

# Nutritional status of rural elderly people with special reference to iron deficiency, anemia

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The present study was undertaken to assess the nutritional status of rural elderly people with special reference to iron deficiency, anemia. For this purpose a sample of 60 each, rural elderly male and female of 60-80 yrs. were selected. A pre-tested interview schedule was developed to collect information regarding socio- economic status, nutritional status by dietary survey (24 hrs. recall method), anthropometric measurements (height, weight and BMI), clinical and hemoglobin estimation to assess the nutritional status of the elderly. It was concluded from the findings of research that socio- economic status of the families was poor 48.3 per cent of them were from lower caste and 46.6 per cent from medium class. Dietary survey revealed that the diet of the elderly people in comparison to the balanced diet was substantially inadequate. Cereals and pulses were food consumed by all the people. In anthropometric indices, distribution of elderly subjects on the basis of height (cm.), weight (kg.) and BMI (kg./meter square) revealed that 70 per cent of elderly male and 84 per cent female were suffering from different grades of malnutrition. By the assessment of prevalence of clinical signs/symptoms and hemoglobin estimation showed that the mean hemoglobin level of elderly people showed that 57.5 per cent elderly people were falling in moderate category of anemia, 38.3 per cent people were severely anemic and very few (4.16%) subjects were falling in mild category of anemia. The prevalence of anemia was higher in low socio-economic status (53.3%) group as compared to high and middle socio-economic status (46.6%) group. The correlation between Hb status and pertinent nutrients showed that there was a positive correlation between Hb and protein intake, while there was non-significant correlation observed between iron, vitamin C and folic acid content. From the above results it can be concluded that overall nutritional status of rural elderly people was not satisfactory and they were having higher prevalence of iron deficiency anemia.

**Key Words :** Nutritional status, Anemia, Elderly, RDA BMI.

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## INTRODUCTION

The elderly in the rural areas are of the most vulnerable group because of the poor eating habit and impaired iron absorption. Nutrition is also found to be linked with many chronic diseases that affect the elderly. Hence, nutrition is found to be an important factor for successful aging. Nutritional problems inherent in aging population need to be monitored and modified to prevent malnutrition. These are

contributed mainly by certain physical, social, functional, psychological and certain medical factors. However, the data on rural elderly population are scanty. In this background, this study was conducted to find out the prevalence of anemia and its relation to certain socio-economic factors among elderly people in rural community.

## METHODOLOGY

The present study was conducted on 60-80 years of elderly men and women in the selected rural villages of Udaipur district of Rajasthan. A list of villages was procured from the Tehsil headquarter and two villages falling in the radius of 12 – 15 km. from the Tehsil headquarter, well connected by road and having good transportation facilities were selected. The villages thus selected included Namari and Ganoli.

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The sample for the present study was comprised of 120 elderly people (60 male and 60 female) in the age group of 60-80 years. For the selection of subjects, Sarpanch of the village was contacted and list of all households and their family members was prepared. Homes were visited and the head of the family or any other responsible adult was contacted from each family and the nature of the study was explained to them. Sixty each elderly men and women were surveyed on the basis of their cooperation and availability at the time of survey till the required sample size was covered.

A pre-tested interview schedule was developed to collect information regarding socio- economic status, (All India coordinated research project,1997), nutritional status by dietary survey (24.hrs. recall method), anthropometric measurements (height, weight and BMI), clinical and hemoglobin estimation to assess the nutritional status of the elderly.

#### Dietary survey :

Detailed information on dietary intake of elderly people was gathered by "24 hours recall method". Actual diet consumed by the subjects was found out with the help of standard set of cups. From the cooked and raw amount of foods, the raw amount of foods consumed by each subject was then calculated. Information thus obtained was converted in terms of nutrients with the help of food composition tables (Gopalan *et al.*, 1989) and was compared with dietary recommendations for elderly population suggested by Pasricha and Thimmayamma (1992).

#### Anthropometric measurements :

Anthropometric measurements namely height and weight were assessed for all the subjects using the standard procedure, using this parameter body mass index was computed.

#### Clinical examination :

The clinical examination of each subject was carried out by observation with help of medical doctor. Each individual subject was examined for the signs and symptoms of iron deficiency as recommended by Jellife (1966), and observations were recorded in the interview scheduled.

#### Hemoglobin estimation :

Hemoglobin was estimated by using "cyanmethemoglobin -method" as described by Dacie and

Levis (1975) it converts hemoglobin iron from ferrous to ferric state to form methaemoglobin. On the basis of Hemoglobin levels, the subjects were classified into four groups as suggested by WHO (1989) (Table A).

HB level (g./dl)		Interpretation
Men	Women	
>14.0	<12.0	Normal
12-14	10-12	Mild
9-12	7-10	Moderate
<9.0	<7.0	Severe

#### Statistical analysis :

The data were statistically analyzed as per the objectives of the study. Information about subjects and their families were expressed as percentage. Mean  $\pm$  standard error value were also calculated for dietary intake, anthropometric and biochemical parameters.

## OBSERVATIONS AND ASSESSMENT

The results of the present investigation as well as relevant discussion have been presented under following heads :

#### Socio-economic status :

On the basis of scores obtained by the respondents in different aspects of socio-economic status scale, the respondents were categorized in high, medium and low socio-economic status. Table 1 presents the socio-economic status of the rural elderly people, it can be deduced from the findings of research that socio- economic status of the families was poor 48.3 per cent of them were from lower caste and 46.6 per cent from medium class.

#### Food and nutrient intake :

The dietary survey conducted by "24 hour recall" method revealed that the elderly people were taking 2-3 meals per day. The main preparations were maize/chapati/rab and a curry of vegetables or dal and buttermilk or milk. Cereals and pluses were consumed by all the elderly whereas consumption of green leafy vegetables, milk and fruits was very low as compared to balanced diet suggested by (Pasricha and Thiammayamma, 1992). A very few elderly subjects (8.7 % elderly men and 7.5%

**Table 1.** Socio-economic profile of the respondents

S. No.	Socio-economic status categorized	Male (n=60)	Female (n=60)	Total (n=120)
1.	High socio-economic status	4 (6.66)	2 (3.33)	6 (5)
2.	Medium socio-economic status	28 (46.6)	28 (46.6)	56 (46.6)
3.	Low socio-economic status	28 (46.6)	30 (50)	58 (48.3)

(Figures in parentheses represent the percentage of subjects)

elderly women) were consuming fruits and 31.6 per cent elderly men and 26.6 per cent elderly women were consuming green leafy vegetables. 28.3 per cent elderly men and 19.5 per cent elderly women were consuming milk and milk products. A significant difference was observed in foods and nutrient intake in both age groups of elderly people (60-70 and 70-80 yrs.).

Nutrient intake calculated using food composition tables revealed that mean intake of energy by the elderly male was 41.3 per cent and by elderly women was 41.5 per cent of RDA. Protein intake was 47.8 per cent in male and 50.7 per cent of in female. The calcium intake by the elderly male was 24.5 per cent and by elderly women was 23.8 per cent. The mean intake of vitamin such as vitamin C by the elderly men was 13.8 per cent and by the elderly female was 8.5 per cent and intake of iron by the elderly male was 23.9 per cent and by elderly women was 23.7 per cent which was very low as compared to RDA. The low intake of nutrients required for Hb formation is due to inadequate intake of green leafy vegetables, milk and fruits.

**Anthropometric assessment :**

Anthropometric assessments serve as a good indicator of past and present nutritional status of an individual. Since physical measurements are partially dependent upon nutrient

intake, they are of much value in assessing nutritional status. Physical growth is considered as one of the major outcome of interaction between nutrients and environment.

In anthropometric indices distribution of elderly subjects on the basis of height, weight and BMI showed that 70 per cent elderly male and 84 per cent elderly female were suffering from different grades of malnutrition.

**Clinical assessment :**

Clinical examination is another method for measuring the nutritional status and prevalence of deficiency diseases. In the present study the clinical signs have been assessed as recommended by the Jelliffe (1966). 120 respondents were clinically examined for the presence and absence of clinical signs and symptoms, presented in Table 2.

**Hemoglobin assessment :**

Distributions of subjects on the basis of hemoglobin level showed that 4.16 per cent elderly people were mild anemic 57.5 per cent were falling in moderate category of anemia and 38.3 per cent respondents were severely anemic (Table 3). Data revealed that prevalence of moderate anemia was particularly high among females (71.6%) and 43.3 per cent of males were moderately anemic, 25 per cent of women

**Table 2.** Prevalence of clinical signs/symptoms of iron deficiency anemia

Sr. No.	Details	Male (n=60)	Female (n=60)	Total (n=120)
(A)	No clinical sign and symptoms	15(25)	14(23.3)	29(24.16)
(B)	Clinical sign and symptoms present			
1.	Pale conjunctiva	10(16.6)	8(13.3)	18(15)
2.	Pale tongue	8(13.3)	5(8.3)	13(10.8)
3.	Koilonychias	7(11.6)	8(13.3)	15(12.5)
4.	Easy fatigability	20(33.3)	25(41.6)	45(37.5)

Figures in parentheses represent the percentage of subjects.

**Table 3.** Prevalence of anemia by hemoglobin among the subjects

Anemia grade # & Hemoglobin (g./dl)		Categories	Male (n=60)	Female (n=60)	Total (n=120)
Men	Women				
<14.0	<12.0	Normal	Nil	Nil	Nil
12-14	10-12	Mild	3(5)	2(3.33)	5(4.16)
9-12	7-10	Moderate	26(43.3)	43(71.6)	69(57.5)
<9.0	<7.0	Severe	31(51.6)	15(25)	46(38.3)

Figures in parentheses represent the percentage of subjects

# Classification suggested by WHO (1989)

**Table 4.** Correlation between hemoglobin status and pertinent nutrients

S.No.	Relationship	Correlation analysis
1.	Protein and hemoglobin	0.299**
2.	Iron and hemoglobin	0.001 NS
3.	Vitamin C and hemoglobin	0.102 NS
4.	Folic acid and hemoglobin	0.128 NS

\* & \* indicate significance of values at P = 0.05 and 0.01 respectively

NS = Non-significant

were severely anemic, while prevalence of severe anemia was high among males (51.6%). The prevalence of anemia was higher in low socio- economic status (53.3%) group as compared to high and middle socio- economic status (46.6%) group.

#### **Correlation analysis between hemoglobin status and pertinent nutrients :**

In order to find out the correlation between hemoglobin status and pertinent nutrients *viz.*, protein, iron, vitamin C, folic acid. Coefficients of correlation were worked out and their significance was tested.

Table 4 revealed that there was a significant positive ( $p < 0.01$ ) correlation between Hb and protein intake, while there was a non significant correlation observed between iron, vitamin C and folic acid content of diet and their hemoglobin level. The perusal of the data clearly indicated that poor intake of protein (quantity as well as quality) along with low intake of other nutrients contributed towards high prevalence of iron deficiency anemia among rural elderly subjects.

#### **Conclusion :**

Anemia is a major nutritional problem in India affecting all segments of the population. Rural people are at risk of anemia because of pre- agriculture level of technology, illiteracy, poverty, traditional way of life and subsistence economy.

The present study was conducted to assess the nutritional status of rural elderly people with special reference to iron deficiency anemia. The study was undertaken in the Ganoli and Namri villages, Mavali Tehsil, District Udaipur. For this purpose, samples of 120 elderly subjects (60-80 yrs.) were selected with equal representation of male and female.

Data pertaining to the information about respondents,

their socio- economic status, food consumption pattern, dietary intake, anthropometric measurement, clinical assessment and hemoglobin assessment were gathered through interview schedule regarding socio- economic status, (All India coordinated research project, 1997). The socio- economic indicators of the study population were found to be very poor including living conditions and illiteracy. The prevalence of anemia was 57.5 per cent elderly people were falling in moderate category of anemia, 38.3 per cent people were severely anemic and very few (4.16%) subjects were falling in mild category of anemia.

This study, thus, indicates that anemia is a major nutritional problem along with poor socio- economic status in the rural elderly person which needs urgent attention. Majority of the elderly people were anemic as indicated by Hb level. The nutritional status of elderly was not satisfactory and they were having higher prevalence of anemia.

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