ASSESSMENT OF NUTRITIONAL STATUS IN ELDERLY POPULATION

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ABSTRACT

Introduction: Malnutrition is a multi-dimensional issue, underreported and untreated major public health problem. Elderly population is a vulnerable group who needs medical attention, the rise in inflation combined with the slowdown of the global economy likely adding more and more health concerns towards older patients. The objective of the study is to evaluate the nutritional status of elderly patients and to correlate the sociodemographic variables and chronic diseases in relation to nutritional status.

Materials and Methods: This cross-sectional study was conducted among the elderly patients. Assessment of nutritional status was performed by MNA tool. All the study participants were assessed by recording their anthropometric measures such as height, weight, mid arm circumference and calf circumference and also structure questionnaires related to global and dietary assessment.

Results: A total of 120 elderly patients nutritional status assessment showed 68 (56.7%) patients are at risk of malnutrition, 34 (28.3%) patients were malnourished and 18 (15%) were nourished adequately. The mean age of the study population is 67.54±6.21 years. 66 (55%) participants were males and the remaining 54 (45%) participants were females. Significant association of malnourishment observed in relation to gender (p=0.00001) and residency (0.00001). Inadequate family income, age group and any existing disease factors had strong association with poor nutritional status among elderly population.

Conclusion: Ageing is a natural phenomenon with greatest challenges to lead a quality of life but positive thinking, taking care of senior citizens, physical activity, discouraging being alone and negligence and mental well being promotes quality of life as age advances.

Keywords: Assessments, Nutrition, Older adults.

INTRODUCTION

Nutritional concerns are continuing as major issues in India. According to the theory of ‘fetal origin of adult disease’, childrens, elders, pregnants and even adolescents are experiencing nutritional transition and are expected to face the increase in trends of non-communicable diseases such as diabetes, hypertension and coronary heart disease [1].

India is a developing middle-income, newly industrialized country showing its outperformance in economy and its GDP is rising, nevertheless, nutritional insecurity,

poverty and malnutrition remain as serious and persistent concerns. Data on consumption survey reports of the National Sample Survey office since 1972-73 to 2011-12 signified that the majority of status has experienced significant calorie intake changes and reduction over time. It is also indicated that inequalities in nutrition in different states, across rural and urban and regional prioritization [2]. A good intake of calories, protein and fat supports the effective functioning of our body.

Malnutrition is an underreported and untreated major public health problem. Malnutrition is a multi-dimensional issue, it should be focused by prioritizing important aspects like health care systems, cost-effective food systems, effective and regulatory financing systems.

According to the WHO 2011 census, India has 104 million older people (60+ years), constituting 8.6% of total population. Amongst the elderly (60+ years), females outnumber males [3]. In elderly population and patients with chronic disease the prevalence of malnutrition increases by two fold, and among individuals living in institutional care the malnutrition prevalence increases by at least three fold [4].

Elderly population is a vulnerable group who needs medical attention, the rise in inflation combined with the slowdown of the global economy likely adding more and more health concerns towards older patients. As age advances there is increased likelihood of facing homeostatic imbalance assaults which leads to increase in the risk of frailty.

Age related evaluation clearly indicates that the older patients are experiencing more morbidity risk factors such as sickness, injury, cardiovascular illness, circulatory diseases, and cancers when compared to other non-elderly patients [5,6].

Nutritional assessment in the elderly consists of many different tests ± clinical, biochemical and anthropometric. However, objective markers of nutritional assessment often do not reflect physiologic, physical, cognitive and emotional function. At present there is no gold standard for evaluating nutritional status. The relationship between nutritional status and functional capacities apparently is the simplest, but also the most reliable indicator of malnutrition. Commonly used assessment tools in practice are the mini-nutritional assessment (MNA), anthropometric measurements such as height, weight, mid-arm circumference, calf circumference, the body mass index, and serum albumin.

This study is aimed to create awareness about the elderly patients nutritional status and its importance. It is a vital part to perform screening to assess nutritional status of elderly population by using a special tool, helps for early intervention with nutritional therapy.

The objective of the study is to evaluate the nutritional status of elderly patients and to correlate the sociodemographic variables and chronic diseases in relation to nutritional status.

MATERIALS AND METHODS

Setting: This cross-sectional study was conducted among the elderly patients attending the department of General Medicine, Government General Hospital, Anantapur, which is a government district hospital serving both rural and urban population.

Study Period: January 2021 to April 2022

Inclusion Criteria: Elderly patients of both sexes

Elderly patients in the age group of ≥ 60 years

Exclusion Criteria: Elderly patients who are critically ill or bedridden or unresponsive patients.

Elderly patients affected with infectious diseases

Study Protocol:

Details pertaining to sociodemographic variables composed of age, sex, patient identification details, place of living, marital status, education, number of children, occupation, residential home type, dependency, adequacy of family income, anthropometric measurements, any comorbidities. Medications were collected through a structured proforma. Weight of the patient, measured using a common weighing scale used in the hospital in kilograms. Heights measured as heel shin height in centimetres.

The Mini-Nutritional Assessment (MNA):

Assessment of nutritional status was performed by MNA tool. All the study participants were assessed by recording their anthropometric measures such as height, weight, mid arm circumference and calf circumference and also structure questionnaires related to global and dietary assessment. Interpretation of MNA tools was done as follows: A score of <17 was considered as malnourished, a score of 17-23.5 signifies that at the risk of malnutrition and score >23.5 it indicated that the person is well nourished [7].

Statistical analysis:

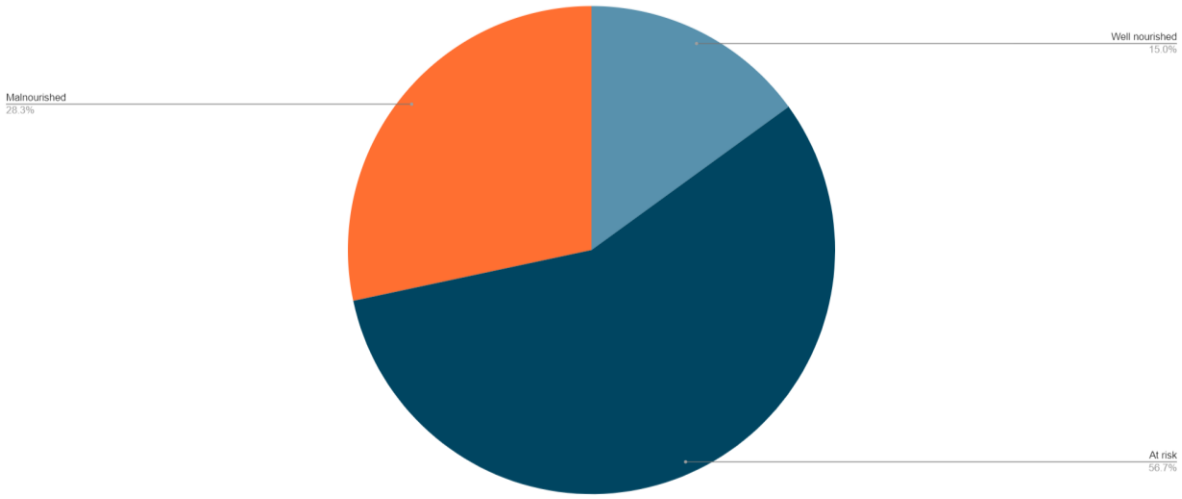
Continuous variables are presented using mean±SD. Categorical variables are presented using frequencies and percentages. Association between categorical

variables was assessed using chi-square test with yates continuity correction. All statistical analysis was performed using SPSS 16.0 for windows. A p value of <0.05 was considered to be statistically significant.

RESULTS

A total of 120 elderly patients nutritional status assessment showed 68 (56.7%) patients are at risk of malnutrition, 34 (28.3%) patients were malnourished and 18 (15%) were nourished adequately according to Mini Nutritional Assessment scale (Fig 1).

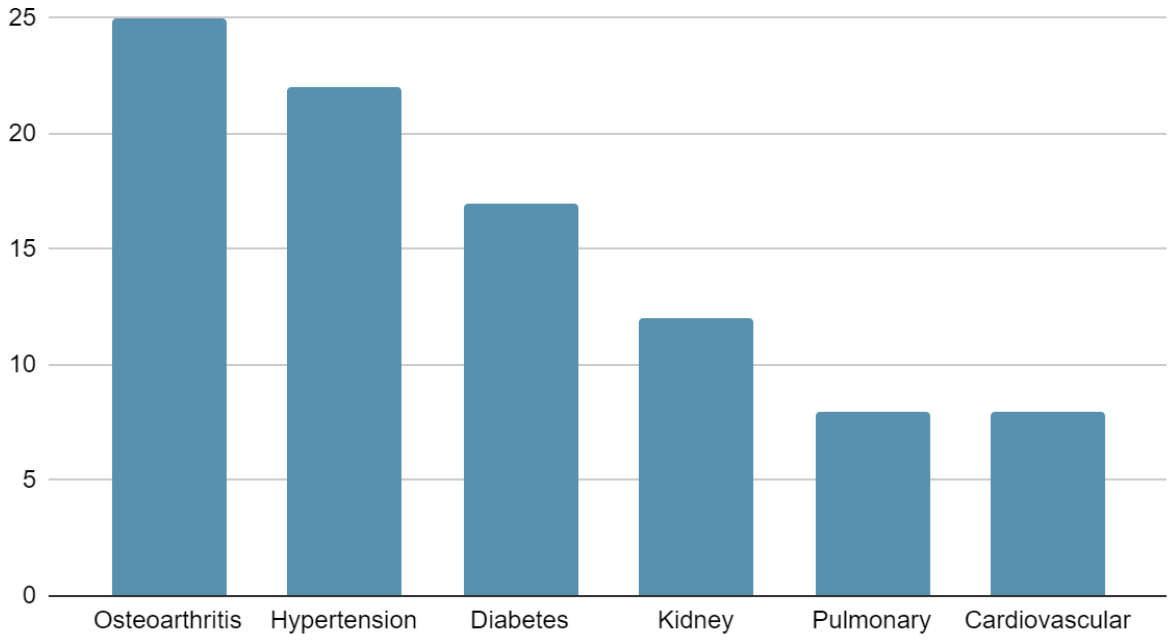
Fig 1. Nutritional status of elderly population



The mean age of the study population is 67.54±6.21 years. 66 (55%) participants were males and the remaining 54 (45%) participants were females. Out of 120 study population, 42 (35%) hailed from urban communities and the remaining 78 (65%) were from rural communities. 62 (51.6%) patients with inadequate family income, 34 (28.3%) family income is almost enough and 24 (20%) patients are surviving with adequate family income. 86 (71.6%) of the study population were living with spouses, 20 (16.1%)

lived with their children and 14 (11.6%) lived alone. Comorbidities were assessed, among 120 study participants 48 (40%) presented with any existing disease and 72 (60%) patients didn't have any existing disease. 20.8% (25) of patients had osteoarthritis, 18.3% (22) of patients had hypertension, 14.1% (17) suffering from diabetes mellitus, 10% (12) had kidney problems, 6.6% (8) had cardiovascular and pulmonary diseases each (Fig 2).

Fig 2. Existing diseases among study population



Significant association of malnourishment observed in relation to gender (p=0.00001) and residency (0.00001). Inadequate family income, age group and any existing disease factors had strong association with poor nutritional status among elderly population (Table 1).

Table 1. Sociodemographic parameters association with well nourished and malnourished elderly population

Sociodemographic variables	Malnourished (n=34)	Well Nourished (n=18)	Total (%)	Chi Square	P value
Age group					
60-75	20 (62.5%)	12 (37.5%)	32 (61.5%)	4.779	0.091
75-85	13 (62.5%)	3 (37.5%)	16 (30.7%)		
>85	1 (25%)	3 (75%)	4 (7.69%)		
Gender					
Males	26 (92.8%)	2 (7.1%)	28 (53.8%)	20.2	0.00001
Females	8 (28.5%)	16 (57.1%)	24 (46.1%)		
Marital status					
Married	22 (73.3%)	8 (26.6%)	30 (57.6%)	1.979	0.159
divorced/single/widowed	12 (54.5%)	10 (45.4%)	22 (42.3%)		
Residency					
Urban	3 (17.6%)	14 (82.3%)	17 (32.6%)	25.43	0.00001
Rural	31 (88.5%)	4 (11.4%)	35 (67.3%)		

Family income					
Inadequate	20 (71.4%)	8 (28.5%)	28 (53.8%)	3.524	0.171
Almost enough	10 (71.4%)	4 (28.5%)	14 (26.9%)		
Adequate	4 (40%)	6 (60%)	10 (19.2%)		
Live with					
Alone	4 (57.1%)	3 (42.8%)	7 (13.4%)	0.499	0.778
Spouse	29 (67.4%)	14 (32.5%)	43 (82.6%)		
Children	1 (50%)	1 (50%)	2 (3.8%)		
Any existing disease					
Yes	18 (72%)	7 (28%)	25 (48.07%)	0.931	0.334
No	16 (59.2%)	11 (40.7%)	27 (51.9%)		

DISCUSSION

Nutritious food and balanced diet are cornerstones of health, providing us energy to promote and maintain tissue growth, and to regulate body processes. Malnutrition is one of the greatest global health challenges. It refers to deficiencies, excesses, or

imbalances in a person's intake of energy and/or nutrients resulting in a measurable adverse effect on body composition, function and clinical outcome [8]. It addresses 3 broad conditions including undernutrition, micronutrient - related malnutrition and overweight, obesity and diet-related non communicable diseases. one or more such forms of malnutrition witnessed in every country of the world.

In India, the world's second most populous country is experiencing a considerable increase in the number of elderly population because there is a decreasing trend in fertility rates and increase in the life expectancy of people by advanced medical techniques.

Physiological factors that cause malnutrition in elderly patients are decrease in appetite, reduced physical activity and fat free body mass diminishes even in the absence of overt catabolic illness. Poor nutritional status of the older patients is attributable to multiple predisposing risk factors such as biological, psychological and social stressors, and also medical illness that are associated with inadequate nutritional intake such as oral and dental problems, comorbidities, disability and functional impairment.

The projected data from United Nations Department of Economic and Social Affairs, 2008 [9], elderly population in India is estimated to reach 158.7 million in 2025 and is expected, by 2050, to surpass the population of children below 14 years [10].

68 (56.7%) patients are at risk of malnutrition, 34 (28.3%) patients were malnourished and 18 (15%) were nourished adequately. A study by Rashmi Agarwalla et al [11] on nutritional status evaluation of the elderly patients by using MNA noted that malnourished patients were 15%, patients at risk of malnutrition were 55% and remaining 30% were found to be well nourished. A study from Bangladesh on

malnutrition showed malnourishment in 26% of the elderly population and 62% of the population were at risk [12]. Our study findings in relation to malnutrition rate were similar to studies from other countries including a study from Italy documenting a malnutrition at 25% [13], a study on geriatric population living at six nursing homes in Iran documented 49.6% of the participants were malnourished [14], a study from India noted 32.5% of malnourished patients [15] and a study from turkey with 28% poor nutritional status in elderly population [16].

20.8% (25) of patients had osteoarthritis, 18.3% (22) of patients had hypertension, 14.1% (17) suffering from diabetes mellitus, 10% (12) had kidney problems, 6.6% (8) had cardiovascular and pulmonary diseases each in the present study. Acute infections were observed in three-quarters of the participants, 66% participants presented with chronic illnesses, 36% suffered from sensory impairments and 81% had gastrointestinal disorders. Significant association with malnutrition observed in acute infections, gastrointestinal disorders, depressive symptoms and impaired cognitive function [12]. Bakhtiari A et al [17] did a study on the prevalence of major diseases associated with malnutrition, among the study participants 64.41% were normal, 32.21% had hypertension, 24.54% had diabetes, 23.31% suffering with cardiovascular disease, 7.67% patients had rheumatic disease, 6.44% had pulmonary disease, 4.9% had kidney problems and remaining 1.23% suffering with cancer.

Significant association of malnourishment observed in relation to gender (p=0.00001) and residency (p=0.00001). Inadequate family income, age group and any existing disease factors had strong association with poor nutritional status among elderly population in this study. In a similar study by Rashmi Agarwalla et al [11] noted the

significant association between the nutritional status and the age group, gender, status of being financially and functionally dependent. Association between living status and nutritional status is not significant. Ferdous T et al [12] noted malnutrition was significantly associated with female gender, inadequate family income, illiteracy and not receiving financial support. Baweja S et al [18] documented in their study that the age group parameter had significant association with poorer nutritional status. In line with this study, many research works noted significant and independent association of gender with poor nutritional status [14,19,20]. A large repertoire of works on nutritional status in the older age population supported that no income and not receiving regular financial support were inadequately associated with malnutrition [12,21,22].

The limitations of this study include it couldn't establish the casualty due to cross-sectional study, population selection mostly from rural communities as it is a government hospital and could be the presence of unidentified factors and residual bias.

In developing countries like India, dietary diversity, nutrition inequalities with communities, policy implementation difficulty and insufficient investments are the biggest challenges to reduce the burden of malnutrition. In such scenarios, bio-fortification is one of the best and cost-effective methods to improve the nutritional status of the population.

CONCLUSION

Ageing is a natural phenomenon with greatest challenges to lead a quality of life but positive thinking, taking care of senior citizens, physical activity, discouraging being alone and negligence and mental well being promotes quality of life as age advances.

At the central level and population level there is a great need to diversify the nutrient-rich foods such as grains, cereals to improve dietary diversity in India and nutritional status of vulnerable populations.

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