

## Assessment of the Nutritional Health Status of Rural Old People in District Saharanpur (U.P.)

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### ABSTRACT

**Background-** Older people in the developing India is more affected with various diseases like malnutrition and associated with low income society, poor eating patterns.

**Objective-** The present study was carried out to assess the nutritional status of old people and percentage level of malnutrition among the people who were living in the rural areas of district Saharanpur.

**Materials and methods-** This cross sectional study was done from July 2018 to Nov 2018 in the 05 villages of Nanauta block, district Saharanpur, Uttar Pradesh India. The old people those over 60 years and above age in male and 58 years and above age in female who met the inclusion criteria participated in this study. A total of 50 old people were selected for this study. Nutritional status was assessed by MNA tool and 24 hour dietary recall method. Analysis of data was performed using Microsoft Office Excel 2007. Analysis for qualitative variables was done using Chi-Square test.

**Result-** Most (62%) of older people belongs to 58-65 years of age. Majority of the aged were married (62%), all are living in joint families and majority of older people are illiterate (80%) and all the old people of low income group who are in this study are not employed they are dependent on labour work and any other, 48% were found to be malnourished and 30% were at risk of malnutrition, 98% older people are functionally independent. The association between nutritional status and older age group, female gender, dependent functional status, dependent financial status and inadequate calorie intake was found to be significant. The difference in the risk of occurrence of malnutrition between male and female was found statistically significant ( $\chi^2=7.6$ ,  $P=0.02$ ).

**Conclusion-**The present findings reveal that low income group old people are suffered with malnutrition and females are more affected with malnutrition as compared to males due to poor eating habits and age factor.

**Keywords:** Calorie intake, old people, Mini nutritional assessment tool, nutritional status, low income group.

### INTRODUCTION

In India the percentage of elderly population (60+) accounts to about 8.0 percent, constituting 104 million with 53 million females and 51million males during 2011 census. It is projected to increase to 133.32 million (2021), 178.59 million (2031), 236.01 million (2041) and 300.96 million (2051). India's older population will increase dramatically over the next four decades. The share of India's population ages 60 and older is projected to climb from 8 percent in 2010 to 19 percent in 2050, according to the United Nations population division (UN 2011).<sup>[1]</sup> Malnutrition can be defined as the state of being poorly nourished. It may be caused by the lack of one or more nutrients (under-nutrition), or an excess of nutrients (over nutrition).<sup>[2]</sup>

Nutritional needs change throughout life. For the elderly, these changes may be related to normal aging processes, medical conditions, or lifestyles. Assessment of nutritional status is essential for preventing or maintaining a chronic disease and for healing.<sup>[1]</sup> Inadequate attention to malnutrition may lead to poor health in older adults.<sup>[3]</sup> Malnutrition happens when a

person has an imbalance between the nutrients they need and those that they receive and can result from over nutrition or under nutrition. Over nutrition comes from consuming too many calories or too much of any nutrient-protein, fat, carbohydrate, vitamin, mineral, or dietary supplement. Undernutrition results from not consuming enough calories, protein, or nutrients (Merck Manual, 2017).<sup>[4]</sup> Psychosocial risk factors for malnutrition include cognitive impairment, depression, isolation and difficulty accessing food. People can become malnourished whether they are underweight, overweight, or obese and experience the resulting adverse effects on their health, function and well-being. In addition, many studies document under nutrition among older adults in developed countries, including the U.S. One literature review stated that up to 15% of community-dwelling older adults and 23% to 62% of hospitalized older patients experience under nutrition (Soenen and Chapman, 2013).<sup>[5]</sup> Two additional studies support the conclusion that nutrition inadequacy is a major problem among older adults (Kaiser et al, 2010; Agarwal et al, 2013).<sup>[6]</sup> Those at greatest risk of under nutrition are older women, minorities, and people who are poor or live in rural areas. Being age 75+ is an independent risk factor for poor nutrition (Silver, 2009).<sup>[7]</sup> Malnutrition in older adults is associated with complications and premature death. The progression to malnutrition is often insidious and often undetected.<sup>[7]</sup> Understanding the causes of under nutrition is the key to implementing nutrition interventions tailored to the individual. If a person has psychosocial conditions, such as cognitive impairment or depression, professionals need to address them too. Nutritional needs change throughout life. For the elderly, these changes may be related to normal aging processes, medical conditions, or lifestyles. Assessment of nutritional status is essential for preventing or maintaining a chronic disease and for healing.<sup>[7]</sup> The scientific progress has reached a level where

nutritional interventions may play a part in the prevention of degenerative conditions of age, improvement of quality of life and impact on health care burden and resources. Moreover a timely intervention can stop weight loss in elderly at risk of malnutrition or undernourished.<sup>[9]</sup> Evaluation of nutritional status is important for any nutrition or dietary modification so researcher therefore did a study to evaluate the nutritional status of older people living at rural areas of district Saharanpur with help of mini nutritional assessment tool. During the course of old age metabolism processes slows down, People became weak both physically and mentally. They are more prone to sickness, diseases, syndromes, etc. The immunity of a person is lowered. Older people are mostly vulnerable to non-communicable diseases. Reducing health due to increasing age is complicated by non-availability to good quality, age-sensitive, health care for a large proportion of older persons in the country. Few diseases which are common with advancing age obesity, diabetes, greying of hair color, lessened hearing, wrinkling of skin, liver spots on the skin, agility and slower reaction times, reduced ability to clear thinking, diminished eyesight, difficulty recalling memories, weakness to bone diseases such as osteoarthritis.<sup>[10]</sup>

## **MATERIALS AND METHODS**

This cross-sectional study was under taken in the five villages of Nanauta block, Saharanpur district, Uttar Pradesh, India. The study was conducted from July 2018 to Nov 2018.

### **Study population**

A total of 50 older people above 60 years age of male and above 58 years age of female living in the villages under the block were included in this study. Those who were seriously ill, feed by tube and living alone and in nuclear family excluded from the study.

Tools for data collection-The Mini-Nutritional Assessment Short-Form (MNA-SF) is a screening tool used to identify older

people who are malnourished or at risk of malnutrition. The MNA-SF is based on the full MNA, the original 18-item questionnaire published in 1994 by Guigoz and colleagues. The most recent version of the MNA-SF was developed in 2009 (Kaiser et al., 2009) and consists of 6 questions on food intake, weight loss, mobility, psychological stress or acute disease, presence of dementia or depression, and body mass index (BMI), height and weight were measured. Scores of 12-14 are considered normal nutritional status; 8-11 indicate at risk of malnutrition; 0-7 indicates malnutrition. An advantage of the tool is that no laboratory data are needed. [11]

A 24-h dietary recall method was used to assess the calorie intake of the older people. The calorie requirement was calculated by using recommended dietary allowances (RDA) 2010, guidelines as per the weight of the elderly. [12] Adequate calorie intake per 24-h has been defined as the intake of calories as recommended per kg body weight as per RDA 2010 guidelines. Nutritional status assessment was done by MNA tool. Interpretation of scores was done as follows: Score <17: Malnourished, Score 17-23.5: At risk of malnutrition and Score >23.5: Well nourished. [13] All of the older people in the present study went through the complete MNA assessment irrespective of the MNA screening score. Anthropometric examination was done for height, weight, mid upper arm circumference and calf circumference. Weight and height were measured by using standardized weighing machine and height measuring tape wall respectively. Weight was measured to the nearest 0.1 kg and height to the nearest 0.1 cm. For the very older people with spinal curvatures, arm length was used to estimate height. Based on the self-reporting the older people who were self-earning (shop, labour, getting pensions, had savings were considered financially independent and the

elderly who needed help with one or more items were assigned to the functionally dependent group. For the assessment of functional status activities of daily living and instrumental activity of daily living was evaluated by Katz [14] and Lawton's index [15] respectively. In order to find out the association of important variables with nutritional status, only those who fell into the categories of the well-nourished and malnourished by the group of MNA scoring were included. Those who fell into the "At risk" category were excluded. Information of low income of participants was taken from every panchayat secretary of villages of block Nanauta.

**Statistical analysis:** Analysis of data was performed using Microsoft Office Excel 2007. Analysis for qualitative variables was done using Chi-Square test.

## RESULTS

[Table 1] summarizes the nutritional status of the older people as determined by the MNA tool. Of the 50 older people, 48% were found to be malnourished, 30% were at risk of malnutrition and 22% were found to be well nourished.

The association between nutritional status and older age group, female gender, dependent functional status, dependent financial status and inadequate calorie intake was found to be significant. No significant association was found between functional status and nutritional status [Table 2].

[Table 3] illustrates the significant relationship found between nutritional status and calorie intake. Out of the 50 older people, 31(62%) were found to have inadequate calorie intake. Various reasons cited for the inadequate calorie intake were problems of chewing and swallowing (58.5%), some complained of loss of appetite (54.2%), some indicated they could not afford it (48.4%), for some and 38.4% older people were unaware [Table 4].

MNA status	Frequency		Percentage		Table 1- frequency X <sup>2</sup> =7.6; P=0.02 Null ho is rejected (significant association was found between male and female in the risk of occurrence of malnutrition.
	male	female	male	Female	
Well nourished	06	05	24%	20%	
At risk	10	05	40%	20%	
Malnourished	09	15	36%	60%	
total	25	25	100%	100%	

MNA mini nutritional assessment(male and female individually)

Table 1-Shows that the malnutrition percentage is very high in females as compare to males in low income group of older people in rural areas of block Nanauta.

MNA status	Frequency	Percentage (%)
Well nourished	11	22
At risk	15	30
malnourished	24	48
total	50	100

MNA mini nutritional assessment

Sociodemographic variables	Well nourished	Malnourished	total	P value
	N=11	N=24		
<b>Age group</b>				<0.05 P=0.00036
58-65	7(31.81)	15(68.18)	22(100)	
66-85	4(30.76)	9(69.23)	13(100)	
85<				
<b>Gender</b>				<0.05
Males	6(40)	9(60)	15(100)	
Females	5(25)	15(75)	20(100)	P=0.02
<b>Living status</b>				<0.05
With children	5(35.71)	9(64.28)	14(100)	
With spouse and children	6(28.57)	15(71.42)	21(100)	P=0.019
Only relatives				
<b>Financial status</b>				<0.05
Independent	6(33.33)	13(66.6)	19(100)	p=0.009
Dependent	5(31.25)	11(68.75)	16(100)	
<b>Functional status</b>				>0.05
ADL status				p=0.29
Independent	10(30.33)	23(69.6)	33(100)	
Dependent	1(50)	1(50)	02(100)	
<b>Literacy status</b>				<0.05
Illiterate	6(21.42)	22(78.57)	28(100)	p=0.03
Primary	2(33.33)	4(66.6)	06(100)	
Middle	1(100)		01(100)	
High School				
Intermediate				
Graduate and above				
<b>Occupation</b>				
Employed				
Not employed	11(31.42)	24(68.5)	35(100)	
<b>Marital status</b>				<0.05
unmarried				p=0.02
Married	5(25)	15(75)	20(100)	
Widowed	5(35)	10(66.6)	15(100)	

Calorie intake	Nutritional status(n(%row wise))		total	P
	Well nourished (n=11)	malnourished (n=24)		
Adequate	07(63.6%)	04(16.6%)	11(100)	<0.05
inadequate	04(36.4%)	20(83.3%)	24(100)	

Statistically significant at p<0.05. older people at risk were excluded during analysis

Reasons cited	Frequency (n=50)	Percentage (%)
Chewing and swallowing problems	29	58
Complained of loss of appetite	27	54
Not able to afford	24	48
Decision was taken by care givers	23	47
Elderly were unaware	19	38

Multiple reasons were cited. Total older people not taking adequate calorie intake, n=50 (older people falling in the "at risk" category were also included). Statistically significant at p<0.05

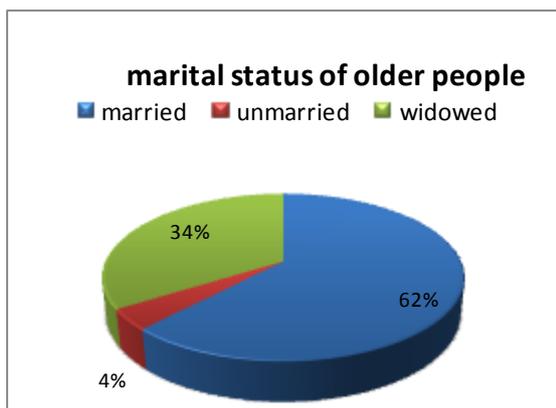


Table:5 This table shows marital status of older people and majority of older people in the total were married (all the categories were also included). Statistically significant at  $p < 0.05$

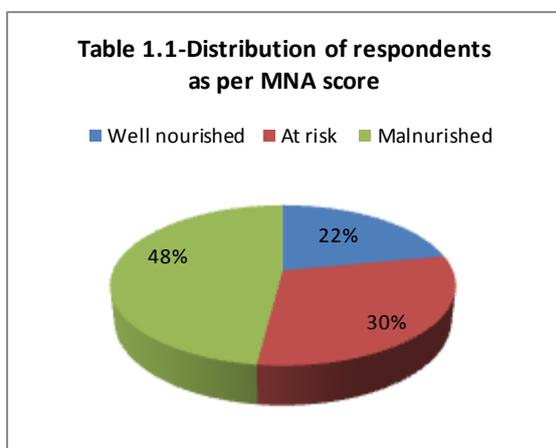


Table (1.1) shows the distribution of respondents as per MNA score of all three categories in this male and female both were included. Statistically significant at  $p < 0.05$

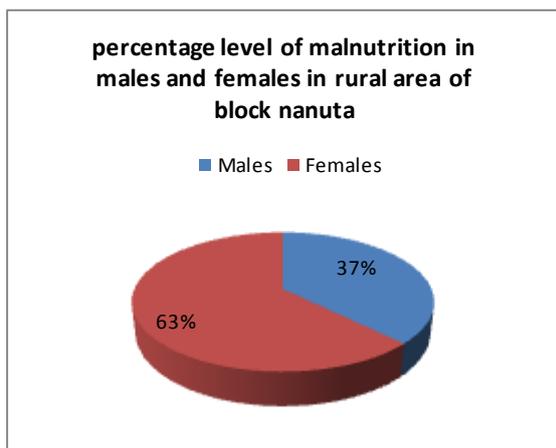


Table:6 shows the percentage level of malnutrition in males and females in rural area of block Nanauta-conclusion shows the high prevalence of malnutrition %in females as compare to males and many reasons cited ex. inadequate diet was one of the reason of this condition of females of low income group in rural areas .

[Table:5] this table shows marital status of older people of low income group rural older people widowed 34% married 60% and unmarried 4% were found in the study males and females both are included in this result and found that majority of older people in the total were married (all the categories were also included). Statistically significant at  $p < 0.05$ .

Table: 6 shows the percentage level of malnutrition in males and females in rural area of block Nanauta.37% males were malnourished and 63% of females were malnourished this is due to inadequate diet, low quality of food items consumed by them, low income, diseases affects their nutritional level, and many reasons of this condition were cited of low income group in rural areas.

## DISCUSSION

Previous study conducted using the MNA questionnaire in western Rajasthan showed a high prevalence of malnutrition and risk of malnutrition among the rural elderly compared the urban elderly (11% and 62% vs. 2% and 36%, respectively). [16] the study conducted by Saeidlou et al. In a nursing home in Iran (2008) [17] observed that a considerably higher percentage (49.6%) of the elderly were malnourished. In the study done in rural Tamil Nadu, Vedantam et al. [18] found that 14% of the elderly were malnourished. Ferdous et al., [19] and Saka et al. [20] also had similar results in their studies. However, the study conducted by Saeidlou et al. In an attempt to study the relationship of different variables with nutritional status, a significant relationship was observed between age groups and MNA status. A similar observation between age group and nutritional status was also made in the studies done by Baweja et al. [16] and Wadhwa et al. [21] in rural Rajasthan. The association between MNA status and gender was found to be statistically significant. This could be attributed to factors such as the role of women in the society and financial dependency which eventually

affects nutritional status. Studies done by Saeidlou et al., [17] Donini et al. [22] and Boulos et al. [23] also found significant associations between female gender and nutritional status. No significant association was found between functional status and nutritional status, which was in consonance with studies done by Boulos et al. in Lebanon [23] and Saikia and Mahanta in Guwahati, Assam. [24] However, studies have shown that malnutrition was more prevalent among the elderly who lived alone. [17] None of the elderly in the present study lived alone. An analysis of the relationship of financial dependency with nutritional status revealed a significant association. Most (62%) of older people belongs to 58-65 years of age and significant association was found between age group and nutritional status. Majority of the aged were married (62%), all are living in joint families and significant association was found between marital status and nutritional status majority of older people are illiterate (80%) and significant association was found between literacy status and nutritional status. There is no significant association was found between occupation and nutritional status, all the old people of low income group who are in this study are not employed they are dependent on labour work and any other work. The intake of food is determined by the purchasing power, and moreover a person can be decisive about food intake if he or she is financially independent. Some studies similarly found that not having an income and not receiving regular financial support were associated with poor nutritional status. [19,24] older women's were found more malnourished in this study. Our analysis showed that the lower MNA scores were associated with those subjects who had fewer than three meals per day. A similar finding was reported in Bangladesh, where most of the elderly who were malnourished or at risk of malnourishment consumed only two meals daily. [25] There was significant association between calorie intake and nutritional status. Similar observations were

also revealed by Vedantam et al. in their study in South India. [18] The most common reasons cited for inadequate calorie intake were difficulty in chewing and swallowing (58%), and loss of appetite (54.2%). The helplessness of older people to take decisions about food intake (47.8%), lack of funds (48.4%) lack of awareness (38.4%) was other reasons cited. Physical and financial dependency thus definitely influenced nutritional status. This study had some limitations. No assessment of biochemical parameters of nutritional status and hemoglobin were done because of constraints of resources.

## CONCLUSIONS AND RECOMMENDATIONS

The overall prevalence of malnutrition was found relatively very high 48%, and the proportion of older people at risk of malnutrition was 30%. Result shows that almost 78% elderly had low MNA scores. Considering the high prevalence of poor nutritional status among elderly, more focus on diet and possible nutritional interventions are required to those found to be at risk of malnutrition or malnourished of Lower income group and should receive particular attention to meet their special needs. Calorie intake was found to be inadequate for the various reasons cited. Therefore, it is necessary to raise awareness of the older people and their caregivers about the quality, quantity and frequency of food intake of older persons. However, a multidimensional approach is required at this moment to deal with these issues. Efforts should be initiated to help the elderly to adopt healthy life style practices to maintain or improve their functional status. Further studies are needed to generate a database for effective policy making and planning for interventions.

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