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Assessment of prevalence of anaemia among pregnant women admitted for delivery at labor room

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DOI: https://doi.org/10.33545/gynae.2020.v4.i4f.667

Abstract
Background: Anemia affects almost two-thirds of pregnant women in developing countries and contributes to maternal mortality and low birthweight. Although biological risk factors such as dietary deficiency, parasitic infestations, and chronic diseases are well-known risk factors, it is important for the physician to understand the ecological or structural risk factors that could be of regional interest. Hence; the present study was conducted with the aim of assessing the prevalence of anemia among pregnant women admitted for delivery at GGSMC labor room.
Materials & methods: 1800 pregnant women admitted for delivery were interviewed by using predesigned and pretested questionnaire. The diagnosis on anemia was made by shale's haematin method of hemoglobin method of estimation and type of anemia was confirmed by using the standard peripheral blood smear examination. Anemia was classified according as per the (WHO) World Health Organization grading criteria; Mild = 10 -10.9g/dl, Moderate = 7 – 9.9 g/dl and Severe - < 7g/dl. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.
Results: Anemia was present in 48.88 percent (880 subjects) of the subjects. Out of 880 anemic subjects, 338 subjects had mild anemia, 390 anemic subjects had moderate anemia and remaining 152 anemic subjects had severe anemia. While analyzing various risk factors, it was seen that severe anemia was more common in illiterate subjects, laborers and subjects with lower socio-economic status. Also, anemia was more common among subjects who had never taken iron, folic acid supplements, and subjects who were not aware about free iron at hospital.
Conclusion: Anemia continues to be a significant health issue. Even though iron–folic acid supplementation is readily available, it is crucial for primary health care workers to address other risk factors when designing therapeutic interventions for anemia control.

Keywords: anemia, pregnant, women

Introduction
Anemia affects almost two-thirds of pregnant women in developing countries and contributes to maternal mortality and low birthweight. The World Health Organization (WHO) defines anemia as a condition in which the hemoglobin concentration of a woman during pregnancy is <11 g/dl. Nutritional anemia as iron deficiency anemia (IDA) is the most common cause of anemia during pregnancy, globally affecting about 32 million women and at least half of all the pregnant women in middle and low-income countries [1- 3]. The primary care physician who is the backbone of the health care system and also the first contact point for a patient plays a crucial role in the identification and management of anemia. Even in the public sector, majority of the antenatal cases are handled at the level of primary health care. Although biological risk factors such as dietary deficiency, parasitic infestations, and chronic diseases are well-known risk factors, it is important for the physician to understand the ecological or structural risk factors that could be of regional interest [4, 5]. Hence; the present study was conducted with the aim of assessing the prevalence of anemia among pregnant women admitted for delivery at GGSMC labor room.

Material and method
A prospective observational study was carried at GGSMC labor room where all pregnant women admitted for delivery were interviewed by using predesigned and pretested questionnaire. The diagnosis on anemia was made by shale's haematin method of hemoglobin method of estimation and type of anemia was confirmed by using the standard peripheral blood smear examination.

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Study period
Conducted for one year i.e from 1st January to 31st December 2018
Anemia was classified according as per the (WHO) World Health Organization grading criteria.
- Mild = 10 -10.9g/dl
- Moderate = 7 – 9.9 g/dl
- Severe - < 7g/dl

Inclusion criteria
- All pregnant women admitted for delivery at labor room of GGSMC (Guru Gobind Singh medical college) Faridkot

Exclusion criteria
- Recent blood transfused
- Who had chronic medical disorder
- Diagnosed hemoglobinopathies
- Bleeding disorder
- Antepartum hemorrhage

All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.

Results
In the present study, a total of 1800 subjects were analyzed. Among these 1800 subjects, anemia was present in 48.88 percent (880 subjects) of the subjects. Out of 880 anemic subjects, 338 subjects had mild anemia, 390 anemic subjects had moderate anemia and remaining 152 anemic subjects had severe anemia. Out of 880 anemic subjects, 388 subjects had microcytic-hypochromic type of anemia, 280 subjects had a normocytic- normochromic type of anemia and remaining 212 subjects had others (combined morphology) type of anemia. While analyzing various risk factors, it was seen that severe anemia was more common in illiterate subjects, laborers and subjects with lower socio-economic status. Also, anemia was more common among subjects who had never taken iron, folic acid supplements, and subjects who were not aware about free iron at hospital.

Table 1: Distribution of subjects according to severity of anemia

Haemoglobin level	No of women (880)
Mild 10 /10.9 g/dl	338
Moderate 7 -9.9 g /dl	390
Severe <7 g /dl	152

Table 2: Distribution of patients according to morphologic type of Anemia

Morphologic type of Anaemia	Number
Microcytic-hypochromic Anaemia	388
Normocytic-normochromic Anaemia	280
Others (combined morphology)	212
Total	880

Table 3: Risk factors

Parameter		Mild (338)	Moderate (390)	Severe (152)	p- value
Educational qualification	Illiterate	128	283	120	0.00 (S)
	Primary school	110	64	26	
	Secondary	90	43	6	
	Graduate	10	0	0	
Occupation	Housewife	312	277	23	0.00 (S)
	Labourer	22	111	129	
	Employed	4	2	0	
Socio-economic status	Lower	259	298	132	0.01 (S)
	Middle	61	90	20	
	Higher	18	2	0	
Gravidity	G1	155	11	2	0.05 (S)
	G2	108	148	34	
	>G2	75	231	116	
Diet	Strict vegetarian	77	137	98	0.78
	Mixed	261	253	54	
Iron, folic acid supplement	Daily	5	4	0	0.00 (S)
	Two to three times a week	108	168	12	
	Not taken	225	218	140	
Awareness about free iron at hospital	Yes	312	48	26	0.03 (S)
	No	26	342	126	

Discussion
Anemia in pregnancy is one of the most common preventable causes of maternal morbidity and poor perinatal outcome. The main causes of anemia during pregnancy involve deficiencies of key nutrients, infections, and parasitic diseases. Among these etiologic factors, iron deficiency is often identified as the primary contributor to anemia in pregnancy. The determination of these factors will help to provide valuable information for the identification of the "at-risk" group and also for the implementation of interventions to reduce anemia. However, these studies regarding the etiology of anemia in pregnancy were conducted with anemic women prior to conception or during the first trimester of pregnancy. There is a need for studies exploring the prevalence of anemia and predisposing risk factors for anemia observed at the time of delivery [6-9]. Hence; the present study was conducted with the aim of assessing the prevalence of anemia among pregnant women admitted for delivery at GGSMC labor room.

In the present study, a total of 1800 subjects were analyzed. Among these 1800 subjects, anemia was present in 48.88 percent (880 subjects) of the subjects. Out of 880 anemic subjects, 338 subjects had mild anemia, 390 anemic subjects had moderate anemia and remaining 152 anemic subjects had severe anemia. Out of 880 anemic subjects, 388 subjects had microcytic-hypochromic type of anemia, 280 subjects had a normocytic- normochromic type of anemia and remaining 212 subjects had others (combined morphology) type of anemia. Srour MA *et al*. investigated the prevalence of anemia and iron

deficiency among pregnant women and its association with pregnancy outcome. They enrolled 300 pregnant women in their first trimester and 163 babies. The prevalence of iron deficiency anemia among pregnant women was 25.7% and 52% of them had depleted iron stores. When pregnant women were grouped into three hemoglobin (Hb) tertile groups, a significant difference was observed between maternal Hb and newborns' birth weight (P= 0.009), height (P= 0.022), head circumference (P= 0.017), and gestational age (P= 0.012). There was a significant association between maternal serum ferritin and frequency of low birth weight and frequency of preterm delivery (P= 0.003). No significant association was observed between maternal anthropometric measures or the socioeconomic status and pregnancy outcomes [8].

In the present study, while analyzing various risk factors, it was seen that severe anemia was more common in illiterate subjects, laborers and subjects with lower socio-economic status. Also, anemia was more common among subjects who had never taken iron, folic acid supplements, and subjects who were not aware about free iron at hospital. Anemia during pregnancy is reported to have negative maternal and child health effect and increase the risk of maternal and perinatal mortality. The negative health effects for the mother include fatigue, poor work capacity, impaired immune function, increased risk of cardiac diseases and mortality. Some studies have shown that anemia during pregnancy contributes to 23% of indirect causes of maternal deaths in developing countries [9-12]. Suryanarayana R *et al*. Estimated the prevalence of anemia among pregnant women and to determine its association with maternal and fetal outcomes. Four hundred and forty-six pregnant women were included in the study from three primary health centers in Kolar district by multistage sampling technique and were followed up till 1 week after delivery. There was a significant overall improvement in the hemoglobin levels of pregnant during the follow-up (10.3-10.72 gm%). About 35.6% of the women had maternal or fetal morbidity. Anemia was one of the main pregnancy-related complications (62.3%), other complications include difficult labor (3%), postpartum hemorrhage, and preeclampsia 1.6% each abortions/stillbirths (3.5%). The fetal complications include low birth weight (25.5%) followed by premature delivery (0.2%) and birth asphyxia (0.5%). A high prevalence of anemia in pregnant women apparently increases the maternal and fetal risks [12].

Conclusion
From the above results, the authors conclude that anemia continues to be a significant health issue. Even though iron–folic acid supplementation is readily available, it is crucial for primary health care workers to address other risk factors when designing therapeutic interventions for anemia control.

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