

**NUTRITIONAL ASSESSMENT OF ELDERLY WITH DIABETES VISITING
KARNATAKA INSTITUTE OF ENDOCRINOLOGY AND RESEARCH USING MINI
NUTRITIONAL ASSESSMENT.**

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ABSTRACT

Malnutrition in the elderly is an under recognized condition that is increasing in prevalence as the population ages. Older adults are more likely to have chronic conditions like diabetes, cardiovascular diseases and cancer, which further puts them at risk of malnutrition and increases the frequency of hospitalization. If identified early, malnutrition can be treated with proper adherence to a nutritional intervention plan. In this present study, 75 elderly aged 65 years and above with diabetes were selected as participants from the outpatient department of Karnataka Institute of Endocrinology and Research, Bangalore. Nutritional status was assessed using Mini Nutritional Assessment tool (MNA). The findings showed that 84% (63) of people were normal, 16% (12) were at risk of malnutrition and none of them were malnourished. Early recognition and treatment of malnutrition are not only beneficial for the people's health but can reduce overall cost to the healthcare system.

KEYWORDS: Nutritional Status - Elderly - Mini Nutritional Assessment – Malnutrition.

INTRODUCTION

Aging is an inevitable phenomenon. Increase in life expectancy over the year due to advancement in medical science and health care delivery system has led to a rapid increase in elderly population both in developed and developing countries.^[1] Elderly aged 65 years and above made up 7.7% of the global population in 2013, and it is estimated that this will increase to 10.2% by 2023, to 20.8% by 2050 and 27.7% by 2075.^[2] India's elderly population is also growing rapidly and accounted for 8.1% of total population in 2011.^[3] Such a rapid rise in the elderly population will definitely pose several challenges.

Among different elderly health issues like chronic non communicable disease, mental health and disability, malnutrition also is quite prevalent and it usually coexists with other morbidities. The magnitude of malnutrition among the elderly in India is underreported. In old age, under nutrition is the main cause of concern than over nutrition since its relation to morbidity and mortality is stronger than that of obesity.^[4] In the elderly, inadequate food consumption due to a loss of appetite

results in a decrease in muscle and fat mass and the development of malnutrition.^[5]

Diabetes mellitus is one of the most prevalent endocrine pathologies, especially in the elderly (>65 years).^[6] Malnutrition is highly prevalent in elderly diabetic inpatients and it should be screened in these people, in order to detect and treat an early malnutrition state for a better overall management.^[7] Failure to diagnose malnutrition can increase the morbidity and mortality.

Mini nutritional assessment tool (MNA) is a widely used international questionnaire to evaluate the nutritional state of elderly with high sensitivity (98.9%), specificity (94.3%), and diagnostic accuracy (97.2%). It closely correlates with biochemical and anthropometrical markers that were verified by a number of clinical studies on wide sets of geriatric patients.^{[8],[9],[10]} The present study was carried out to assess the nutritional status of the elderly with diabetes aged 65 years and above using MNA tool visiting KIER. This will initiate further studies in the future.

MATERIAL AND METHODS

Study design

This study is an observational study in which a standard questionnaire MNA has been used to assess nutritional status of 75 elderly with diabetes aged 65 years and above, visiting KIER by face to face interview technique and no follow up was done. All gathered data was statistically analyzed.

Inclusion and exclusion criteria

Elderly aged 65 years and above with diabetes, with no other co morbidities and who were not hospitalized were included. People who were too ill, who had other co morbidities and hospitalized were excluded.

RESULTS AND DISCUSSION

In the present study, out of 75 people, 55 were men and 20 were women. Among the participants, about 45 (60%) people had diabetes from 10 years and 30 (40%) people had diabetes from more than 10 years.

Around 65 (86.6%) people did not have any decrease in food intake; their calorie intake was high which can

increase their weight and increase the chances of other co morbidities. 10 (13.3%) people had a moderate decrease in food intake due to acidity, indigestion and lack of appetite.

In 56 (74.6%) people, there was no weight loss, 9 (12%) of them had a weight loss of 1-3 kg in the last 3 months and 4 (5.3%) of them had more than 3 kg of weight reduction, which may be due to reduced food intake or high blood sugars or due to loss of lean body mass, which is common in elderly (Table 1).

Most of them (98.6%) were able to get out of the house for walks and to run some household errands. No one was involved in any kind of resistance activity, which can help in maintaining the muscle mass.

About 41 (54.6%) people did not have any psychological problems, 32 (42.6%) people had mild dementia wherein they had forgetfulness and 2 of them were depressed due to some personal loss. Dementia and depression can be present in old age due to ageing and loneliness, which can in turn affect their food intake and missing medication (Table 1).

Table 1: Screening of the participants.

	Number of participants	Percentage
Gender		
Women	20	26.6%
Men	55	73.3%
Duration of diabetes		
<10 years	45	60%
>10 years	30	40%
SCREENING		
A. Decrease in food intake		
No decrease	65	86.6%
Moderate decrease	10	13.3%
Severe decrease	0	0%
B. Weight loss during last 3 months		
No Weight loss	56	74.6%
Weight loss between 1-3 kg	9	12%
Weight loss more than 3 kg	4	5.3%
Does not know	6	8%
C. Mobility		
Bed or chair bound	0	0
Able to get out of bed but does not go out	1	0.75%
Goes out	74	98.6%
D. Has suffered psychological stress or acute disease in last 3 months		
Yes	15	20%
No	60	80%
E. Neuropsychological symptoms		
Severe dementia	2	2.6%
Mild dementia	32	42.6%
No psychological problems	41	54.6%
F. BMI		
<19	2	2.6%
19 – 21	3	4%
21 -23	13	17.3%
>23	57	76%

Nearly 57 (76%) people had BMI higher than the ideal range, which could be a result of high calorie intake and decreased physical activity. This can increase the chances of other co morbidities like cardiovascular problems, dyslipidemia etc. 16 (21%) of them were in the ideal body weight range and 2 (3%) were in the underweight category, which could be due to high blood sugars or reduced calorie and protein intake, which if not corrected can cause protein energy malnutrition (Figure 1).

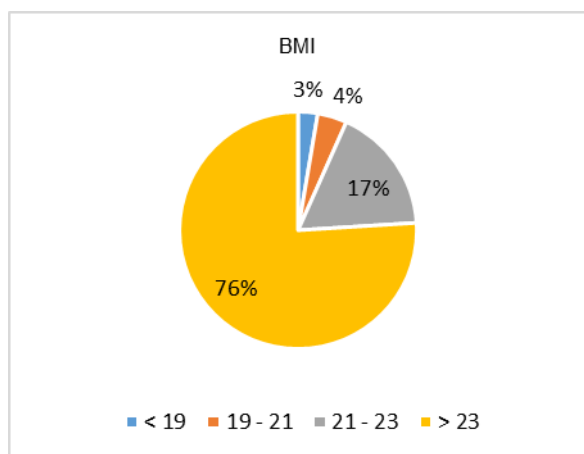


Figure 1: BMI classification of the participants.

The screening score showed that about 59 (78.6%) people were normal and 16 (21.3%) were screened as at risk of malnutrition. None of them were malnourished (Figure 2). These 16 people who were screened as at risk of malnutrition were further assessed for malnutrition.

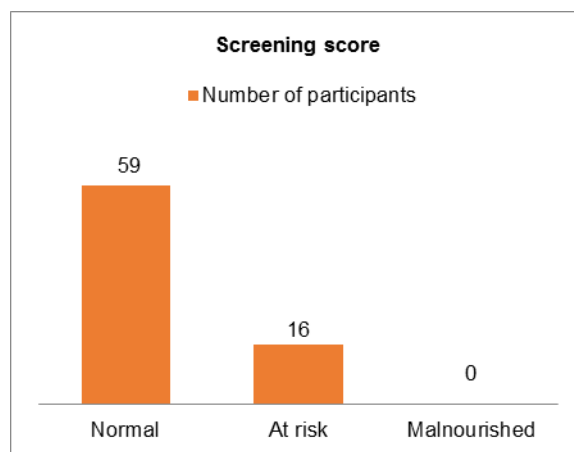


Figure 2: Screening of the participants.

Table 2: Nutritional assessment of the participants.

	Number of participants (n = 16)	Percentage
G. Lives independently		
Yes	16	100%
No	0	0
H. Takes more than 3 prescription of drug		
Yes	6	37.5%
No	10	62.5%
I. Pressure sores or skin ulcers		
Yes	4	25%
No	12	75%
J. How many full meals does the patient eat daily		
1 meal	0	0
2 meals	1	6.25%
3 meals	15	93.7%
K. Markers for protein intake		
0 or 1 yes	5	31.25%
2 yes	11	68.75%
3 yes	0	0
L. Consumes 2 or more servings of fruit and vegetable		
Yes	10	62.5%
No	6	37.5%
M. How much fluid is consumed per day		
Less than 3 cups	0	0
3 – 5 cups	2	12.5%
More than 3 cups	14	87.5%
N. Mode of feeding		
Unable to eat without assistance	0	0
Self-fed with difficulty	0	0
Self-fed without any problem	16	100%

O. Self-view of nutritional status		
Views self as malnourished	4	25%
Uncertain	4	25%
View self as having no nutritional problem	8	50%
P. In comparison with other people of same age, how does the patient consider his/her health		
Not as good	5	31.25%
Does not know	1	6.25%
As good	1	6.25%
Better	9	56.25%
Q. Mid arm circumference (MAC) in centimeters		
Less than 21	1	6.25%
21 – 22	1	6.25%
>22	14	87.5%
R. Calf circumference (CC) in centimeters		
Less than 31	5	31.25%
31 or greater	11	68.75%

All of them were living with their families and not in a nursing home or a hospital. All were self-fed with 3 meals a day without any problem. 9 people viewed themselves having no nutritional problems and thought they were better than other people of their age.

About 5 participant’s protein intake was less, as they were not consuming protein rich foods on a daily basis. They were advised to include foods like whole pulses, dals, dairy, eggs and groundnuts to meet their daily protein needs. 6 of them were not consuming enough fruits and vegetables due to affordability, unavailability and unawareness about the importance of them. People were educated about including at least 1 fruit and 3 cups of vegetables in the diet, which are locally grown and are affordable (Table 2).

Most of the participants had their MAC (mid arm circumference) and CC (calf circumference) in the normal range but 5 of them had CC below the normal range which shows that there may be decrease in muscle mass due to inadequate protein intake or due to lack of resistance exercise (Table 2).

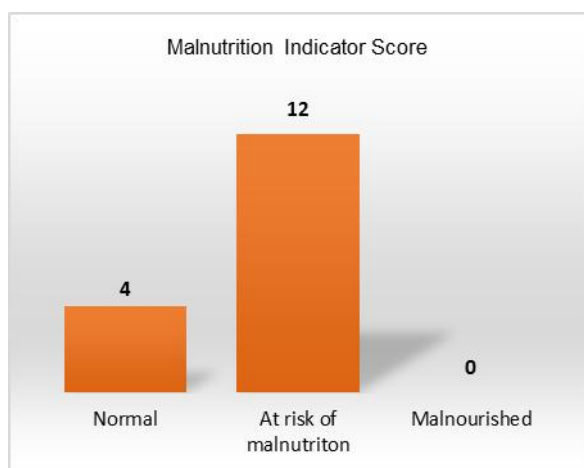


Figure 3: Malnutrition Indicator Score of the participants.

According to MNA score (Figure 3); 4 out of 16, who were at risk of malnutrition following screening were normal after further assessing for malnutrition. 12 people out of 75 were at risk of malnutrition i.e. 16% of the total number of participants and none of them were malnourished. A chi square test with a p value 0.49 shows statistical significance against community level malnutrition. Though malnutrition in elderly with diabetes is not very high at community level in the chosen group, which may be due to a small sample size, increase in older population can increase the number of people with at risk of malnutrition and can predispose them to disease, hospital admission, delayed recovery from illness and can adversely affect their body function, wellbeing and clinical outcome.

Despite the increased risk in this vulnerable group, malnutrition is often unrecognized and untreated. So it is important to identify malnutrition and start early intervention to prevent unnecessary hospital admission.^[11]

Association between Diabetes and Malnutrition

Diabetes in older adults is linked to increased mortality and complication rates when compared to young diabetics and to the people in the same age group without diabetes.^{[12], [13]} A chi square statistical test with p value of 0.19 shows greater co relation between duration of diabetes and malnutrition. 40% (30) of the total participants had diabetes from more than 10 years (Table1), which can increase their chances of malnutrition and other complications.

Association between BMI and Malnutrition

Most of the participants (76%) had BMI higher than the normal range, 21% were in the normal range and only 3% were underweight (Figure 1). However, according to MNA, about 16% (12) of the people were at risk of malnutrition (Figure 3), which shows that BMI cannot be an independent indicator of malnutrition. High BMI can actually cover underlying malnutrition at screening and

can influence overall MNA score unless a body composition or clinical test is done. Hence a nutritional assessment using a full MNA score is advised regardless of their BMI.^[14]

CONCLUSION

This observational study shows that 84% (63) of the people in the study group were normal, about 16% (12) were at risk of malnutrition and none of them were malnourished. The duration of diabetes increased the risk of malnutrition in the elderly. Malnutrition should be corrected by implementing appropriate nutrition and exercise plan. A healthy diet with adequate proteins and moderate fat can improve their nutritional status and reduce cardiovascular diseases along with frequent hospital admission. Hence nutritional assessment is an important step needed to help intervene earlier. Early detection can help in thorough assessment and earlier intervention to prevent further malnutrition and improve their quality of life.

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