

A Study of Anemia Among General Population in Field Practice Area of Rural Health Training Centre, Nagpur, India



Medical science

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ABSTRACT

Objectives: To estimate the prevalence of anemia among general population and to study the socio demographic factors associated with anemia.

Material and Methods: A community based cross sectional study was carried out in field practice area of rural health training centre, Indira Gandhi Government Medical College, Nagpur using a simple random sampling technique to select the households. The structured questionnaire was designed to seek the information related to education, occupation, income, socio-economic status, type of diet, physical activity and religion. Hemoglobin estimation of all the study subjects was done by Sahli's method. On similar lines Body Mass Index (BMI) was determined for all subjects. The collected data was analyzed statistically by using percentage and association of various factors with anemia was tested by Z test for difference between two proportions.

Results: Based on the analyzed data, it was found that prevalence of anemia was 90.8 %; 91.1% in females and 89.4% in males. Overall prevalence of anemia was more in women than men but the difference was not statistically significant ($p>0.05$). The difference in prevalence of anemia in different age groups was not statistically significant ($p>0.05$). Males as well as females who were illiterate, belonging to low socio-economic status, those involved in heavy physical activity work, Buddha religion persons and having low BMI were suffering from anemia. Among all these factors, socio-economic status, physical activity and BMI showed statistically significant association with anemia. Conclusions: This study highlights the need for preventive measures for anemia in general population from all the age groups and both sexes instead of reproductive age women only.

Introduction

Anemia continues to be a major public health problem at all ages worldwide. Anemia is one of the most common problem in women and children. Because of the loss of blood every month in females due to menstruation, anemia is more common in female. The anemic person is prone to many diseases. The problem is much more in rural than the urban areas. It is very common in rural population due to poverty and inadequate diet. It ranges from mild to severe form.

Adolescent age is the formative period of life when the maximum amount of physical, psychological and behavioral changes take place.^[1] This is a vulnerable period in the human life cycle for the development of nutritional anemia which has been constantly neglected by public health programmes. In the adult population anemia is a risk factor for cardio-vascular health and early death.^[2] In addition it also causes fatigue and leads to negative impact on cognitive and physical functions as well as on the quality of life. Anemia represents a sign of serious diseases.^[3] Thus, if not treated properly anemia can cause severe complications especially among the older population.

Anemia is one of the most common problems in India. Data on the prevalence of anemia in adult population (non- pregnant females and adult males) is inadequate.^[4] Undiagnosed and untreated anemia is also associated with a decreased quality of life.^[5,6] Therefore in the present study, attempt has been made to estimate the prevalence of anemia in general population from all the age groups.

Material and Methods

This is a community based cross sectional time bound study carried out in field practice area of rural health training centre, Department of Preventive and Social Medicine, Indira Gandhi Government Medical College, Nagpur. A total of 295 patients (7 to 70 years) present at home at the time of house to house survey were included in this study. The study took place from July 2012 to September 2012. Information regarding education, occupation, income, socio-economic status, type of diet, physical activity and religion was obtained by interviewing using a structured questionnaire. All the subjects were subjected to hemoglobin estimation by Sahli's method. Anemia was defined

as hemoglobin of less than 13g/dl in males and less than 12 g/dl in females.^[7,8] Mild anemia was defined as hemoglobin level of 10 to 12.9 g/dl in males and 10 to 11.9g/dl in females, moderate anemia was defined as hemoglobin level of 7 to 9.9 g/dl and severe anemia was defined as hemoglobin level of less than 7g/dl both among males and females respectively. Height and weight was measured in all the study subjects and Body Mass Index (BMI) was calculated as weight in kilograms divided by square of height in meters. BMI was further categorized into low ($<18.5 \text{ kg/m}^2$), normal ($18.5 \text{ to } 24.9 \text{ kg/m}^2$) and high ($>25 \text{ kg/m}^2$) according to WHO criteria.^[9] Statistical analyses were done using percentage and association of various factors with anemia was tested by Z test for difference between two proportions.

Results:

Out of 295 study subjects, 47 were males and 248 were females. Prevalence of anemia was 90.8 %; 91.1% in females and 89.4% in males. Overall prevalence of anemia was more in women than men but the difference was not statistically significant ($p>0.05$). Age-wise prevalence of anemia was more common in adult males; 20-40 years 92.3 % and 40-60 years 100%. Whereas in females anemia was more prevalent in 7-10 years age group and least prevalent in 10-19 year age group. The difference in prevalence of anemia in different age groups was not statistically significant ($p>0.05$). Mild anemia was present in 40.4% males, 46.8 % had moderate type of anemia and 2.2% suffered from severe anemia. Likewise 29.4% females had mild anemia, 54% females was suffering from moderate anemia and 7.7% from severe anemia.

Males as well females who were illiterate, belonging to low socio-economic status, those involved in heavy physical activity work, Buddha religion persons and having low BMI were suffering from anemia. Males who were taking mixed type of diet were more anemic and females on vegetarian diet were more anemic. Among all these factors, socio-economic status, physical activity and BMI showed statistically significant association with anemia.

Discussion:

In the present study, in general population in rural area of Nagpur, overall prevalence of anemia was 90.8%. Similarly Kaur M

et al (2009) found 88.7% prevalence in Jat women and Punia MS et al^[10] noted 96% elderly rural population anemic.

In present study prevalence of anemia was more in females (91.1%) than males (89.4%), which reflect the status of woman in the house as well as society in comparison to man. Rao S et al (2011)^[11] found 77% rural women anemic, Kaur M et al (2009) observed 91.3% rural women anemic, Kim HS et al (2008) found 13.6 % rural women anemic, Malhotra P et al (2004) showed 50% rural women anemic. Bentley ME et al (2003)^[12] observed 49.5% women anemic. Punia MS et al (2009) mentioned mean Haemoglobin level in women was approximately 1gm less than that of men.

Pasricha SR et al (2009)^[13] found that anemia is an important problem among young children living in rural India.

The prevalence of anemia in adolescent girls was 83.3% in the present study. Whereas Chaudhary SM et al (2008) mentioned 35.1%, Toteja GS et al (2006)^[14] showed 90.1%, Rawat CM et al (2001)^[15] found 34.5%, Rajaratnam J et al (2000)^[16] found 44.8 % and Vasanthi G et al (1994)^[17] observed 25% prevalence of anemia among adolescent girls. Kaul M et al observed decline in Hb level with advancing age.

Punia MS et al (2009) noted 50.4% rural elderly population having moderate anemia and 4.8% were severely anemic Malhotra P et al (2004) reported mild anemia in 32.9% males and 30.1% females, moderate anemia in 10.1% males and 19.1% females and severe anemia in 1.3% males and 0.7% females in rural population. Bentley ME (2003) reported mild anemia in 32.4% women, moderate anemia 14.19% and severe anemia in 2.2% women. Rajaratnam Jet al (2000) mentioned severe anemia in 2.1%, moderate anemia in 6.3% and mild anemia in 36.5% adolescent girls. Chaudhary SM et al (2008) found mild anemia in 69.2% and moderate anemia in 30.8% adolescent girls.

Chaudhary SM et al (2008) noted statistically significant association of anemia with the socio-economic status of study subjects whereas age group and type of diet were statistically not significantly associated with anemia similar to the present study. Malhotra P et al (2004) mentioned the prevalence of anemia was more common in rural population from lower socio-economic status group, those who were illiterate, having low BMI and engaged in sedentary or moderate occupation related work activity. Whereas Bentley ME et al (2003) reported anemia was more common in rural women from lower income groups and having low BMI, as well as in women other than from Muslim community.

Conclusions and Recommendations:

A high prevalence of anemia was found in females and subjects having low socio-economic status, heavy physical activity and low BMI. This suggests need to improve socio economic status and nutritional status of the population. There is a need for national programme for prevention of anemia for all age groups rather than limited to reproductive age group.

Table 1 : Age and sex- wise distribution of anemia

Male n=47(%)					Female n=248 (%)				
Anemia	Normal	Mild	Moderate	Severe		Normal	Mild	Moderate	Severe
Age -group (years)	N					N			
7 - 10	04	1 (25)	1 (25)	2 (50)	05			5 (100)	---
10 -19	08	2 (25)	1 (12.5)	5 (62.5)	---	24	4 (16.7)	8 (33.3)	12 (50.0)
20-40	13	1 (7.7)	10 (76.9)	2 (15.4)	---	145	11 (7.6)	52 (35.7)	71 (48.9)
40-60	18	0	6 (33.3)	11 (61)	1 (5.7)	61	6 (9.8)	8(13.1)	40 (65.6)
>60	04	1 (25)	1 (25)	2 (50)	---	13	1 (7.7)	5 (38.5)	6 (46.1)
Total	47	5 (10.6)	19 (40.4)	22 (46.8)	1 (2.2)	248	22 (8.9)	73 (29.4)	134(54.0)

Table2 :Comparison of study population with and without anemia

			Male n=47(%)						Female n=248 (%)			
	Hb gm %		N	> 13		< 13		N	> 12		< 12	
1	Illit-eracy	yes	5	0	0	5	100	23	1	4.35	22	95.7
		no	42	5	11.9	37	88.1	225	21	9.33	204	90.7
2	Socio eco-nomic Status ^a	Low	13	1	7.692	12	92.31	108	5	4.63	103	95.4
		Middle	28	3	10.71	25	89.29	133	15	11.3	118	88.7
		High	6	1	16.67	5	83.33	7	2	28.6	5	71.4
3	Type of diet	Vegetarian	15	2	13.33	13	86.67	84	6	7.14	78	92.9
		Mixed	32	3	9.375	29	90.63	164	16	9.76	148	90.2
4	Physical activity ^b	Sedentary	12	2	16.67	10	83.33	30	8	26.7	22	73.3
		Moderate	15	2	13.33	13	86.67	80	12	15	68	85
		Heavy	20	1	5	19	95	138	2	1.45	136	98.6
5	Religion	Hindu	22	2	9.091	20	90.91	185	17	9.19	168	90.8
		Muslim	4	1	25	3	75	9	2	22.2	7	77.8
		Budha	18	1	5.556	17	94.44	48	2	4.17	46	95.8
		Other	3	1	33.33	2	66.67	6	1	16.7	5	83.3
6	Body Mass Index ^c	Low	30	1	3.333	29	96.67	189	2	1.06	187	98.9
		Normal	13	3	23.08	10	76.92	47	15	31.9	32	68.1
		High	4	1	25	3	75	12	5	41.7	7	58.3

a Z=2.25, p<0.05 b Z= 4.56, p<0.001 c Z= 5.61, p<0.001

REFERENCE

- 1.Gotoh T,KikuchiV., Takano M,Kitu T,Ogata S,Aidu.S.:Epithelioid leiomyosarcoma of the uterine cervix, Gynaecol Oncol:82:400-405:2001.
- 2.Jaff R,Altaras M,Bernheim J et al.Endocervical Stromal sarcoma-A case report.Gynaecol oncol:22:105-108:1985.
- 3.Fadare O,Ghorani N,Stamatikos MD,Tavassoli FA:Mesenchymal lesions of the uterine cervix.Pathol Case Reviews,11:140-152:2006.
- 4.Taylor HB,Norris HJ:Mesenchymal tumors of the uterus.IV.Diagnosis and prognosis of leiomyosarcomas. Arch Pathol.82:40,1966.
- 5.Bell SW,Kempson RL,Hendrickson MR:Problematic uterine smooth muscle neoplasms,A clinicopathologic study of 213 cases,Am J Surg Pathol.18:535,1994.
- 6.Wright JD,Resenblum K,Huenffner PC,Mutch DG,RaderJS :Cervical sarcomas:An Analysis of incidence and outcome.Gynaecol Oncol,99:348-51:2005.