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RESEARCH ARTICLE

CLINICAL & HEMATOLOGICAL PROFILE OF ANEMIA AMONG MALE PATIENTS: A SNAPSHOT STUDY FROM TERTIARY CARE CENTRE OF WESTERN INDIA

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Abstract

Background: In India, the prevalence is 47-50% for all ages while as per NFHS-4, the prevalence of anemia among men 15-49 year age (<13gm/dl) is 18.5% for urban & 25.3% for rural areas. Most of the programs are directed at the Reproductive & Adolescent age group & mainly for females & children. The above data shows 1 in 4 men suffers from anemia & may face complications & consequences.

Objective: Thus the present study is aimed to assess the Clinical & Hematological profiles of Male anemic patients admitted to Medical wards.

Methodology:100 Male patients admitted to the medical ward for anemia at tertiary care hospital affiliated with the medical college, during the study period, who met inclusion criteria and who were willing to participate in this study were subjected to further evaluation. Along with clinical data, demographic information was also obtained.

Results: Severe Anemia was present in 70% of males. Moderate anemia was seen in 30% of males with a Mean age of 43 years. Hence in male patients, anemia should be screened vigilantly so that we can treat it and avoid complications. Nutritional deficiency is the most common etiology found. All patients had pallor. The most common symptom observed were weakness (85%) followed by easy fatigability (82%)and breathlessness on exertion (47%). In peripheral smear examination, 50% of males were having microcytic hypochromic anemia. The most common type of anemia was Iron deficiency anemia observed in 50% of patients. In male anemic patients, a thorough evaluation of the type of anemia will make etiology-specific treatment more effective.

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Introduction:-

Worldwide, anemia affects over two billion people and the World Health Organization (WHO) has estimated that half of these are due to iron deficiency. Iron deficiency is not only the most prevalent but also the most neglected nutrient deficiency in the world. Iron deficiency is the most prevalent single deficiency state on a worldwide basis. Prevalence of anemia in the South Asia is amongst the highest in the world, mirroring overall high rates of malnutrition. [1]

WHO defined anemia as hemoglobin concentration less than 13 g/dl in adult males or hematocrit value less than 0.33. In India prevalence is 47-50% [2] while as per NFHS-4, prevalence of anemia among MEN 15-49 YEAR AGE (<13gm/dl) is 18.5% for urban & 25.3% for rural area. Similar results are for Gujarat state as well with 17.8% & 25% in urban & rural respectively. [3]

Most of the programs for anemia control are directed for Reproductive & Adolescent age group & mainly for females & children. Above data shows 1 in 4 men suffers from anemia & may face the complications & consequences. Thus there is dearth of data about the male anemia patterns. Thus present study is aimed to assess Clinical & Hematological Profile of Male anemic patients admitted at Medical wards.

Materials & Methods:-

100 Male patients admitted in medical ward for anemia at tertiary care hospital affiliated with medical college, during study period, who met inclusion criteria and who were willing to participate in this study were subjected for further evaluation. Inclusion criteria included Age group- above 12 years , Hemoglobin level ≤ 10 g/dl and Exclusion criteria includes Age group < 12 years , Female patients , Hemoglobin >10mg/dl. The study participants were recruited through Simple random sampling by random number of tables. All those patients admitted in a month were line listed & based on selected random number patients were recruited till the desired sample was achieved. It took three month to complete data collection process. Sample size was calculated using proportion of 20% anemic male patients & 8% of precision through the formula of $n=3.96*p*q/l^2$. [4] The final product of the above calculation was arrived at 99 which were rounded to 100.

Along with clinical data, demographic information in form of age, socio-economic status was obtained. A detailed history was taken including the chief complaints, which were in form of easy fatigability, breathlessness on exertion, edema feet, anorexia, palpitation, and jaundice, Glossitis, bleeding from any site, numbness, paraesthesia and any disturbances in gait. Past history and family history pertaining to anemia was also recorded. Specific inquiry regarding hemolytic, hemorrhagic, hepatic or endocrine disorders were made and noted. In the personal history, details of the dietary pattern (vegetarian and mixed.), addictions (tobacco in different forms, alcohol), appetite were obtained Drug history for ingestion of any offending drug which might have caused anemia (Aplastic, hemorrhagic or hemolytic) was also determined. Patients were classified in lower, middle and upper socio-economic class according to monthly family income as per Kuppu swami's socioeconomic classification. [5] A thorough physical examination was performed with special emphasis on signs of anemia on general examination like pallor in conjunctiva, tongue, palms, nails, lips and mucus membranes. Other relevant findings on general examination like icterus, mouth ulcer, cheilosis, koilonychias, edema feet and face, neck veins, skinpigmentations, purpura, petechial, lymphadenopathy and stigmata for endocrinopathy. Vital data including temperature, pulse, blood pressure, respiratory rate were noted. Nutritional status was assessed with the help of measuring height and weight as well as by calculating the body mass index. Systemic examination included that for cardiovascular system (Water hammer pulse, signs of CCF, hemic murmur), abdomen (ascites, organomegaly) and CNS examination (higher functions, sensory system, gait disturbances, motor system, reflexes).

Ethical Approval:

Prior approval of the institutional ethics committee was taken before commencing the study. Data collected from the selected subjects were internally compared and statistically analyzed by using descriptive and inferential statistics through Microsoft excel & Epi info based on formulated objectives of the study.

Results:-

Table 1:- Sociodemographic Profile & personal profile of study participants (n=100).

Variable	Frequency (%)
Age Group	

13-20	12
21-30	07
31-40	18
41-50	23
51-60	15
61-70	12
71-80	09
81-90	04
Mean Age	39.33+-2.3 years
Residence	
Urban	26
Rural	64
SE class	
Middle	33
Lower	67
Dietary Habit	
Pure Vegetarian	05
Lacto Vegetarian	24
Ova Vegetarian	03
Lacto ova Vegetarian	35
Non Vegetarian	33
Personal Habit	
Tobacco smoker	22
Tobacco chewer	45
Alcoholic	14

As per Table:1, Anemia was prevalent in males of all age group but highest in fifth decade which was around 23%, followed by 15% in 6^{th} decade, 18% in 3^{rd} decade, 12% in 7^{th} decade and 2^{nd} decade, 7% in 3^{rd} decade, 9% in 8^{th} decade. 67% males were vegetarians and 33% males were non vegetarians. 5% males were pure vegetarians who were taking various types of food from natural sources only like cereals, pulses, vegetables, fruits and nuts (no milk or dairy products, no eggs, no meat, no fish). 24% males were Lacto-vegetarian who were taking milk and Dairy products. 35% males were Lacto-ova-vegetarian who was taking cereals, pulses, fruits, vegetables, milk and milk products and eggs. 3% males were Ova-vegetarian who were taking eggs in addition to vegetarian food items but no other items. Among non-vegetarian males, their diet consists of chicken, meat, fish, eggs, milk & dairyproducts.

22% Males were Bidi smokers, 14% males were Alcoholic and 45% male were Tobacco chewers. This study shows anemia was more common in lower socio economic males (67%) in comparison to middle and higher socio economic males (33%). Patients were classified in lower, middle socio-economic class according to monthly family income as per Kuppuswami's socio-economic classification [(5)]

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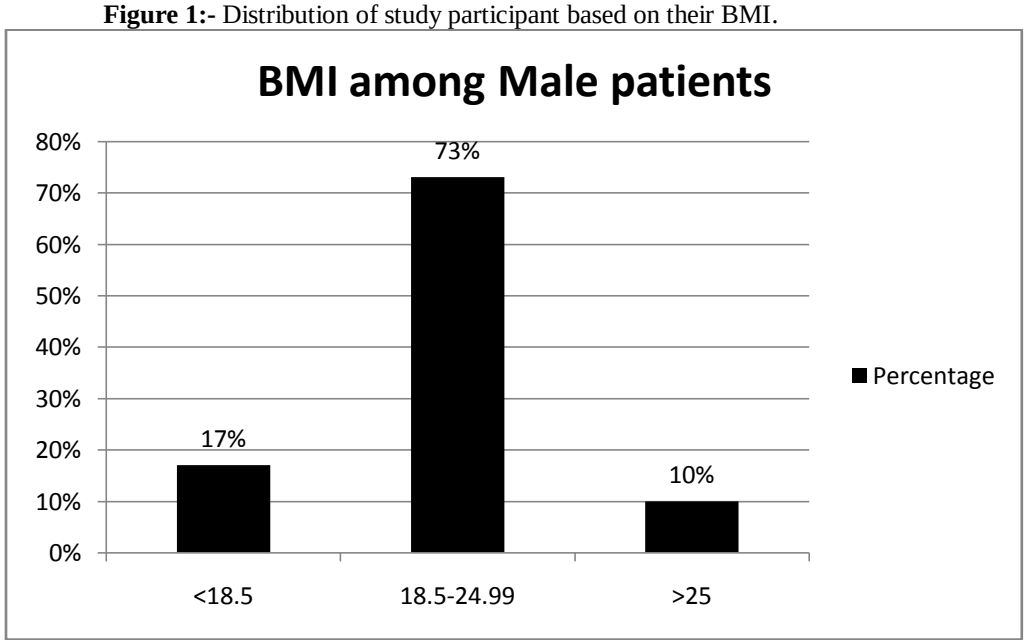
Figure 1:- Distribution of study participant based on their BMI.



In our present study, 17% males had low BMI (<18.5 kg/m^2),73% males BMI (18.5-25 kg/m^2) and 10% males had BMI above 25 kg/m^2.

Table 2:- Distribution of study participants according to presenting symptoms (n=100).

Symptoms*	**No. Of Patient (%)**
Weakness	85
Easy fatigability	82
Dizziness	46
Palpitation	44
Breathlessness onexertion	47
Frequentfalls/syncope	16
Upper GI LOSS(Hematemesis)	13
LowerGI loss (hemorrhoids/ piles/analfissure)	18
Abdominaldistension	04
Sensorydisturbance	04
Tinglingandparaesthesia	14
Anorexia	46

*= Multiple responses

The most common symptom observed in our study was weakness (85%). Second most common symptom observed in our study was easy fatigability (82%).Third most common observed in our study was breathlessness on exertion (47%). Other symptom observed in our study were palpitation (44%),anorexia(46%), upper GI blood loss (13%),lower GI blood loss(18%),dizziness(46%),abdominal distension (4%), tingling and paraesthesia (14%), sensory disturbances (4%). In our present study, male patients were admitted to hospital for various co-morbid conditions, we had focused on symptoms likebreathlessness on exertion, easy fatigability, weakness, palpitation, dizziness, anorexia along with comorbid conditions.There was significant improvement in comorbid conditions after correction of anemia done. It would help in improving quality oflifeofpeople.

Table 3:- Distribution of study participants according to presenting signs on physical examination (n=100).

Signs	**No. Of patient (%)**
Pallor	100
Glossitis	56

Cheilitis	45
Edema feet	37
Hemic murmur	34
Koilonychias	27
Hepatomegaly	26
Lymphadenopathy	24
Splenomegaly	24
Apthous ulcers	23
Mucocutaneus hyperpigmentation	21
Jaundice	20
Clubbing	04
Objective sensory disturbance	04
Gait disturbance	04

* Multiple Responses

Out of 100 male patients, the sign associated with anemiawas Pallor of conjunctiva, nails and tongue which was present in allmales, followed by Glossitis in 56 patients , Cheilosis in 45 patients ,Odem of Feet in 37 patients, Koilonychias in 27 patients, Apthousulcers in 23 patients, Mucocutaneus Hyper pigmentation in 21 patients, Jaundice in 20 patients, Lymphadenopathy in 24 patients, Splenomegaly in 24 patients, Hepatomegaly in 26 patients, sensory disturbance in 4 patients , Gait disturbance in 4 patients and Hemicmurmurin 34 patients.

In present study, 30 male patients were having hemoglobinbetween 7.1 to 10 gm. %. So 30% males were having moderate anemia. [6] 70 male patients were having hemoglobin below 7 gm. %. So 70 %males were having severe anemia. [6] The intensity of anemia was decided according to ICMR grading system. [6]

Figure 2:- Hemoglobin level in patients of anemia.

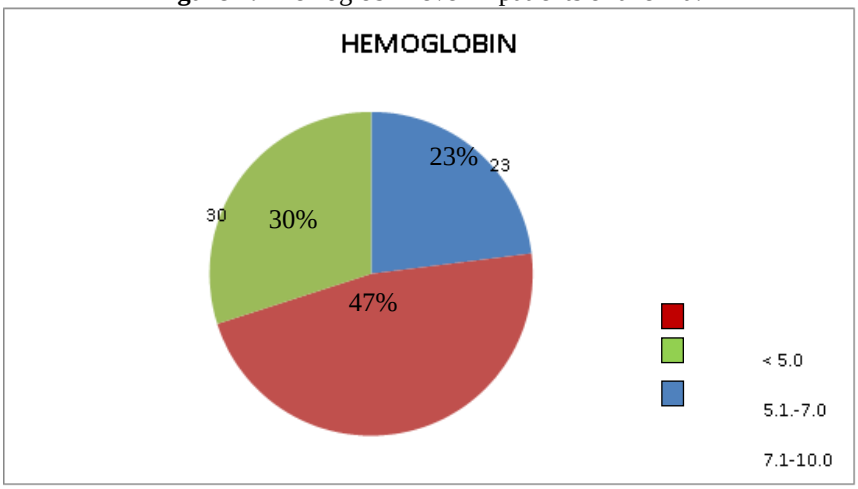


Table 4:- Types of anemia as per peripheral smear of study participants (n=100).

RBC morphology	**No. of Patient**
Hypochromic microcytic	50
Macrocytic	19
Dimorphic	15
Normocytic normochromic	08
Pancytopenia due to aplastic crisis	03
Hemolytic	05
Total	100

In our present study, most common RBC morphology was microcytic hypochromic (50%) which was associated with iron deficiency. Dimorphic picture was found in (15%) males. It shows combined deficiency of iron, vit B12,

folic acid. Macrocytosis was found in 19% males. 8% males were having normocytic normochromic pattern in peripheral smear in our present study. 3% males were having pancytopenia in peripheral smear which has correlation with aplastic crisis. 5% males were having Hemolytic pattern in peripheral smear which was associated with hemoglobinopathies like thalassemia and sickle cell anemia,

Table 5:- Distribution of various indices (MCV, MCH, MCHC) for measurement of anemia among study subjects (n=100).

TypeofAnemia	MCV	MCH	MCHC	Reticulocyte count%
Normal	90FL	30pg	33 g/dl	0.8
Irondeficiency	65.0	24.33	24.00	0.99
Megaloblastic	109.0	30.40	31.60	0.54
Dimorphic	91.0	27.98	24.42	1.06
Hemolytic	82.7	28.57	31.14	4.9
Aplastic	102.5	25.45	27.25	0.20

There was vast variation among various forms of anemia & Hematological indices.

Discussion:-

Table 1:- Comparison of Age Distribution As Reported By Various Studies.

Studies	Maximum Proportion in Age group	Averageageinyears
Mark Ruth Prassana etal(2017)[7]	56-65	59
MilindChandurkaretal(2017)[8]	40-49	44
ReenaKoulietal(2016)[9]	20-30	29
Nasrin Qureshi etal(2015)[10]	41-50	43
PresentStudy(2020)	41-50	43.00

Table compares age distribution of anemia among present study with Milind Chandurkar teal(2017)[8] Mark Ruth Prassana et al (2017)[7]'Reena Kouli et al(2016)[9]and Nasrin Qureshi et al (2015)[10]'In present study, Anemia was more common in age group 41-50 years with mean age of 43 years which was consisted with all above mentioned studies except Reena Kouli et al (2016)[9] in which maximum incidence was seen in 20-30 year age. In present study, 63% males wereabove 40 years and 37% males werebelow 40 years .So our present study shows that we needto be alert inmale patients above 40 years regarding screening of anemia so that we can treat it and avoid complications. In present study, 67% males were coming from lower socio-economic class. These findings were comparable with Mehta B.c.et al [11] (60%). Unbalanced diet with deficiency of nutrients likeiron, Vit-B_{12}, Folic acid and protein was responsible for anemia in lower socio-economic class. In present study, 33% males were coming from Middle and higher Socio-economic class. These findings were comparable with Mehta B.c.etal [11] (40%) Habit of junk food consumption may because of anemia in middle and higher socio-economic class.

Anemia is more prevalent in lower socio economic group due to the following possible reasons: 1. More prevalence of nutritional deficiencies, 2.Delay in seeking health care facilities and medical help, 3. More prevalence of worm infestations 4. Lack of knowledge about nutrition, hygiene and the available facilities. 5. Ignorance.

Table 2:- Comparison of Hemoglobin level As Reported by Various Studies.

Hemoglobin (Gm. %)	Mark Ruth Prassana et al (2017)[7]	Nasrin Qureshi et al (2015)[10]	Reena Kouli et al (2016)[9]	Present study
Severe(<8)[8]	26	10.22	30	79
Moderate(8-10)[8]	42	43.44	35.26	21

Severe anemic males are more prone to suffer from community acquiredinfections and heart failure .This shows that when anemia present in themales,itisusuallysevereandso itshould bevigorouslytreated.

Symptoms	Milind Chandurkar et al (2017)[8]	Mehta C.[11] et al	PresentStudy
Easy Fatigability	80	72.82	82

Breathlessness on excretion	76	64.26	47
Palpitation	64	56.17	44
Edema feet	40	21.19	37
Giddiness	46	60.93	46
Jaundice	18	0.00	20
Paraesthesia	12	0.00	4.20
Pallor	94	100	100
Koilonychias	20	21.90	27
Hemic murmur	22	0.00	34
Palpable liver	0	27.10	26
Palpablespleen	0	26.06	24
Edema feet	40	21.90	37
Objective sensory disturbance	0	0.00	4
Gait disturbance	0	0.00	4

Table 3:- Comparison of clinical symptoms & various signs of anemia with other study.

Table 4:- Percentage distribution of participants as per RBC morphology in peripheral smear in various studies.

RBC morphology	**Mark Ruth Prassanaetal (2017)[7]**	**Milind Chandurkaretal (2017)[8]**	**Nasrin Qureshietal (2015)[10]**	**Present Study%**
Hypochromicmicrocytic	33	42	46.50	50
Dimorphic	12	27	1.36	15
Macrocytic	2	12	9.88	19
Normocyticnormochromic	53	11	42.25	8
Hemolytic	0	0	0	5
Leukemia	0	8	0	3

So the present study emphasizes that in male patients, we should notignore sign and symptoms of anemia even in the presence of other comorbid conditions. Rather even in male patients, we should vigilantly look for anemia. There was significant improvement even in co morbid conditions after correction of anemia done. It will help in improving quality of life of people. Pallor was commonest signfound in present study (100%) which was comparable with Milind Chandurkar et al(94%) [8] and Mehta B. Cetal(100%) [11] Koilonychias as was found in 27% in present study which was comparable with Milind Chandurkar et al (20%)[8] and Mehta B.c.etal al (100%)[11] Hemic murmur was found in 34% in present study which was Comparable with Milind Chandurkar et al (22%) [8]. It was present in severe anemic males whose HB below 6 gm. /dl.

Conclusion & Recommendations:-

Anemia was prevalent in males of all age group but highest incidence (23%) seen in 5thdecade (41-50yearage) with mean age of 43 years. Hence in male patients, anemia should be screened vigilantly so that we can treat it and avoid complications. Nutritional deficiency is the most common etiology found in Irondeficiency anemia as well as Megaloblastic anemia. Anemia was more prevalent in strict vegetarian males (67%) as compare to non-vegetarians. (33%).Lower socio economic status was responsible forhigh incidence of nutritional anemia. BMI per se does not have much correlation with anemia. Diet, Alcohol addiction, worm Infestations, personal hygiene, drugs like phenytoin, anticancer drugs, Low socio economic status are considered as modifiable risk factorsof anemia. Risk factors should be corrected by patient education, proper sanitation, removal of offending agent and proper balanced diet. The most common symptom observed were weakness (85%) Followed by easy fatigability (82%) and breathlessness on exertion (47%). so any male patient presenting with such symptoms should be vigilantly investigated for anemia. There is significant improvement even in co morbid conditions after correction of anemia done. It will help in improving quality of life of people. Pallor of skin and mucus membrane was the most common sign present in 100 % cases followed by Glossitis in 56% cases. So it suggests that habitual inclusion of these in examination of all male patients will assure not missing anemia in male patients even in presence of co morbid condition. In peripheral smear examination, 50% males were having microcytic hypochromic anemia. Most common type of anemia was Iron deficiency anemia observed in 50% patients. Those in male anemic patients, thorough evaluation for type of anemia will make etiology specific treatment more effective.

Limitations of the study:-
As it is a hospital based study, these results cannot be extrapolated to the general population. Many patients could not produce previous imaging studies and laboratory investigations. VitB12, serum folate level, serum iron level, TIBC LEVEL, protein electrophoresis, immuno histo chemistry, and cytogenetic are not possible in our setup. Endoscopy was not done in subjects as it is not available in our institute. Patient with unidentified etiology could not be evaluated further.

Conflict of Interest:
Declared None

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Nil.

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Nil.

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