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Determination of Various Sociodemographic Factors Affecting Anemia in Pregnancy

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Research Article

Abstract: **Objective:** Many sociodemographic factors are responsible for anemia in pregnancy such as age, parity, spacing, percapita income, number of ANC visits, educational status, dietary habits, occupation, type of family. We studied socio-demographic factors affecting anemia in pregnancy. **Design**: a cross sectional study. **Setting:** tertiary-care referral hospital. **Participants:** All the pregnant patients admitted in the hospital whose hemoglobin less than 10gm% were included in the anemic group and whose hemoglobin above 10 gm% were included in non anemic group. **Intervention:** detailed history which included various sociodemographic factors was taken; their association with anemia in pregnancy was studied. **Outcome Measures**: factors such as age, parity, spacing, percapita income, number of ANC visits, educational status, dietary habits, occupation, type of family and association with anemia in pregnancy. **Results:** 144 patients with hemoglobin <10gm% were included in the anemic group. 122 patients with hemoglobin more than or equal to 10gm% were taken as non anemic group. In Anemic group 90.97% of the patients were from lower socioeconomic class 3 and class 4. Only 09 (06.25%) patients from anemic group had more than 4 antenatal checkups, whereas in non anemic group 118(96.72%) cases out of 122 had more than 4 antenatal checkups. **Conclusions**: we found that anemia in pregnancy was more common in multiparous women, less birth spacing, lower income, number of ANC visits <4, low educational status, poor calorie intake and with vegetarian diet, but some factors like age, occupation and type of family had no correlation with anemia in pregnancy.

Key words: anemia in pregnancy, sociodemographic factors.

Introduction

Although anemia was known since the days of Hippocrates (B.C.460), it was for the first time described by Walter Channing of Boston in America (1842) who reported 10 fatal cases of severe anemia in pregnancy.[1] **(Singh et al (1998)**[2].)The overall prevalence of anemia (hemoglobin <11 g/dl) was 20.6% at booking and 15.3% at delivery, (81.3%) anemic women at delivery had iron deficiency anemia. Multiparous women of low socioeconomic status who booked late in pregnancy had the highest risk of anemia. In Indians the risk anemia at delivery was 1.58 times more. to be Finally, women with a previous history of anemia were 2.6 times more likely to be anemic than those without such a history. **Agarwal et al (2008)**[3] studies on anemia concluded that high prevalence of anemia in pregnancy observed in low income, illiterate population as well as nutritional deficit. Severity of anemia was significantly higher in those aged>25 years, from nuclear family, educated till high school and less in those with birth interval >36 months. So to rule out association of anemia with various sociodemographic factors such as: age, parity, spacing, percapita income, educational status, dietary habits, occupation and type of family. To find out factors responsible for causing anemia and to improve some factors by educating mother and creating awareness regarding anemia and preventing anemia in pregnancy because Anemia continues to be responsible for a substantial proportion of the perinatal and maternal morbidity and maternal mortality.[4]

Methods

Study Design

It is a cross sectional study.

The present study was carried out in the Department of Obstetrics and Gynecology, to study prevalence and clinical profile of anemia in obstetric cases.

Study Period

The study period from Dec 2010 to Aug 2012.

Study Population

The study population was patient who admitted in the obstetric ward or labor room. Hemoglobin concentration of 7 gm% & below was taken as cut off limit for severe anemia that is group I and 7.1gm% to <10 gm% was taken as cut off limit for anemic patients of group II.

Total 266 patients were included in study and investigated. Out of these 144 patients, 56 patients were in group I that is patients with hemoglobin percentage less than 7 gm% and 88 patients were in group II that is patients with hemoglobin percentage 7-<10 gm% and 122 patients with hemoglobin concentration 10 gm% or more served as non anemic group, irrespective of patients on supplementation of iron.

Inclusion Criteria:

1) All the pregnant patients admitted in the hospital whose hemoglobin less than 10gm% were included in the anemic group and whose hemoglobin above 10 gm% were included in non anemic group.

2) Patients who came in labor.

Exclusion Criteria:

1) Acute cases of obstetric hemorrhage as in antepartum and postpartum (traumatic PPH) were excluded.

2) Those who denied informed consent. detailed history which included various sociodemographic factors such as age, parity, spacing , percapita income, number of ANC visits, educational status, dietary habits, occupation, type of family and association with anemia in pregnancytheir association with anemia in pregnancy was studied.

Results and Discussion

Age age wise distribution of anemic patients shows 21.43% of patients were less than 20 years of age. Majority of the patients (63.54%) were between 21 to 25 years age group. In non anemic group 27patients and in anemic group 30 patients belong to less than 20 years age group and majority of patients belongs to 21 to 25 years age group. Chi square test applied for this table. P value > 0.5 so difference in anemic and non-anemic group is not significant with respect to age. There was no significant difference between anemic (HB<10 g/dl) and non-anemic pregnant women (HB>10 g/dl) with respect to age **(EI Guindi et al,2004**)[5]. Our findings correlate with this study.

Parity In the present study parity wise distribution of patients shows that 13 anemic patients having parity of more than 2 compare to no patients from non anemic group with parity more than 2. Chi square test applied for this table. P value<0.1 so difference in anemic and non-anemic group is significant with respect to parity. **Studies by Hytten et al (1970**)[6] ,**Singh et al (1998**)[7] ,**Raghuram et al(2012**)[8] shows that multiparous women had the highest risk of anemia. Women with prior pregnancy sustain a 500-600 mg iron loss per pregnancy, which include in addition to daily iron loss in that part of gestation, iron requirement directed towards the fetus and the placenta (300-350 mg) and the puerperal blood loss (200-250mg). Hemorrhage will increase this loss. Iron deficiency is therefore apt to be more common as parity increases. **Per capita income**In the present study distribution of cases according to per capita income. Modified method of B.G. Prasad for socio-economic classification is used. Majority of anemic cases are distributed in class 3 and class 4 with 41.66% and 49.31% respectively. While in non anemic group, majority i.e. 95 cases were from class 2. Chi square test applied for this table. P value <0.05 so significant number of anemic patients belong to low socioeconomic group. **Studies by Singh et al (1998)**[7], **Javed et al (2001)**[9] ,**(Gautam et al, 2002**)[10]& **Lokare et al (2012**)[11] noted women of low socio economic status had more prevalence of anemia. Our study is comparable with these studies.

Their poor economic reduces the availability of food, education and knowledge further adds to their anemic status.

Occupational Status: There was no significant difference between study and non anemic cases for occupation status as variable. **Viveki RJ et al (2012**)[12] **Madhavi LH (2011**)[13], **Lokare PO (2012**)[11] also revealed occupation status of patient not related to increase prevalence of anemia in pregnancy.

Family Type: in our study there was no significant difference in anemic status in joint or nuclear families & study by **V. P. Gautam et al**)[10] also support our findings.

Spacing in present study in anemic group, 64 (53.78%) cases had spacing of one year followed by 51 (42.86%) cases with spacing of 2 years. In control group, 51 (65.38%) cases had spacing of 3 years followed by 20 (25.64%) with spacing of 4 years. From above information it is clearly evident that inter pregnancy interval in years (spacing) is directly proportional to prevalence of anemia in pregnancy. The statistical association of spacing and two groups was evaluated using Chi-square test. It resulted into a p-value of < 0.0001 indicating strong association between spacing and disease groups. The proportion of cases with spacing 3 or more in non anemic group is significantly higher than that of anemic group.

Studies by **V.P.Gautam et al 2002**)[10], **Agarwal K N;(2008)**[14], **Shidhaye et al 2012**)[15] however prevalence of anemia in pregnancy more in those who had repeated pregnancy with less spacing interval.

Our study correlates with above studies. Less body iron stores and micronutrient deficiency are responsible factor for anemia in pregnancy due to repeated pregnancy with less spacing.

Dietary Deficits: In present study anemic cases had caloric intake deficit has compare to non anemic group; our findings are comparable to above study. Similar finding was also noted by **Agarwal et al(2008**)[14]**.**

Educational Status: In our study education level is as follows, most of non anemic cases i.e. 48.36% were

completed high school education. However all patients in non anemic group are literate. While in anemic group most of patients have not completed their education up to high school that is 76.60%. The association of educational level and two groups was evaluated using Chi square test. It resulted in to p value <0.05 indicating highly significant association between education and two groups. In non anemic group proportion of patient with higher educational level was more than anemic group.

As in other studies, severity of anemia was inversely related to education status **(Thangaleela et al 1994)** [16]**, (Gatutam et al 2002)** [10]**, Jin L et al 2010)**[17]also noted that Socio- economic status increases as literacy increase.

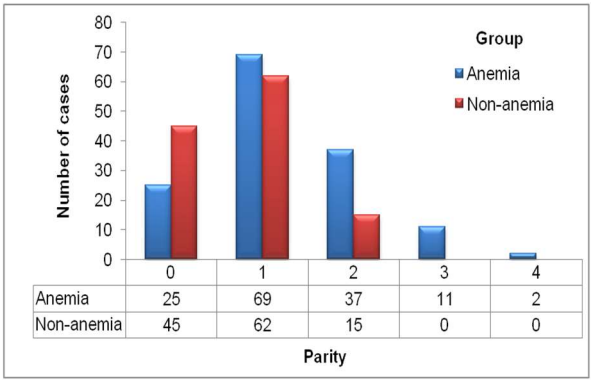

Figure 1: Bar chart showing the distribution of patients in two study groups according to parity

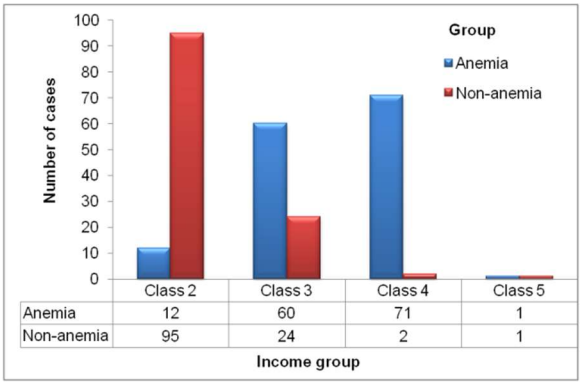

Figure 2*:* Bar chart showing distribution of patients in two study groups according to income group

Table 1: Distribution of patients according to education

Education level	Anemia			Non-anemia
	Group I	Group II	Total	Number (%)
Illiterate	12	13	25 (17.36%)	0
Primary school	15	15	30 (20.83%)	8 (6.56%)
Middle school	20	36	56 (38.89%)	26 (21.31%)
High school	6	24	30 (20.83%)	59 (48.36%)
Graduate	3	0	3 (2.09%)	29 (23.77%)
Total	56 (38.88%)	88 (61.12%)	144	122

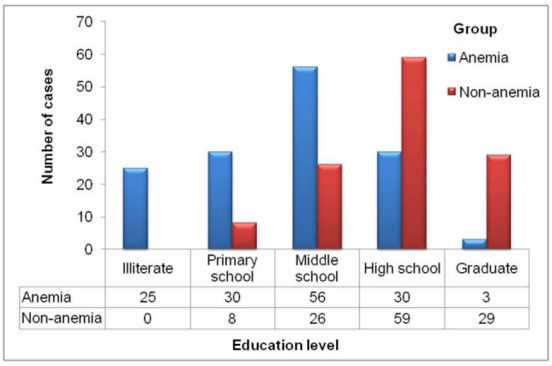

Figure 3: Bar chart showing the distribution of patients in two groups according to education level

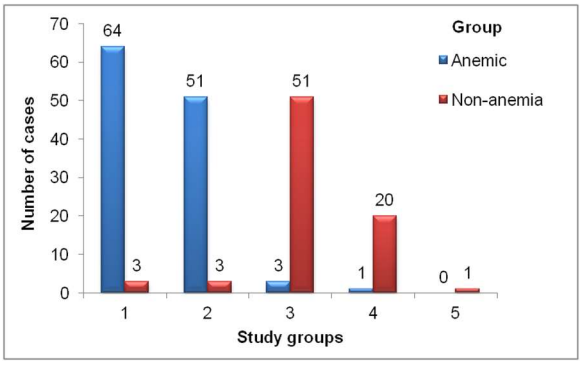

Figure 4*:* Bar chart showing number of cases as per spacing and two groups

Table 2: Family type in anemia and non-anemia groups

Family	Anemia			Non-anemia
	Group I	Group II	Total (%)	Number (%)
Joint	33	62	95 (65.97%)	33 (27.05%)
Nuclear	23	26	49 (34.03%)	89 (72.95%)
Total	56 (38.88%)	88 (61.12%)	144	122

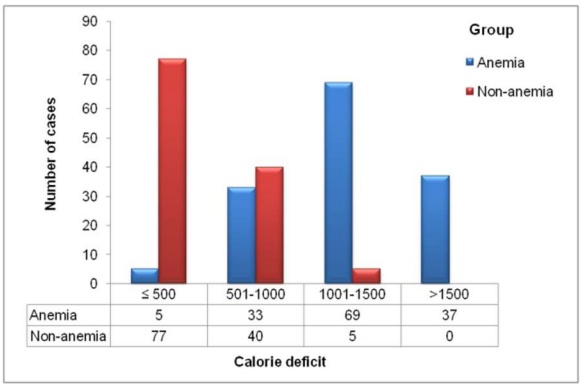

Figure 5: Bar chart showing the distribution of patients in two groups as per calorie deficiency

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