RESEARCH ARTICLE

ANAEMIA IN PREGNANT WOMEN IN A RURAL BLOCK OF KASHMIR VALLEY: ITS PREVALENCE AND SOCIO-DEMOGRAPHIC ASSOCIATES

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ABSTRACT

Background: Anaemia is a major public health problem in developing countries like India and is especially seen among women of childbearing age, during pregnancy and lactation. Nearly two-thirds of pregnant and one-half of non-pregnant women in developing countries have anaemia, which increases the risk of maternal and fetal mortality and morbidity.

Aims & Objective: The study was designed to assess the prevalence of anaemia in pregnant women and to report the socio-demographic factors associated with anaemia during pregnancy.

Material and Methods: This is a Cross sectional study. The study was conducted in Block Hajan, the rural field practice area under the department of community medicine, Sher-i-Kashmir Institute of Medical Sciences (SKIMS) Soura.482 pregnant women were examined and screened for anaemia. Haemoglobin level, age, education, income, type of family and parity were among the various variables studied. Statistical analysis was done by using Chi-square test using SPSS statistical package version (Chicago 11, IL).

Results: A high prevalence (91%) of anaemia (Hb<11g/dl) was observed. The prevalence of anaemia was significantly higher in those aged ≥ 35 years. A highly significant association was found with woman's age, parity, educational and socio-economic status. However, family type and birth interval were not significantly associated with anaemia.

Conclusion: There is a high prevalence of anaemia among pregnant women and there is need for correcting this to improve the overall health of pregnant women.

Key-Words: Pregnant Women; Anaemia; Haemoglobin; Rural Area

Introduction

Anaemia is defined as decreased haemoglobin level, or circulating red blood cells and it is the most common haematological disorder during pregnancy. Pregnant women with haemoglobin level less than 11g/dl should be considered as anaemic.[1,2] At least half of all anaemia cases have been attributed to iron deficiency.[3] Iron deficiency can be due to inadequate oral intake or poor bioavailability of iron in foodstuffs. It can also occur due to excessive loss of iron from the body. While the diet may contain adequate amounts of iron poor bioavailability of dietary iron is considered as the major reason for the widespread prevalence of iron deficiency anaemia.[4-6] Malaria and hookworm infestations also contribute to the anaemia. Moreover, mothers with fewer intervals between the subsequent pregnancies become anaemic as a result of additional demands and the loss of blood during each delivery. Folate deficiency anaemia has been seen in 25-50% of pregnant women in some areas of India attending the hospital clinics.[4] Studies have shown that folate deficiency anaemia in pregnancy has become a global problem and mainly affects the economically unprivileged population.[7-13]

According to World Health Organization (WHO), in developing countries anaemia affects nearly two thirds of pregnant and one half of non-pregnant women.[7] Prevalence of anaemia in South Asian countries is among the highest in the world. Among the South Asian countries, India has the highest prevalence of anaemia (87%) and half of the global maternal deaths due to anaemia occur in South Asian countries; India contributes to about 80 per cent of the maternal deaths due to anaemia in South Asia. In contrast, only 4-12% of women of child-bearing age in developed countries suffer from anaemia.[14-16] Various studies from different regions of the India have reported the prevalence of anaemia to be between 33-100%.[8,9] According to National Family Health Survey-3 (NFHS-3), prevalence of anaemia was 59% in pregnant women.[10] A United Nations expert panel considered severe anaemia (< 7g/dl) as an associated cause in up to half of the maternal deaths worldwide.[11] In India, anaemia is the second most common cause of maternal death, accounting for 20% of total maternal deaths.[12]

Anaemia during pregnancy can be associated with severe complications like increased risks of maternal mortality, premature delivery, low birth weight, etc. Thus, routine screening tests for anaemia are recommended in pregnant women.[1,2] The present study was planned to estimate anaemia in pregnant women using Sahli's method and to study association between socio-demographic factors such as maternal age, literacy, socio-economic status, family type etc. The aim and objective of the study was to create awareness among the women folk living rural block of mountainous valley of Kashmir, for maintain good physique and hygiene during pregnancy etc.

Materials and Methods

The present study was conducted at the Department of Community Medicine, Sher-i Kashmir Institute of Medical Science (SKIMS) Soura. The study was conducted in Block Hajan, one of the rural field practice area. The study was cross sectional and was carried out from June 2010 to May 2011. All pregnant women attending for their first antenatal appointment were included in the study. A total of 482 pregnant women were examined and screened for anemia. Informed consent was obtained from each patient. Pregnant women with diabetes mellitus, systemic hypertension, pregnancy induced hypertension and those suffering from chronic systemic illnesses were excluded from the study.

After registration, patients were interviewed using pretested, pre-structured questionnaire. Demographic information including age, parity, ethnic, educational and socio-economic status were documented. Vegetarian/Non-Vegetarian status was revealed from them. None of the pregnant women enrolled was a vegetarian. General physical examination followed by systemic examination was done in all participants by same examiner. Haemoglobin estimation was done by Sahli's Method. Sahli's haemoglobinometer was used to determine hemoglobin level and was carried out by a trained laboratory technician. The reading for Sahli's haemoglobinometer is taken by comparing blood drops on filter paper with colour standards. It was taken separately by 2 persons. Typing of anaemia was done as per standard peripheral blood smear examination.[17] Anaemia was classified according to WHO criteria.[18] Haemoglobin concentration of less than 11.0 gm/dl was considered as anaemia. Haemoglobin concentration of 10.0-10.9 gm/dl, 7.0-10.0 gm/dl and less than 7.0gm/dl were considered to indicate mild, moderate and severe anaemia respectively.

Socio- economic status was assessed according to modified Prasad's classification based on consumer price index of rupees for July 2009.Socio-economic status of the study subjects was classified into Class I (≥ 3239), Class II (1620-3239), Class III (972-1620), Class IV (486-972) and Class V (< 486) according to the Indian currency of rupee.[13] (Correction Factor = 32.39).[19]

Statistical Analysis

The data collected was compiled, tabulated and finally analyzed. Descriptive statistics are reported as percentage, mean and standard deviation (S.D). Group comparisons were done by Chi-square test using SPSS package 11.0. P values less than 0.05 were taken as statistically significant.

Results

More than half (74.27%) of the study subjects were from joint families and majority (83.8%) was illiterate followed by primary level education (9.12%). Most of studied subjects (34.32%) belong to younger age group (25-29 yr). As per modified BG Prasad classification based on Consumer Price Index of December 2009, 37.55 %

were from Class IV and 11.2% of subjects were from class V. Of 482 pregnant women studied, 438 were anaemic giving a prevalence of about 91 %. The majority of subjects had moderate anaemia (51.4%) followed by severe anaemia (22.8 %) and mild anaemia (16.5 %).

Table-1: Age-wise Distribution of Degree of Anaemia

Age (Years)	Anaemia				Total
	No	Yes			
		Mild	Moderate	Severe	
	No. (%)	No. (%)	No. (%)	No. (%)	
< 25	12 (15)	26 (32.5)	34 (42.5)	8 (10)	80
25-29	22 (13.4)	32 (19.5)	76 (46.5)	34 (20.7)	164
30-34	10 (6.3)	16 (10.1)	92 (58.2)	40 (25.3)	158
≥35	0 (0.0)	6 (7.5)	46 (57.5)	28 (35)	80
Total	44 (8.2)	80 (16.5)	248 (51.4)	110(22.8)	482
Odd Ratio: 7.52; CI 95%: 12.4-4.6; P < 0.05; χ^2: 51.7484					

Table-2: Association of Anaemia with Socio-Demographic Factors

Characteristic		Normal No. (%)	Anaemia No. (%)	Total No.
Age (in Years)	< 25	12 (17.6)	68 (85)	80
	25-29	22 (13.4)	142 (84.5)	164
	30-34	10 (6.3)	148 (93.6)	158
	≥ 35	0	80 (100)	80
	Odd Ratio: 7.48; CI 95%: 11.5-4.6; P < 0.05; χ^2: 16.4856			
Family Structure	Nuclear	16 (13)	108 (87)	124
	Joint	28 (7.8)	330 (92.1)	358
	Odd Ratio: 6.09; CI 95%: 9.46-1.56; P > 0.0903; χ^2: 2.8674			
Educational Status	Illiterate	28 (6.9)	376 (93)	404
	Primary	8 (18)	36 (81.8)	44
	Middle School	5 (20)	19 (79.1)	24
	Matric or more	3 (30)	7 (70)	10
	Odd Ratio: 6.09; CI 95%: 9.46-1.56; P < 0.05; χ^2: 15.95			
Socio-Economic Status	Upper Class	0	0	0
	Upper Middle	5 (7.7)	60 (92.3)	65
	Middle	23 (12.8)	157 (87.2)	180
	Lower Middle	12 (6.7)	169 (93.3)	181
	Lower	4 (7.14)	52 (92.9)	56
	Odd Ratio: 7.55; CI 95%: 8.45-1.8; P < 0.05; χ^2: 45.15			
Total		**44**	**438**	**482**

Using statistical tool, significant association of anaemia was found with the mother's age group (χ^2=16.4856, p<0.001), educational (χ^2=15.95 p<0.001) and socio-economic status (χ^2= 45.15, p<0.001) (Table 2,3). Other factors such as family structure (χ^2=2.867, p>0.05) and size were not significantly associated with anaemia. All the women with multiple pregnancies were found to be anaemic.

The severity of anaemia was significantly higher in those aged ≥ 35 years as shown in table 1. The peripheral blood smear (PBS) identified normocytic hypochromic and microcytic hypochromic types, morphological characteristics consistent with iron deficiency anaemia.

Table-3: Association of Anaemia with Parity & Birth Interval

Characteristic		Normal No. (%)	Anaemia No. (%)	Total No.
Parity	0	20 (18.2)	90 (81.8)	110
	1	18 (16.7)	90 (83.3)	108
	2	4 (2.9)	132 (97)	136
	3	2 (2.9)	66 (88.2)	68
	4 & above	0 (0.0)	60 (100)	60
	Odd Ratio: 7.23; CI 95%: 9.7-4.4; P < 0.05; χ^2: 33.70			
Birth Interval (in Years)	< 1 year	16 (7.84)	188 (92.1)	204
	1-2 years	12 (8.1)	136 (91)	148
	> 2 years	16 (12.3)	114 (87.6)	130
	Odd Ratio: 7.12; CI 95%: 10.5-7.5; P: 0.3368; χ^2: 2.17			
Total		**44**	**438**	**482**

Discussion

In this study we found a high prevalence of anaemia, majority of the women were suffering from moderate anaemia (51.4%) followed by severe anaemia (22.8%). The severity of anaemia was significantly higher in women aged ≥ 35 years. Most of the anaemic pregnant women were in the 25-29 year age group. We have found a much higher prevalence of anaemia in our study as compared to other studies. Our studies are same as of other part of country studied by, GS Toteja et al. found the prevalence to be 84.9%.[20] while, Umesh Kapil et al. found 78.8% prevalence.[21] Other studies have found an even lower prevalence of anaemia such as by Panghal et al. (51.0%).[22] and National Family Health Survey-3. (59%).[6] The findings of normocytic hypochromic and microcytic hypochromic types of anaemia were predominant in our study which is consistent with other studies.[23-26]

The prevalence of anaemia was significantly more in those above 25 years of age and those from below Class IV socio-economic status, similar to that reported by VP Gautam et al.[27] As in other studies, severity of anaemia was inversely related to educational[27-29] and socio-economic status[27]. The prevalence of anaemia was not significantly related with birth interval and was seen to increase with increase in parity.[30] These factors could be taken care of by timely health education to adolescent girls regarding importance of literacy, delaying the age at marriage, family spacing, small family norm, etc.

The limitations of the study were that the study was limited to those pregnant women who attended the antenatal clinic; no intervention was planned; and worm infestation in these rural women could not be studied. Secondly, haemoglobin estimation was done by Sahli's method whereas the procedure of choice for the same is cyanmethaemoglobin method.[31] As there is no reason to believe that women who are anaemic selectively visit the antenatal clinic, it may be assumed that the estimates of prevalence obtained in this study are a reasonable estimate for the population. In order to establish which group has severe enough anaemia to be considered for intervention, a simple accurate method for estimating Haemoglobin concentration is necessary. In practice however, most clinics in developing countries rely mainly on conjunctival inspection.[32]

During pregnancy, efforts should be geared toward the early detection and treatment of anaemia before delivery. Also, medical staff managing pregnant women should endeavour to investigate anaemic pregnant women further in order to identify the etiology of anaemia whenever possible, despite commencing the usual treatment with iron and folate. Screening for anaemia, treatment of anaemic women, and availability of food fortification (wheat flour with iron and folic acid), milk sugar and salt with iron to build long term iron stores remains the key to reduce anaemia. Even cooking in cast iron utensils improves iron content in diet.[33] The anaemia control programme needs to be implemented more efficiently in these States.

Conclusion

Very high prevalence of anaemia (91 %) early in pregnancy, an indicator of the maternal anaemia, continues to be a major health problem not only in this part of the country but also in many other states of country and worldwide that needs attention. As normocytic hypochromic & microcytic hypochromic blood pictures were predominant, it indicates deficient iron intake/absorption respective of age, type of family and parity as the prevalence was equally high in all these groups of population. In our population, primiparae have an increased risk of anaemia and of a severe type, which is independent of age; however, giving prophylaxis to primiparae only will exclude more than half of all women with anaemia.

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