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Anemia and the Factors Associated with it in Pregnant Women Attending Al-Sabeen Maternal and Child Hospital in Sana'a, Yemen

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ABSTRACT

Introduction: Anemia in pregnant women is associated with adverse maternal and fetal outcomes and therefore it is important to find out the burden of the disease and the factors associated with it.
Aims & Objectives: To find out the prevalence of anemia in Al-Sabeen Maternal and Child Hospital in Sana'a, Yemen and the factors associated with it.
Place and duration of study: Al-Sabeen Maternal and Child Hospital and Department of Community Medicine, Faculty of Medicine Sana'a University, Yemen; from January to December 2017
Material & Methods: This cross-sectional study included 449 pregnant women attending labor room, aged 15-44 years. Informed consent was taken from them, and demographic data was recorded. Two ml of blood was drawn, and hemoglobin levels were measured. Hemoglobin levels ≥11 gm/dL were considered normal, 10-10.9 gm/dL as mild anemia, 7-9.9 gm/dL as moderate anemia, and <7 gm/dL as severe anemia. Data was entered and analyzed using SPSS 17.0.P-Value < 0.05 was taken as significant.
Results: The mean±SD age of the participants was 26.11±6.19 yrs. Prevalence of anemia was 26.8%. Anemia was significantly associated with education level of the pregnant women, parity, and antenatal visits (p values < 0.05). Women living in rural areas had higher frequency of anemia than women living in urban areas (p value=0.013). Pregnant women taking iron supplementation had less frequency of anemia as compared to those not taking iron supplements (p-value = 0.026).
Conclusion: Prevalence of anemia was high in pregnant women. Factors predisposing to anemia were illiteracy, living in rural areas, increased parity, no or few antenatal visits, and not taking iron supplementation.

Keywords: Prevalence of Anemia, Pregnant women, Anemia in pregnancy

INTRODUCTION

Anemia is an important worldwide health issue affecting pregnant women and young children with 40% pregnant women estimated to be anemic[1] and with those living in Africa and Asia being at highest risk[2].Despite it being recognized as a global medical issue for years, little progress is noted, and its worldwide prevalence remains high[3].The commonest cause of anemia is iron deficiency[4].Iron deficiency is still an underestimated problem even in the tertiary care centers[5].Other causes of anemia include vitamin B_{12} and folate deficiency, parasitic infections, inflammation, and inherited disorders affecting synthesis of hemoglobin or production of red blood cells[4].

During pregnancy, due to increase in the circulating blood volume, there is dilution and therefore decrease in hemoglobin concentration. Moreover, the pregnant women are prone to have folic acid and iron deficiency anemia because folic acid and iron are transported to the fetus[6].Symptoms of anemia are usually dismissed as normal in pregnancy[7].

Anemia in pregnant women is linked with maternal morbidity as well as fetal morbidity and mortality[8]. It may increase non communicable diseases risk during adulthood as well as the risk of next generation low birth weight[9].Maternal anemia was found to be associated with high parity, shorter gestational duration, intrauterine growth restriction,

prematurity, and with low Apgar scores of infants at 1 and 5 minutes after birth[10,11].Low iron during the 3rd trimester might be associated with adverse neurodevelopment in the offsprings[12].With maternal anemia, there is increase likelihood of blood transfusion during delivery[13].

Considering the serious complications of anemia in the mother and fetus, it is important to find out the burden of the disease. Anemia in pregnancy has a prevalence of more than 20% in > 80% of the countries with a worldwide prevalence of 41.8%[14]. In Yemen, prevalence of anemia was last recorded by WHO in 2011[4]. It is important to find out the current prevalence of anemia. Our study aimed at finding out the prevalence of anemia in pregnant women attending the labor room at Al-Sabeen Maternal and Child Hospital and find out the factors associated with it.

MATERIAL AND METHODS

After approval from the Faculty of Medicine Sana'a University, this cross-sectional study was conducted at the Al-Sabeen Maternal and Child Hospital and Department of Community Medicine, Faculty of Medicine Sana'a University. Sample size was calculated to be 449 with a 5% level of significance and 95% power of the test[15].Convenient sampling was used. Informed consent was taken from the pregnant women attending the labor room at delivery time, aged 15-44 years. Patients with hemolytic anemia, known hemoglobinopathies, anemia of chronic diseases, and anemia of blood loss i.e., GI bleed were excluded. Demographic data was recorded, 2 mL of blood was drawn, and hemoglobin levels were measured. Following WHO guidelines, hemoglobin levels ≥11 gm/dL were considered as normal, 10-10.9 gm/dL as mild anemia, 7-9.9 gm/dL as moderate anemia, and <7 gm/dL as severe anemia[16]. Data was entered and analyzed using SPSS 17.0. Qualitative data was presented using frequencies and percentages. Quantitative data was presented using mean ±SD. Chi-Square test was used to study the association between anemia and the potential associated factors.

RESULTS

This study included 449 pregnant women with mean ±SD aged 26.11±6.19 yrs. Demographic data of the participants is presented in Table-1. Prevalence of anemia was 26.7% (n=120) i.e., 16.5% (n=74) mild anemia, 8.5% (n=38) moderate anemia, and 1.8% (n=8) severe anemia.

Variable		Count (%)
Age group	15-24 yrs	193 (43%)
	25-34 yrs	196 (43.7%)
	35-44 yrs	60 (13.4%)
Education level	University graduates	65 (14.5%)
	Secondary school graduates	143 (31.8%)
	Primary school graduates	158 (35.2%)
	illiterate	83 (18.5%)
Residence	Urban	357 (79.5%)
	Rural	92 (20.5%)
Family size	1-4	200 (44.5%)
	5-7	146 (32.5%)
	>7	103 (22.9%)
Socioeconomic status	Low	131 (29.2%)
	Middle	313 (69.7%)
	Upper	5 (1.1%)

Table-1: Demographic data of the participants.

No significant association was found between anemia and age (p-value= 0.29). However, a significant association was found between anemia and the education level of the pregnant women (p-value= 0.01); university and secondary school graduates had less frequency of anemia as compared to illiterate and primary school graduates (Table-2).

Education level	Anemia		Total	p-value
	Yes	No		
Illiterate	27	56	83	0.01
Primary school	53	105	158	
Secondary school	28	115	143	
University degree	12	53	65	
Total	120	329	449	

Table-2: Association of anemia with education level of the pregnant women.

Women living in rural areas had higher frequency of anemia than women living in urban areas (p-value=0.01). Anemia was significantly associated with parity (p-value = 0.009) (Table-3). Anemia was not significantly associated with the size of the family, socioeconomic status, age of menarche of the pregnant woman, amount of menstrual bleeding, duration of menstrual cycle, or the number of abortions (p values > 0.05).

Variable		Anemia		Total	p-value
		Yes	No		
Residence	Urban	86	271	357	0.01
	Rural	34	58	92	
Parity	0-2	63	225	288	0.009
	3-4	32	67	99	
	5-6	16	27	43	
	>6	9	10	19	

Table-3: Association of anemia with living in urban or rural areas and with parity.

Antenatal visits as well as intake of iron supplementation were significantly associated with less frequency of anemia (p-values <0.05) (Fig-1 & Fig-2).

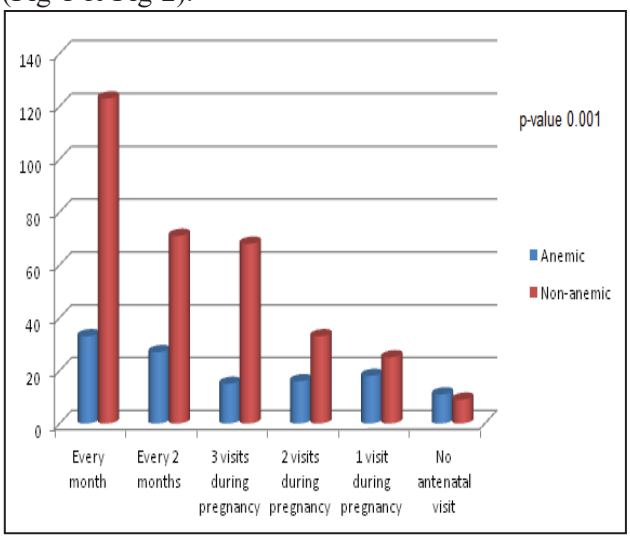

Fig-1: Association of anemia with antenatal care visits.

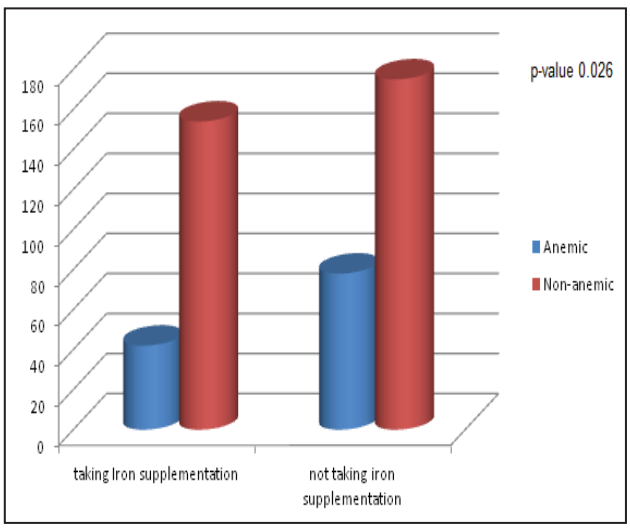

Fig-2: Association of anemia with intake of iron supplementation.

DISCUSSION

Anemia in pregnancy is an important health problem. In our study, the prevalence of anemia was found to be 26.8% which is lower than the prevalence reported by the WHO in 2011 i.e., 36%.[4] This could be because WHO estimation was community based whereas this estimation is in the city and not many from the rural areas can reach to the city especially with the current war circumstance of the country.

Our study found no significant association between socioeconomic status and anemia and that is in contrary to the findings of Ndukwu and Dienye who found severe anemia to be associated with the socioeconomic status of women.[17] In our sample, majority of the participants were from the middle socioeconomic status and that might have affected the role of socioeconomic status in predisposing to anemia.

Alaini et al. found no association between parity and anaemia[18] which is contrary to our findings in which we found an association between parity and anemia. Our results are aligned with the results of Taner et al.[19] Alaini et al.[18] had less number of grand multiparous women in their study participants which might have affected the role of parity in predisposing to anemia.

In our study, we found a significant association between education level and anemia with more cases of anemia in the less educated. Our results are similar to the results of Ezugwu et al. who found higher prevalence of anaemia in pregnant women with no formal education.[20] Educated women are probably more aware of the importance of nutritional intake.

Dim and Onah reported no association between anemia and age of the pregnant women[21] and this is in alignment with our finding. We found less frequency of anemia in pregnant women taking iron supplements and that is similar to the results of Yakoob and Bhutta[22] and Peña-Rosas and Viteri[23] who found daily supplementation with iron-folate to be associated with anemia reduction. In a study by Tunkyi and Moodley (2017), pregnant women were given prophylactic and therapeutic iron and folic acid according to their need. Hemoglobin levels have significantly increased between the first antenatal visit and at 32-34 weeks and prevalence of anemia has significantly decreased from 42.7% to 28.1%.[24] In pregnancy, there is an increase in circulating blood volume which results in decrease in hemoglobin concentration. Moreover, iron is transported from the mother to the fetus.[6] Intake of iron supplements would compensate and overcome the pregnancy induced iron deficiency anemia. Igbinoa et al (2022) reported that iron in all its forms IV, oral and dietary is effective in treating anemia during pregnancy[25].

We found no association between anemia and the number of abortions and that is similar to the finding by Gautam et al[26].

CONCLUSION

The prevalence of anemia in pregnant women attending the labor room was 26.7%. Anemia was found to be more prevalent in pregnant women who were uneducated, resident of rural areas, with more number of children, did not attend antenatal visits

regularly, and who did not take iron supplementation.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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