Prevalence of anemia among pregnant women - A cross-sectional study

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ABSTRACT

Background: Anemia in pregnancy is a worldwide problem, but it is most prevalent in the developing world. Anemia during pregnancy affects both mother's and her child's health. Globally, the prevalence of anemia is 74% among pregnant women, and in India, it ranges from 19% to 61%. Anemia during pregnancy will lead to consequences such as fetal anemia, low birth weight, preterm delivery, intrauterine growth restriction, and perinatal mortality. Anemia during pregnancy and its consequences can be prevented and treated if diagnosed on time. **Objective:** This study was done with the objective to determine the prevalence of anemia and its associated factors among pregnant women. **Materials and Methods:** A retrospective record-based study was conducted at the Urban Health and Training Centre (UHTC) of Dr. B. R. Ambedkar Medical College, Bengaluru. The study was conducted for a period of 2 months (May–June 2017). All the antenatal mothers visiting the UHTC for regular antenatal checkup during this period were included in the study after taking informed consent for participation in the study. The data were collected using semi-structured questionnaire. **Results:** Among 300 study subjects, most of them were in the age group of 21–35 years with mean age 24.4 + 4.2 years. Around 67% of study subjects were in the second trimester and 42% were primigravida. The prevalence of anemia among pregnant mothers was 68.6% (60.6% and 8.0% were mild and moderately anemic, respectively), none of the study subjects were severely anemic. There was no significant association between hemoglobin status and factors such as education, diet, age at first pregnancy, and gravid status, but there was significant association between spacing between pregnancy and utilization of integrated child development nutritional services and hemoglobin status of pregnant mothers. **Conclusion:** The prevalence of anemia among pregnant women was high. Spacing between pregnancies will have a significant impact on hemoglobin status of pregnant women.

KEY WORDS: Anemia; Hemoglobin Status; Pregnant Women

INTRODUCTION

Anemia is a global health problem affecting both developed and developing countries. Around 1.62 billion people suffer from anemia in the world which corresponds to 24.8% of the population and the prevalence of anemia in pregnancy is around 74%.[1] According to the National Family Health Survey (NFHS-4) data, the prevalence of anemia in India is 50.3%, and in Karnataka, it is 45.4%. Almost 50% of the population is anemic with the overall burden more in rural areas compared to urban areas.[2]

Anemia during pregnancy not only affects the health of the mother such as maternal mortality and morbidity but also the health of the baby, leading to low birth weight, premature delivery, and underdevelopment of brain, leading to increase mortality and morbidity.[3] Of many causes of anemia such as multiple pregnancy, lack of spacing between pregnancies, and multiple pregnancies, nutritional deficiency is the most common cause of anemia and iron deficiency anemia is the most common type of anemia.[4,5]

Taking into account burden of anemia in our country, many programs have been introduced and implemented, but the reduction is lower than expected compared to the South Asian countries.[6] Reproduction and child health programs such as reproductive, maternal, newborn, child, and adolescent health are introduced with special focus on controlling and preventing anemia during pregnancy and also during adolescents. Various studies regarding anemia in pregnancy have been done in India mainly in rural areas with few studies in urban areas.

Objectives

The objectives of this study were as follows:
1. To determine the prevalence of anemia among pregnant women.
2. To determine the factors affecting hemoglobin status among pregnant women.

MATERIALS AND METHODS

A retrospective record-based study was conducted at the Urban Health and Training Centre (UHTC) of Dr. B. R. Ambedkar Medical College, Bengaluru. The study was conducted for a period of 2 months (May–June 2017). All the antenatal mothers visiting the UHTC for regular antenatal checkup during this period were included in the study after taking informed consent for participation in the study. The data were collected using semi-structured questionnaire. The questionnaire consisted of data regarding sociodemographic data, obstetric score, antenatal visits, and weight gain during pregnancy and hemoglobin status. Sociodemographic details were collected by interviewing the mothers and other details including hemoglobin status were collected from the records (from both mother and child protection card and other reports from private hospitals the mothers had). The total sample size in this study came up to 300. The study was initiated after obtaining approval from the Institutional Ethics Committee. The data were analyzed for frequencies and Chi-square test was applied for the determination of association between variables and hemoglobin status using Statistical Package for the Social Sciences 18.0 version. For determination of association, $P < 0.05$ was considered statistically significant.

RESULTS

Table 1 shows among 300 study subjects maximum mothers were in the age group of 21–25 years and 26–35 years, i.e. 46–35%, respectively, very few were in the age group of 15–20 years and > 35 years. Most of the study subjects were literates (99.3%). There was no much difference in the proportion of individuals who belonged to Hindu and Muslim religion, and very few belonged to Christian religion (3.3%). In our study, the trend of nuclear family was higher than the

Table 1: Sociodemographic characteristics of antenatal women (*n*=300)

Sociodemographic characteristics	*n* (%)
Age in years	
15–20	54 (18.0)
21–25	138 (460)
26–35	105 (35.0)
>35	3 (1.0)
Education	
Literate	298 (99.3)
Illiterate	2 (0.6)
Religion	
Hindu	123 (41.0)
Muslim	167 (55.6)
Christian	10 (3.3)
Family type	
Nuclear	165 (55.0)
Joint family	58 (19.3)
Three generation	77 (25.6)
SES classification	
Upper class	52 (17.3)
Upper middle	135 (450)
Middle class	107 (35.7)
Lower middle class	6 (2.0)

SES: Socioeconomic status

joint family and three-generation family. For socioeconomic status (SES), classification modified Kuppuswamy classification was used. More than 80% of the individuals belonged to SES Classes II and III. Very few belonged to SES Class IV and none of them belonged to Class V.

Table 2 shows the antenatal mothers included, in our study, belonged to different trimesters, among them more than 50% belonged to the second trimester (67%) and around 30% were in the first and third trimester (33%). There was no much difference in the percentage of mother who was primi and multigravida, but multigravida mothers were slightly higher than primi mothers (42–58%). More than half of the mothers had spacing of more than 2 years of spacing between present pregnancy and previous pregnancy and 46% of them had spacing of < 2 years.

Table 3 shows anemia was assessed for association with various factors such as age at first pregnancy, gravid status, spacing between the pregnancies, types of diet and utilization of ICDS services, and other sociodemographic variables. $P < 0.05$ was considered as statistically significant association. The study showed a significant association between anemia and spacing between the pregnancies and utilization of ICDS services. There was no significant association between anemia and sociodemographic variables, type of diet gravid status, and age at first pregnancy ($P > 0.05$).

Table 2: Distribution of study subjects according to trimester, gravid, spacing between the pregnancies, and age at the first pregnancy (*n*=300)

Variables	*n* (%)
Trimester	
First	46 (15.3)
Second	201 (67.0)
Third	53 (17.7)
Gravida	
Primigravida	126 (42.0)
Multigravida	174 (58.0)
Spacing between previous and present pregnancy	
<2 years	75 (46.0)
>2 years	88 (64.0)
Age at the first pregnancy in years	
<20	133 (44.3)
21–25	143 (47.6)
>26	24 (8)

Table 3: Determination of association between hemoglobin status and age at the first pregnancy, gravid status, spacing between pregnancy, diet, and utilization of integrated child development services

Variables	Anemia		*P* value*
	Mild	Moderate	
Age at the first pregnancy in years			
<20	35 (43.2)	54 (48.2)	0.741
21–25	38 (51.9)	49 (46.9)	
>26	8 (9.9)	9 (8.0)	
Gravida			
Primigravida	32 (39.5)	48 (42.9)	0.851
Multigravida	49 (60.5)	64 (57.1)	
Spacing between previous and present pregnancy in years			
<2	32 (39.5)	48 (42.9)	0.02
>2	49 (60.5)	64 (57.1)	
Diet			
Vegetarian	18 (22.2)	20 (17.9)	0.130
Mixed	63 (77.8)	92 (82.1)	
Utilization of ICDS services			
Yes	21 (25.9)	34 (30.4)	0.005
No	60 (74.1)	78 (69.6)	

ICDS: Integrated child development services scheme; *Chi-square test

Figure 1 shows for classification of anemia, the World Health Organization classification for pregnant women was used. Hemoglobin > 11 g/dl was considered as normal hemoglobin status, 9–10.9 g/dl as mild anemia, 7–8.9 g/dl as moderate anemia, and hemoglobin < 7 g/dl as severe anemia. In our study, around 1/3rd was having normal hemoglobin status (31.3%) and more than 2/3rd of them were having mild
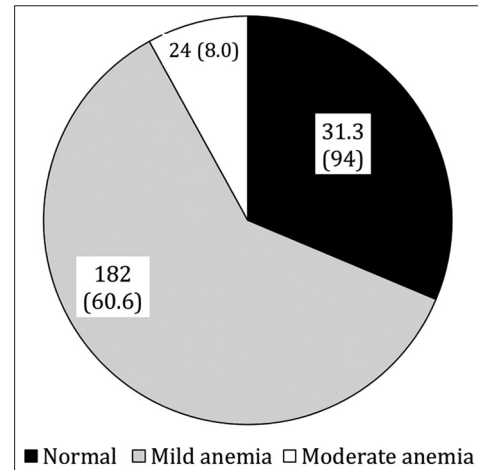

Figure 1: Distribution of study subjects according to hemoglobin status

anemia (60.6%). None of the mothers were having severe anemia.

DISCUSSION

Anemia is a known public health problem affecting mainly the developing countries than the developed countries, especially anemia in pregnancy affects not only the health of the mother but also the outcome of the pregnancy, health of the baby, leading to intergenerational cycle of anemia, malnutrition, etc., and other comorbidities.

A study by Mangla M *et al.* in rural area of Haryana consisted of maximum number of pregnant women in the age group of 20–29 years and more than 70% of them were literates. The age group and literacy status of pregnant women were similar to the findings of our study. Around 45% them had age of 19–24 years when they conceived for the 1st time, but in our study, around 80% of them belonged to 19–24 years of during their first pregnancy.[7]

A survey by the Indian Council of Medical Research has shown, more than 50% of adolescents, children, and pregnant women are anemic. Suryanarayana *et al.* conducted a study in Kolar district and showed prevalence of 63% among pregnant women. The prevalence of anemia in our study (68.6%) was similar to that in Kolar.

A study in rural area of Mysore, 64.2% of pregnant women were anemic and there was a significant association between anemia and factors such as age at first pregnancy, sociodemographic characteristics, and parity. Similar findings were observed in our study, but significant association was seen with hemoglobin status and spacing between pregnancy and utilization of ICDS services.[8-10]

Factsheets published by the NFHS-4 and the Ministry of Health and Family Welfare, in the 2017, has showed that

despite various efforts by the government such as ICDS nutrition services, distribution of iron and folic acid tablets, and rigorous health education on improving the nutrition to combat anemia among all age groups of women, the burden is still huge affecting overall health status of the mothers. The most common cause of anemia is nutritional deficiency which may due to lack of purchasing power or lack of adequate knowledge regarding the importance of nutrition on health.[11–13]

CONCLUSION

The prevalence of anemia among pregnant women was high in our study and also seen is various studies in different parts of the country. This continuing high burden of anemia could be mainly due to lack of spacing between the pregnancies and lack of utilization of the services provided by the government to combat the problem. Although our study did not show a significant association between hemoglobin status and various sociodemographic characteristics, various studies have shown a significant association between the same. Accessing the knowledge regarding anemia, nutrition, availability of various free governmental services, and importance of spacing between the pregnancies on health of the mother and the baby and educating about the same may improve prevalence of the anemia.

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