

A Descriptive Cross-Sectional Assessment the Prevalence and Severity of Anemia in Pregnant Women

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Abstract

Aim: The aim of the present study was to assess the prevalence and severity of anemia in pregnant women.

Methods: A descriptive cross-sectional study was conducted in the Department of Pathology, DMCH, Darbhanga, Bihar, India over a period of 2 years. In considering the inclusion and exclusion criteria, the pregnant mothers were selected in the study. A total sample comprised of 50 pregnant women who were interviewed by using self-structured questionnaire for data collection, and classification of anemia was performed according to Indian Council of Medical Research (ICMR).

Results: 14 (28%) were in between the 20-25 yrs of age group, 12 (24%) were in between 26 and 30 yrs of age group, 24 (48%) were in between 31 and 35 yrs of age group, 28 (56%) antenatal women were from rural area. 24 (44%) women belong to nuclear family, 28 (56%) belong to joint family, 15 (28%) were employed, and 37 (71%) were unemployed. 18 (36%) were having no children, 19 (38%) were single child, and 13 (26%) were ≥ 2 no. of children. 18 (36%) were vegetarian, and 32 (64%) were nonvegetarian category of dietary practices. 17 (34%) were primigravida, and 33 (66%) were multigravida. 01 (02%) were nullipara, 22 (44%) were primipara, and 27 (54%) were multipara woman. The contributing factors leading to anemia in antenatal women, 30 (60%) were not having any H/O abortion, 20 (40%) were having H/O abortion, 40 (80%) were not having any H/O infection, 11 (22%) were having history of infection, 8 (16%) were having H/O chronic malaria, 42 (84%) were not having any H/O chronic malaria, 14 (28%) were having H/O hook worm, 36 (72%) were not having any H/O hook worm infection, 13 (26%) had low menstruation flow, 32 (64%) were moderate, 5 (10%) were high, 20 (40%) attended < 4 antenatal visit, 30 (60%) attended ≥ 4 antenatal visit, 32 (64%) were taking iron supplement, 17 (34%) were having previous H/O anemia, 33 (66%) were not having previous H/O anemia.

Conclusion: The study implies that the prevalence rate of Anemia is high. Spacing between pregnancy and H/O infection plays a significant role in considering anemia in pregnant women, which eventually affects both maternal and fetal condition.

Keywords: Prevalence, Severity of Anemia, Pregnant Women.

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Introduction

Anaemia is one of the highly prevalent health conditions and a major risk factor contributing significantly to the global burden of disease. [1] According to the World Health Organization (WHO), Anaemia is defined as having haemoglobin (Hb) levels lower than 11.0, 12.0, and 13.0 g/dL in pregnant women, non-pregnant women and men, respectively. It disproportionately affects children, adolescent girls, and women of reproductive age, especially pregnant women. [2] Due to the persistent reduction in oxygen-carrying capacity, anaemia can significantly reduce the cognitive, physical and work capacities and is associated with reduced economic productivity, increased susceptibility to infections due to its

effect on immunity, increased morbidity and mortality. [3-5]

Among pregnant women, iron-deficient anaemia can lead to adverse pregnancy outcomes, including stillbirth, preterm delivery, low birth weight, and infant mortality. [6-8] Moreover, anaemia can be a risk or a prognostic factor for other diseases, such as tuberculosis and heart failure. [9,10] Globally, the anaemia prevalence in women of reproductive age was 29.9%; equivalent to over half a billion women aged 15–49 years in 2019. The prevalence was relatively higher in pregnant women with 36.5% compared to non-pregnant women (29.6%). [11] The prevalence of anaemia among women of reproductive age in the South Asia region was

41%, it was 48% in pregnant women and 49% in non-pregnant women in 2019. [12] According to National Family Health Survey (NFHS)-IV (2015-16), the prevalence of anemia among women aged 15 to 49 years was 53.1% it was the 5th highest among globally. [13]

The aim of the present study was to assess the prevalence and severity of anemia in pregnant women.

Materials and Methods

A descriptive cross-sectional study was conducted in the Department of Pathology, DMCH, Darbhanga, Bihar, India over a period of 2 years. In considering the inclusion and exclusion criteria, the pregnant mothers were selected in the study. A total sample comprised of 50 pregnant women who were interviewed by using self-structured questionnaire for data collection, and classification of anemia was performed according to Indian Council of Medical Research (ICMR). Self-structured tool pertaining to various independent variable in sociodemographic profile such as education, family monthly income, number of antenatal visits, intervals of pregnancy, and level of

Hb. It also encompasses of contributing factors including H/O malaria, hook worm infection, consumption of iron, and folic acid tablets during present pregnancy. Determining the outcome variable level of hemoglobin was considered through laboratory report. Pregnant mother with Hb level less than 11 gm/dl was considered as anemic further classification of mild, moderate, and severe anemia were those recommended by the Indian Council of Medical Research (ICMR), which is defined as follows:

Mild anemia: Hb 10.0 mg/dl-10.9 mg/dl.

Moderate anemia: Hb 7.0 mg/dl-10.0 mg/dl.

Severe anemia: Hb less than 7 mg/dl.

Data was analyzed by the process of compilation, tabulation, and classification and result was expressed in form of frequency and percentage.

Mild anemia: Hb 10.0 mg/dl-10.9 mg/dl.

Moderate anemia: Hb 7.0 mg/dl-10.0 mg/dl. Severe

anemia: Hb less than 7 mg/dl.

Results

Table 1: Sociodemographic variable parameter

		Frequency	Percentage
Age	20-25 years	14	28
	26-30 years	12	24
	31-35 years	24	48
Residence	Rural	28	56
	Urban	22	44
Mother's educational level	Yes	20	40
	No	30	60
Types of family	Nuclear	22	44
	Joint	28	56
Employment status	Employed	14	28
	Unemployed	36	72
No. of children	None	18	36
	1	19	38
	≥2	13	26
Dietary Practices	Veg	18	36
	Nonveg	32	64
Gravida	Primigravid	17	34
	Multigravid	33	66
Parity	Nullipara	1	2
	Primipara	22	44
	Multipara	27	54

14 (28%) were in between the 20-25 yrs of age group, 12 (24%) were in between 26 and 30 yrs of age group, 24 (48%) were in between 31 and 35 yrs of age group, 28 (56%) antenatal women were from rural area. 24 (44%) women belong to nuclear family, 28 (56%) belong to joint family, 15 (28%) were employed, and 37 (71%) were unemployed. 18 (36%) were having no children, 19 (38%) were

single child, and 13 (26%) were ≥2 no. of children. 18 (36%) were vegetarian, and 32 (64%) were non-vegetarian category of dietary practices. 17 (34%) were primigravida, and 33 (66%) were multigravida. 01 (02%) were nullipara, 22 (44%) were primipara, and 27 (54%) were multipara woman.

Table 2: Frequency and percentage distribution on contributing factors of anemia

Contributing Factor	Parameter	Frequency	Percentage
H/O abortion	No	30	60
	Yes	20	40
H/O infection	Yes	11	22
	No	39	78
H/O chronic malaria	Yes	8	16
	No	42	84
H/O hook worm	Yes	14	28
	No	36	72
Menstruation flow	Low	13	26
	Moderate	32	64
	High	5	10
Antenatal visit	<4 visit	20	40
	≥4 visit	30	60
Iron supplement	Yes	32	64
	No	18	36
Previous history of anemia	Yes	17	34
	No	33	66
Birth interval (year)	Not applicable	17	34
	Yes	13	26
	No	20	40
Body mass index (BMI)	Underweight <18.9	7	14
	Normal weight 19-24.9	24	48
	Overweight 25-29.9	19	38
No. of previous pregnancies	0	13	26
	1	20	40
	2-4	17	34
Hemoglobin level	Normal	28	56
	Mild	17	34
	Moderate	4	8
	Severe	1	2

The contributing factors leading to anemia in antenatal women, 30 (60%) were not having any H/O abortion, 20 (40%) were having H/O abortion, 40 (80%) were not having any H/O infection, 11 (22%) were having history of infection, 8 (16%) were having H/O chronic malaria, 42 (84%) were not having any H/O chronic malaria, 14 (28%) were having H/O hook worm, 36 (72%) were not having any H/O hook worm infection, 13 (26%) had low menstruation flow, 32 (64%) were moderate, 5 (10%) were high, 20 (40%) attended <4 antenatal visit, 30 (60%) attended ≥4 antenatal visit, 32 (64%) were taking iron supplement, 17 (34%) were having previous H/O anemia, 33 (66%) were not having previous H/O anemia, 13 (26%) were having birth interval, 7 (14%) of mother were underweight <18.9, 24 (48%) were normal weight and 19 (38%) were overweight, 13 (26%) were having no previous pregnancies, 20 (40%) were history of single pregnancies, 28 (56%) were having normal Hb level.

Discussion

Anemia is the most widespread nutritional deficiency among pregnant females in the world.

[14] According to the latest report of the World Health Organization, in most countries, the prevalence of anemia among pregnant and nonpregnant females aged 15 to 49 years increased from 2012 to 2016. [15] The current worldwide progress is not on track in terms of achieving the nutrition target set by the 65th World Health Assembly, which is aiming for a 50% reduction in anemia prevalence among females of reproductive age by 2025. [16] A total of 40.05% of pregnant females worldwide had anemia during pregnancy in 2016, with the highest prevalence (48.15%) in Southeast Asia. [17] Because of the high prevalence of anemia, any adverse maternal and fetal outcomes associated with anemia during pregnancy would have a great public health impact.

14 (28%) were in between the 20-25 yrs of age group, 12 (24%) were in between 26 and 30 yrs of age group, 24 (48%) were in between 31 and 35 yrs of age group, 28 (56%) antenatal women were from rural area. 24 (44%) women belong to nuclear family, 28 (56%) belong to joint family, 15 (28%) were employed, and 37 (71%) were unemployed. 18 (36%) were having no children, 19 (38%) were

single child, and 13 (26%) were ≥ 2 no. of children. 18 (36%) were vegetarian, and 32 (64%) were nonvegetarian category of dietary practices. 17 (34%) were primigravida, and 33 (66%) were multigravida. 01 (02%) were nullipara, 22 (44%) were primipara, and 27 (54%) were multipara woman. Anemia is the underlying cause or contributing factor for 20-40% of maternal deaths in India, Odisha reported anemia during pregnancy in urban area, which is 46.2% and 47.8% in rural area. [18,19] According to a survey conducted by the Indian Council of Medical Research, more than 50% of children, adolescents, and expectant mothers are anemic. [20] Research by Ravishankar Suryanarayana et al. in the Kolar area revealed a frequency of 63% among pregnant women. In our study, the prevalence of anemia (68.6%) was comparable to that in Kolar. [21] According to a study conducted in a rural area of Mysore, 64.2% of pregnant women had anemia, and there was a strong correlation between anemia and sociodemographic features, parity, and age at first pregnancy. Similar results were reported in our study, but there was a significant correlation between hemoglobin status and the interval between pregnancy and ICDS service use. [22]

The contributing factors leading to anemia in antenatal women, 30 (60%) were not having any H/O abortion, 20 (40%) were having H/O abortion, 40 (80%) were not having any H/O infection, 11 (22%) were having history of infection, 8 (16%) were having H/O chronic malaria, 42 (84%) were not having any H/O chronic malaria, 14 (28%) were having H/O hook worm, 36 (72%) were not having any H/O hook worm infection, 13 (26%) had low menstruation flow, 32 (64%) were moderate, 5 (10%) were high, 20 (40%) attended < 4 antenatal visit, 30 (60%) attended ≥ 4 antenatal visit, 32 (64%) were taking iron supplement, 17 (34%) were having previous H/O anemia, 33 (66%) were not having previous H/O anemia, 13 (26%) were having birth interval, 7 (14%) of mother were underweight < 18.9 , 24 (48%) were normal weight and 19 (38%) were overweight, 13 (26%) were having no previous pregnancies, 20 (40%) were history of single pregnancies, 28 (56%) were having normal Hb level. Data of national family health survey of 2, 3, and 4 indicated that about 50 per cent of pregnant women in India were anemic; among South Asian countries, India had the highest prevalence of anemia. National family health survey 4 of 2018 reported high rate of anemia during pregnancy in some of the states in India: 62.6% in Jharkhand, 58.3% in Bihar, 51.3% in Gujrat, 50.2% in Himachal Pradesh, 47.6% in Odisha, and 44.8% in Assam, as compared to Kerala, Punjab, Himachal, and Delhi. No substantial or consistent decline was observed in prevalence of anemia in pregnant women between NFHS 2, 3, and 4 in any of the states. [23,24]

Punjab has reported the risk factor for anemia in pregnancy is directly proportional to parity women had parity > 3 , spacing between two pregnancies. 90.8% anemic and 87.5% women with spacing between pregnancy < 1 year suffered more from maternal anemia as compared to women with birth interval more than 3 years, H/O chronic malaria. It is highly recommended that more effective guidelines regarding educating girl child, spreading effective awareness regarding balanced diet, regular antenatal checkups, regular intake of iron-folic acid tab, should start at grassroot levels to get safe motherhood. [25,26]

Conclusion

The study implies that the prevalence rate of Anemia is high. Spacing between pregnancy and H/O infection plays a significant role in considering anemia in pregnant women, which eventually affects both maternal and fetal condition.

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