MATERNAL ANEMIA AS A PREDICTOR OF LOW BIRTH WEIGHT BABIES IN UNDERDEVELOPED RURAL AREA OF SOUTHERN PUNJAB

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Abstract

Objective; To determine the frequency of low birth weight babies born to anemic pregnant ladies of underdeveloped area of Southern Punjab. **Subjects and methods;** A total 216 pregnant women aged 20 – 40 years, with anemia were included in our study. Anemic pregnant women with gestational age more than 24 weeks having singleton fetus were taken. Five ml of venous blood sample was drawn and sent to the laboratory for estimation hemoglobin levels to diagnose anemia among pregnant women and only anemic women were taken and followed till delivery to diagnose low birth weight. All the data was entered and analyzed by using SPSS version 20.0. **Results;** A total of 216 pregnant women with anemia were included in this study. Mean age of our study cases was 26.67 ± 4.26 years ranging from 21 – 35 years and 161 (74.5%) were aged up to 30 years. One hundred sixty three (75.5%) were from poor socioeconomic background while 53 (24.5%) were from middle income families. Only 36 (16.7%) were literate and 180 (83.3%) were illiterate. One hundred forty four (66.7%) belonged to joint family system and only 36 (16.7%) had history of using iron supplementation during course of pregnancy. Mean parity was $3.12 \pm .93$ and 117 (54.2%) had parity up to 3. Mean maternal hemoglobin level was 8.91 ± 1.28 g/dl ranging from 6.5 to 10.8 g/dl. Mean birth weight of our study cases was 2300.97 ± 228.94 grams and low birth weight babies were 120 (55.6%). **Conclusion;** Very high frequency of low birth weight newborn babies was noted among anemic mothers in our study. Low birth weight was significantly associated with increasing age, illiteracy, lack of use of iron supplementation and increasing parity. Anemic mothers should be counseled for proper dietary uptake during pregnancy so as to avoid adverse pregnancy outcomes.

Keywords; Maternal anemia, low birth weight, hemoglobin levels.

Introduction:

Anemia is global public health issue which affects both developed as well as low and middle income countries having significant impact not only on human health but also affects social and economic developments with negative indicators [1]. Such public health issue may lead to the loss of billions of dollars annually. Anemia affects more than 1.6 billion persons which comprise 24.8% of total world population as reported by World Health Organization in 2008. Worldwide, its prevalence among pregnant ladies is about 42 % which makes it as an important predictor for maternal mortality. Geographic distribution of anemia varies greatly in different parts of the world, even reliable data are missing, however it is strikingly increasing in proportion in low and middle income countries among females of childbearing age especially among pregnant ladies. Particularly pregnant women living in Asia and African countries are at increased risk of having anemia [6, 7].

The impact of anemia on maternal and neonatal health varies from range of morbidities to mortality [8]. As reported in different studies, severe anemia during pregnancy defined as Hb <7g/dl has been related with significant increase in maternal and fetal complications as it increases the chances of preterm labor, intrauterine fetal demise, low birth weight, early neonatal death, maternal and infant mortalities [9, 10].

Although efforts are being made by public health professionals to reduce its burden but still 42 % pregnant ladies are anemic ultimately affecting to millions of mothers as well as their infants. This menace is not only restricted to the low and middle income countries only, even the developed nations like USA harbor its magnitude ranging to 30 – 34 % during pregnancy [11]. However up to what extent anemia may have consequences on maternal and neonatal health, still needs to be explored while it has been implicated as a potential risk factor for low birth weight babies and different studies have associated maternal anemia as an independent risk factor for low birth weight babies. Some other studies have reported conflicting results[12].

Most of the data available on this topic is available from large healthcare setting while data from rural communities and under-developed areas is scarce. Keeping these facts in minds we conducted this study in rural community to see its magnitude in these patients who are attending Basic Health Unit.

MATERIAL AND METHODS:

A total 216 pregnant women aged 20 – 40 years, with anemia visiting basic health unit Ibrahim Pur were included in our study. Anemic pregnant women with gestational age more than 24 weeks having singleton fetus were taken while pregnant women who had diabetes, hypertension, twin pregnancy, having fetal anomalies (congenital heart disease and Down syndrome) were excluded from our study. These anemic pregnant women were briefed about objectives of the study, ensuring them confidentiality of their information. Detailed history and physical examination of our study cases was done. Five ml of venous blood sample was drawn and sent to the laboratory for estimation hemoglobin levels to diagnose anemia among pregnant women and only anemic women were taken and followed till delivery to diagnose low birth weight (birth weight less than 2500 grams was defined as low birth weight, irrespective of gestational age) while anemia was defined as hemoglobin levels less than 11 g/dl will be deemed as positive. All the data was entered and analyzed by using SPSS version 20.0. The quantitative variables like age, BMI and hemoglobin levels will be presented as mean and standard deviation. Frequencies and percentages will be calculated for age groups, obesity, residential status, treatment status, family income, parity and educational status. Stratification with respect to age, parity, residential status, educational level, family income, treatment status and obesity was done by applying chi-square test at level of significance of 0.05.

RESULTS; A total of 216 pregnant women with anemia were included in this study. Mean age of our study cases was 26.67 ± 4.26 years ranging from 21 – 35 years and 161 (74.5%) were aged up to 30 years. One hundred sixty three (75.5%) were from poor socioeconomic background while 53 (24.5%) were from middle income families. Only 36 (16.7%) were literate and 180 (83.3%) were illiterate. One hundred forty four (66.7%) belonged to joint family system and only 36 (16.7%) had history of using iron supplementation during course of pregnancy. Mean parity was $3.12 \pm .93$ and 117 (54.2%) had parity up to 3. Mean maternal hemoglobin level was 8.91 ± 1.28 g/dl ranging from 6.5 to 10.8 g/dl. Mean birth weight of our study cases was 2300.97 ± 228.94 grams and low birth weight babies were 120 (55.6%).

Table No. 1 Distribution of low birth weight babies with regards to maternal age groups.

Age groups	Low birth weight		P – value
	Yes (n = 120)	No (n = 96)	
Up to 30 Years (n = 161)	67	94	
More than 30 Years (n = 55)	53	02	0.001
Total	216		

Table No. 2   Distribution of low birth weight babies with regards to socioeconomic status.

Socioeconomic status	Low birth weight		P – value
	Yes (n = 120)	No (n = 96)	
Poor (n = 163)	94	69	
Middle Income (n = 53)	26	27	0.340
Total	216		

Table No. 3   **Distribution of low birth weight babies with regards to maternal literacy.**

Literacy	Low birth weight		P – value
	Yes (n = 120)	No (n = 96)	
Literate (n = 36)	02	34	
Illiterate (n = 180)	118	62	0.001
Total	216		

Table No. 4   **Distribution of low birth weight babies with regards to iron supplementation during pregnancy.**

Iron supplementation	Low birth weight		P – value
	Yes (n = 120)	No (n = 96)	
Yes (n = 36)	09	27	
No (n = 180)	111	69	0.000
Total	216		

Table No. 5   **Distribution of low birth weight babies with regards to parity.**

Parity	Low birth weight		P – value
	Yes (n = 120)	No (n = 96)	
Up to 3 (n = 117)	30	87	
More than 3 (n = 99)	90	09	0.001
Total	216		

DISCUSSION;

Proper nutrition plays an important role in terms of desired perinatal outcomes. Anemia in pregnancy is quite common medical problem faced by Obstetricians all over the world [13-15]. Although efforts are being made by public health professionals to reduce its burden but still 42 % pregnant ladies are anemic ultimately affecting to millions of mothers as well as their infants. This menace is not only restricted to the low and middle income countries only, even the developed nations like USA harbor its magnitude ranging to 30 – 34 % during pregnancy [11]. However up to what extent anemia may have consequences on maternal and neonatal health, still needs to be explored while it has been implicated as a potential risk factor for low birth weight babies and different studies have associated maternal anemia as an independent risk factor for low birth weight babies. Some other studies have reported conflicting results

A total of 216 pregnant women with anemia were included in this study. Mean age of our study cases was 26.67 ± 4.26 years ranging from 21 – 35 years and 161 (74.5%) were aged up to 30 years. Ayesha et al [16]

from Karachi also reported 26 years mean age and 82 % of which were less than 30 years old which are close our results. Ahmad et al [17] from Rawalpindi also reported similar results with 29.44 years mean age. Similarly Moghaddam et al [18] from Iran documented 26.1 ± 5.8 years mean age of anemic pregnant ladies.

One hundred sixty three (75.5%) were from poor socioeconomic background while 53 (24.5%) were from middle income families. Ayesha et al [16] from Karachi also reported similar results. Iltaf et al [19] from Kashmir also reported similar results while associating low birth weight with lower income groups.

Only 36 (16.7%) were literate and 180 (83.3%) were illiterate. One hundred forty four (66.7%) belonged to joint family system and only 36 (16.7%) had history of using iron supplementation during course of pregnancy. Mean parity was 3.12 ± .93 and 117 (54.2%) had parity up to 3. Ayesha et al [16] from Karachi also reported 87 % parity up to 3 which is quite higher than our results which may be due to the fact that our study was done in rural community where people tend to have more children while Ayesha et al [16] conducted her study in the urban population of Karachi.

Mean maternal hemoglobin level was 8.91 ± 1.28 g/dl ranging from 6.5 to 10.8 g/dl. Mean birth weight of our study cases was 2300.97 ± 228.94 grams and low birth weight babies were 120 (55.6%). Ayesha et al [16] from Karachi also reported 52 % low birth weight babies were associated with maternal anemia during pregnancy which is close to our study results. Ahmad et al [17] from Rawalpindi also reported 64 % low birth weight babies born to anemic pregnant ladies. Moghaddam et al [18] from Iran documented similar results. A large Cohort study from Zimbabwe also found significant association of maternal anemia with low birth weight babies [20].

Conclusion;

Very high frequency of low birth weight newborn babies was noted among anemic mothers in our study. Low birth weight was significantly associated with increasing age, illiteracy, lack of use of iron supplementation and increasing parity. Anemic mothers should be counseled for proper dietary uptake during pregnancy so as to avoid adverse pregnancy outcomes.

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