ASSOCIATION OF APPETITE, FUNCTIONAL AND PSYCHOSOCIAL STATUS WITH THE MALNUTRITION AMONG ELDERLY RESIDING IN OLD AGE HOMES

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ABSTRACT

Malnutrition is a common phenomenon among the elderly and quite often related to psychological and functional problems. The objective of this study was to determine malnutrition risk and its association with appetite, functional and psychosocial status among elderly residing in old age homes of Delhi. The study was conducted among 200 subjects (male=100 and female=100), with a mean age of 79.1 ± 5.52 years (male) and 76.7 ± 7.44 years (female), who were interviewed to obtain information on malnutrition risk and appetite using Mini Nutritional Assessment and Simplified Nutritional Appetite Questionnaire. Functional status was also determined using Instrumental Activities of Daily Living (IADL) and Elderly Mobility Scale (EMS). Geriatric Depression Scale was used to identify cognitive impairment, depressive symptoms and loneliness status of subjects respectively. A total of 29% of subjects were at risk of malnutrition and 43.5% had poor appetite. The mean scores of EMS of the elderly who were dependent in mobility were 9± 0 and about 50.5% of the subjects were having low functional ability. Pearson correlation showed that the nutritional status was positively correlated with the appetite (0.75) and functional ability (0.72). It was also found that there was a negative correlation between the nutritional status and depression level (-0.53) of the elderly. The correlation indicates that if the subjects have good appetite and indulge in light activities then there will be an improvement in their nutritional status. Malnutrition risk was prevalent and associated with poor appetite, functional status and psychosocial problems among the elderly subjects.

KEYWORDS: Malnutrition, elderly, functional, Appetite, psychosocial aspects.

INTRODUCTION

Conventionally, "elderly" has been defined as a chronological age of 65 years old or older, while those from 65 through 74 years old are referred to as "early elderly" and those over 75 years old as "late elderly.[1] The health problems of the elderly are complicated by social, economical and psychological situations. Moreover, these problems are usually multiple and are often masked by sensory and cognitive impairments.[2] Malnutrition is defined as "a state of nutrition in which a deficiency or excess (or imbalance) of energy, protein, and other nutrients causes measurable adverse effects on tissue/body form (body shape, size and composition) and function, and clinical outcome".[3] Malnutrition is the state of being poorly nourished. Malnutrition is not an inevitable side effect of ageing, but many changes associated with the process of ageing can promote malnutrition. Such as, ageing is frequently associated with decreases in taste acuity and smell, deteriorating dental health, and decreases in physical activity,

psychosocial problems which may all affect the nutrient intake. Anxiety or stress is also thought to be associated with changes of food intake. For example, low mood may lead people to eat more and may result in their seeking "comfort foods" or foods that make them feel better.[4] The risk of developing malnutrition increases with advancing age.[5, 6]

Methodology

Locale of the study: This study was conducted in the old age homes of all the four zones (east, west, and north, south).

Sampling: Purposive sampling Technique was employed for this study. Elderly of age group above 65 years were selected.

Sample size: The sample consisted of 200 elderly (100-females and 100- males) of age group above 65 years.

Development of Tools and Collection of Data

A detailed interview scale was prepared for the collection of data and following methods were used for gathering information.

- Interviewing method
- Anthropometric measurements
- Dietary survey
- Statistical Analysis

➤ **Interview Method**

In this method standardized scoring scales were used. This included the information regarding name, age, sex, education, eating pattern and food habits.

➤ **The questionnaires are divided into three categories as follows:**
- Nutritional assessment
- Functional assessment
- Psychosocial assessment

➤ **Scoring Scales**
- **Mini Nutritional Assessment Questionnaire (Annexure1)**

The MNA is a highly specific, reliable and validated screening tool for malnutrition in the elderly. Performing the MNA is not time consuming, the complete form does not exceed 15 minutes. Mini Nutritional Assessment (MNA) comprises of 18 questions regarding anthropometry.[7]

- **Simplified nutritional appetite questionnaire (Annexure2)**

This tool was designed to assess appetite and predict weight loss in older people. This allows for pre-emptive identification and management.[8]

- **Elderly mobility scale (Annexure 3)**

EMS evaluates an individual's mobility problems through seven functional activities including bed mobility, transfers and bodily reaction to perturbation (Chiu et al 2003). Speed of sit to stand and walking speed are analyzed.[9,10]

- **Instrumental activities of daily living scale (Annexure 4)**

Lawton's Scale

Lawton's encompasses the more complex activities needed for greater social independence, such as: using the telephone, shopping, preparing meals, housekeeping or working in the garden, household repairs, doing the laundry, using transportation, handling medication and managing personal and/or household finances.[11]

- **Geriatric depression scale (Annexure 5)**

The Geriatric Depression Scale (GDS) was developed as a simple, easy-to-use tool to screen for depression in older adults; the original GDS Long Form is a 30-item questionnaire in which participants are asked to answer yes or no to questions.[12]

The dietary assessment was done by using the 24 hour dietary recall and nutrient adequacy ratio.

24 hour dietary recall: The dietary intake data of the subject was collected for 3 consecutive days in a week (inclusive of a holiday) using 24 hour recall method. Information on the total cooked amount of each preparation is noted in terms of standardized cups.

Nutrient Adequacy Ratio: Since the adequacy of the diet is a function of the extent to which its contribution of particular nutrients meets our best estimate of the need for those nutrients; it is helpful to calculate a Nutrient Adequacy Ratio (NAR) for each nutrient.[13]

NAR = Amount of nutrient in diet / RDA for that nutrient

RESULTS AND DISCUSSIONS

Nutritional assessment of elderly through Mini Nutritional Assessment Questionnaire.

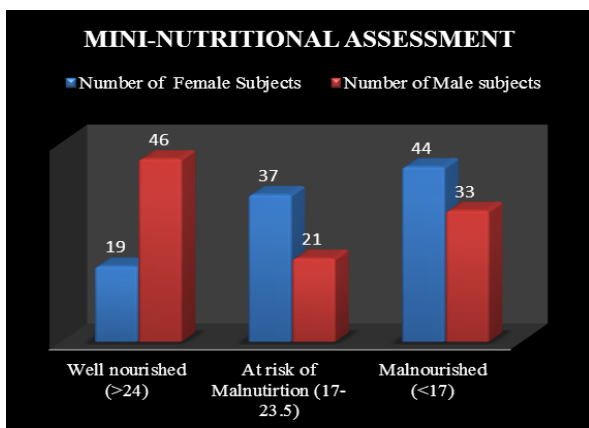| Mini Nutritional Assessment	Male Subjects (n=100)	Female subjects (n=100)	Total (n=200)	Mean Score (Mean ± SD)	
				Male	female
Well nourished (>24)	46	19	65	24.60± 0.714	24.27± 0.61
At risk of Malnutrition (17-23.5)	21	37	58	19.61± 0.92	20.22± 0.92
Malnourished (<17)	33	44	77	14.84± 2.01	14.61±1.78

Table: Represents the nutritional status of the elderly which reveals that most of the male subjects were well nourished whereas highest number of female subjects was malnourished. Thus, the prevalence of malnourishment was high among female elderly.

Appetite assessment of elderly through Simplified Nutritional Appetite Questionnaire.

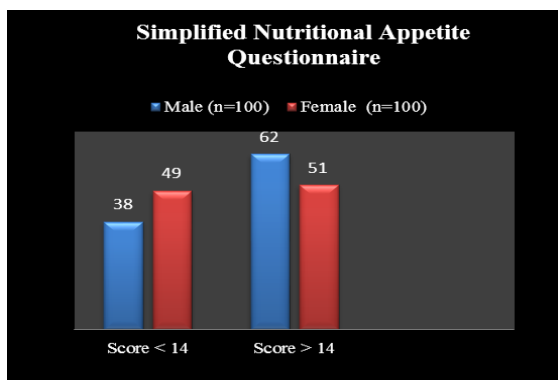| SNAQ	Male (n=100)	Female (n=100)	Mean Score (Mean ± SD)		Pearson correlation
			Male	Female	
Score < 14	38	49	11.02± 0.85	11.12± 1.09	0.75
Score > 14	62	51	15.01± 1.09	15.35±0.97	

Table reveals that according to the simplified nutritional appetite questionnaire 38% of male subjects were at significant risk of at least 5% weight loss within six months whereas 49% of female subjects were at significant risk of at least 5% weight loss within six months. The number of elderly who were having normal appetite was 62% in males and 51% in females respectively. There was a positive moderate correlation (0.75) between the appetite and nutritional status which indicates that with the increase in appetite of the subjects there will be an improvement in the nutritional status of the elderly.

Functional ability of elderly through Elderly Mobility Scale (EMS) and Instrumental Activities of Daily Living Scale (IADL).

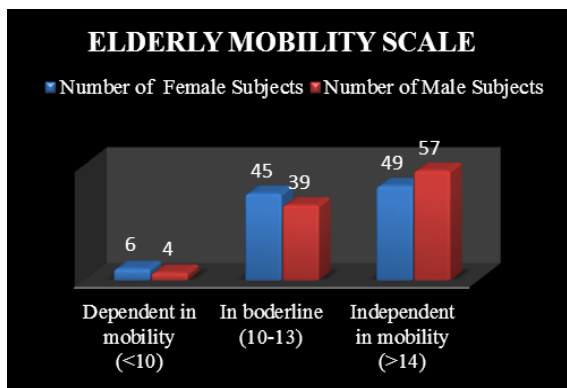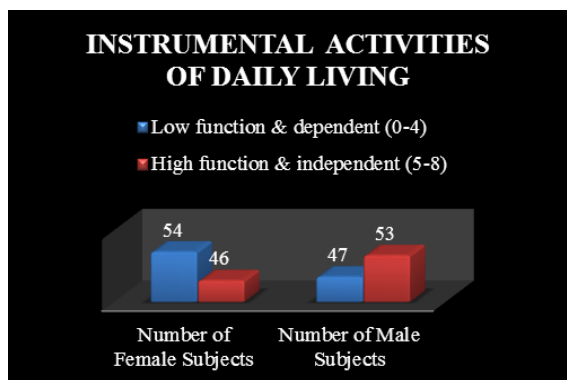| EMS	Male (n=100)	Female (n=100)	Mean Score Mean ± SD		Pearson correlation
			Male	Female	
Dependent in mobility (<10)	4	6	9± 0	9± 0	
In borderline (10-13)	39	45	11.35± 1.03	11.33± 1.08	
Independent in mobility (>14)	57	49	17.12±1.63	16.26± 1.66	
IADL					0.72
Low function and dependent (0-4)	47	54	2.87± 0.84	3.11± 0.66	
High function and independent (5-8)	53	46	6.26± 0.96	6.34± 0.84	

Table revealed that according to the EMS scale 6% female subjects were dependent in mobility in comparison to the 4% male subjects. Similarly, at borderline there were 45% of female and 39% of male subjects. Comparatively subjects independent in mobility were 49% female and 57% male subjects. The table also shows that according to the IADL scale 54% of female subjects showed low function and dependent in comparison to the 47% male subjects. Similarly 46% female subjects showed high function and independent in where as in males it was 53%. There was a moderate positive correlation (0.72) between the functional ability and the nutritional status of the elderly which indicates that the improved nutritional status will lead to increased functional abilities of the elderly.

Psychosocial status of elderly through Geriatric Depression scale.

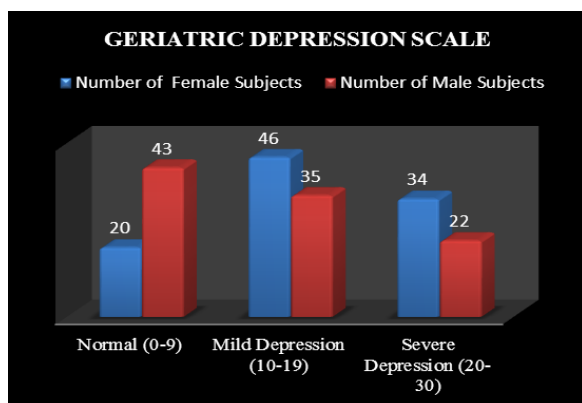| GDS	Male (n=100)	Female (n=100)	Mean Score Mean ± SD		Pearson correlation
			Male	Female	
Normal (0-9)	43	21	4.97± 3.56	5.23± 3.03	
Mild Depression (10-19)	35	46	14.25± 2.04	13.67± 2.17	-0.53
Severe Depression (20-30)	22	33	21.81± 1.33	22.81± 1.53	

Table reveals that according to the Geriatric Depression Scale 21% of the female subjects were normal in their psychosocial status in comparison to the male subjects which was 43%. Similarly mild depression is 46% and severe depression is 33% in females. Comparative ratio in male is 35% in mild depression and 22% in severe depression respectively. There was a significant association between geriatric depression scale and the gender. There was a moderate negative correlation (-0.53) between the depression level and the nutritional status of the elderly which indicates that the increased depression levels leads to the decline in the nutritional status of elderly.

Mean intake of nutrient by the elderly.

	RDA		Intake (Mean ± SD)		T- Value
	Elderly Male	Elderly Female	Elderly Male	Elderly Female	
Energy (kcal)	2100	1700	1203.09 ± 193.85	1121.82 ± 350.17	2.03
Protein (g)	55	45	33.91 ± 7.22	26.92 ± 136.37	8.005***
Fat (g)	25	25	35.24 ± 6.08	28.86 ±3.17	9.29***
Carbohydrates (g)	413.75	323.75	300.46 ± 70.37	222.11 ± 48.8	9.143***
Calcium (mg)	500	500	315.53 ± 39.42	361.44 ± 46.04	7.573***

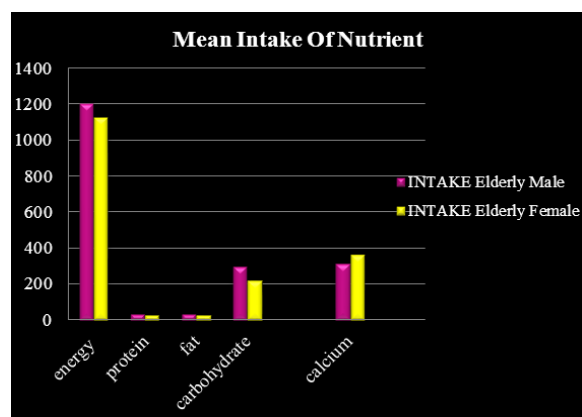***Significant at $p < 0.001$

Table shows that the mean of energy, protein, carbohydrates, and calcium intake of all the subjects was below the RDA. Only the fat consumption of both male and female elderly was more than the RDA. There was a highly significant difference ($p < 0.001$) in the nutrient intake of male and female elderly. Elderly male were consuming protein, fat and carbohydrates in larger amounts as compared to elderly female.

Nutrient Adequacy Ratio (NAR).

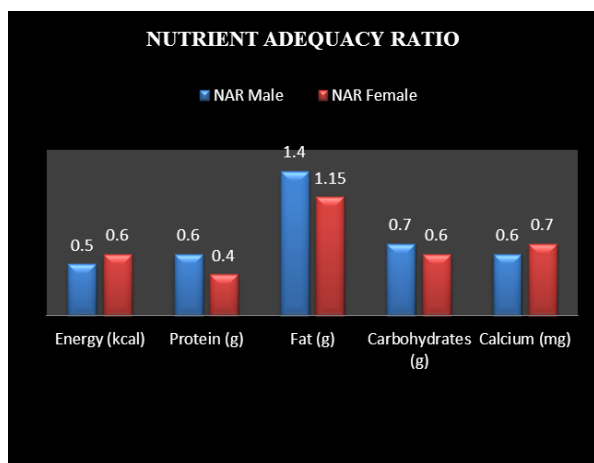|	Elderly		NAR Range	Inference
	Male	Female		
Energy (kcal)	0.5	0.6	<1	Needs not met
Protein (g)	0.6	0.4	<1	Needs not met
Fat (g)	1.4	1.15	>1	Needs met
Carbohydrates (g)	0.7	0.6	<1	Needs not met
Calcium (mg)	0.6	0.7	<1	Needs not met

Table shows the nutrient adequacy ratio of the elderly which reveals that the energy, protein, carbohydrate and calcium requirements of the all subjects were not met whereas the fat requirements were met.

CONCLUSION

The study concluded that a total of 29% of subjects were at risk of malnutrition and 43.5% had poor appetite. The mean scores of EMS of the elderly who were dependent in mobility were 9 ± 0 and about 50.5% of the subjects were having low functional ability. Pearson correlation showed that the nutritional status was positively correlated with the appetite (0.75) and functional ability (0.72). It was also found that there was a negative correlation between the nutritional status and depression level (-0.53) of the elderly. The correlation indicates that if the subjects have good appetite and indulge in light activities then there will be an improvement in their nutritional status. Malnutrition risk was prevalent and associated with poor appetite, functional status and psychosocial problems among the elderly subjects.

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