ORIGINAL RESEARCH PAPER

Medicine

A STUDY ON PATIENTS (VEGETARIAN) WITH DIFFERENT TYPES OF ANEMIA'S

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ABSTRACT

The World Health Organization stated that the hemoglobin range <12g/dl in non-pregnant females and hemoglobin <13g/dl in males is diagnosed as anemia. It was observed that vegetarian and vegans affect more with anemia than non-vegetarians as they suffer from micronutrient and vitamin (iron, vitamin B12, etc.) deficiency due to strict plant -based diet. This prospective observational study was conducted in the out - patient department of ASCOMS, Jammu, including a total of 100 vegetarian patients. Findings showed that the mean age of the study participants was 33.90 ± 11.88 years and majority of the cases were females (65%) and the female to male ratio was 1.85:1. The overall prevalence of anemia was 78% and most of the patients had moderate anemia. The present study concluded that there was a high prevalence of anemia among vegetarians and most common (type of anemia was iron deficiency anemia which was significantly associated with RBC, Hb, BMI, iron level, total iron binding capacity, serum ferritin, and vitamin B12. Thus, iron intake is a major nutrient concern among vegetarians.

INTRODUCTION

Anemia is the most prevalent micronutrient deficiency disorder globally.. The World Health Organization has given the criteria for anemia on the basis of hemoglobin concentration. The hemoglobin range <12g/dl in non-pregnant females and hemoglobin <13g/dl in males is diagnosed as anemia.[1,2]

According to the Global Burden of Disease, Injuries and Risk Factors 2013, about 1.93 billion population is affected with anemia.[3] The prevalence of anemia is more in low income countries and commonly affect vulnerable groups.[4]

Various factors such as lack of vitamin or minerals, age, physiological state (menstruation, pregnancy), primary chronic disease, etc. contribute and increases the risk of anemia. The literature suggests that vegetarian and vegans affect more with anemia than non-vegetarians as they suffer from micronutrient and vitamin (iron, vitamin B12, etc.) deficiency due to strict plant -based diet.[5,6,7]

The synthesis of hemoglobin requires iron. Vitamin B12 plays an important role in maturation of red blood cells and in the platelet life cycle. The lack of iron and vitamin B12 leads to iron deficiency anemia which is the most common type of anemia.[8,9,10]

Thus, the present study was undertaken with the aim to determine the prevalence of different types of anemia among vegetarian patients.

MATERIAL AND METHODS

This prospective observational study was conducted in the out - patient department of ASCOMS, Jammu, during the period January 2022 to June 2022 after obtaining approval from the institute ethical committee.

A total of 100 vegetarian patients attending the out-patient department were involved after obtaining the informed consent from all the patients.

Data was collected with the help of a structured proforma which consists the items (data) regarding the clinical manifestations of anemia, laboratory test values and dietary pattern of the patients.

Inclusion Criteria
- Age group 18-60 years.
- Vegetarian patients.
- Patients who were willing to participate in the study.

Exclusion Criteria
- Alcoholic patients.
- Under gone gastrectomy/ ilostomy chronic renal disease.
- Chronic liver disease inflammatory bowel disease.
- Any co-morbid disease which causes Iron, B12 deficiency.
- Pregnant women.

A detailed history was collected and physical examination was done. The laboratory tests [complete blood count (CBC), peripheral blood smear and anemia profile (serum ferritin, serum folate, serum vitamin B12 and total iron binding capacity)] was done in all the patients.

Data was tabulated, organized, analyzed and interpreted in both descriptive and inferential statistics i.e. frequency and percentage distribution, by using statistical package for social science software (SPSS), version 21. Categorical variables were expressed as number and percentage.

OBSERVATION AND RESULT

In the present study a total of 100 patients were included. The mean age of the study participants was 33.90 ± 11.88 years and majority of the cases were females (65%) and the female to male ratio was 1.85:1.

Table 2 Educational status

Education	Number	Percentage
Illiterate	4	4
	8	8
Matric	34	34
10+2	14	14
Graduation	28	28
Post graduation	10	10
Doctorate	2	2

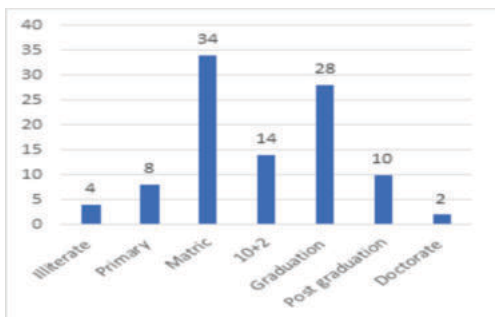Table 1 depicted that the majority (34%) of the study participants had matric education level.

Figure 1. Educational status

Table 2 Occupation

Occupation	Number	Percentage
Government job	8	8
House wife	39	39
Labourer	17	17
Businessman	7	7
Agriculturist	14	14
Student	5	5
Miscellaneous worker	10	10

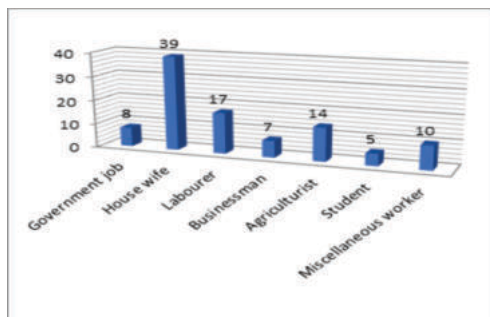In table 2, it was depicted that majority (39) of the patients were housewife.

Figure 2. Occupation

Table 3 Socio-economic status

Socio-economic status	Number	Percentage
Low	30	30
Middle	58	58
High	12	12

It was observed that most (58%) of the study participants were from middle class.
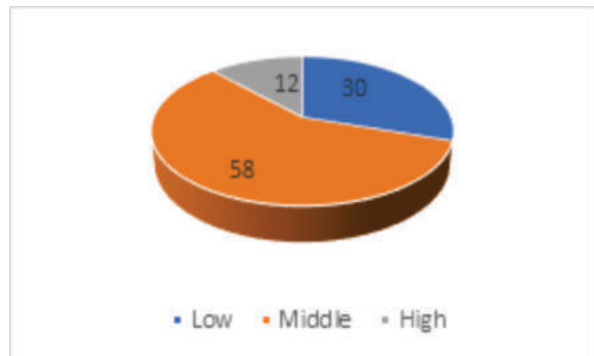
Figure 3. Socio-economic status (SES)

Table 4 Area of living

Area of living	Number	Percentage
Rural	58	58
Urban	42	42

Table 4 showed that most (58%) of the patients were residing in rural area.
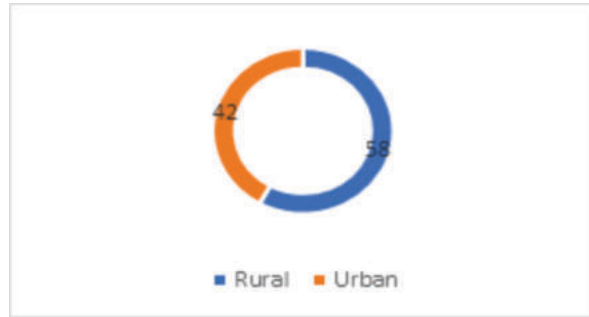
Figure 4. Area of living

Table 5 BMI distribution

BMI category	Number	Percentage
<18.5 kg/m2	43	43
18.5-24.9 kg/m2	39	39
25.0-29.9 kg/m2	15	15
30.0-34.9 kg/m2	3	3
35.0-39.9 kg/m2	0	0
>40 kg/m2	0	0

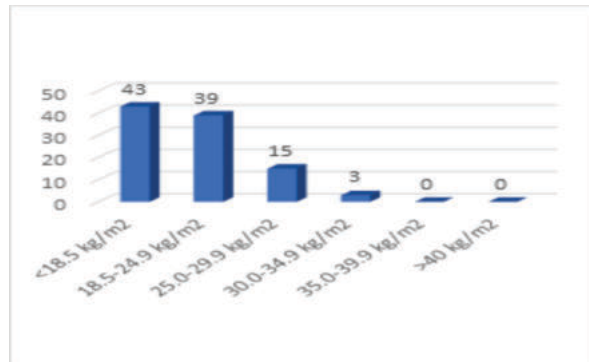Table 5 depicted the BMI score of the patients. Majority (43%) of the patients had BMI <18.5 kg/m^2.

Figure 5. BMI distribution

Table 6 Hemoglobin level (status of anemia)

Status	Number	Percentage
Non anemic (Hb>12g/dl)	22	22
Mild anemia (Hb 10-11.99g/dl)	30	30
Moderate anemia (Hb 7-9.99g/dl)	41	41
Severe anemia (<7g/dl)	7	7

In the present study the overall prevalence of anemia among vegetarians was 78% and among them majority (41%) of study participants had moderate anemia, 30% study subjects had mild anemia and 7% study subjects had severe anemia as represented in table 6.
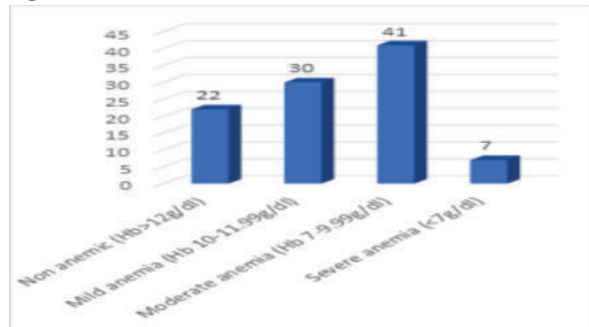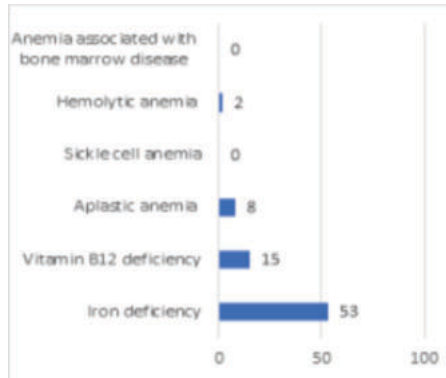

Figure 6. Hemoglobin level (status of anemia)

Table 7 Type of anemia

Type of anemia	Number	Percentage
Iron deficiency	53	53
Vitamin B12 deficiency	15	15

It was reported that the iron deficiency anemia was the most (53%) common type of anemia as depicted in table 7.

Figure 7. Type of anemia

In our study, a significant association was found between anemia among vegetarian with RBC, Hb, BMI, iron level, total iron binding capacity, serum ferritin, capillary refill and vitamin B12 (P<0.001).

DISCUSSION

In this study a total of 100 vegetarian patients were included. Data was analyzed and discussed with previous literature.

In the mean age of the study participants was 33.90 ±11.88 years and majority of the cases were females. Most of the patients had matric education, were house wives, were residing in rural area, were from middle class family and were underweight. The findings are in accordance with the study conducted by Chai ZF, et al. (2020), observed that the mean age of the study participants was 47.1±12.0 years. Most of the patients had secondary education level, were house wives, were from middle class family and the mean BMI was 23.2±3.9.[11]

It was observed the overall prevalence of anemia was 78% and most of the patients had moderate anemia. Further, it was reported that iron deficiency anemia was the most common type of anemia and a significant association was found between anemia among vegetarian with RBC, Hb, BMI, iron level, total iron binding capacity, serum ferritin, capillary refill and vitamin B12. In a review by Pawlak R, et al. (2018), found that majority of the vegetarians had iron deficiency anemia and there was a significant association between anemia and serum ferritin and Hb concentration.[12]

CONCLUSION

Anemia is a common health problem among vegetarians, as vegetarian diet doesn't contain the adequate essential nutrients which causes the nutritional deficiencies. The present study concluded that there was a high prevalence (78%) of anemia among vegetarians and most common (53%) type of anemia was iron deficiency anemia which was significantly associated with RBC, Hb, BMI, iron level, total iron binding capacity, serum ferritin, capillary refill and vitamin B12. Thus, iron intake is a major nutrient concern among vegetarians.

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