



NUTRITIONAL STATUS OF ELDERLY OF JALAUN DISTRICT (RURAL) UP

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ABSTRACT

The present study was conducted to assess the nutritional profile of rural elderly in Jalaun district of Bundelkhand region of Uttar Pradesh covering four blocks and eight villages. A total number of 150 each of elderly men and women belonging to the age group of above 60 years were selected purposively for the study. The maximum were belonged to 60-70 years age class i.e. 53.33 and 60 percent in male and female respectively. The education status was very poor especially among female elderly because 48% found in illiterate class, whereas 38 per cent of males were having education up to high school but 26 % of males were also having illiterate category. The study revealed that rural elderly were subsisting on inadequate diet, which was reflected in the poor intake of all the nutrients and higher prevalence of under nutrition. Except cereal, mean intake of all foods in both men and women were found below the recommended amount. Mean body mass index of elderly men and women found to be 46 percent males and 42 percent females and 44 percent of total respondents were classified as normal as they had BMI values between the range 18.50-24.99. Waist hip ratio of 0.7 for women and 0.9 for men has been shown to correlate strongly with general health. The study further indicated that prevalence of chronic energy deficiency was higher in males (16.75%) as compared to their female counterparts (1.36%). To improve the nutritional status of elderly person, dissemination of low cost sustainable agriculture technologies along with nutrition education need to be given importance.

Keywords: Elderly, dietary intake, Nutrient intake, Anthropometric profile

Bundelkhand is known for its cultural-geographic region uniqueness in India, which is surrounded by Vindhyan Plateau in south, Yamuna River in north, Ken River in east and by Betwa and Pahuj rivers in west. From the reports of various institutions, it has been noted that there is mass migration, starvation deaths, and malnourishment case, increasing debts on farmers further leading farmer suicides and even the “mortgaging” of women over the years. Living conditions are harsh especially for the rural poor who depend mainly on agricultural incomes for sustenance.

Majority of rural population of Jalaun lives in village

and has its own socio cultural pattern, traditions and typical food practices. The elderly are one of the most vulnerable and high risk groups in terms of health status in any society (**Chakrabarti and Sarkar 2011**). Good nutrition is important at every stage of life for maintaining good health and personal productivity and it is especially important to the elderly because of the physiological changes that occur in the body as people age. Nutrition is an important determination of health in persons over the age of 60 years (**Reddy et al. 2014**). In addition, studies have shown that elderly people who are underweight are at higher risk of acute illness and death (**Scidell, 1996**). Malnutrition in the elderly is

often under diagnosed and neglected. Careful nutritional assessment is necessary for both the successful diagnosis and development of comprehensive treatment plans for malnutrition in this population. Moreover information on the nutritional status of elderly is scanty particularly with respect to bundekhand region of Uttar Pradesh. Keeping this in view, a study was conducted in Jalaun district to assess the nutritional profile of rural elderly men & women.

MATERIALS AND METHODS

Selection of the study area

The study was conducted in the Jalaun district of Uttar Pradesh and four blocks namely Dakore, Jalaun, Mahewa and Madhogah were selected randomly.

Selection of sample

In the study only those persons aged above 60 years were selected who wanted to participate voluntarily. A total of 300 respondents in which 150 male and 150 female were then randomly selected from four blocks of Jalaun district

Collection of data

Data were collected with the help of participatory rural appraisal and interview schedule.

Diet survey

The information on dietary intake was collected by 24 hour recall method followed by one day weightment method (**Price et. al.,2006**). Standard measures including calories, spoons and glasses of standard sizes were shown to the respondents to help the respondents in estimating the amounts of food consumed. Calculations were done to get the values for raw ingredients consumed by them the nutrient intake was calculated with the help of Indian Council of Medical Research bulletin. The diet and nutrient intake was compared with recommended dietary allowance (**ICMR, 1992**).

Method of Data Analysis

(a) Percentage:

Percentage was used for simple comparison and was calculated by multiplying the frequency of a particular item by 100 and dividing it by total frequency of the items.

$$\% = n/N \times 100$$

Where, n = No. of respondents

N = Sample size

(b) Arithmetic Mean:

Mean was calculated by dividing the sum of observation by the number of observation.

$$\text{Mean (x)} = \frac{\sum W_1 - W_2}{W_2} \quad 100$$

Where,

? X = sum of all observation

n = number of observation

RESULTS AND DISCUSSION

General profile of the respondents

Study revealed that most of the respondents belonged to 60-70 years age from both categories i.e. 53.33 and 60 percent in male and female respectively. While considering the males and females separately, 85.33 percent males and 74 percent females were financially independent while the rest 14.67 percent of the males and 26 percent of the females were found to be financially dependent.

Frequency of consumption of food

Table 1 Food consumption and dietary diversity of Respondent

Food groups	Males, n=150		Females, n=150	
	N	Percentage	N	Percentage
Cereals	150	100	150	100
Pulses	150	100	150	100
Milk and milk product	145	96.67	143	95.33
Root and tubers	128	85.33	112	74.67
Green leafy vegetables	120	80	123	82.67
Other vegetables	126	84	120	80
Fruits	33	22	27	18
Meat, fish and poultry	50	33.33	32	21.33
Fat and oils	150	100	150	100
Sugar and jiggery	115	76.67	128	85.33
Beverages	6	4	8	5.33
Pickles	57	38	63	42
Average dietary diversity score	1		1	

The overall consumption pattern of the elderly diet suggest that cereals, fats and oils, pulses were consumed daily by all the respondents i.e. both by males and females. The daily consumption of root and tubers was observed in 85.33 percent males and 74.67 per cent females. The consumption of green leafy vegetables was observed in 80 percent males

and 82.67 per cent females. The findings of this study was in accordance with earlier study that found mean consumption of all foods were below the recommended dietary intake in both men and women (Arlappa et al.2005).

Nutrient intake by Respondents

Table 2 Mean Nutrient Intake of Respondents with their RDA Comparison

Nutrients	Males, n=150			Females, n=150			Correlation Coefficient (r)
	Mean Nutrient Intake	RDA	Deficient or Increment %	Mean Nutrient intake	RDA	Deficient or Increment %	
Energy (Kcal)	1831.35	2200	-16.75	1775.46	1800	-1.36	0.0286
Protein (g)	60.77	65	-6.51	39.98	50	-10.02	-0.0256
CHO (g)	313	350	-10.57	302	300	+0.66	0.0451
Fat (g)	48.23	50	-3.54	41.58	40	+3.95	-0.0167
Iron (mg)	26	30	-13.33	18	30	-40	-0.0275
Calcium (mg)	669.01	1000	-33.1	678.05	900	-24.66	-0.1254
Vitamin A (µg)	688.01	1030	-33.2	763.78	930	-17.87	-0.0013
Dietary fiber (g)	12.94	30	-56.86	14.00	30	-53.33	0.2045*

Table 2 showed that the mean energy intake by males had been 1831.35 Kcal/day and 1775.48 Kcal/day by females respectively. The females consumed percent adequacy for energy almost equal to RDA (only -1.36 % deficient from their RDA), but male's energy intake was deficient than their RDA i.e. -16.75 due to poor oral health and loss of

appetite. Males and females both categories of respondents had consumed calcium in significantly deficient percent from their RDAs i.e. -33.1 and -24.66 % respectively. Similarly lower mean intake of all the nutrients in elderly men and women has been reported by Arlappa et al (2005).

Intake of Dietary supplements

Table 3 Type of dietary supplements used by respondents

Type of dietary supplements	Males, n=150		Females, n=150		Total, n=300	
	N	Percentage	N	Percentage	N	Percentage
Health drinks	38	25.33	18	12	56	18.67
Vitamins and mineral supplement	32	21.33	27	18	59	19.67
Miscellaneous (chavanprash, boost)	26	17.33	20	13.33	46	15.33

Table 3 showed that One fourth of the males and one eighth of females were taking a health drink which includes horlicks, boost and bournvita. A sizable proportion of the males and females i.e. 18 per cent and 19.67 per cent were taking vitamins and mineral supplement in the form of tablets or tonics

respectively as suggested by their doctors. About 17.33 per cent males and 13.33 per cent of females were taking chavanprash. The rest of the respondents were not taking any kinds of recognized dietary supplement.

Anthropometric profile

Body mass index

Table 4 Body mass index classification for the respondents

Classification	Indicators (kg/m ²)	Males, n=150		Females,		Total, n=300	
		N	Percentage	N	Percentage	N	Percentage
Severe thinness	<16.00	7	4.67	9	6	16	5.33
Moderate thinness	16.00 - 16.99	12	8	10	6.66	22	7.33
Mild thinness	17.00 - 18.49	21	14	23	15.33	44	14.67
Normal range	18.50 - 24.99	69	46	63	42	132	44
Pre-obese	25.00 - 29.99	24	16	26	17.33	50	16.67
Obese class I	30.00 - 34.99	12	8	13	8.67	25	8.33
Obese class II	35.00 - 39.99	5	3.33	6	4	11	3.67
Obese class III	= 40.00	0	0	0	0	0	0

Source: Adapted from WHO (2015)

Results showed that 4.67 percent males and 6 percent females and 5.33 per cent of total population were classified as severe thinness below the range 16 kg/m², 14 percent males and 15.33 percent females and 14.67 per cent of total population were classified as mild thinness between the range 17-18.49 kg/m². Majority of the respondents i.e. 46 percent males and 42 percent females and 44 percent of total subject were classified as normal as they had BMI values between the range 18.50-24.99. About 16 per cent of males 17.33 percent females and 16.67 per cent of total were classified as pre-obese between the range

of 25-29.99 and 8 per cent of males 8.67 per cent females and 8.33 percent of total were classified as pre-obese grade I between the range of 30-34.99 and the rest of the respondents i.e. 3.33 percent males, 4 per cent females and 3.67 percent of total respondents were classified as obese grade II between the range of 35-39.99 and no respondents were found BMI above 40. The mean body mass index was 22.50, 25 and 23 kg/m² for males, females and total respondents respectively.

Waists hip ratio

Table 5 Classification of Waist-Hip ratios

Classification	Indicator	Males, n=150		Females, n=150		Total, n=300	
		N	%	N	%	N	%
Normal	Male <0.90, Female <0.70	5	3.33	7	4.67	12	4
Low risk	Male 0.95 or below, Female 0.80 or below	78	52	37	24.67	114	38.33
Moderate risk	Male 0.96 or above, Female 0.81 or above	43	28.67	63	42	107	35.33
High risk	Male >1, Female >0.85	24	16	43	28.67	67	22.33

A waist hip ratio of 0.7 for women and 0.9 for men has been shown to correlate strongly with general health. Men with waist hip ratio around 0.9, found to be 3.33 percent, they have been shown to be healthier with less possibility of prostate cancer and testicular cancer. Women within 0.7 ranges found to be having optimal health and were less susceptible to disease such as diabetes and cardiovascular disease and ovarian cancer. These studies were also supported by **Sowers (2006)** stated that the increases in fat mass and its distribution to the waist around the menopause represent compelling risk factors for heart disease.

Conclusion

Hence it may be concluded that dietary and nutrient intakes of rural elderly men and women were inadequate. Except cereal, the intakes of other foods were far below the recommended amount. The percent adequacy of green leafy vegetables, roots and tubers and other vegetables among elderly men and women were 80,85.33 and 80 and 82.67, 74.67, and 80 percent, respectively. Gap between mean intake of all nutrients particularly micronutrients were far below the RDA. The females consumed percent adequacy for energy almost equal to RDA (only -1.36 % deficient from their RDA), but male's energy intake was deficient than their RDA i.e. - 16.75 due to poor oral health and loss of appetite.

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