Determinants of Anemia in Antenatal Cases: A Cross-sectional Analysis

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Abstract— *Anemia in pregnancy is a major health problem in developing country like India. So this present study was carried out at Dr. Kusum Sharma Hospital Bharatpur (Rajasthan) India, with the aim to find out the determinents of anemia in Antenatal cases attended for delivery. period on pregnancy outcomes. For this study, 100 Antenatal Cases (ANCs) attended for delivery at Dr. Kusum Sharma Hospital Bharatpur (Rajasthan) India were included in this study. These ANCs were interrogated and investigated for hemoglobin estimation. It was found in this study that 63% of proportion of ANCs were having Anemia. Anemia was found to associate with age, residence, education, occupation and parity of ANCs but not with BMI and bad obstetric history of ANCs. Anemia was found significantly more in younger age, less educated and housewives than their counterparts. Likewise ANCs of rural area had more chances of Anemia than those residing in urban areas. And ANCs having either zero parity or parity more than two had more probability to have anemia than their counterparts.*

Keywords: Antenatal Cases (ANCs), Anemia in pregnancy, Determinants of ANCs

I. INTRODUCTION

Of the 600,000 deaths from pregnancy related complications world over, anemia is responsible for 40-60% of them.[1] Anemia causes direct as well as indirect maternal deaths from cardiac failure, hemorrhage, infection and pre-eclampcia. Among anemia, iron deficiency anemia is the most common. Nutritional deficiency is the commonest cause for iron deficiency anemia, especially in developing countries like ours.[2]

Anemia in pregnancy is defined by WHO as a hemoglobin concentration below 11g/dl.[3] Although only 15% of pregnant women are anemic in developed countries,[4] the prevalence of anemia in developing countries is relatively high (33% to 75%).[3-5] According to NFHS-III (2005-2006) prevalence of anemia among pregnant women in India is 58%.[6]

In India, prevalence ranges from 33% to 89%. ICMR district nutrition survey 1999-2000 also reported prevalence of anemia as 84.2% with 13.1% with severe anemia in pregnancy.[7] Anemia is associated with 22% maternal deaths around the world.[7] India contributes to about 80% of maternal deaths due to anemia in south Asia.[8] In India anemia is second most common cause of maternal death, accounting for 20% of the total maternal death.[9]

Iron deficiency is principal cause of anemia.[10] Only 22.3% pregnant women consumed Iron and folic acid tablets for 100 days. (NFHS 2005-06). National Nutrition Monitoring Bureau (NNMB-2003) and RCH surveys have shown that coverage under IFA supplementation was low and even among those who received the tablets, only one-third of them were regularly taking.[11]

This present study was conducted with the aim to determine the factors associated with anemia in ANCs attended at a private hospital of western Rajasthan.

II. METHODOLOGY

This hospital based cross-sectional observational study was carried out on 100 ANCs attending at Dr. Kusum Sharma Hospital Bharatpur (Rajasthan) India.

Sample size was calculated 100 subjects at 95% confidence limit and 20% relative allowable error assuming 50% prevalence of anemia in pregnant women.

Consecutive ANCs attending at this hospital were included in the study till the sample size i.e. 100 ANCs were achieved. These ANCs were interrogated and data regarding their age, residence, weight and height was noted. Body Mass Index (BMI) of each ANC was calculated as below

$$BMI=Weight/Height^2$$

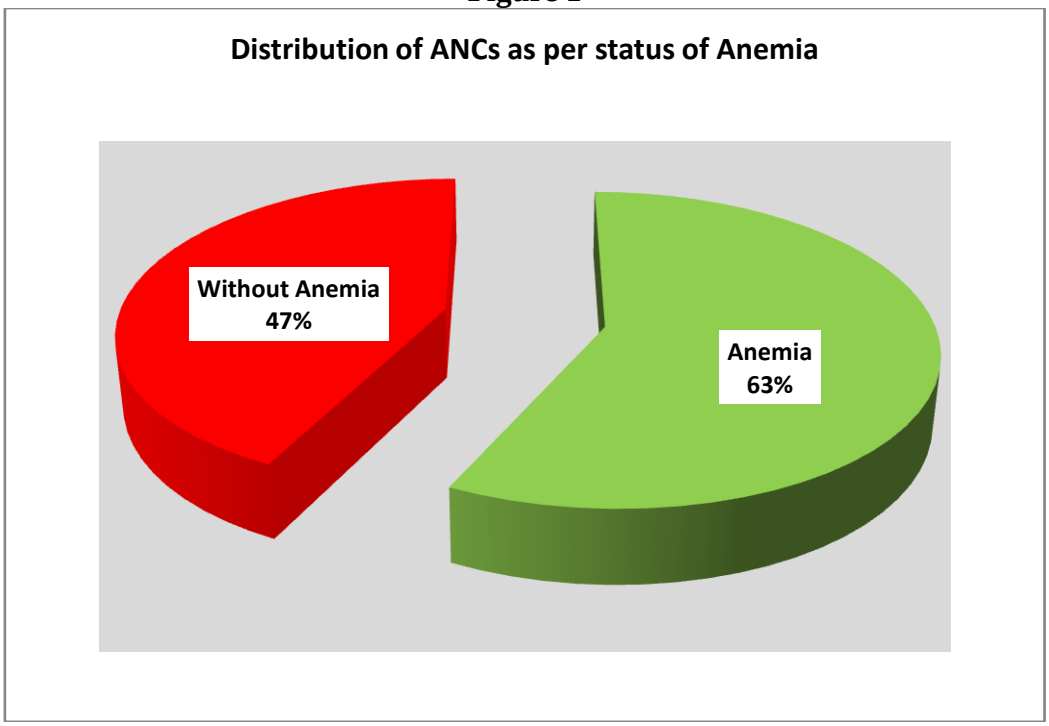
Information regarding gravidity, parity, and obstetric history was also taken.

Data thus collected were entered in MS Excel 2010 worksheet in the form of master chart. Determinants of anemia was found with Chi-square Test and unpaired 't' test/ANOVA test of significance.

III. RESULTS

In the present study out of 100 ANCs, 63 (i.e. 63%) ANCs were having anemia while only 47 (i.e. 47%) ANCs were not having anemia.(Figure 1)

Figure 1



Regarding bio-social factors, present study also observed that anemia was found to be associated with age and residence but not with BMI. It was revealed that anemia was found more in younger age, <10th standard and house wives than their counterpart groups. Likewise anemia was found more in ANCs from rural areas. (Table 1)

Table 1
Comparison of Bio-social variables of ANCs pregnancy with and without Anemia (N=100)

Bio-social Variables		With Anemia Group (N=63)	Without Anemia (N=47)	P Value	LS
Age (in years)	<20 Years	16	1	0.007*	S
	20-24 Years	24	19		
	25-29 Years	21	23		
	≥30 years	2	4		
Residence	Urban	47	25	0.033*	S
	Rural	16	22		
Education	Illiterate	19	21	0.006*	S
	<10th Standard	35	12		
	>10th Standard	9	14		
Occupation	Housewives	52	28	0.014*	S
	Working	11	19		
BMI	Mean ± SD	20.3±4.2	21.4±5.1	0.218**	NS

***P value with Chi-square** ****P value with Unpaired 't' Test**

Regarding obstetrical history, anemia was found to be associated with parity but not with bad obstetric history. Anemia was found significantly more in nullipara and ANCs with more than 2 parity than that of parity one or two. (Table 2)

Table 2
Comparison of Variables related to Obstetrical history of ANCs pregnancy with and without Anemia (N=100)

Bio-social Variables		With Anemia Group (N=63)	Without Anemia (N=47)	P Value	LS
Parity	Nullipara	18	7	0.015*	S
	Upto 2	24	31		
	>2	21	9		
Bad OH	Yes	12	9	0.817*	NS
	No	**51**	**38**		

***P value with Chi-square**

IV. DISCUSSION

In the present study anemia was found in 63% ANCs attented at Dr. Kusum Sharma Hospital Bharatpur. NFHS-III (2005-2006) reported prevalence of anemia among pregnant women in India is 58%.[6] Another study reports Anemia in 43.38% in ANCs attending at a private hospital of Bareilly district during the month of Jan.2010 to May2010.[12] However higher prevalence of anemia (57.23, 96.5 and 84.9% respectively) had been reported by various other studies.[13,14,15] This difference is perhaps the present study was limited to the hospital and that to in urban area.

Present study also observed that anemia was found to be associated with age, residence, parity and but not with BMI and bad OH. It was revealed that anemia was found more in younger age group, ANCs from rural areas and in either nullipara or parity more than two. However a cross sectional study was carried out in obstetric and gynecological department OPD of one of the private hospital of Bareilly district during the month of Jan.2010 to May2010.[12] who found more prevalent in women age more than 30 years (80.39%), illiterate (49.53%), working (83.82%). Parity was found to be reported with other authors also. [14.16]

V. CONCLUSION

ANCs with anemia were found 63%. Anemia was found to be associated with age, education, occupation, parity and residence of ANCs but not with BMI and bad obstetric history. Anemia was found significantly more in younger age, less educated and housewives than their counterparts. Likewise ANCs of rural area had more chances of Anemia than those residing in urban areas. And ANCs having either zero parity or parity more than two had more probability to have anemia than their counterparts.

CONFLICT OF INTEREST

None declared till now.

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