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Original Research Article

Comparative Analysis of nutritional status of Anaemia patients

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Abstract

Anaemia is defined as a decrease in the red blood cell mass. In the present study, 30 anaemic patients were selected to assess nutritional status. Patient's anthropometric measurements, biochemical parameters and 24 hours home diet recall were noted. All patients showed low haemoglobin levels. Females showed an average haemoglobin level as 6.5 while males showed 6.1 g/dl. All patients were found anaemic. Average RBC (10^6/ul) for females was 2.61, while for males, it was 3.3. It showed that there is a drastic need for effective preventive and curative treatment in this direction.

Keywords: Iron, anaemia, folate, haemolytic

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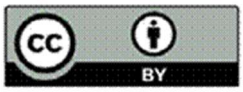

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Introduction

Haemoglobin is an essential part of red blood cells that carry oxygen to every cell of the body. Deficiency of RBCs or inefficient function of RBCs is termed as anaemia. Haemoglobin levels <13.5 gm/dl in men and <12.0 gm/dl in women, is termed as anaemia. Cutoffs for children vary with age. Nutritional anaemia is one of the significant public health problems in India. The adolescent population is quite vulnerable to be anaemic. Anaemia in adolescence is a major risk factor for mortality and morbidity during pregnancy [1].

Prevalence of anaemia was found to be very high (90.1%) among adolescent girls, in which 88.6% of the girls showed moderate anaemia. A strong correlation was seen in a study between education and occupation of the parents with anaemia. Anaemia is identified by clinical symptoms of tiredness, weakness, shortness of breath, pale or yellowish skin, irregular heartbeat, dizziness or light-headedness, chest pain etc [2].

Types: Fanconi anaemia, falciform anaemia, iron deficiency anaemia, sickle cell anaemia, haemolytic anaemia, aplastic anaemia are some of the major types of anaemia [3].

Iron-deficiency anaemia is the most common form of nutritional anaemia in the world. Therefore, the present study was planned with the aim to study nutritional status of 30 anaemic patients so that their nutrition intervention can be planned timely.

Research methodology

A prospective observational study was conducted on 30 patients admitted under Cardiology at Mahatma Gandhi Medical College and Hospital, Jaipur. Purposive sampling technique was chosen for sample selection.

Inclusion criteria

- Patients aged 25 - 80 years
- Both male and female patients

Exclusion criteria

- 1.Patients below 25 years and above 80 years
- 2. Patient with any other comorbidity

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Data collection

Samples selected were studied for their nutritional status as per following details.

Phase 1: General information

Information about patient's name, age, sex, educational status, economic status, socio economic status and marital status was noted in a structured questionnaire.

Phase 2:

Data collection for assessment of nutritional status

2a. Anthropometric measurements: Patient's anthropometric measurements were taken such as weight, height, MUAC, waist circumference, hip circumference, waist to hip ratio as per standard procedures. Body mass index was calculated as per following formula -

$$\text{Weight (Kg)} / \text{Height (m}^2\text{)}$$

2b. Biochemical reports: Following biochemical parameters were recorded from the reports available in file which were suggested by clinicians as a part of standard treatment-

1. Renal function test (RFT)
2. Electrolyte report's
3. Complete blood count (CBC) Haemoglobin
4. Total protein

2c. **Clinical signs and symptoms:** Patients were examined for presence or absence of clinical signs and symptoms such as weakness, fatigue, yellowish skin and headache.

2d. Diet recall: Patient's home diet recall was recorded by interview in which diet intake for 3 consecutive days including two working days and one holiday was recorded. Food frequency tables were used to collect data on empty calorie intake.

Phase 3: Data analysis and interpretation

Patients were divided into following categories as per Subjective Global Assessment tool -

1. SGA rating A - Normally nourished/ Healthy
2. SGA rating B - Mildly malnourished (At risk of malnutrition)

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3. SGA rating C - Malnourished

Results & Discussion

Results & Discussion part has been divided into following sub headings:

General information of the patients:

Parameter	Category	No. of samples	Percentage
Gender	Male	17	56.66
	Female	13	43.33
Age	> 50 years	17	56.66
	< 50 years	13	43.33
Education	Primary	5	16.66
	Metric	13	43.33
	Graduate	6	20
	Illiterate	6	20
Occupation	Yes	23	76.66
	No	7	23.33
Activity	Sedentary	15	50
	Moderate	13	43.33
	Heavy	2	6.66
Socio economic status	LIG	6	20
	MIG	17	56.66
	HIG	7	23.33
Marital status	Married	30	100
	Unmarried	0	0

Table 1. General information of the patients

Table 1 showing that 56.66% patients were male, while 43.33 % patients were females. Age ranged between 30 -76 years. All patients were married and working status showed that 76% patients were working, 23% were not engaged in any type of occupational work. Fifty percent of patients showed sedentary lifestyle, while 43 % patients were moderately active and 6.6% of the patients were engaged in heavy working status. Twenty percent of patients were from the low income group, 56% were from middle class and 23% patients were from higher class.

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2. Assessment of Nutritional status

2.1 Anthropometric measurements

Parameters	Values	± SD
Mean height male (n=17)	164.8 cm	0.105
Mean weight male (n=17)	56.29 kg	0.129
Mean BMI male (n=17)	20.92 kg/m^2	0.114
Mean waist circumference male (n=17)	82.41 cm	0.05
Mean hip circumference male (n=17)	86.52 cm	0.112
Waist to hip ratio (male)	0.95	0.015
Mean height female (n=13)	160.15 cm	0.126
Mean weight female (n=13)	56.07 kg	0.211
Mean BMI female (n=13)	21.90 kg/m^2	0.019
Mean waist circumference female (n=17)	78.07 cm	0.122
Mean hip circumference female (n=17)	82.61	0.13
Waist to hip ratio (female)	0.945	0.002

Table 2: Anthropometric measurements of patients

Table 2 is showing that average height of all male patients was 164.8 cm and female was 160.15 cm, average weight of all male patients was 56.29 kg and female was 56.07 kg, average waist circumferences of male patients was 82.41 cm and for was 78.07 cm, average hip circumferences of male patients was 86.52 cm and female patients was 82.61 cm, waist-Hip ratio of male patients was 0.95 and female patients was 0.945.

2.2 Patient's hemoglobin (g/dL)

Haemoglobin level (g/dL)	No. of patients	Percentage	Interpretation
< 8	23	76.66	Severe anaemia
8.1 – 10	4	13.33	Moderate anaemia
10.1 – 12	3	10	Mild anaemia

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> 12	0	0	No anaemia

Table 3: Haemoglobin levels of patients

Table 3 is showing haemoglobin levels of all patients. It was found that 76.66% patients were severely anaemic, while 13.33% patients were suffering with moderate anaemia. Ten percent of patients were found to suffer from mild anaemia. No patient was observed under normal haemoglobin level.

2.3 Clinical signs and symptoms

Clinical symptoms	No of patients (n=30)	Percentage
Weakness	17	56.66
Fatigue	19	63.33
Shortness of breath	11	36.66
Headache	14	46.66
Pallor nail/ conjunctiva	7	23.33

Table 4: Clinical signs & symptoms of the patients

Table 4 is presenting that out of 30 patients, 17 patients showed symptoms of weakness, while 63.33% of the patients faced fatigue. Eleven patients out of 30 had shortness of breath, while 46.66% patients suffered from headache. Pallor skin/ nails and conjunctiva was seen in 23.33% of the patients. When correlated with sex and age, it was found that the majority of the patients were female and in the age group of 20 - 40 years of age, who showed iron deficiency as well. On the other hand, in the older age group, both males and females showed symptoms of anaemia, but these were suffering with some or other chronic disease [4] [5].

2.4 Nutrient intake as per home diet recall

Nutrient	Intake range	No. of patients (n=30)	Percentage
Energy	Above normal	2	6.66
	Normal	8	26.66
	Below normal	20	66.66

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Protein	Above normal	0	0
	Normal	5	16.66
	Below normal	25	83.33
Iron	Above normal	0	0
	Normal	7	23.33
	Below normal	23	76.66
Vitamin C	Above normal	0	0
	Normal	4	13.33
	Below normal	26	86.66

Table 5: Nutrient intake of patients

It is evident from table 5 that 66.66% patient's energy intake was below normal and protein intake of 83.33% patients was less than their requirements. 76.66% of the patients showed consumption of daily iron less than recommended dietary allowances while most of the patients (86.66%) patients showed negligible consumption of vitamin C. It was correlated well with their haemoglobin level. Patients who were suffering with nutritional anaemia showed lesser consumption of these nutrients. Patients suffering from chronic diseases also had below normal level consumption of nutrients due to anorexia, altered taste and many other digestion and absorption related complications.

3. Nutritional diagnosis

Parameters	Total male patients (No 17)	Percentage	Total females (No. 13)	Percentage %
SGA RATING A	5	29.41%	1	7.69
SGA RATING B	10	58.82	9	69.23
SGA RATING C	2	11.76	3	23.07

Table 6: Nutritional diagnosis of the patients

Table 6 is showing that 29.41 % male patients fell in the category of SGA rating A i.e. They were found nutritionally normal. On the other hand, 58.82% patients were at risk of malnutrition with SGA RATING B. 2 out of 17 males were found malnourished, while in

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females, 23.07% patients were found to be severely malnourished. Nine out of 13 females were found at risk of malnutrition. Only 7.69% females were observed nutritionally normal.

Conclusion

Present study showed that out of 30, 16.66% patients were malnourished with SGA grading C. It was also observed that 76.66% patients were severely anaemic while 13.33% patients were moderately anaemic. It may be correlated to the age and sex as most of the patients ranged between 30 -76 years. As majority of them were suffering with chronic diseases and nutrient intake of most of the patients was below normal level. It was in consonance with clinical signs and symptoms as 17 out of 30 patients showed symptoms of weakness, 63.33% of the patients faced fatigue. Eleven patients out of 30 patients showed shortness of breath, while 46.66% patients suffered from headache. Pallor skin/ nails and conjunctiva was seen in 23.33% of the patients. Therefore, the present study highlights a very alarming situation that needs to be handled timely to prevent further complications and to enhance treatment outcome of the patients.

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