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Research Article

Anemia: a non-communicable disease, its prevalence in adult patients of Telangana region of South India; a semi-urban tertiary care teaching hospital study

Rajendra Kumar Jatav[1]*, Mamta B. Kumbhare[2], Pekra Ragini Rao[3], Alugubelly Keerthi Reddy[3], Rachana Chennamaneni[3]

[1]Associate Professor, [3]P.G. Student, Department of Medicine, Chalmeda Anand Rao Institute of Medical Sciences (CAIMS), Bommakal-Karimnagar-505001, A.P., India
[2]Senior Specialist, Department of Anesthesia, Dhanvanthari Hospital, NTPC, RSTPS, Jyothinagar, Karimnagar-505215, A.P., India

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***Correspondence:**
Dr. Rajendra Kumar Jatav,
E-mail: krajendramamta@gmail.com

ABSTRACT

Anemia is a one of the major health challenges to global development in this century and this non-communicable disease is rapidly rising in both developed and developing countries. Anemia is wide spread in India but it varies in severity from state to state and zone to zone. Poor diet, lack of sense of hygiene which lead to worm infestations, lack of health consciousness, social taboos and poor economic status all contributes to overwhelming prevalence of anemia. Our analysis suggests prevalence of anemia is very high in adult age group and especially in female patients. Chronic anemia's have significant morbidity and mortality in untreated patients, because anemia is a sign, not a diagnosis, an evaluation is almost warranted to identify the underlying cause.

Keywords: Anaemia, Prevalence, Non-communicable diseases

INTRODUCTION

According to WHO anemia is the qualitative and or quantitative diminution of hemoglobin or RBC or both in respect to the age and sex of the individual and as per Robbins[1] anemia is defined as a reduction of the total circulating red cell mass below normal limits. Anemia is a major problem in India spatially in pregnant women but young adult women between the ages 15 to 25 where who are non-pregnant are also especially vulnerable to anemia. Though anemia is less common among male but they also suffer from anemia in a considerable extent to their counterpart in developed and developing countries. Adverse effects of anemia are various as for example on nervous system, on physical response to diseases, physiological stressed condition like pregnancies. Iron, vitamin B_{12} and folate deficiencies are the common causes of anemia. Anemia is wide spread in India but it varies in severity from state to state and zone to zone. Poor die, lack of sense of hygiene which lead to worm infestations, lack of health consciousness social taboos and poor economic status all contributes to overwhelming prevalence of anemia. Our objective is to find out the prevalence of anemia even in a medical OPD patient of tertiary teaching health care centre. Majority of the anemia can be treated in primary or secondary health care system. Even primordial prevention can arrest a sizable number of anemias before development. Despite of different programmers taken by the government for primary and primordial prevention of anemia among vulnerable groups the prevalence is on the rise. So we want to focus on the prevalence so that newer innovative

and effective methods can be taken against this growing menace.

METHODS

This was a single center and cross sectional study conducted by the department of medicine at Chalmeda Anand Rao institute of medical sciences, a semi-urban tertiary care teaching hospital, Telangana Region - Bommakal-Karimnagar, Andhra Pradesh, India, over a period of 24 months, from January 2012 to January 2014. The aim of the present study was to find out the prevalence of anemia in adult patients in a medical OPD of a tertiary teaching health care centre in Telengana region of south India. During the study period we enrolled 5505 adult patients (≥18 years) who were referred or presented in out-patient department for evaluation of anemia. Out of 5502 adult 1102 patients were diagnosed with anemia. Hemoglobin was estimated using cyanmethemoglobin method with the help of Drabkin`s solution and colorimeter.[2]

The patients were divided into six sub-groups: young age group (18 - 30 year), young adults (31 - 40 year), adults (41 - 50 year), late adults and old ages (51 - 60 year), old age to early geriatric group (61 - 70 year) and geriatric age group (>71 year). In our study the definition of anemia is, if the Hemoglobin level is less than 13 g/dl for men and 12 g/dl for women (non-pregnant) based on World Health Organization. Anemic patients were classified into following groups: Severely anemia (Hb <7gm/l), moderate to mild anemic (Hb 7-10 gm%), mild anemic to low normal (Hb 10-13 gm/l), absolutely normal (Hb >13-15 gm/l) and healthy patients (Hb >15 gm /l).

RESULTS

Total 5505 adult patients were enrolled and of these 1102 diagnosed with anemia and thus giving raise a moderate prevalence of anemia (20.01%). Table 1 shows numbers of adult patients (N=1102) diagnosed with anemia and of these 40.83% was male (N=450) and 59.16% was female (N=652). Anemia is more prevalent in females as compare to male because menstruation & pregnancies make women more vulnerable to anemia. Table 2 shows anemia is more prevalent in younger (35.39%) age group and adult age group (24.04%) patients and less common in older the group (7.25% & 2.27%). Our result suggests prevalence of anemia is very high in reproductive age group female and adolescence females (Table 1, 2 & Figure 1).

Table 1: Sex ration in the present study.

Sex	Number of cases	Percentage of total cases
Male	450	40.83%
Female	652	59.16%
Total	1102	100%

Table 2: Age distribution of cases.

Range of age	No. of cases	Percentage (%)
18-30 year	390	35.39%
31-40 year	265	24.04%
41-50 year	217	19.69%
51-60 year	120	10.88%
61-70 year	80	7.25%
>70 year	30	2.72%

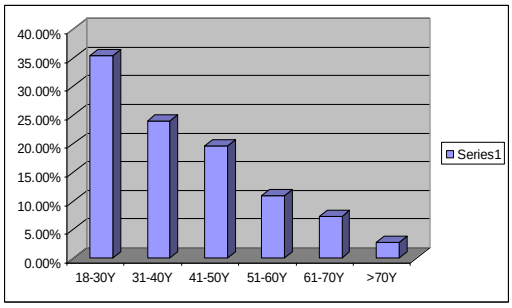

Figure 1: 3 Dimensional columns shows age distribution and percentage of anemia in present study.

Table 3: Severity of anemia according to Hb level.

Hb level (gm/l)	No. of cases	Percentage
<7	30	2.72%
7-10	345	31.30%
10-13	652	56.16%
13-15	70	6.35%
>15	05	0.45%
Total	1102	100%

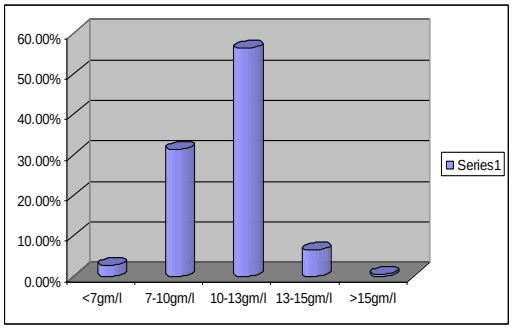

Figure 2: 3 Dimensional cylinder shows severity of anemia according to blood level of Hb (g/l).

Table 4: Distribution of cases according to religion.

Religion	No. of cases	Percentage
Hinduism	814	73.86%
Islam	200	18.14%
Others	88	7.98%

Hemoglobin level was severely decreased in 2.27%, but majority of adult patients shows mild (56.16%) and mild to moderate degree of anemia (Table 3 & Figure 2). Anemia is more prevalent in Hindu patients as compare to Islamic patients (Table 4).

Table 5: Prevalence of anemia in males and females of different age groups.

Hb Level	<7 gm/l		7-10 gm/l		10-13 gm/l		13-15 gm/l		>15 gm/l	
Age (years)	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
18-30 year	4	7	75	98	179	202	12	16	1	0
31-40 year	3	5	35	44	70	98	9	12	1	1
41-50 year	2	3	20	25	21	30	3	5	0	0
51-60 year	2	1	7	10	12	13	3	4	0	1
61-70 year	1	1	9	12	8	10	1	2	1	0
>70 year	1	0	4	6	4	5	1	2	0	0

Table 6: WHO classification of public health significance of anemia in populations on the basis of prevalence estimated from blood levels of hemoglobin.

Category of public health significance	Prevalence of anemia (%)
Sever	40 % or higher
Moderate	20.0 - 39.9%
Mild	5.0 - 19.9%
Normal	4.9% or lower

DISCUSSION

Anemia is a condition in which the number of RBC (and consequently their oxygen-carrying capacity) is insufficient to meet the body's physiologic needs. Specific physiologic needs vary with a person's age, gender, residential elevation above sea level (altitude), smoking behavior, and different stages of pregnancy. Iron deficiency is thought to be the most common cause of anemia globally, but other nutritional deficiencies (Including folate, vitamin B_{12}, and vitamin A), acute and chronic inflammation, parasitic infections, and inherited or acquired disorders that affect hemoglobin synthesis, RBC production or RBC survival, can all cause anemias. Anemia is defined as a condition of decreased RBC mass, reflected in decreased Hb and Hct level. Signs traditionally used in the physical diagnosis of anemia are pallor of palpebral conjunctiva, nail beds, face, tongue, palms and palmar creases. Severity of anemia or rough estimation of Hb level can be decided on the basis clinical features like: fatigue, lethargy. Dizziness, headache, depression, cognitive impairment and exertional dyspnea, which are frequent in chronic anemia with Hb levels between 8 to 12 g/dl, marked reduction of exercise capacity, difficulty in breathing at rest and rapid or irregular heart beat at rest indicate Hb level is less than 8 g/dl. There is also an increased risk of angina pectoris, myocardial infarction and TIA. Hb level has been reported to be more precise in diagnosis of anemia than Hct level. Mild Anemia is a misnomer; iron deficiency is already advance by the time anemia is detected. The deficiency has consequences even when no anemia is clinically apparent.

Anemia is a common concern in female young and has significant morbidity and mortality, because anemia is a sign, not diagnosis, an evaluation is almost always warranted to identify the underlying cause. One of the major health challenges to global development in this century is the rapid rise NCDs in both developed and developing countries. This growing challenge threatens economic and social development as well as the lives and health of millions of people.[10] Considering high prevalence of anemia in general population and direct impact on patient health, anemia causes important physiologic effect on the cardiovascular system, however studies measuring anemia prevalence in population is rare. Paulo suggest that mild anemia was independent modifiable risk factor, for older adults. Most practical definition of anemia is the one given by the World Health Organization, hemoglobin concentration less than 13 g/dl for men and 12 g/dl for women.[11,12] We found moderate prevalence (20.01%) of anemia in Telengana region of south India. Based on these findings females are well ahead of males in the population of anemic and this problem in Telengana region of south India. Anemia is almost exclusively prevalent in females and this feature led many researchers and workers like R. G. Viveki, A. B. Halappanavar et al.[3] Higher prevalence of nutritional anaemia in pregnant women is a major problem in India. Among adolescence girls 60% were anemic as observed by Toteja GS et al. [4] In our observation 35.39% % of all anemic patients belonging to 18 - 30 years age group are females. Priyali Pathak et al.[5] observed micronutrient deficiency in diet like zinc, iron, folate, iodine etc. in pregnant women are the causes of low birth weight babies and there is no denying the fact the low birth weight babies contribute to increase prevalence of anemia in pediatric age group. Bharati et al.[6] observed that non pregnant females below age 25 years and 15 to 49 age of

pregnant females are anemic. According to Dr. Vijaynath et al.[7] iron deficiency anemia has deleterious effect on mother and fetus. Literacy, occupation, consumption of iron, vitamin B_{12}, folate, parity, fertility all counts in the development of anemia and this is also seconded by K. N. Agarwal et al.[8] Vegetarian and girls specially after menarche are at risk for development of anemia as observed by Verma M. et al.[9] In our study group patients usually live on vegetarian diets not for habit but for poverty in most of the cases. Also the population the hospital usually caters is young. So prevalence of anemia is evident in this age group here. Moreover poor sense of hygiene, going to natures call bare footed ingesting contaminated pond water in the name of God etc. contribute to worm infestation including hook worms and cause chronic iron deficiency and megaloblastic anemia. Muslim patients are less in numbers that does not mean that they are more healthy but this is because less health consciousness and education. So there is less turn up of Muslim patients in hospitals. Our present study revealed significant increase in the prevalence of anemia by increasing age (18-30 year & 35.39%) and less in older age group. However, our study pointed out anemia is not limited to aged people but also targeting younger patients.

CONCLUSION

Clinician should be aware that anemia is rapidly rising non-communicable diseases and more prevalent among in growing age and if it is not corrected it may lead to increased morbidity and mortality, so treatment of anemia may be helpful to reduce the risk. This is a single center study, and findings may not be generalized to different populations.

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Abbreviations

Hb: Hemoglobin, RBC: Red blood cells, Hct: Hematocrit, TIA: Transient ischemic attack, OPD: Out-patient department. NCDs: Non-communicable diseases.

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