Original Article

Anaemia in Pregnancy: Prevalence and Socio demographic determinants

Sunanda Pramanick*, Suprakas Hazra**, Dipak Pal***,Debashis Dutt***** and G.K. Pandey*****,

Abstract

Background and objectives: Anaemia is a commonly prevalent nutritional deficiency disorder. Its prevalence and severity is known to increase during pregnancy. Multitude of factors like dietary habits, poverty, ignorance, poor sanitation, poor access to health care and religious practices etc. have been found to be associated with anaemia. The aims of this study were to estimate the prevalence of anemia and its associated factors among pregnant women attending health facilities in a district of West Bengal. **Methods:** A Cross sectional study was conducted among 174 pregnant women in three PHCs and one Hospital selected randomly. Data were collected by observation and interview of the antenatal mothers. **Results:** Prevalence of anaemia was 66.1%. It was higher among women from minority community (90.2%), women who were illiterate (83.3%), who worked as labourers (84.4%), had fewer ANC visits (84.4%), consumed less than 100 IFA tablets(81.4%), whose husbands worked as labourers (73.0%), and with BMI less than 18.5(88.3%). **Conclusions:** Anaemia during

* Student M.Sc. Applied Nutrition. All India Institute of Hygiene & Public Health, Kolkata.

** Faculty, Department of Epidemiology, All India Institute of Hygiene & Public Health, Kolkata.

*** Professor, Department of Epidemiology , All India institute of Hygiene & Public Health, Kolkata.

***** Professor & Head, Department of Epidemiology , All India institute of Hygiene & Public Health, Kolkata.

*****Director Professor, Department of Epidemiology , All India institute of Hygiene & Public Health, Kolkata.

Corresponding Author: Suprakas Hazra, Email: hazrasuprakas@yahoo.com, Ph.No.: 09433215913

pregnancy continues to remains a challenge to public health**.** Women from minority community, lower educational levels, belonging to laboring class of occupation, poorly utilizing MCH services, husbands being labourers and women with lower BMI have greater predisposition towards anaemia. **Recommendation**: Persisting inequities call for addressing the social determinants.

Keywords: Anaemia, Pregnancy, Minority Community, Antenatal Care (ANC), Body Mass Index (BMI), Iron and Folic Acid (IFA) tablet, Underweight, Primary Health Centre (PHC)

Introduction

Anaemia is the term used to describe the condition in which there is a reduction in the concentration of haemoglobin in the blood stream to a level below 11gm/dl for pregnant women.[1]Anaemia is a commonly prevalent nutritional deficiency disorder. Its prevalence and severity is known to increase during pregnancy.WHO has estimated that prevalence of anaemia in pregnant women in India is 65-75 per cent[2]. Anaemia is also known to adversely affect the outcome of pregnancy, both to the mother and foetus.[3]
Multitude of factors like dietary habits, poverty, ignorance, poor sanitation, poor access to health care and religious practices etc. have been found to be associated with anaemia[4].

The present investigation was conducted to find out the prevalence of anaemia among pregnant women attending health care facilities for ante-natal care in selected health facilities of Burdwan district in West Bengal.

Materials and Methods

Study was carried out in Burdwan district of West Bengal located nearly a hundred kilometres from Kolkata. It had a population of 77,23,63, census 2011[5].Religious minorities constituted over one fifth of its population.

Expectant mothers who were registered for antenatal care in the health facilities constituted the subjects of study. The study was conducted between November 2014 to April 2015 in primary and secondary care health facilities located in the district.

Considering the prevalence of anaemia among pregnant woman as 65%[1,] estimated sample size was 87,with a confidence level of 95% and absolute allowable error of 10%. As the mothers were not selected by simple random sampling, a design effect of size 2 was considered giving the revised sample size as 87 x 2=174.

The health facilities of the district were grouped in two strata namely PHCs and Hospitals. From the first stratum three PHCs and from the second, one hospital was chosen by simple random sampling.

 The data were collected two days in a week .In each day 5 patients were interviewed. From past data it was observed that the average attendance of patients in the Hospital and PHC's

were 75 and 32 respectively. From the Hospital every 15th and from PHC'c every 6th mother was selected by systematic random sampling .In this way 45 mothers from the Hospital and 43 mothers from each PHC's were taken ,so as to make the total sample size 174. Data were collected using a pretested questionnaire by interview, direct observation and scrutiny of antenatal records. Anemia was estimated by Cyanomet Haemoglobin method using WHO criteria.[6] To categorize socio- economic `status modified Prasad's scale was used [7]. Anthropometric rod and spring balance, were used for measuring height and weight respectively.

Expectant mothers who were ill, who came for delivery, and whose ante natal records were not available were excluded.

Data were analyzed in M S Office Excel and online Vassar Stats. Odds ratios, p value, and 95% confidence interval were computed.

Ethical clearance was obtained from the ethical committee of All India institute of Hygiene & Public Health, Kolkata. Verbal consent was obtained from the participants.

Results

The study population consisted of 174 ante-natal women. Almost 71% of the women were Hindus. More than two third of them (67.8%) belonged to joint family. Nearly one third (33.7%) were from general caste and 31.6% from scheduled tribe. More than half (53.5%) of women were between 20-24 years. As per modified Prasad scale, 38.5% and 28.7% belonged to social class IV and III respectively. More than one third mothers had education upto middle class (37.9%) and 21.8% had studied upto higher secondary level. Housewife (59.2%) was the most common occupation of mothers. Majority (69%) of the pregnant women got married between 15 and 19 years and age at first pregnancy was maximum (56.3%) in the same age group. (Table 1)

The prevalence of anaemia was 66.1% among pregnant women. 31.6% had mild anaemia (Hb 10 to 10.99 gm/dl), 28.7% had moderate anaemia (Hb 7 to 9.9 gm/dl) and 5.8% had severe anaemia(Hb<7gm/dl).

Further, the prevalence of anaemia was analysed in terms of demographic and biological, variables. The prevalence of anaemia was 90.2 % among Muslim women. Higher prevalence of anaemia was seen among women who were illiterate (83.3%), who worked as labourers (84.4%). Women who had less than 4 ante-natal visits had higher prevalence (84.4 %). Mothers who consumed less than 100 IFA tablets showed higher prevalence (81.4%) in comparison to women who consumed 100 or more IFA tablets (37.7%).Women whose husbands worked as labourers had higher prevalence (73.0%) than the women whose husbands were engaged in other occupations (52.5%).Antenatal women with BMI less than 18.5 had greater disposition to anaemia (88.3%) than mothers having BMI 18.5 or above. No significant difference in prevalence of anaemia was found with regard to age, caste, type of family, age at the time of

marriage, age at first pregnancy, parity, level of education of husband, socioeconomic class (Table2).

Discussion

Anaemia continues to remain a major public health problem in ante-natal period. Overall prevalence of anaemia, in the present study was found to be 66.1% which corresponds with the findings of a community based study in rural Bengal by Bisoi et al[8]. Another study in the same district by Agarwal et al[9] in 1999 had found 80% of pregnant women to be anaemic. In rural Maharashtra also a prevalence of 92.4 % has been reported by Wadgave[10]. Relatively lower proportion of anaemic mothers in the present study could partly be attributed to IFA supplementation, and better MCH services.

   High proportion (90%) of anaemia observed in women from minority community in present study corroborates with the findings of Bisoi et al[8] who found 80.6% anaemia in Muslim women. On the contrary Gautam et al[11] and   Dutta et al[12] found higher proportion of Hindu women to be anaemic. These differences point out to persisting inequities in health and call for addressing the social determinants of health.

The type of family i.e. joint or nuclear had no relation to anaemia in the present study. But Bisoi et al[8], Gautam[11] and Bhattacharyya et al[13]found higher prevalence of anaemia in mothers from joint familes.

In the present study no variation in the prevalence of anaemia was found in different socioeconomic groups, although Gautam[11] & Judith et al[14] have reported higher prevalence in women from lower socio economic strata.

Age of the mother during pregnancy did not affect the prevalence of anaemia in the present study, which corresponds with the findings of S. Bisoi et al[8] and Judith[14]] et al. However Bhattacharyya et al[13]noted higher prevalence in mothers below the age of 20 years. Greater awareness in the younger mothers because of improved educational status and sustained efforts of health system possibly had contributed to this change.

 Occurrence of first pregnancy in younger women (below20years) did not affect the prevalence of anaemia in the present study, which is similar to the findings of Bisoi et al[8].

Inverse relationship was found between literacy status of mothers and anaemia in the present study which was similar to Bisoi et al[8]. Gautam[11] found higher proportion of women to be anaemic in the just literate group.

It was observed that there was a direct relationship between consumption of IFA tablets and prevalence of anaemia. Similar findings were noted by Bisoi et al[8] who also found lower prevalence of anaemia in mothers who consumed greater quantities of IFA.

All the pregnant women who had less than 3 years gap between last two consecutive births suffered from anaemia (100%) compared to those who had spacing of at least 3 years (60.3%). The study conducted by Judith [14]et al also made similar observations where higher prevalence was recorded in women with short pregnancy intervals. Bisoi et al[8]found lack of spacing between successive pregnancies as an important predictor of anaemia. Women who had less than two year gap between pregnancies were reported to have higher prevalence of (88.9%) in comparison to rest of the women (65.3%).

The prevalence of anaemia among underweight pregnant women was higher (88.3%) than the women who were normal or overweight (54.4%). Better nutritional status is known to have inverse relationship with anaemia and this study is no exception.

Conclusion: Anaemia during pregnancy continues to remain a challenge to public health. Women from minority community, lower educational levels, labourers, utilizing less MCH services, low BMI have greater predisposition to anaemia. Persisting inequities call for addressing the social determinants.

Results

Table1 Socio-demographic characteristics of Antenatal Mothers (n=174)

Variables	Number	%
Religion		
Hindu	123	70.7
Muslim	50	28.7
Others	1	0.6
Type of family		
Nuclear	56	32.2
Joint	118	67.8

Caste		
General	59	33.7
SC	17	9.8
ST	54	31.0
OBC	44	25.5
Age (yrs)	33	19.0
15-19	93	53.5
20-24	36	20.6
25-29	12	6.9
≥30		
Socio Economic Class(per capita income, in Rs)		
< 773-(Class V)	30	17.2
773-1546(Class IV)	67	38.5
1547-2577(Class III)	50	28.7
2578-5155 lass II)	21	12.1
≥ 5156 (Class I)	6	3.5
Level of Education		
Illiterate	30	17.2
Below Primary	6	3.5
Primary	18	10.3
Middle	66	37.9
Secondary	38	21.8
Higher Secondary	11	6.3
Graduate and above	5	3.0
Occupation		
Unemployed	24	13.8
Unskilled Labour	31	17.8
Skilled Labour	1	0.6
House wife	103	59.2

Teachers	8	4.6
Office Staff	1	0.6
Business	6	3.4
Age at marriage (yrs)		
< 15	9	5.2
15-19	120	69.0
20-24	42	24.1
25-29	3	1.7
Age at first pregnancy (yrs)	1	0.6
< 15	98	56.3
15-19	72	41.4
20-24	3	1.7
25-29		
Parity		
1st	60	34.5
2nd	85	48.9
3rd	25	14.4
4th and above	4	2.3
BMI (kg/m²)		34.4
	60	58.6
< 18.5	102	6.9
18.5-22.9	12	
23-24.9		
Level of Education of Husband		
Illiterate	8	4.6

Below Primary	13	7.5
Primary	31	17.8
Middle	61	35.1
Secondary	34	19.5
Higher Secondary	12	6.9
Graduate and above	15	8.6
Occupation of Husband	1	0.6
Unemployed	97	55.8
Unskilled Labor	18	10.3
Skilled Labor	8	4.6
Teachers	9	5.2
Office Staff	41	23.5
Business		

Table –2 : Level of haemoglobin according to different variables

Variables	Hemoglobin level(gm/dl)		O.R.(95% C.I.)	p Value
	<11	≥11		
Religion			6.97(2.6- 18.7)	< 0.0001
Muslim	46(90.2)	5(9.8)		
Hindu	70(56.9)	53(43.1)		
Caste			1.40(0.7-2.7)	0.310159
Other caste				
General	79(68.7))	36(31.3)		
	36(61.0	23(38.1)		
Type of family			-	-
Nuclear	37(66.1))	19(33.9)		
Joint	78(66.1)	40(33.9)		

Age (yrs)			1.47(0.6-3.4)	0.371093
<20	24(72.7)	9(27.3)		
≥20	91(64.5)	50(35.5)		
Level of Education			3.0(1.1-8.3)	0.028295
Illiterate	25((83.3)	5(16.7)		
Illiterate	90(62.5)	54(37.5)		
Occupation			3.31(1.2-9.1)	0.015577
Labor	27(84.4)	5(15.6)		
Others	88(62.0)	54(38.0)		
Age at marriage (yrs)			1.9(0.4-9.2)	0.35807
<15	7(77.8)	2(22.2)		
≥15	108(65.5)	57(34.5)		
Age at first pregnancy (yrs)			1.8(1.0-3.4)	0.071861
<20	71(71.7)	28(28.3)		
≥20	44(58.7)	31(41.3)		
Number of ANC visits			6.3(3.1-12.8)	<0.0001
< 4	76(84.4)	14(15.6)		
≥ 4	39(46.5)	45(53.6)		
Number of IFA tablets consumed			7.2(3.6-14.6)	<0.0001
<100	92 (81.4)	21 (18.6)		
≥ 100	23(37.7)	38(62.3)		
Parity			-	-
< 3	86(59.3)	59(40.0)		
≥ 3	29(100.0)	0(0)		
Education of Husband			3.8(0.5-31.3)	0.1794
Illiterate	7(87.5)	1(12.5)		
Illiterate	108(70.1)	58(39.9)		

			2.5(1.3-4.7)	0.006857
Occupation of Husband				
Labor	84(73.0)	31(27.0)		
Others	31(52.5)	28(47.5)		
BMI of pregnant woman(kg/m^2)			6.4(2.7-15.2)	<0.0001
< 18.5	53(88.3)	7(11.7)		
≥ 18.5	62(54.4)	52(45.6)		
Socio economic Status			1.8(1.0-3.5)	0.057433
Category IV & V	70(72.2)	27(27.8)		
Category IV & V	45(58.4)	32(41.6)		
Interval between last two consecutive Births (yrs)			-	-
< 3	36(100)	0		
≥ 3	47(60.3)	31(39.7)		
Not applicable	32(53.3)	28(46.7)		

O.R. : Odds Ratio , C.I. : Confidence interval

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