Original Research Article

Burden of Anaemia among Pregnant Women Attending a Tertiary Care Hospital in Assam

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ABSTRACT

Anaemia in pregnancy continues to be a health problem. As per NFHS-3, in Assam 72% pregnant women are anaemic. Regular antenatal check-up usually provides opportunities for delivering timely and essential interventions to the pregnant women. A cross-sectional hospital based study was carried out for three months, from November 2011 to February 2012 in Jorhat Medical College Hospital using a predesigned, pretested proforma. Data was collected regarding the socio-demographic factors, antenatal care services utilization and presence of anaemia in the participants. The degree of anaemia was categorised as mild (9-11 g/dL), moderate (7-9 g/dL), severe (<7 g/dL). The prevalence of anaemia was 61.69%; severe anaemia was 2.03% %. Most participants in 20-25 years age group (63.7%) and lower socio-economic class (62.63%) were found to be anaemic. Participants who did not adequately utilize antenatal services, i.e., registering for ANC after 12th week (83.4%), attending inadequate number of ANCs (70.06%), and failing to take IFA tablets (60%) were found to be anaemic. The high prevalence of anaemia, despite the availability and easy access to medical care, indicates the level of ignorance and indifference to health needs. Antenatal care is the single most important intervention that can reduce the maternal and infant morbidity and mortality in developing countries and so antenatal care services need to be delivered more practically.

Keywords: Anaemia, Pregnancy, Pattern of Utilization of Antenatal Services, Socio Demographic Characteristics.

INTRODUCTION

Pregnancy is not just a matter of waiting to give birth but a joyful and a fulfilling period in a woman's life. It can also be one of the experiences of misery and suffering when complications or adverse circumstances compromise the pregnancy, causing ill health or even death. Anaemia is one of the most commonly encountered medical disorders during pregnancy. Anaemia in pregnancy is one of the major causes of maternal morbidity, mortality and reproductive wastage in the world including India. In developing countries like India, maternal health care services are not sufficient as per requirement, which ultimately leads to maternal deaths triggering a challenge to achieve improve maternal health. [1] Anaemia in pregnancy takes heavy tolls in the form of abortion, premature birth, intrauterine growth retardation, high infant mortality and 20 to 40 percent maternal death of India. [2] Maternal anaemia is associated with poor intrauterine growth and increased risk of preterm births and low birth weight rates. Physical and cognitive development in growing phases of life is hampered among children of anaemic mothers. Thus maternal anaemia contributes to intergenerational

cycle of poor growth in the offspring. As per NFHS-3 (2005-6) survey Assam 72% pregnant women are anaemic. [3] It is a cause of serious concern as, besides many other adverse effects on the mother and the fetus, it contributes significantly to high maternal mortality. [4]

Antenatal care is essential to reduce morbidity and mortality among newborn babies and pregnant women. [5] Early Antenatal check-up (ANC) booking and regular follow-up of services usually provides opportunities for delivering services that can significantly enhance the health of the mother and fetus. [6,7] World Health Organization (WHO) in 2002 recommends that pregnant women should attend ANC at least 4 times starting from the first trimester. [8] The pregnant women who registers early before 12 weeks for ante-natal care and takes iron regularly has greater iron reserves, higher haemoglobin levels and a lower prevalence of anaemia. [9,10] Assam remains at the bottom with regard to Maternal Mortality Ratio, which is considered one of the most important indicators of maternal health.

There is an urgent need to make pregnant women and their families aware about the importance of antenatal care. Early detection and effective management of anaemia in pregnancy can contribute substantially to reduction in maternal mortality.

This study, therefore, aims to estimate the burden of anaemia and explore the socio-demographic factors influencing the prevalence of anaemia amongst pregnant women in Assam.

MATERIALS AND METHODS

Study site and population: A cross-sectional study was carried out for three months during the period of November, 2011 to February, 2012 in the postnatal ward of Jorhat Medical College Hospital, Jorhat, Assam. A total of 1845 antenatal mothers had been admitted in Jorhat Medical College Hospital between November 2011 and February 2012.

Data collection and tools: A pre-designed and pre-tested proforma was used to get information regarding socio-demographic factors and the antenatal care they had received during pregnancy. The classification of the patients for anaemia was done on the basis of the haemoglobin level at their last ANC. Written informed consent of the participants was taken. Data were entered in MS Excel and analyzed using Standard Statistical Techniques.

RESULTS & DISCUSSION

A total of 61.69% pregnant women were found to be anaemic, 46.80% mildly anaemic, 12.85% moderately anaemic and 2.03% severely anaemic. The prevalence of anaemia found in the present study is comparable to the findings of Bisoi, et.al. [14] (67.8%) and Noronha, et.al. [10] (50.14 %). Wadgave, et.al [11] had reported 92.38%. Srivastava et al [12] had reported 87.4% of their study subjects to be anaemic, whereas, Bivalkar, et.al [13] had reported as less as 43.4% to be anaemic. The prevalence of anaemia as found in the present study stands slightly lower than the national average of 72% as given by NFHS 3 which was conducted in 2005. With the thrust of interventions under NHM and the newer initiatives under RCH-II since 2005, such an improvement of parameter is explainable and expected. The scenario of antenatal care and IFA supplementation has indeed improved the health status of this reproductive group in recent times. Distribution of grade of anaemia as found in the present study is comparable to the findings of the studies by Bisoi et.al. [4] and Sahoo, et.al [14] which showed majority of those anaemic to be mildly anaemic and less than 5% to be severely anaemic.

Mild, anaemia may not have any effect on pregnancy and labour except that the mother will have low iron stores and may become moderately to- severely anemic in subsequent pregnancies. Moderate anaemia may cause increased weakness. Severe anaemia, however, is associated with poor outcome. The woman

may have palpitations, breathlessness, and also cardiac failure which may be fatal 5, 8. Increased incidence of pre-term labour (28.2%), pre-eclampsia (31.2%) and sepsis have been associated with anaemia.5 Adverse perinatal outcome in the form of pre-term and small-for-gestational-age babies and increased perinatal mortality rates occur in neonates of anemic mothers. [15]
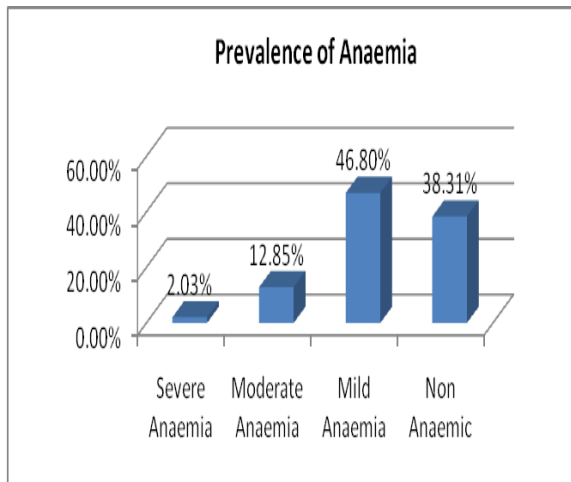

Fig. 1: Distribution of Anaemia in Pregnancy

According to the present study, the prevalence of anaemia was high among younger age group of pregnant women with maximum prevalence (63.7%) in the 20-25 years age group. This is in concordance to the findings of Noronha, et.al. (57.72%), [10] Bisoi, et.al. [4] and Bivalkar, et.al. [13] all of whom reported anaemia to be occurring mostly in younger mothers. The greater prevalence of anemia in the younger age group may be explained by the fact that poor iron stores at birth, low dietary iron intake through childhood results in high frequency of anaemia in childhood. With the onset of menstruation and associated blood loss, there is the further rise in prevalence and severity of anaemia in adolescent girls. Anaemia gets aggravated by increased requirements during adolescence and during pregnancy. [14]

According to the present study, most of the women were found to be literate below class 10 level (65.55%) but anaemia was found to be present across all educational status. According to Bisoi et al [4] an inverse relation was found between education and anaemia which showed significant increase with decrease in literacy status. According to Bivalkar, et.al, most of the women are educated up to primary level having (57.5%) anaemia but as per non anemic cases 51.8% are also educated up to primary level. [13] Irrespective of the educational status, maternal awareness about diet, regular ANC visits & personal care has been found to be good in the present study population, probably due to more exposure to mass media and better communication from the health workers.

According to the present study most of the participants belonged to upper-lower and lower socio-economic groups (44.82% and 42.93% respectively). Anaemia was however, found in the majority (62.63%) of participants from lower socio-economic class. This is comparable to the findings of Bisoi, et.al and Bivalkar, et.al, which also had reported more of anaemia in the lower to middle socio-economic class. Lower socio-economic group means lower purchasing power and poorer diet in the family. This results in more of anaemia in this group in the Indian society.

According to the present study, most (64.82%) participants belonged to joint families. However anaemia was found to be evenly distributed in both types of families. This finding is in vast contrast to the findings of Bisoi, et.al and Bivalkar, et.al. (78.5%), both of which studies had reported significantly higher proportion of anaemia amongst women from joint families. the finding in the present study can be explained by the fact that, the joint family system existent in Assam is not as hierarchal dominating as in many other parts of India. However, unequal distribution of food in the family and eating last, with less food is a tradition and a determinant of nutritional status of Indian women.

According to the present study most pregnant women had not taken extra food (72.52%) during pregnancy, and anaemia was also found to be more prevalent (68.61%) in this group. The study by Bisoi,

et.al, had also reported that no pregnant women had taken extra meal during pregnancy however, in their study, prevalence of anaemia was not different in comparison to those did consume extra food.

Table 1: Distribution of Anaemia according to Socio-demographic Factors and ANC utilization

	Total		Anaemic (<11gm %)	
	Number	**Percentage**	**Number**	**Percentage**
Age				
<20 years	185	10.02	112	61.88
20-25 years	1010	54.78	658	63.70
25-30 years	486	26.34	283	60.21
30-35 years	90	4.90	47	54.02
35-40 years	65	3.50	21	36.21
>40years	9	0.47	18	100.00
Education				
Non-literate	175	9.51	83	47.43
Below 10th	1209	65.55	749	61.95
Beyond 10th Std pass	460	24.94	86	18.70
Socio-economic status				
I Upper	0	0.00	0	0
II Upper Middle	0	0.00	0	0
III Middle/Lower middle	227	12.30	102	44.93
IV Lower/Upper lower	827	44.82	375	45.34
V Lower	792	42.93	496	62.63
Type of Family				
Nuclear	649	35.18	347	53.47
Joint	1196	64.82	617	51.59
Extra food during Pregnancy				
Yes	507	27.48	290	57.20
No	1338	72.52	918	68.61
Gravida				
Primi (1)	1197	64.89	735	61.40
Multi (2 to 4)	634	34.38	390	61.51
Grand multi (>4)	13	0.73	13	100.00
Time of Regn.				
<=12 weeks	1063	57.62	629	59.17
12 to 28 weeks	771	41.79	643	83.40
> 28 weeks	11	0.6	9	81.82
No of ANCs				
1 to 3 ANCs	775	42.01	543	70.06
>3 ANCs	1070	57.99	595	55.61
IFA Supplementation				
Taken 100 or more tablets	1217	65.97	188	15.44
Partial	623	33.77	131	21.03
Nil	5	0.27	3	60.00

According to the present study, most (64.89%) participants were primigravidae, however, anaemia was found to be equally distributed irrespective of the parity of the pregnant women which is comparable to the findings of Bisoi, et.al. Bivalkar, et.al and Sahoo, et.al had reported more anemia in multigravidae with more than 1-2 children. This finding can only be explained in the light that the blood loss during successive deliveries in the multigravidae is balanced by the nutritional drain of even the first pregnancy on the growing adolescent or young mother.

In the present study, it was found that most (57.62%) participants registered themselves for ANC early in pregnancy and also, anaemia was alarmingly present (83.40%) in those who registered after the 12th week of pregnancy. Bisoi, et.al, had also reported that early registration appeared to be a protective factor against anaemia. [4] The benefit of antenatal care is undeniable. Early Antenatal check-up (ANC) booking and regular follow-up of services usually provides opportunities for delivering services that can significantly enhance the health of the mother and fetus. [3,4]

It was found in the present study that 58.37% participants took the full course of IFA supplementation tablets and another 7.53% took even more than the prescribed 100 tablets. Presence of anaemia showed an inverse trend against intake of IFA tablets.

While among those who took the full course, anaemia was present in 16.53%, it was seen that anaemia was present in 60.0% of those who did not take IFA tablets at all. According to the study by Bisoi, et.al anaemia was significantly lower compared to non-user of IFA tablets. This proves that IFA tablets play an indispensible role in the prevention of anaemia. Inadequate dietary iron, folate intake due to low vegetable consumption, perhaps low B12 intake and poor bioavailability of dietary iron from the fibre, phytate rich Indian diets are the major factors responsible for high prevalence of anaemia. A woman is therefore invariably predisposed to anaemia. The intake of IFA tablets from early pregnancy can help reduce the losses during the pregnancy.

When the epidemiological determinants were cross matched with the severity of anaemia, it was found that age is significantly associated with the severity of anaemia (p<0.001). Anaemia was found to be more prevalent in the younger age groups, and severe anaemia was seen maximally in the less than 20 year old pregnant women. Most participants being primigravidae, number of primigravidae being anaemic was also found to be more. However, gravida was not found to be significantly associated with severity of anaemia. When adequate utilization of ANC was examined with severity of anaemia, it was not found to be significant, however, the table shows a greater number of the participants who had utilized adequate ANC to be only mildly anaemic, whereas, a greater number of the participants who had not utilized ANC adequately to be severely anaemic.

Table 2: Severity of Anaemia according to Socio-demographic Factors & ANC utilization

	Mild Anaemic (9-11gm %)	Moderate Anaemic (7-9gm %)	Severe Anaemic (<7gm %)	Total	p-value
Age					
<20 years	80	18	14	112	
20-25 years	504	144	10	658	
25-30 years	206	64	13	283	<0.001
30-35 years	38	9	0	47	
35-40 years	21	0	0	21	
>40years	15	3	0	18	
Gravida					
Primi (1)	556	158	25	739	(not significant)
Multi (2 to 4)	298	79	12	389	
Grand-multi(>4)	10	0	0	10	
No of ANCs					
1 to 3 ANCs	386	125	32	543	(not significant)
>3 ANCs	478	112	5	595	
Total	**864**	**237**	**37**	**1138**	

CONCLUSION

Anaemia is a silent destroyer. Maternal anaemia is associated with poor intrauterine growth and increased risk of preterm births and low birth weight rates which in turn, lead to poor growth in infancy, childhood and adolescence. The high prevalence of anaemia, despite the availability and easy access to medical care, indicates the level of ignorance and indifference to health needs. Antenatal care is the single most important intervention that can reduce the maternal and infant morbidity and mortality in developing countries and so antenatal care services need to be delivered more practically. There is an urgent need to make pregnant women and their families aware about the importance of antenatal care. Early detection and effective management of anaemia in pregnancy can contribute substantially to reduction in maternal mortality.

REFERENCES

1. C. Abou-Zahr and T. Wardlaw, Maternal Mortality in 2000: Estimates Developed by WHO, UNICEF, UNFPA, World Health Organization, Geneva, Switzerland, 2004, Pg. - 1-39.

2. Mittal, S. Overview of 12 by 12 Initiatives, (Hb 12 by 12 years). GOI, UNICEF & FOGSI, collaboration, 2007 (http://www.whoindia.org/Link Files/ FCH_ News_ &_ Workshop _12_ by_ 12_Initiative_Booklet.pdf; accessed on 3/3/2010).

3. Key findings of NFHS- 3, 2005-06, Sept 2007, Pg. 1-22.

4. S. Bisoi, D. Haldar, T.K. Majumdar, N. Bhattacharya, G.N. Sarkar And S.K. Ray, Correlates of Anaemia Among Pregnant Women in A Rural Area of West Bengal, The Indian *Journal Of Family Welfare*, Vol. 57, No.1, June *2011, Pg. 72-78.*

5. K. Beeckman, F. Louckx, and K. Putman, "Predisposing, enabling and pregnancy-related determinants of late initiation of prenatal care," Maternal and Child Health Journal, vol. 15, no. 7, 2011, pp. 1067-1075.

6. "Antenatal care, routine care for pregnant women, clinical guideline," 2009, http://www.nice.org.uk/nicemedia/live/1 1947/40145/4 0145.

7. Nazli Khatib, Quazi Syed Zahiruddin, A. M. Gaidhane, Lalit Waghmare, Tripti Srivatsava, R. C. Goyal, S. P. Zodpey, S. R. Johrapurkar, Predictors for Antenatal Services and Pregnancy Outcome in a Rural Area: A Prospective Study in Wardha District, India; Indian J Med Sci, Vol. 63, No. 10, October 2009, Pg. 436- 444.

8. Milman N, Bergholt T, Byg KE, Ericksen L and Graudal N (1999). Iron Status and Iron Balance During Pregnancy. A Critical Reappraisal of Iron Supplementation. *Acta Obstet. Gyneco Scand,* 78 (9), 749-57.

9. Ray SK, Mallick S, Kumar S and Biswas (2000). A Rapid Assessment of Anaemia in Pregnancy in West Bengal with Special Reference to Care Seeking Behaviours of Mothers. *Indian Journal of Public Health,* 46 (2), 58- 64.

10. Judith A. Noronha, Aparna Bhaduri and H. Vinod Bhat, Prevalence of Anaemia among Pregnant Women: A Community-Based Study in Udupi District, Health and Population-*Perspectives and Issues* 31 (1): 31-40, 2008.

11. Hanmanta V Wadgave, Burden of anaemia among the pregnant women in rural Area, Journal Healthline, Journal of Indian Association of Preventive and Social Medicine. 2011; 2(2): 76-77.

12. Srivastava A, Prabha T, Quershi S and Das Vinita (2005). Anaemia in Pregnancy- A Novel Regime of Intramuscular Iron Therapy, *Journal of Obstetrics and Gynaecology of India*, 55(3), 237-240.

13. Neha Y. Bivalkar, Dr. (Mrs) K. C. Wingkar, Dr. A. G. Joshi, Dr. (Mrs) Swati Jagtap, Study of anaemia and it's epidemiological determinants in pregnant women, International J. of Healthcare and Biomedical Research, Volume: 03, Issue: 02, January 2015, Pages 140-145; www.ijhbr.com ISSN: 2319-7072.

14. Sahoo Debalina, Gosai Harshida, Shah Yash, Sahoo Ujjwal, Harsoda J. M. A Screening Study on Prevalence of Anaemia in Pregnant Women during Different Trimester, Scholars Journal of Applied Medical Sciences (SJAMS) Sch. J. App. Med. Sci., 2014; 2(5B): 1639-1642.

15. Sharma J.B., Meenakshi Shankar, Nutritional anaemia during pregnancy in non industrial countries, Progress in Obst. & Gynae (Studd) 2003, vol - 15,103-122.

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