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The Prevalence of Anaemia among Reproductive Age Group (15-45 Yrs) Women in A PHC of Rural Field Practice Area of MM Medical College, Ambala, India

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Abstract

Background: Anaemia is one of the most common causes of malnutrition and it has a great public health significance affecting children, adolescents and women of reproductive age worldwide. Thus, there is a need to investigate the prevalence of anaemia particularly among females in their reproductive aged 15 to 45 years in The magnitude of anaemia in the general population of Ambala district has not yet been well documented.

Objective: To estimate the magnitude of anaemia among women of reproductive age in a PHC of Ambala district of Haryana.

Methods: A cross-sectional study of analytical nature was conducted in one cluster (village) namely Barara drawn from a PHC Barara of the Ambala district between May to July 2010. A total of 598 women of reproductive age (15-45 years) were clinically examined. Sahli´s Haemoglobinometer method was used to examine the level of hemoglobin (Hgb).

Results: The prevalence rate of any anaemia was 96.8%. The majority of anaemic women were in the category of mild (75.3 %) to moderate (16.9%) and severe Anaemia was 7.8%. A significantly higher proportion of anaemia 96.8% (95% CI: 78.0 to 98.0%)]. Though the most affected age group was 21-25 years but the difference noted was not statistically significant.

Conclusion: The study substantiates the existence of mild to moderate form of anaemia among women of reproductive age and underlines the need for iron supplementation to all reproductive women especially during the antenatal period with more attention to the most affected regions.

Keywords: Anaemia among reproductive age; Nutritional problem; Hemoglobin; Mild; Moderate; Severe

Introduction

Anaemia is one of the most common nutritional disorders and it has public health importance in developing countries like India where it is the most widespread nutritional problem and common cause of anaemia in adolescents and women of reproductive age. WHO has estimated that prevalence of anaemia in pregnant women is 14% in developed and 51% in developing countries while it is 65-75% in India [1,2]. As a result, about one-third of the global population (over 2 billion) is anaemic [3]. The economic and social consequences of anaemia, as yet un-quantified, are thought to be enormous including a significant drain on health care, education resources and labour productivity, and reduced physical and mental capacity of large segments of the population. Although the most important determinant factor of anaemia is poor bioavailability of dietary iron in most developing countries, intestinal parasites, especially hookworm infestation are reported to be a major cause [4,5]. Other causes include malaria and congenital hemolytic diseases. The etiology of anaemia in India is not well established and the information available is limited in representativeness of the whole country. Various researchers have come up with different conclusions despite the problems. Because large proportion of population is under poor economic status it results into shortage of minerals and vitamins implying that the bioavailability of much of the iron in the average Indian diet is restricted, presumably affecting the iron status of the community [6]. In view of the discrepancies and non-conclusive results available in the country, we have examined the magnitude of anaemia among women of reproductive age in Ambala district of the Haryana.

What is Anaemia?

Anemia is a condition characterized by a decrease in the concentration of hemoglobin in the Blood [7]. Hemoglobin is necessary for transporting oxygen to tissues and organs in the body. The reduction in oxygen available to organs and tissues when hemoglobin levels are low is responsible for many of the symptoms experienced by anemic people. The consequences of anemia include general body weakness, frequent tiredness, and lowered resistance to disease. Anaemia can be a particularly serious problem for pregnant women, leading to premature delivery and low birth weight. Overall, morbidity and mortality risks increase for individuals suffering from anaemia. Hemoglobin testing is the primary method of anaemia diagnosis. Based on concentration

of hemoglobin in the blood, anaemia is classified into three groups as mild, moderate or severe [8-10].

Mild anaemia

Mild anemia corresponds to a level of hemoglobin concentration of 9.0-10.9 gm/dl for pregnant women and 9.0-11.9 gm/dl for non-pregnant women. Women with mild anaemia in pregnancy have decreased work capacity. They may be unable to earn their livelihood if the work involves manual labour.

Moderate anaemia

Moderate anaemia corresponds to a level of 7.0-9 gm/dl; women with moderate anaemia have substantial reduction in work capacity and may find it difficult to cope with household chores and child care. Available data from India and elsewhere indicate that maternal morbidity rates are higher in women with Hb below 8 gm/dl. They are more susceptible to infections and recovery from infections may be prolonged. Premature births are more common in women with moderate anaemia. They deliver infants with lower birth weight and perinatal mortality is higher in these babies.

Severe anaemia

For all of the tested groups, severe anaemia (<7.0 gm/dl) is more dangerous. Severe anaemia is important because it indicates that there may be one or more serious nutritional deficiencies or an underlying medical problem that requires thorough assessment and treatment.

The purpose of our study is to determine the frequency of different causes of anemia in female patients of reproductive age group and to determine the association between attributes.

Materials and Methods

This was a cross-sectional study of the prevalence of anaemia in females of reproductive aged 15-45 years old. Study was conducted during May to July 2010. Sample size of 598 female from the Barara village of the Ambala district selected for the study. For this purpose, two-stage cluster-sampling approach was adopted. In First stage we selected one rural PHC namely Barara, out of three PHC using simple random sampling. In second stage, we selected one village also namely Barara among the entire village under this PHC. All the reproductive age group women who were eligible and agree to participate have included in the study. The study protocol was approved by the Institutional Review Board of the MM institute of medical sciences & research, Mullana, Ambala. Written informed consent was obtained from each subject for their participation after the nature of the study was fully explained to them in their local languages. From all the participants, prior to enrolment, hemoglobin concentration was measured using portable Sahli´s Haemoglobinometer method. Anaemia was defined as Hgb <11 gm/dl in pregnant women and <12 gm/dl for non-pregnant women. Adjustment was made for pregnancy and then converted into the international cut-off recommended by International Nutritional Anaemia Consultative Group (INACG). Severe, moderate, and mild anaemia was defined as Hgb below 7 gm/dl, 7-9 gm/dl and 9-11.9 gm/dl respectively. Data were entered and compiled to avoid human errors.

Statistical analysis

Statistical Package for Social Science (SPSS) version 11.5. Descriptive statistics were used to show the socio-demographic characteristics of the anaemic patients. One way ANOVA have been used to find out whether mean difference of hemoglobin level among three anaemic groups are significant. Cross tabulations were used to see the association between different attributes. Univariate analysis has been used to calculate the odds ratio. At minimum 95% confidence intervals & p-value of less than 0.05 has been considered significance.

Results

Out of 598 respondents, 579 respondents have identified as anaemic cases (96.8%) therefore the analysis was based on these figures. Out of total anaemic cases, 27 were pregnant. The mean age of the anaemic patients was 27.7 years and about 25%, 50% and 75% patient's age was less than 21 years, 27 years and 34 years respectively. Number of females was highest in 21-25 year age group (25%) followed by age 15-20 years (21%). Considering economic status, mean monthly income was Rs 9643 per month, about 25%, 50% and 75% patients income was less than Rs 6000/- , Rs 8500/- and Rs 12000/- respectively. For hemoglobin status, mean hemoglobin level was 9.5 and, about 25%, 50% and 75% patients it was less than 9.02, 9.24 and 10.4 gm/dl respectively (Table 1). Table 2 shows the distribution of anaemia and its severity as determined by hemoglobin level. When the level of anaemia is disaggregated by severity, the majority of anaemic cases were of mild (75.5%) followed by moderate (16.9%). The mean difference of hemoglobin levels among mild, moderate and severe anaemic group was significant (P<0.05). When we see the association between grades of anaemia with attributes, we find that age category is not showing significant association with grades of anaemia (P>0.05) while income was highly significantly associated with grades of anaemia (P<0.05). Univariate analysis shows that less than 30 years age group women have more chances to have moderate & severe anaemia (<9 gm/dl) comparisons to more than 30 years age group women (Odds Ratio = 1.31, 95% C.I. = 0.88–1.96) while less than Rs 10,000/- income group women have more chances to having moderate & severe anaemia comparisons to more than Rs 10,000/- income group women (Odds Ratio = 4.80, 95% C.I. = 2.96-7.79).

Discussion

It was a community based study in which we included female patients of reproductive age group. In the sample of 579 respondents, 178 were unmarried. In this study, results showed that 96.8% patients were found to have anaemia and majority of the patients (63.9%) were aged 15-30 years. The odds ratio also indicates that 15-30 years women have chances of having anaemia, hence, the maximum of reproductive age group women between 15-30 years are under childbearing stage and they have given births, which is a major sensitive time to cause

	Mean	25th	50th	75th	Range	Coefficient of Variation (CV)
Age (Years)	27.60	21.00	27	34	15-45	28.3%
HMG (mg/dl)	9.483	9.02	9.24	10.40	4.9-17.00	18.04%
Income (Rs)	9643	6000	8500	12000	1300-60000	56.04%

Table 1: Descriptive statistics of the studied subjects.

S.No.	Grades of Anaemia*	Non-Pregnant	Pregnant	Total	Mean±S.D.
	Total Female Examined	570	28	598	9.98 ± 1.72
	Total Anaemic	552 (96.8)	27 (96.4)	579 (96.8%)	9.32 ± 1.52
	Mild (9-12 gm)	417 (75.5)	19 (70.4%)	436 (75.3%)	9.92 ± 0.94
	Moderate (7-9 gm)	92 (16.7)	06 (23%)	98 (16.9%)	7.81 ± 0.60
	Severe (<7 gm)	43 (7.8)	02 (6.6%)	45 (7.8%)	5.88 ± 0.56

*WHO Expert Group (60)

Table 2: General information of the studied subjects.

		<9 gm	9-12 gm	Total	χ^2 test		Odds Ratio	
					Value	P Value	Value	95% C.I.
Age	15-30	98	272	370 (63.9%)	1.76	0.184	1.31	0.88-1.96
	31-45	45	164	209 (36.1%)				
Income	<10,000	120	227	347(59.9%)	45.49	0.000	4.80	2.96-7.79
	≥ 10,000	23	209	232 (40.1%)				

Significant level have considered at P<0.05.

Table 3: Association of the grade of anaemia with attributes.

anaemia. The economic status of most patients in our sample was low; about 6.4% patients had monthly income of less than Rs 5,000/- and 53.5% patients income was vary between Rs 5000/- to Rs 10000/-. About 40% patients income was more than Rs 10000/-. This means that anaemia was more common in low socioeconomic class, the reasons were varied but the most important was inadequate amount of food which shown that the nutritional scores also followed the above pattern and were much less in low income groups (Table 3). Besides age and income, there are some others factors like parity, awareness and health services is also a influencing factors for anaemia which is not observed in this study. In many studies it was found that anaemia is a common problem in reproductive age group women because due to low income they are unable to take dietary food, lack of awareness is also a main cause of anaemia. Iron deficiency is the most common cause of anaemia worldwide. It frequently occurs due to inadequate iron intake, chronic blood loss or disease, mal-absorption, or a combination of all these factors. Similarly data from NNMB surveys [11] showed that iron and folic acid intake in the country in all the age groups was very low. It affects one's development, growth and resistance to infections, and is also associated with mortality among children younger than two years old. Iron deficiency usually develops in a sequential manner over a period of negative iron balance, such as periods of blood loss and/or prolonged iron-deficient diet, accelerated growth in children and adolescents as well as during pregnancy and lactation [12]. Further research is recommended to identify the specific risk factors for anaemia. It may be helpful to implement measures to improve nutritional knowledge and awareness among mothers and health workers. Finally, nutrition education and intervention programs should address anaemia with a focus on both the dietary quantity. All of these interventions must be monitored for effectiveness [13].

Conclusions

It is concluded that the women who were under peak childbearing age as well as low income group have more chances to experience by anaemia because there is a definite role of nutritional deprivation in the development of anaemia and lack of balanced diet especially deficient in protein group has much stronger association with this type of anaemia. There are some others factors like heavy menstrual blood loss and parity levels may account for such an effect and thus calls for iron supplementation to all reproductive women during the antenatal period Although in the tenth five year Plan [14] suggested multipronged strategies for the control of anaemia in pregnancy but there are more attention have required specially in the most affected regions.

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