



Original Research Article

A STUDY ON ASSOCIATION OF SOCIOECONOMIC AND DEMOGRAPHIC FACTORS AMONG ANAEMIC PREGNANT MOTHERS AT RHC

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Received : 25/08/2024
Received in revised form : 16/10/2024
Accepted : 30/10/2024

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DOI: 10.70034/ijmedph.2024.4.58

Source of Support: Nil,

Conflict of Interest: None declared

Int J Med Pub Health
2024; 14 (4); 300-305

ABSTRACT

Background: The World Health Organization (WHO) defines health as a state of complete physical, mental, and social well-being, not just the absence of illness or disability, allowing individuals to lead socially and economically productive lives. A WHO expert panel has suggested that anaemia should be diagnosed when haemoglobin levels fall below 13g/dl in adult men, 12g/dl in non-pregnant adult women, and below 11g/dl in pregnant women. Anaemia during pregnancy is typically due to iron deficiency. WHO estimates that two billion people worldwide are affected by anaemia, with around 50% of cases caused by iron deficiency. Anaemia is linked to several maternal and foetal complications, including reducing a woman's ability to cope with blood loss during or after childbirth. It is also associated with low birth weight, premature delivery, intrauterine growth retardation, and higher perinatal mortality.

Aim: To assess the association of various socioeconomic and demographic factors on anaemia and the degree of anaemia found in pregnant mothers at RHC.

Objectives: 1. To assess the influence of social and economic status and factors influencing anaemia in pregnant mothers using B.G. Prasad classification. 2. To assess the influence of demographic factors like parity, education, occupation, etc. on anaemia in pregnant mothers. 3. To assess the utilization of various ANC services being provided at RHC especially the use of iron and folic acid tablets.

Materials and Methods: This is a longitudinal prospective observational study conducted in a field practice area. The study was undertaken at a RHTC under Tertiary Care Teaching Hospital. All the pregnant women who were anaemic i.e. whose Hb levels were less than 11g/dl (according to WHO classification) and who had no other comorbidities who visited the RHTC for the first time were included in the study. All pregnant women whose Hb levels were below 11g/dl and who visited the RHTC for the first time for various antenatal services during the study period were included in the study. All anaemic pregnant women in any trimester of pregnancy were included in the study.

Results: Table shows the level of anaemia among the 178 subjects included in the study divided according to the WHO classification of anaemia in pregnancy. It shows that 61 participants (34.26%) had mild anaemia, 98(55.05%) mothers had moderate anaemia whereas 19(10.6%) had severe type of anaemia. According to table 7 of the 178 pregnant anaemic mothers, 39(21.91%) were taking iron and folic acid tablets regularly, 66(37.07%) were taking iron and folic acid tablets irregularly whereas 73(41.01%) were not taking any iron and folic acid tablets. Of the 178 participating anaemic pregnant mothers, 123(69.10%) visited ANC units 1-2 times and 55(30.89%) visited ANC units 3 or more times. As seen in table 8, of the 123 pregnant mothers with

anaemia who visited the ANC unit 1-2 times in the present pregnancy, 41(33.33%) had mild anaemia, 67(54.47%) had moderate anaemia and 15(12.19%) had severe anaemia. Of the 55 pregnant mothers with anaemia who visited the ANC unit 3 or more times in the present pregnancy, 20(36.36%) had mild anaemia, 31(56.36%) had moderate anaemia and 4(7.27%) had severe anaemia.

Conclusion: Most of the anaemic pregnant women were in middle socioeconomic class i.e. class 3 with majority having completed primary education and were Hindu housewives with mixed diets living in a joint family. Even with the low levels of Hb most of the women were not taking any IFA tablets and the birth spacing was not 3 years in majority of the cases.

Keywords: Anaemic, Pregnant Mothers, RHC.

INTRODUCTION

The world health organisation has defined health as a state of complete physical, mental and social wellbeing and not merely an absence of disease or infirmity to lead a socially and economically productive life.^[1]

A WHO expert panel has suggested that anaemia should be diagnosed when haemoglobin levels fall below 13g/dl in adult men, 12g/dl in non-pregnant adult women, and below 11g/dl in pregnant women.^[2]

Anaemia in pregnancy is typically caused by iron deficiency. The World Health Organization (WHO) estimates that globally, around two billion people are affected by anaemia, with about half of these cases resulting from iron deficiency.^[3] It is a prevalent public health concern with serious implications for both human health and social and economic progress.^[4]

In India the prevalence of anaemia among pregnant women is about 65-75%.⁷ According to Indian health statistics from 1993 to 2003, the prevalence of anaemia among antenatal mothers was 87.5%. India faces a high maternal mortality rate of 540 per 100,000 live births, with an estimated 16% of maternal deaths attributed to anaemia. In contrast, only about 2% of women in developed countries suffer from anaemia, while this number can reach up to 50% in developing nations, contributing to elevated maternal mortality rates. Research indicates that for every 1% decrease in haemoglobin levels, productivity declines by at least 1%.^[5]

A 1995 study by the Nutrition Unit of the Ministry of Health, using WHO standards, revealed that 64.5% of antenatal mothers and 59% of lactating women were anaemic. To address this, the government launched the "Matru Suraksha Abhiyan" (Mother Protection Campaign), which offers free testing and provides iron and calcium tablets to antenatal mothers. This initiative aims to help low-income women improve their health and prevent or manage anaemia.^[6]

Anaemia is known to cause various maternal and foetal complications. It diminishes woman's capacity to handle blood loss during or after childbirth and is linked to low birth weight, premature delivery,

intrauterine growth restriction, and increased perinatal mortality.

Additionally, anaemia is associated with a higher risk of birth asphyxia and lower Apgar scores at birth. A recent meta-analysis indicated that for every 1 g/dl increase in haemoglobin concentration, the risk of maternal mortality decreases by 20%. Consequently, addressing anaemia is crucial for enhancing health outcomes during pregnancy and improving the well-being of both mothers and their babies.^[8,9]

Aim: To assess the association of various socioeconomic and demographic factors on anaemia and the degree of anaemia found in pregnant mothers at RHC.

Objectives

1. To assess the influence of social and economic status and factors influencing anaemia in pregnant mothers using B.G. Prasad classification.
2. To assess the influence of demographic factors like parity, education, occupation, etc. on anaemia in pregnant mothers.
3. To assess the utilization of various ANC services being provided at RHC especially the use of iron and folic acid tablets.

MATERIALS AND METHODS

This is a longitudinal prospective observational study conducted in a field practice area.

A pilot study was undertaken before the actual study was done.

The purpose of the pilot study was to assess the utility of the methods used and incorporate suitable changes if required.

The words and phrases in the schedule were modified according to the feedback from the participants.

The study was undertaken at a RHTC under Tertiary Care Teaching Hospital. All the pregnant women who were anaemic i.e. whose Hb levels were less than 11g/dl (according to WHO classification) and who had no other comorbidities who visited the RHTC for the first time were included in the study.

Inclusion Criteria

1. All pregnant women whose Hb levels were below 11g/dl and who visited the RHTC for the first time for various antenatal services during the study period were included in the study.

2. All anaemic pregnant women in any trimester of pregnancy were included in the study.
3. Given consent to be a part of the study throughout the study period.

Exclusion Criteria

1. All anaemic pregnant women who at the time of study had any other comorbidities were excluded from study like multiple pregnancies, fetal anomalies or gestational diabetes.
2. Who did not give consent for interview.
3. Antenatal mothers who are not present at the time of data collection.

Sample Size

178 pregnant women visiting RHTC during the study period were found to be anaemic i.e. Hb level less than 11g/dl and met all the needs of the inclusion criteria were included in the study through random sampling.

Ethical Clearance

Before conducting the study, ethical clearance was taken from the Ethical committee of Medical College & Hospital. During the study, informed verbal consent was taken from the participants and the confidentiality in relation to their information was assured to the participants and was strictly maintained.

RESULTS

Table shows the level of anaemia among the 178 subjects included in the study divided according to the WHO classification of anaemia in pregnancy.

It shows that 61 participants (34.26%) had mild anaemia, 98(55.05%) mothers had moderate anaemia whereas 19(10.6%) had severe type of anaemia. [Table 1]

According to table 2 the age distribution of the pregnant anaemic mothers was 69 (38.7%) among 18yrs-20yrs age group, 97 (54.4%) among the 21-25 yrs age group and 12(6.7%) were 26 and above. As seen in table 2 it was found that of the 69 pregnant anaemic women belonging to 18-20 yr age group, 26(37.68%) were found to have mild anaemia, 37(53.62%) had moderate anaemia and 6(8.69%) had severe anaemia. Among the 97 pregnant anaemic women belonging to the age group 21-25 years, 29(29.89%) had mild anaemia, 58(59.79%) had moderate anemia and 10(10.30%) had severe anaemia. Among the 12 pregnant anaemic women belonging to the age group of 26 yrs or more, 6(50%) had mild anaemia, 3(25%) had moderate anaemia and 3(25%) had severe anaemia. [Table 2]

According to data in table 4 of the 178 participants 30(16.85%) followed a vegetarian diet whereas 148 (83.14%) subjects followed a mixed diet. As seen in table 4 of the 30 anaemic mothers who followed a vegetarian diet, 12(40%) had mild anaemia, 15(50%) had moderate anaemia and 3(10%) had severe

anaemia. Among the 148 anaemic mothers who followed mixed diet, 49(33.10%) had mild anaemia, 83(56.08%) had moderate anaemia and 16(10.81%) had severe anaemia. [Table 4]

As seen in table 5, of the 178 participating anaemic pregnant mothers, 68(38.20%) were primigravidae i.e. pregnant for the first time, 74(41.57%) were in their second pregnancies and 36(20.22%) were in their 3rd or more pregnancies. [Table 5]

As seen in table 6, of the 110 participants who were in their 2nd pregnancy or more, 3(2.72%) were pregnant within one year of previous pregnancy, 66(60%) were pregnant after 1-2yrs of the previous pregnancy and 41(37.27%) were pregnant after 2-3 years of the previous pregnancy

As seen in table 6 of the 3 pregnancies with less than 1 yr between pregnancies, 2(66.66%) had moderate anaemia and 1(33.33%) had severe anaemia.

Among the 66 anaemic pregnant mothers with interval of 1-2 yrs from the previous pregnancy, 17(25.75%) had mild anaemia, 41(62.12%) had moderate anaemia and 8(12.12%) had severe anaemia. Among the 41 pregnant mothers with interval of 2-3 yrs from the previous pregnancy, 25(60.97%) had mild anaemia, 14(34.14%) had moderate anaemia and 2(4.87%) had severe anaemia. [Table 6]

According to table 7 of the 178 pregnant anaemic mothers, 39(21.91%) were taking iron and folic acid tablets regularly, 66(37.07%) were taking iron and folic acid tablets irregularly whereas 73(41.01%) were not taking any iron and folic acid tablets.

According to table 7, of the 39 anaemic pregnant mothers who were taking their IFA tablets regularly, 14(35.89%) were mildly anaemic, 22(56.41%) were moderately anaemic and 3(7.69%) were severely anaemic.

Of the 66 anaemic pregnant mothers who were taking their IFA tablets irregularly, 23(34.84%) were mildly anaemic, 39(59.09%) were moderately anaemic and 4(6.06%) were severely anaemic.

Of the 73 anaemic pregnant mothers who were not taking any IFA tablets, 24(32.87%) were mildly anaemic, 37(50.68%) were moderately anaemic and 12(16.43%) were severely anaemic. [Table 7]

According table 8 of the 178 participating anaemic pregnant mothers, 123(69.10%) visited ANC units 1-2 times and 55(30.89%) visited ANC units 3 or more times.

As seen in table 8, of the 123 pregnant mothers with anaemia who visited the ANC unit 1-2 times in the present pregnancy, 41(33.33%) had mild anemia, 67(54.47%) had moderate anaemia and 15(12.19%) had severe anaemia. Of the 55 pregnant mother with anaemia who visited the ANC unit 3 or more times in the present pregnancy, 20(36.36%) had mild anaemia, 31(56.36%) had moderate anaemia and 4(7.27%) had severe anaemia. [Table 8]

Table 1: Anaemic level in pregnant mothers according to WHO classification

Level of Hb	
Mild	61
Moderate	98
Severe	19

Table 2: Age distribution of the pregnant mothers

AGE GROUP	Mild	Moderate	Severe
18-20yrs	26	37	6
21-25yrs	29	58	10
26yrs or more	6	3	3

Table 3: Socio economic class of the pregnant mothers

Socio Economic Class			
Scale	Mild	Moderate	Severe
I	3	1	0
II	5	5	1
III	30	29	11
IV	20	34	6
V	3	29	1

Table 4: Dietary habits and anaemia levels of the pregnant mothers

TYPE OF DIET	Mild	Moderate	Severe
Veg	12	15	3
Mixed	49	83	16

Table 5: Parity/no of pregnancy and anaemic levels among the pregnant mothers

NO OF PREGNANCY	Mild	Moderate	Severe
1st	19	41	8
2 nd	24	41	9
3rd or More	18	16	2

Table 6: Interval between pregnancies and anaemic levels among pregnant mothers

INTERVAL BETWEEN PREGNANCIES	Mild	Moderate	Severe
<1 year	0	2	1
1-2years	17	41	8
2-3years	25	14	2

Table 7: Use of iron and folic acid tablets and anaemic levels among pregnant mothers

Use of IFA Tablets			
Type	Mild	Moderate	Severe
Regular	14	22	3
Irregular	23	39	4
Nil	24	37	12

Table 8: No of ANC visits and the levels of anemia among pregnant mothers

NO. OF ANC VISITS	Mild	Moderate	Severe
1-2 visits	41	67	15
3 or more	20	31	4

DISCUSSION

In our study it is seen that among the pregnant anaemic mothers visiting the RHTC, most were in the moderate anaemia (55.05%) category and (34.26%) were in mild and (10.6%) were in severe anaemia category respectively.

In a study conducted by Virender P. Gautam et al⁹ it was found that the majority of the anaemic patients belonged to moderate anaemia category (56.1%). Toteja GS,^[10] et al conducted a study where they found that (13.1%) had severe anaemia and (60.1%) had moderate anaemia. In a study conducted by Sankar Goswami Kishore K.Das in India it was found that the prevalence of anaemia was 69.5%; 26.2% mild, 40.4% moderate, and 2.9% severe anaemia.^[11]

In this study we see that 38.7% were in 18yrs-20yrs age group, 54.4% were among the 21-25 yrs age group and 6.7% were 26yrs and above. The severity of anaemia was found to increase with age with 25% of anaemic pregnant mothers above the age of 26yrs and more in severe anaemia category as compared to 10.3% and 8.69% in 21-25yrs and 18-20yrs age group respectively in severe anaemia category.

In a research conducted by Yogesh Bansal et al in rural area of Delhi among 114 pregnant women with gestational period between 12-20 weeks it was found that most of the pregnant women were between 20 and 24 years of age (56.1%).^[12] In a study conducted by R.G. Vivek et al,^[13] found higher prevalence of anaemia among those pregnant women above 26 years of age 97.7%.

In current study -2.24% belonged to class 1 i.e. upper class, 6.17% belonged to class 2 i.e. upper middle class, 39.32% belonged to class 3 i.e. middle class, 33.7% belonged to class 4 i.e. lower middle class and 18.53% belonged to class 5 i.e. lower class. The severity of anaemia was found to be more in class 3 pregnant women with 15.71% of class 3 pregnant women have severe anaemia as compared to 9.09%, 10% and 3.03% in class 2, 4 and 5 respectively.

In a study conducted by Dr. Gajendra Singh Tomar et al,^[14] significantly higher prevalence of anaemia among those pregnant women below Class IV socio-economic status (90.7%). In a study conducted by Ritu Panghal et al they found that 77.8 per cent pregnant women of BPL families were anaemic. Similarly, slightly higher percentage (81.82%) of anaemia in low socio-economic status pregnant women was reported.^[15]

A study conducted by Pushpa O. Lokare et al,^[16] the proportion of pregnant women suffering from anaemia in classes I and II were less (47.61% and 71.42%, respectively) as compared with the lower socioeconomic status (93.51%, 94.49%, and 94.11% in classes III–V, respectively). They calculated Risk of anaemia as compared with class I was 15.87 times higher in class III, 18.88 times higher in class IV and 17.60 times higher in class V.

According to this study, 16.85% followed a vegetarian diet whereas 83.14% subjects followed a mixed diet. In a study conducted by R.G. Viveki et al (83.3%) were having mixed dietary habits. The prevalence of anaemia was found to be more in those having vegetarian diet 86.8%.^[17]

In a research conducted by Dr. Gajendra Singh Tomar et al it was found that prevalence of anaemia was more in pregnant mothers having vegetarian diet,^[14] Rajamouli J et al conducted a study and the results also showed that vegetarian group suffered with high prevalence of anaemia (40.14%) as compared with mixed diet.^[15]

Furthermore, in this study, 38.20% were primigravidae 41.57% were in their second pregnancies and 20.22% were in their 3rd or more pregnancy. A study conducted by Mishu Mangla et al it was found that 51.1% cases of severe anaemia and 50 % cases of very severe anaemia were present in multiparous women.^[16]

In a research conducted by, Yogesh Bansal et al .it was found Women with gravida >2 more often had severe anaemia.^[12] In a study conducted by Sankar Goswami Kishore K.Das found that Higher birth order increased the risks of anaemia^[11]. In a study conducted by Gaffar S.Zamanr et al. Anaemia was more prevalent among primigravida (87.5%) than the multigravidae (75.5%).^[17]

In our study, 21.91% were taking iron and folic acid tablets regularly, 37.07% were taking iron and folic acid tablets irregularly whereas 41.01% were not taking any iron and folic acid tablets with severity of anaemia being more in patients who were not taking any IFA tablets. 16.43% of women who were not using IFA tablets had severe anaemia when compared

to 6.06% and 7.69 % of women who were taking their IFA tablets irregularly and regularly respectively.

In a study conducted by Dr. Gajendra Singh Tomar et al Majority of the subjects (44.7%) had consumed Iron–Folic Acid tablets for less than two months. There was significantly higher prevalence of anaemia among those cases who received IFA tablets for less than two months in the recent past (88.15%).^[14]

The analysis of results of a study conducted by S. BISOI et al over 10 percent of pregnant women were found to consume full course i.e. 100 days of Iron Folic Acid (IFA) tablets.^[17] Mishu Mangla et al conducted a study which showed that only 27.64% had properly taken iron folic acid tablets. 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.^[16]

In this study - 69.10% visited ANC units 1-2 times and 30.89% visited ANC units 3 or more times. A study conducted by Mishu Mangla showed that the Majority had visited antenatal clinic during pregnancy (63.17%) Majority of cases of severe and very severe anemia were found in those pregnant females had undergone only 1 or 2 ANC visits (89.3%).^[16]

CONCLUSION

The majority of anaemic pregnant women were found to belong to the middle socioeconomic class (Class 3), with most having attained only primary education. The demographic profile indicated that they were predominantly Hindu housewives consuming mixed diets and residing in joint family structures. Notably, despite exhibiting low haemoglobin levels, a significant proportion of these women were not adhering to iron and folic acid (IFA) supplementation. Furthermore, the majority did not adhere to the recommended birth spacing of three years.

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