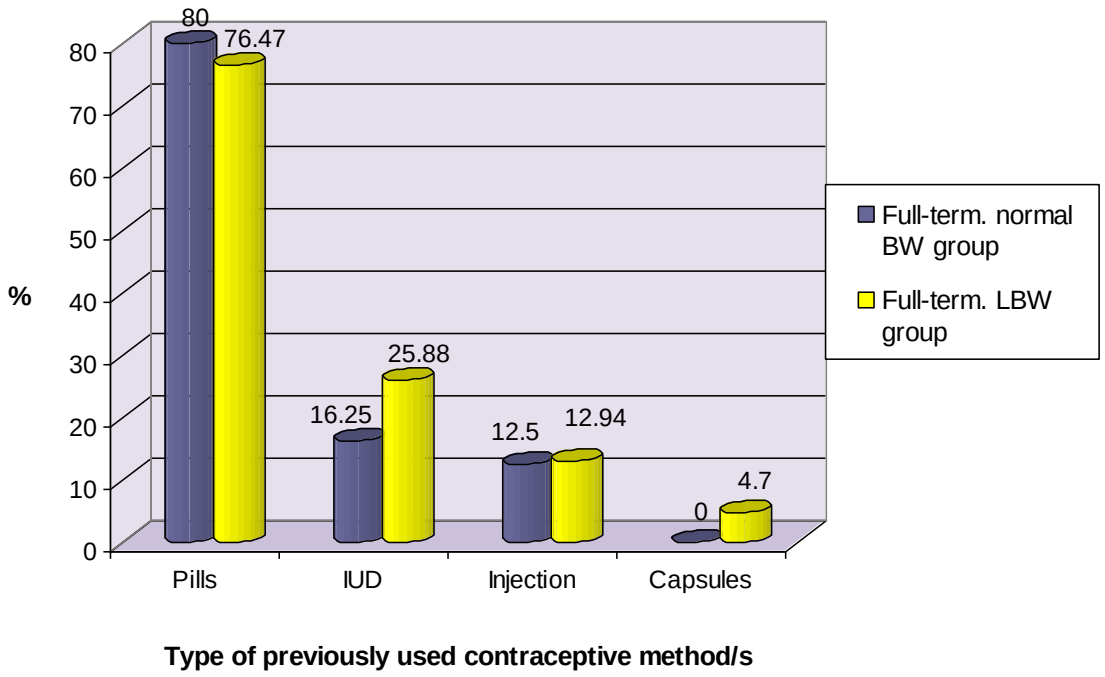

Figure (1): Percent distribution of postpartum women according to type of previously used contraceptive method/s

Table (III): Number and percent distribution of postpartum women according to their history of current pregnancy

History of current pregnancy	Full-term, normal BW group (120)		Full-term, LBW group (120)		F / χ^2 (P)
	No	%	No	%	
No. of antenatal visits:					
None	0	00.00	1	00.83	2.827 (0.243)
< 4	5	04.17	10	08.33	
≥ 4	115	95.83	109	90.83	
Occurrence of pregnancy complications:					
- Yes	43	35.83	120	100.0	113.374 (0.000)**
- No	77	64.17	0	00.00	
Type of pregnancy complications: #	**(n=43)**				
- Anemia	30	69.87	77	64.17	16.763 (0.033)*
- Infection	11	25.68	21	17.50	
- Bleeding	2	04.75	8	06.67	
- PIH	3	06.98	36	30.00	
Birth order:					
1	**42**	35.00	35	29.17	3.374 (0.185)
2	**35**	29.17	28	23.33	
3-6	**43**	35.83	57	47.50	

More than one response
χ^2 (P): Chi-Square Test & P for χ^2 Test
F (P): Fisher Exact test & P for F Test
*: Significant at P ≤0.05
**: Highly Significant at P ≤0.05

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Table (IV): Number and percent distribution of postpartum women according to their gynecological history

Gynecological history	Full-term, normal BW group (120)		Full-term, LBW group (120)		F / χ^2 (P)
	No	%	No	%	
Occurrence of previous or present Gynecological diseases:					
- Yes	19	15.83	27	22.50	1.721
- No	101	84.17	93	77.50	(0.190)
Type of Gynecological diseases: #	**(n=19)**		**(n=27)**		
- Infection	14	73.68	25	92.59	
- Bleeding	2	10.52	4	14.81	3.648
- CS scar	4	21.05	2	07.40	(0.302)
- Fibroid	1	05.26	0	00.00	

More than one response
χ^2 (P): Chi-Square Test & P for χ^2 Test
F (P): Fisher Exact test & P for F Test
*: Significant at P ≤0.05

Table (V): Number and percent distribution of postpartum women according to their life style and behavior during current pregnancy

Life style and behavior during current pregnancy	Full-term, normal BW group (120)		Full-term, LBW group (120)		F / χ^2 (P)
	No	%	No	%	
Eating adequate fiber-rich food & wholegrain cereal in breakfast:					
- Every day	33	27.50	35	29.17	2.507
- Sometimes	44	36.67	53	44.17	(0.285)
- Never	43	35.83	32	26.67	
Eating canned fish/week:					
> 2 times	10	08.33	10	08.33	1.509
One time	42	35.00	51	42.50	(0.470)
Rarely	68	65.67	59	49.17	
Taking fresh fruits & natural juice/week:					
Every day	73	60.83	60	50.00	2.886
≥ 3 times	36	30.00	45	37.50	(0.236)
< 3 times	11	09.17	15	12.50	
Exposure to passive smoking:					
- Yes	59	49.17	71	59.17	2.417
- No	61	50.83	49	40.83	(0.120)
Exposure to environmental pollutants:					
- Yes	16	13.33	13	10.83	0.353
- No	104	86. 67	107	89.17	(0.552)
Duration of exposure to environmental pollutants / week	**(n=16)**		**(n=13)**		
Every day	1	06.25	3	23.08	4.844
≥ 3 times	5	31.25	7	53.84	(0.089)
< 3 times	10	62.50	3	23.08	
Drug intake:					
- Yes	8	06.67	10	08.33	0.24
- No	112	93.33	110	91.67	(0.624)

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Type of medications: #	**(n=8)**		**(n=10)**		
- Antibiotics	1	12.50	0	00.00	
- Anti-spasmodic	1	12.50	1	10.00	
- Anti-emetics	0	00.00	1	10.00	2.981 (0.703)
- Anti-hypertensive	2	25.00	1	10.00	
- Anti-coagulants	3	37.50	5	50.00	
- Anti-histamines (Ranitidine)	1	12.50	2	20.00	

More than one response
χ^2 (P): Chi-Square Test & P for χ^2 Test
F (P): Fisher Exact test & P for F Test
*: Significant at P ≤0.05

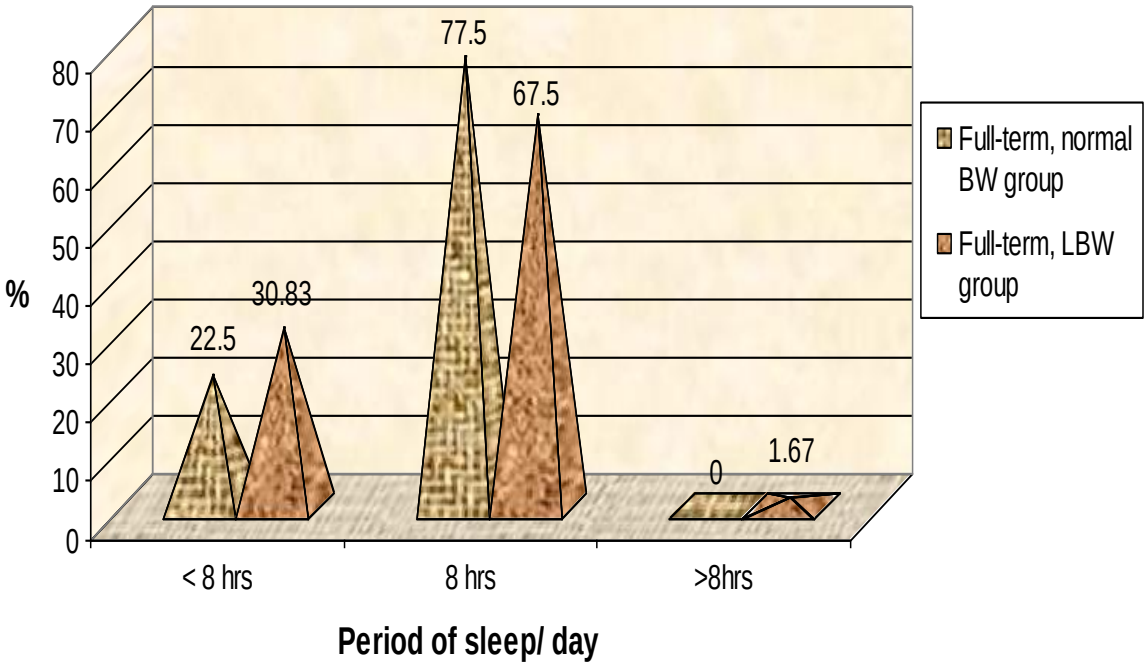

Figure (2): Percent distribution of postpartum women according to their period of sleep/day during current pregnancy