A Prospective Observational Study on Prevalence and Risk Factors of Anemia in a Tertiary Care Hospital

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Abstract:

Back ground- Anemia is a condition where hemoglobin levels in blood falls below the normal levels. RBC and their oxygen carrying capacity are insufficient to meet physiological needs. However for detecting anemia the WHO has recommended certain cutoff levels of hemoglobin for different ages below which the individual is consideration is anemic.

Objectives: To access the prevalence and risk factors of anemia in a tertiary care hospital.

Materials and methods: A Prospective observational study was conducted in Santhiram medical college and general hospital, Nandyal from July 2017 to December 2017, to study the prevalence of anemia and risk factors among population, where clinical data are collected by using case sheets to study anemic conditions were diagnosed based on complete blood picture (HB, MCV) levels, past medical history and dietary habits.

Study design: A total of 84 patients were evaluated for their anemia condition, out of which 69 patients showed positive results, to anemia. The prevalence and risk factors of anemia was summarized as count and percentage. A chi-square test was used to asses, the prevalence among different age groups-gender and risk factor identification based on diet, age group, past medical history.

Results: out of all the subjects 72.6% (n=61) are anemic, in this female subjects showed 78%,male subjects showed 28% and Risk factor assessment was done.

Discussion: In the current study we assessed the prevalence and risk factors of anemia in population presiding in Santhiram general hospital, Nandyal. In our study prevalence of anemia is alarmingly high. Microcytic type is highly observed. Female subjects are more prone to anemia compared to male subjects. Anemia condition is common in the age group of 55-65 years. Chronic kidney disorder is the major risk factor for causing anemia. This was compared to World Health Organization criteria.

Conclusion: Our study proves that prevalence of anemia is more in female with age group 55-65 years in that Microcytic anemia is commonly observed. Our study advises that, age, traditional eating habits, past medical history of the subjects are main reason for arising anemia. Providing health and nutrition education will be the key involvements to prevent and control this huge health problem.

Key words: **Anemia, prevalence and risk factors.**

I. INTRODUCTION

Blood is made up of fluid called plasma which contains RBC, WBC, Platelets, and proteins. Red blood cells are made up in bone marrow and release into blood stream every day. Hemoglobin binds to oxygen and takes oxygen from lungs to all parts of the body. To make red blood cells and hemoglobin constantly require a healthy bone marrow and nutrients such as iron and certain vitamins that obtain from food.

Iron deficiency is thought to be the most common reason for anaemia, although other conditions, such as folate, vitamin B12 and vitamin A deficiencies, chronic inflammation, parasitic infections, and inherited disorders can all cause anaemia.

Normal Hb levels:

AGE	g/dl
6 months to 6 years	11
6 years to 12 years	12
Above 12 years in male	13
Above 12 years in female	12
Pregnant women	11

Anemia is caused by blood loss, decreased or faulty red cell production and destruction of red blood cells.

In general, there are three types of anemia classified according to the size of the red blood cells. They are Microcytic anemia, normocytic anemia and macrocytic anemia.

Dietary sources of iron:

Rich : Liver, egg yolk, oyster, dry beans, dry fruits, wheat germ, yeast etc.

Medium : Meat, chicken, fish, spinach, banana, apple etc.

Poor : Milk and its products, root vegetables etc.

II. METHODOLOGY

Study design: It is a prospective observational study

Study site: The present study was conducted in Santhiram medical college and general hospital, Nandyal**.**

Study Period: The present study was carried out for a period of six months from july-2017 to December-2017

Institutional Ethics Committee (IEC): After approval of Institutional Human Ethics Committee, at Santhiram Medical College and General Hospital, Nandyal this study was initiated.

Sample Size: During the study period of six months of this study, the total sample size was 84 patients.

Study criteria:

A. Inclusion Criteria:

1. Both male and female patients of age group between 5-65 years are included in the study.

B. Exclusion Criteria:

1. Age below 5years and above 65 years, Psychiatric patients and poisonous patients are excluded from the study

Source of Data:

Clinical data are collected from the case sheets or medical records of the patients by specially designed patient data collection form.

a. All patients in department of general medicine in the hospital.

Method of Collection of Data

In Santhiram medical college and general hospital, at general department after thoroughly explaining the study methodology to the subjects. The necessary information was collected by interviewing the patients using the following annexure.

Annexure-I (patient profile form)
Annexure-II (Patient consent form)
Annexure-III (Patient counseling leaflet)

Data was analyzed statistically by using Chi-square test.

III. RESULTS

Table –1: Total data collection:

Total no. of cases	No of anemia cases	No of normal cases
84	61	23

Graph No.1

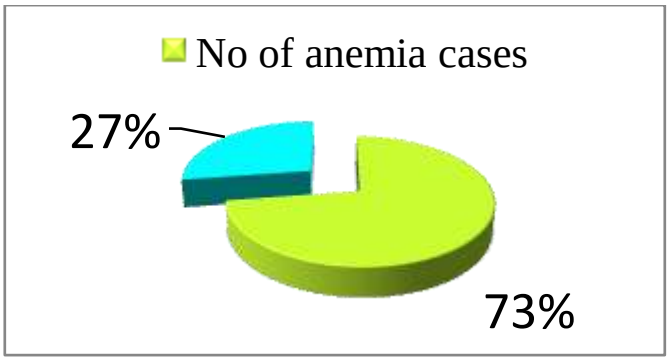


Table – 2: Type of anemia

Type of anemia	Total no of patients
Microcytic	35
Normocytic	21
Macrocytic	5
Total	61

Graph No. 2

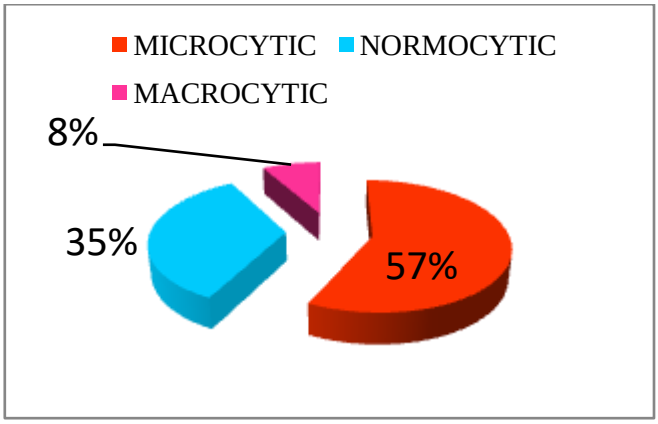


Table no 3: Age group with type of anemia based on MCV levels

			Type of anemia			Total
			MICROCYTIC	NORMOCYTIC	MACROCYTIC	
	15-25	Count	3	2	0	5
		% within Age Group	60.0%	40.0%	0.0%	100.0%
	26-35	Count	7	3	1	11
		% within Age Group	63.6%	27.3%	9.1%	100.0%

Age Group	36-45	Count	6	5	1	12
		% within Age Group	50.0%	41.7%	8.3%	100.0%
	46-55	Count	7	3	0	10
		% within Age Group	70.0%	30.0%	0.0%	100.0%
	56-65	Count	12	8	3	23
		% within Age Group	52.2%	34.8%	13.0%	100.0%
Total		Count	35	21	5	61
		% within Age Group	57.4%	34.4%	8.2%	100.0%

Graph no: 3

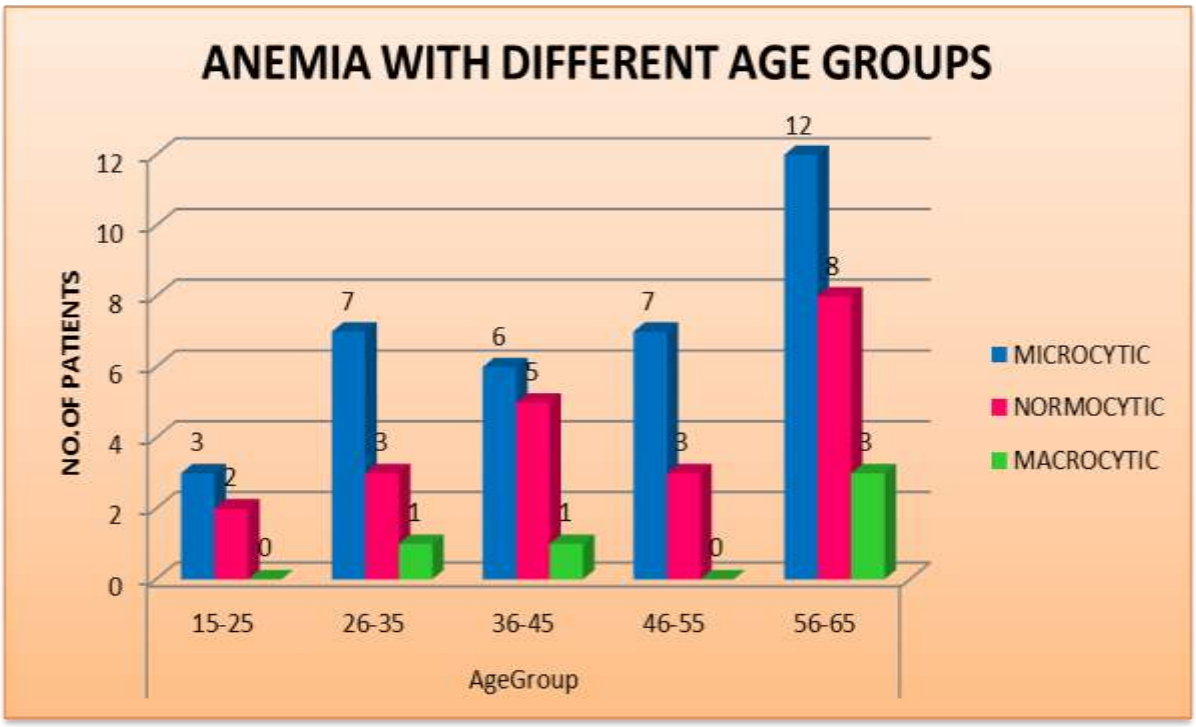


Table – 3: sex with type of anemia

			Type of anemia			Total
			MICROCYTIC	NORMOCYTIC	MACROCYTIC	
Sex	MALE	Count	6	8	3	17
		% within Sex	35.3%	47.1%	17.6%	100.0%
	FEMALE	Count	29	13	2	44
		% within Sex	65.9%	29.5%	4.5%	100.0%
Total		Count	35	21	5	61
		% within Sex	57.4%	34.4%	8.2%	100.0%

Graph no: 4

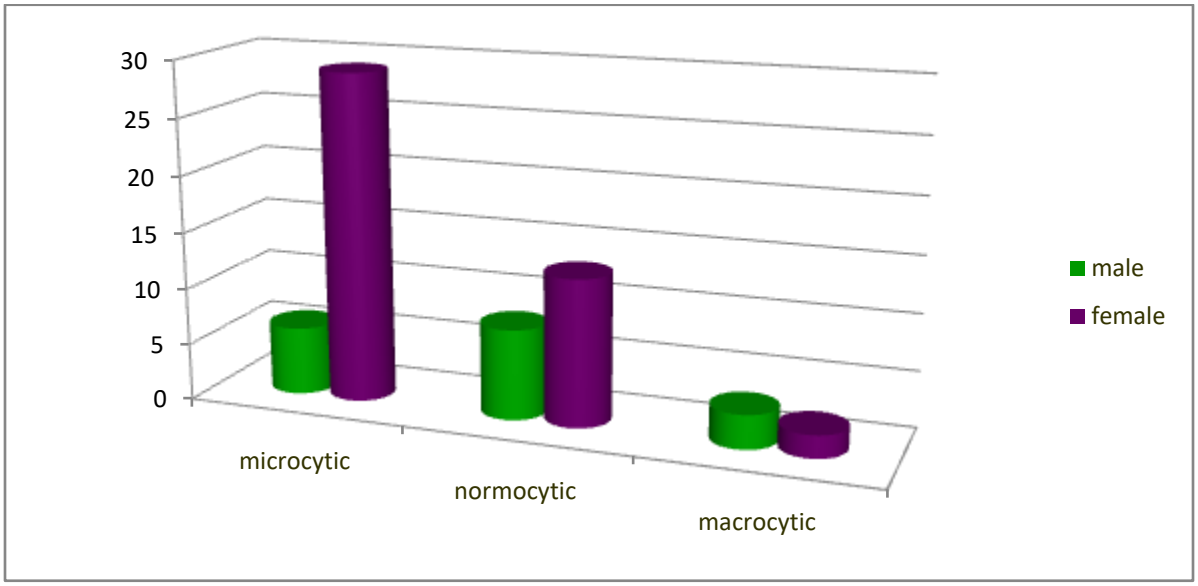
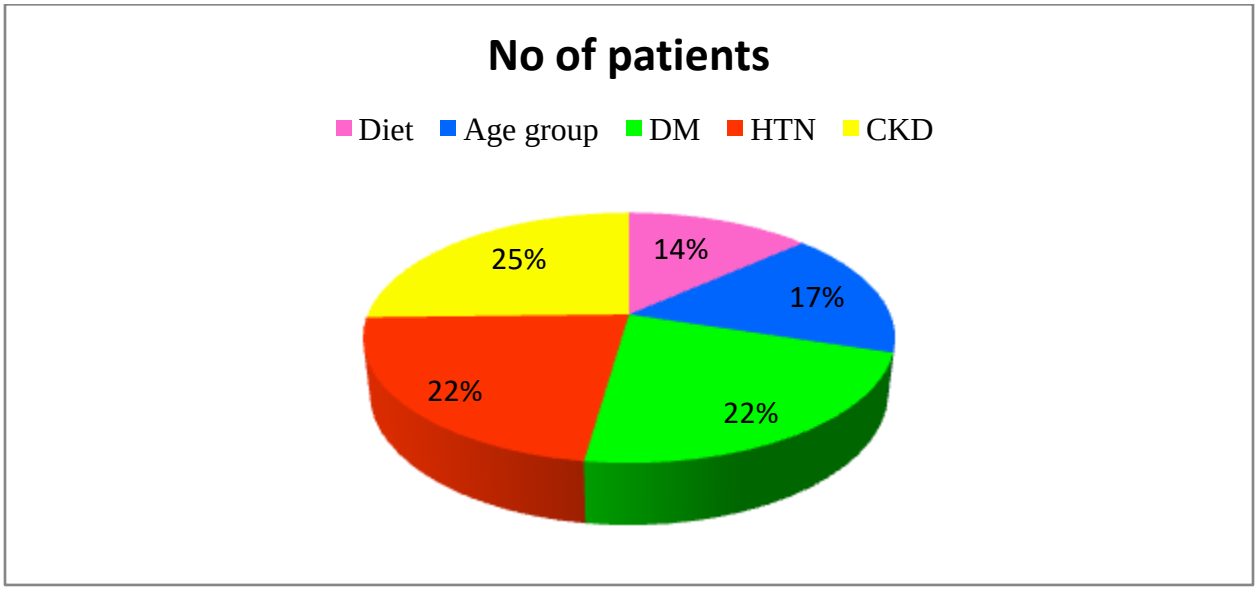


Table no: 5

RISK FACTORS	NO OF PATIENTS	PERCENTAGE
Diet	9	14%
Age group (56-65)	11	17%
Diabetes Mellitus	15	22%
Hypertension	15	22%
CKD	17	25%

Graph no: 5



IV. DISCUSSION

Anemia is clinical condition where it is prevalent in women and it is also associated with many risk factors such as a diet lacking minerals and vitamins, initial disorders, excessive menstruation, pregnancy, trauma, chronic disease condition, auto immune disorders, severely exposed to chemicals and age. The present study was initiated from July 2017 to December 2017; in this study, we assessed the prevalence and risk factors of anemia in the age group 15-65 years in Santhiram general hospital. There are several important findings from a prospective analysis of 300 subjects expected screening for anemia. Anemia was found to be a common form of clinical condition affecting 84 subjects of the study population.

Table no 1 shows the total number of 84 subjects, of which73% (n=61) are anemic and 27% (n=23) cases are non-anemic.

Table no 2 shows the numbers of subjects are 61 of which 51% (n=35) are microcytic, 35% (n=21) are normocytic and only 8% (n=5) are macrocytic.

Table no 3 was distributed with age 56-65 age group patients are more prone to anemia (n=23) 12 (52.2%) are with Microcytic anemia, 8 (34.8%) are with normocytic anemia and 3 (13.0%) are with macrocytic anemia.

Table no 4 was distributed as the type of anemia compared male subjects with female subjects, 35.3% (n=6) male patients are with Microcytic anemia and 65.9% (n=35) female patients are with Microcytic anemia. Compared with female patients male patients are more affected with normocytic type of anemia (41.1%). Compare with female patients male patients are more affected with macrocytic anemia (17.6%).

Table no 5 was distributed with risk factors. In our study we compared some of the risk factors which are most commonly seen in admitted patients are chronic kidney disorder is the major risk factor for causing anemia. This was compared to World Health Organization criteria. Diet is the one of the risk factor for causing anemia, 14 %(n=9). Increase in age is also one of the major risk factor, in our study 56-65 age group are affected with anemia which is 17% (n=11). DM and HTN is also a risk factors for causing anemia, in our study both 22% are affected. In our study CKD is the major risk factor. Patients with chronic kidney disease are anemic that is 25%.

V. CONCLUSION

From results and analysis, we are concluding that anaemia is prevalence in in-patients of general medicine department in Santhiram general hospital. Microcytic anemia is commonly seen in female patients and normocytic and macrocytic anemia is seen in male patients. Patient counselling and awareness programs can be conducted to avoid anemic conditions due to deficiencies of iron, vitamins and minerals. Chronic kidney disease is the major risk factor for causing anaemia in our study; specific risk factors may help in diagnosis and management of subtypes of anaemia.

ABBREVATIONS:

RBC : Red blood cells

WBC : White blood cells

HB : Haemoglobin

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CONFLICT OF INTEREST

The authors have no conflict of interest

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