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Prevalence and severity of anemia in pregnant women visiting Dhiraj hospital

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Abstract
Objective: Anemia is the most common nutritional disease in the world and is the major health problem affecting 25-50% of the world's population and nearly 50% of pregnant women. Anemia is one of the important deciding factors for outcome of pregnancy. Anemia during pregnancy is one of the major public health problems in the world especially in the developing countries and is directly responsible for 20% maternal death. The major objective of the present study is to determine the prevalence and severity of anemia among pregnant women visiting Dhiraj Hospital in Vadodara and to find out factors associated with anemia.
Materials and Methods: The study was conducted at Dhiraj Hospital, a constituent hospital of S.B.K.S. Medical Institute and Research Center, Vadodara. Hematological data of all the pregnant women coming for ante-natal checkup (ANC) from 1st June 2019 to 30th June 2019 was collected from records maintained by Central Laboratory and was analyzed. Severity of anemia was classified according to W.H.O. grading criteria.
Results: Total of 894 pregnant women were registered for ANC from 1st June 2019 to 30th June 2019; 228 cases (25.5%) were found to be in normal hemoglobin range. Prevalence of anemia was found to be 74.4% with 666 cases among which 430 cases (48.1%) were mild form, 211 (23.6%) cases were moderate form and 25 cases (2.8%) were of severe form with hemoglobin <7 gm/dl.
Conclusion: Preconception care and care during pregnancy including iron and folic acid supplementation is to be instituted to reduce the burden of this public health problem. Early antenatal registration & care and measures taken at different stages of pregnancy are necessary for early diagnosis and treatment of anemia during pregnancy to ensure safe motherhood and reduce the prevalence of anemia during pregnancy.

Keywords: Anemia, Severity, Pregnant Women

Introduction
Anemia is the most common nutritional disease in the world. WHO has estimated the prevalence of anemia to be 14% in developed and 51% in developing countries, whereas in India, it is 65-75% [1]. Anemia is the major health problem affecting 25-50% of the world's population and nearly 50% of pregnant women [2].

According to WHO, anemia in pregnancy is defined as hemoglobin concentration below 11gm/dl [3]. As per WHO severity grading criteria, anemia is classified as Normal (>11gm/dl), Mild (9-10.9gm/dl), Moderate (7-8.9gm/dl), Severe (<7gm/dl) and very Severe (<4 gm/dl) [4].

Anemia is one of the important factors which decides the outcome of pregnancy. Anemia in pregnancy in fact, is a known factor for many maternal and fetal & neonatal complications. The prevalence of anemia in pregnancy shows variations across the globe. Studies from industrialized countries show that 2-45% of pregnant women have hemoglobin less than 11gm/dl, whereas the prevalence is higher and with greater variation in developing countries with 5-90% of anemia [2]. Anemia during pregnancy is one of the major public health problems in the world especially in the developing countries.

Increased physiological demands, disturbed metabolism, heavy blood flow during menstruation along with infectious diseases are some common and important factors contributing development of anemia in pregnant woman. Anemia is directly responsible for 20% maternal death [5].

In India, incidence of anemia in pregnancy has been noted as high as 40-80% [6].

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In view of public health importance of anemia during pregnancy, the Government of India has sponsored National Nutritional Anemia Prophylaxis Program during 4th Five Year plan in 1970 aiming reduction in prevalence in anemia to 25% [4].

Though Anemia is preventable and treatable if timely detected, it still continues to be one of the most common causes of mortality and morbidity in developing nations.

Aims and objectives
- To analyze the prevalence of anemia in pregnant women.
- To analyze the severity of anemia in pregnant women.
- To facilitate proper referral and follow up measure to reduce the rate of anemia in pregnant women.

Likely outcomes or benefits of study
- **Likely outcome**
  - Evaluation of anemia in terms of prevalence and severity in pregnant women in current setup.
- **Benefits of study**
  - The study will provide the basis for proper counseling and education regarding the reasons for anemia in pregnant women.

Materials and methods
- **Study design:** It is an observational retrospective study for 1 month.
- **Target population:** All the pregnant women coming for ANC checkup.
- **Study site:** Central Laboratory, Dhiraj Hospital, a Constituent hospital of S.B.K.S. Medical Institute and Research Center, Vadodara

- **Selection criteria**
  - **Inclusion Criteria:** All the pregnant women coming for ANC checkup in Dhiraj Hospital in the month of June (1st June -30th June).
  - **Exclusion criteria:** As the study includes all the pregnant women reporting for ANC checkup, there is no exclusion criteria
- **Number of subjects:** All the pregnant women reporting for ANC checkup from 1st June 2019 to 30th June 2019.
- **Activities planned:** Data is collected from record maintained by Central Laboratory and is analyzed.
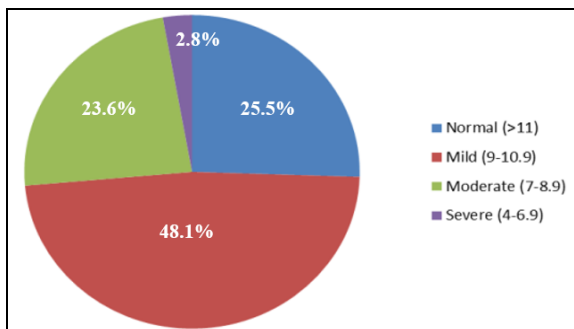
Result

Fig 1: Prevalence of Anemia with their classification

A total of 894 pregnant women were registered for ANC from 1st June 2019 to 30th June 2019 in Dhiraj hospital,

Waghodia, Vadodara. In the present study, majority of pregnant women belong to the age group of 20-25 yrs. (68.34%) followed by age group of 26-30 yrs. (21.68%). 6.04% of the pregnant women belong to age group of less than 20 yrs. while 3.1% of the pregnant women belong to age group of more than 30 yrs.

In current study, 228 cases (25.5%) were found to be in normal hemoglobin range. Prevalence of anemia in present study was found to be 74.4% with 666 cases among which 430 cases (48.1%) were mild form, 211 (23.6%) cases were moderate form and only 25 cases (2.8%) were of severe form with hemoglobin <7 gm/dl.

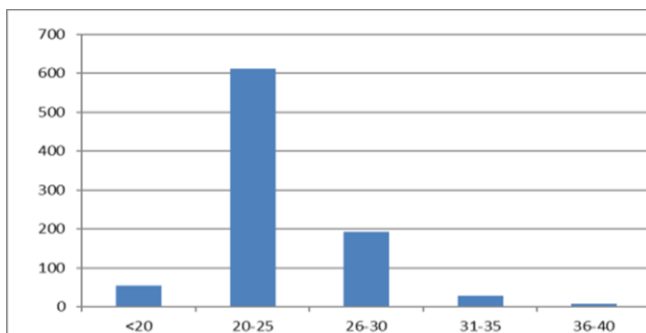**Table 1:** Prevalence of Anemia according to WHO grading

S. No.	Grading of Anemia	Number of cases	Prevalence
1	Normal (Hb >11 gm/dL)	228	25.50%
2	Mild (Hb 9-10.9 gm/dL)	430	48.10%
3	Moderate (Hb 7-8.9 gm/dL)	211	23.60%
4	Severe (Hb <7 gm/dL)	25	2.80%
	Total	894	100%
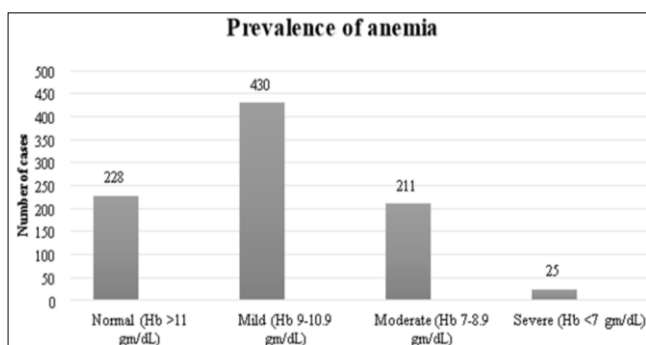
Graph 1: Prevalence of Anemia according to WHO grading
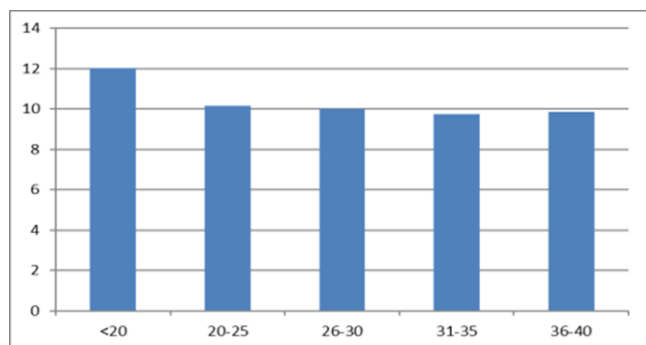
Graph 2: Distribution of Anemia according to age group

Graph 3: Number of Pregnant Women according to their age group

The average hemoglobin level was found highest in

pregnant women below 20 yrs. of age being 12.04 gm/dl. Pregnant women between the age group of 20-25 yrs. were found to have average hemoglobin level of 10.15 gm/dl. Similar level i.e., 10.05 was found in pregnant women between the age group of 26-30. Low hemoglobin levels i.e., 9.76 and 9.86 gm/dl were found in the age group of 31-35 and 36-40 respectively.

Highest number of pregnant women were found in age group of 20-25 yrs. i.e., 611 patients. 54 cases were found in age group of below 20 yrs. while 193 cases were found in age group of 26-30 yrs. few cases i.e., 28 and 8 were found in age group of 31-35 and 36-40 respectively.

Discussion

The study is attempted to assess the prevalence and severity of anemia, and associated age factors, among the pregnant women in Vadodara, Gujarat. The overall prevalence of anemia in the studied population was observed to be 74.49%, whereas Indian average is 50.3% [7].

The prevalence of anemia in Prathvim *et al.* [8] study was found to be 75.2% with 121 cases among which 101 cases were mild form, 19 were moderate form and 1 case was severe form with hemoglobin level below 7gm/dl.

The result of Prathvim *et al.* [8] was very much similar to our study.

Study conducted at Hyderabad, India by Shweta and Prasad *et al.* [12], the results obtained were that maximum (81%) pregnant women were in the age group of 21-35 years.

And in our study also, maximum number of pregnant women were in the age group of 20-30 years (89.9%).

Prevalence of anemia was 74.4% i.e., 666 cases in our study among which Mild = 64.6%, Moderate =31.7%, Severe=3.7%.

Similar result was obtained in a study conducted by Aarti acharya *et al.* [10] where the results obtained were among 121 cases out of which they found 89.62% anemic out of which, Mild = 78.03%, Moderate = 20.74%, Severe = 0.74%. This was conducted in Bikaner, Rajasthan.

Similarly, study conducted by ManjuMerina Bara *et al.* [11] observed high prevalence of anemia i.e. 76% which was very close to our study i.e., 74.49%

Anemia is the direct or indirect cause of maternal death in India. There is 8-10-fold increase in maternal mortality Rate (MMR) when Hemoglobin falls below 5gm/dl. Early detection and effective management of anemia in pregnancy can contribute substantially to reduction in maternal mortality.

Conclusion

Anemia during pregnancy is a major health problem especially in India due to many contributing factors like increased iron demand of body and other social factors and type of family.

The overall prevalence of anemia in the studied population was observed to be 74.49%, which is higher than Indian average of 50.3% [7].

The present study showed similar results to some studies while differing from others reflecting difference in socio-economic status, nutritional status, type of family, awareness about antenatal checkups, accessibility to health care services varying from region to region.

Our study results have shown that about half the pregnant women have mild anemia but it is also important to note the prevalence of Moderate to Severe anemia cumulating to be about 25% of the cases.

Preconception care and care during pregnancy including iron and folic acid supplementation, is advocated to reduce the burden of this public health problem.

Early antenatal registration and improved antenatal care are also necessary for early diagnosis and treatment of anemia during pregnancy.

All effective measures taken at different stages of pregnancy would ensure safe motherhood and reduce the prevalence of anemia during pregnancy.

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