



Original Research Article

An observational study on Prevalence and various risk factors of Anaemia in Pregnant Women in rural area of District Katihar, Bihar, India

Authors

Dr Urmi Poddar¹, Dr Mukesh Nandan², Dr Prawin Chandra³, Dr Vishal Prasad⁴

^{1,4}Post Graduate Trainee, Department of Community Medicine, Katihar Medical College, Katihar, Bihar India

²Assistant professor, Department of Community Medicine, Katihar Medical College, Katihar, Bihar, India

³Associate professor, Department of Community Medicine, Katihar Medical College, Katihar, Bihar, India

Corresponding Author

Dr Mukesh Nandan

Assistant Professor, Department of Community Medicine, Katihar Medical College, Katihar, Bihar, India

Contact: +91 9654284329, Email: drmukeshnandankmc@gmail.com

Abstract

Objectives: This study was to evaluate the prevalence and risk factors of anaemia in pregnancy in rural area of Katihar, Bihar, India.

Methodology: Total 120 pregnant women in any trimester of pregnancy with irrespective Iron and Folic Acid (IFA) consumption and belonged from rural areas of Katihar, Bihar, were enrolled in this study. A detail history, complete examinations and relevant investigations were performed to all cases. A Laboratory estimation of haemoglobin was performed using Sahli's (Acid haematin) method for haemoglobin estimation. Anaemia was classified as per the World Health Organisation (WHO) grading criteria.

Results: Data was analyzed by using simple statistical methods with the help of MS-Office software.

Conclusions: Anaemia in pregnancy was commonly seen in age 20 to 30 years. Most of the cases had mild anaemia in rural area of district Katihar. Parity > 3, pregnancy interval 2-3, illiteracy, lower socioeconomic status was major predictors of anaemia in pregnancy. Hence, anemia continues to be a major public health problem in rural area. To reduce the prevalence, there is a need to public health education on reproductive health, improve the dietary level and strength health care seeking behavior of women. Strategic efforts are needed to broaden the coverage of iron and folic acid distribution and its consumption.

Keywords: Anaemia, Prevalence, Risk factors.

Introduction

Anaemia during pregnancy is a public health problem especially in developing countries and is associated with adverse outcomes in pregnancy^[1].

According to the 2008 World Health Organization (WHO) report, anaemia affected 1.62 billion (24.8%) people globally^[2]. It had an estimated global prevalence of 42% in pregnant women and

is a major cause of maternal mortality^[3,4]. Sub-Saharan Africa is the most affected region, with anaemia prevalence estimated to be 17.2 million pregnant women, which corresponds to approximately 30% of total global cases^[5]. There is an increased iron requirement during pregnancy due to greater expansion in plasma volume that results in a decrease in haemoglobin (Hgb) level to 11g/dl. Therefore, any Hgb level below 11g/dl in pregnancy is considered as anaemia^[5,6]. Anaemia could be classified as mild, moderate and severe. The Hgb level for each class of anaemia in pregnancy are 10.0–10.9g/dl (mild), 7–9.9g/dl (moderate) and <7g/dl (severe)^[7]. When the Hgb value is adjusted for the altitude, anaemia in pregnancy is <11g/dl, 11.2 g/dl, 11.5 g/dl, 11.8 g/dl, 12.5 g/dl, 12.9 g/dl and 13.7g/dl for <1000, 1000-1999, 2000-2499, 2500-2999, 3000-3499 and 3500-3999 meter above sea level, respectively^[8].

Anemia is known to be associated with multiple factors, such as poor socioeconomic status, high parity, short birth interval, poor diet both in quantity and quality, lack of health and nutrition awareness, and a high rate of infectious diseases and parasitic infestations. In developing countries, underprivileged people have often limited access to medical care and preventive measures, increasing their risk of becoming anemic and contributing to high maternal mortality.^[9,10] Aim of our study was to evaluate the factors and prevalence of anaemia in pregnancy in small rural area of District Katihar, Bihar, India.

Materials & Methods

This present study was conducted in department of Community Medicine, Katihar Medical College and Hospital, Katihar, Bihar, India. Data was collected from patients attending Out Patient Department in department of Gynaecology and with collaboration of Department of Pathology in Katihar Medical College and Hospital, Bihar during a period from September 2017 to March 2018. Attendants/patients signed an informed consent approved by institutional ethical

committee of Katihar, Medical College, Katihar, Bihar India was sought.

Methods

A total of 120 pregnant women in any trimester of pregnancy irrespective of Iron and Folic Acid (IFA) consumption with age group <20 to >30 years were enrolled in this study. All pregnant women, who belonged from rural areas were included.

A detail history, complete examinations and relevant investigations were performed to all cases. Study Details: Data collection involved 120 participants in any trimester of pregnancy irrespective of Iron and Folic Acid (IFA) consumption. Participants were interviewed using a predesigned and pretested interview schedule. This was followed by a short clinical examination for pallor. A Laboratory estimation of haemoglobin was performed using Sahli's (Acid haematin) method for haemoglobin estimation. Anaemia was classified as per the World Health Organisation (WHO) grading criteria.

Haemoglobin level below the cut-off of 11 g/dL was used to label a pregnant woman as anaemic and it was further classified as: Mild anaemia (10-10.9 g/dL), Moderate anaemia (7-9.9 g/dL) and Severe anaemia (<7 g/dL).

Statistical Analysis

Data was analyzed by using simple statistical methods with the help of MS-Office software.

Observations

This study was conducted in department of Community Medicine, Katihar Medical College, Katihar, Bihar.

Table.1 Age wise distribution of anaemia in pregnancy.

Age (years)	Anaemic	Non-anaemic	Total
<20	34(35.79%)	2(8%)	36(30%)
20-25	50(52.63%)	15(60%)	65(54.16%)
26-30	4(4.21%)	4(16%)	8(6.67%)
>30	7(7.37%)	4(16%)	11(9.17%)
Total	95(100%)	25(100%)	120(100%)

In this present study, majority of cases 65 (54.16%) were in age group of 20-25 years. Out of total 120 cases, 95(79.16%) were anaemic and 25(20.83%) non-anaemic. Majority of anaemic pregnant women 50(52.63%) and non-anaemic 15 (60%) were belonged in age group of 20-25 years.

Table 2 Classification of anaemia in pregnant women

Hb (< 11g/dl)	No. of pregnant women	Percentage
Mild anaemia	68	56.66%
Moderate anaemia	27	22.5%
Severe anaemia	0	0%
Non anaemic	25	20.83%
Total	120	100%

In this present study, out of total 120 cases of pregnant women, 25(20.83%) cases were non-anaemic, majorities of pregnant women 68 (56.66%) were mild anaemic and 27(22.5%) were moderate anaemic, and no cases had severe anaemia.

Table.4. Parity in anaemic pregnant women

Parity	Anaemic(N=95)	Non anaemic (N=25)	Total(N=120)
<1	23(24.21%)	18(72%)	41(34.17%)
1-3	30(31.58%)	2(8%)	32(26.67%)
>3	42(44.21%)	5(20%)	47(39.16%)

Out of 120 pregnant women, majorities of cases 47(39.16%) were parity >3. Out of total 25 non-anaemic cases, majority 18(72%) were parity <1.

Table 5 Interval between pregnancies

Interval between pregnancies (years)	Anaemic (N=95)	Non-anaemic (N=25)	Total (N=120)
1-2	25(26.31%)	1(4%)	26(21.67%)
2-3	42(44.21%)	7(28%)	47(39.16%)
>3	3(3.16%)	2(8%)	5(4.16%)

Majorities of anaemic and non-anaemic pregnant women were 2-3 years of interval of pregnancies.

Table 6 Consumption s of IFA tablets in anaemic pregnant women.

Consumption of IFA tablets (100 or more)	Anaemic (N=95)	Non- anaemic (N=25)	Total(N=120)
Yes	33(34.73%)	13(52%)	46(38.33%)
No	62(65.26%)	12(48%)	74(61.67%)

In this present study, out of total 120 cases, majorities of cases 74(61.67%) were not taken IFA tablets. Majority 13(52%) of non-anaemic cases were regularly taken IFA tablets.

Table.7 Literacy of anaemic pregnant women

Education	Anaemic (N=95)	Non-anaemic (N=25)	Total (N=120)
Illiterate	57(60%)	9(36%)	66(55%)
Primary	23(24.21%)	4(16%)	27(22.5%)
Secondary	13(13.68%)	6(24%)	19(15.83%)
Higher secondary	1(1.05%)	2(8%)	3(2.5%)
Graduation	1(1.05%)	2(8%)	3(2.5%)
Post graduation	0	1(4%)	1(0.83%)

In this present study, most of pregnant women 66(55%) were illiterate.

Table 8 Type of family of pregnant women.

Type of family	Anaemic (N=95)	Non-anaemic (N=25)	Total (120)
Nuclear	31(32.63%)	7(28%)	38(31.67%)
Joint	64(67.37%)	18(72%)	82(68.33%)

Most of the cases 82(68.33%) were belonged to joint family. Anaemia was also commonly found in joint family.

Table 9 Socioeconomically status of anaemic pregnant women.

Socio-economical	Anaemic (N=95)	Non anaemic (N=25)	Total (N=120)
Lower	52(54.74%)	4(16%)	56(46.67%)
Middle	38(40%)	13(52%)	51(42.5%)
Higher	5(5.26%)	8(32%)	13(10.83%)

In this present study, most of the cases 56 (46.67%) were belonged in lower socio-economical status. Anaemic pregnant women were commonly found in lower socio-economical status.

Discussion

Anaemia is one of the most prevalent nutritional deficiency problems affecting pregnant women. The prevalence of anaemia in pregnancy differs significantly because of variations in socioeconomic conditions, lifestyles, and health-seeking behaviours across different cultures.^[11,12]

The World Health Organization (WHO) estimates that 52% of pregnant women in developing countries are anemic compared with 23% in the developed world.^[13]

World Health Organization (WHO) has defined anaemia in pregnancy as the haemoglobin (Hb) concentration of less than 11 g/dl^[14]. According to WHO, anaemia is considered to be of a public health significance or problem if population studies find the anaemia prevalence of 5.0% or higher. Prevalence of anaemia of $\geq 40\%$ in a population is classified as a severe public health problem^[15].

In our study, pregnant women age 20 to 25 years were commonly suffered with anaemia 65 (54.16%). All the cases were belonged from rural area of Katihar.

Grace stephen, et al. (2018)^[16] were studied on anaemia in pregnancy. They were include 529 participants ranged from 15 to 46 years with mean age of 25.8 (SD 5.73) years.

In this present study, we were enrolled 120 anaemic pregnant women age ranged <20 years to > 30 years. Mild anemia was present in 68 (56.66%) of pregnant women. Moderate anaemia was present in 27(22.5%). And 25(20.83%) was non-anaemic. And there was no any cases of severe anaemia.

Kwabena Acheampong, et al. (2018)^[17] were found that in terms of gravity, mild anemia was 60.8%, moderate anemia was 39.2% and severe anemia was 0.0%. This study was supported the findings of our study.

In this present study, majority of cases 47(39.16%) were parity greater than 3. Interval between pregnancy in majority of cases 47(39.16%) was 2-3.

Similar result was reported on association of anaemia with parity.^[18] Several studies have observed higher prevalence of anaemia in women with high parity.^[18,19] Likely rationalization to the high prevalence of anemia among multiparous women is that these women might have gotten pregnant with low levels of nutrients due to the reduction of reserves of the mother in prior pregnancies and lactation periods or possibly did not also allow spaces between their pregnancies so were not fully recovered from previous anemia.^[17]

In this present study, majority of anaemic cases were not consumption IFA tablets, which was accounted 62(65.26%). And literacy was very low in anaemic pregnant women. Illiterate was seen in 65(55%) pregnant women. Most of the anaemic cases were lived in joint family, which was accounted 82(68.33%).

Mishu Mangla, et al. (2016)^[20] stated that iron Folic acid prophylaxis also were very significant variables in the determination of prevalence as well as the severity of anemia. In their study, majority of cases of Severe and very severe anemia were found in those pregnant females who had either not taken IFA prophylaxis or had taken it irregularly (100%) and had underwent only 1 or 2 ANC visits (89.3%).

Ravishankar Suryanarayana, et al. (2015)^[21] were studied on 446 pregnant women. They were found that 16.4% of women belonged to first, 42.2% to second, and 41.5% to third trimesters. Most of the women belonged to below poverty line (BPL) families (94.8%). Regarding education, 36.3% were illiterates and 40% had completed matriculation or PUC. More than half (57%) of the study subjects belonged to joint families and 34% to nuclear families. Regarding gravidity, 37.5% pregnancies were of primigravida, 48% second gravida, and 14% multigravida.

In this present study, we were found that majorities of anaemic pregnant women were belonged in lower 56(46.67%) and middle 51(42.5%) socioeconomical classes.

According to Ravishankar Suryanarayana, et al. (2015)^[21] Anemia was predominantly seen among

pregnant women belonging to BPL families (59.4%) compared with APL families (5.4%). Similar observation was made in a study conducted by Lokare et al.^[22] in Aurangabad city, the proportion of pregnant women experiencing anemia in classes I and II were less (47.61% and 71.42%, respectively) when compared with the lower socioeconomic status (93.51%, 94.49%, and 94.11% in classes III, IV, and V respectively). Khan et al.^[23] in Uttar Pradesh made similar observation endorsing that anemia in pregnancy was inversely proportional to the socioeconomic class. Improvement in health-care delivery system with health education targeting improved utilization of availability of healthcare facilities at the beneficiary door steps will help in reducing anemia prevalence.^[21]

Conclusion

This present study was concluded that anaemia in pregnancy was commonly seen in age 20 to 30 years. Most of the pregnant women had mild anaemia. Parity > 3, pregnancy interval 2-3, illiteracy, lower socioeconomic status was major predictors of anaemia in pregnancy.

Hence, anemia continues to be a major public health problem in rural area. Age group, parity, interval between pregnancies, illiteracy and socioeconomic status are the major factors that contribute to the problem of anemia. To reduce the prevalence, there is a need to public health education on reproductive health, improve the dietary level and strength health care seeking behavior of women. Strategic efforts are needed to broaden the coverage of iron and folic acid distribution and its consumption.

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