

Malnutrition and its Relation to Food System among Elderly Home Male Residents in Cairo, Egypt

Sweed HS^{1,2}, Mabrouk RR³, Kamel HY^{1,2}, Jamil MA^{1,2}

1 Geriatrics and Gerontology Department, Faculty of Medicine, Ain Shams University, Cairo

2 Ain Shams Ageing Research Center

3 Clinical Pathology Department, Faculty of Medicine, Ain Shams University, Cairo

Abstract

Background: Malnutrition in institutionalized elderly is of individual and public concern since it negatively affects health outcome and quality of life and is often preventable. Assessing this problem is an important step of the residents' assessment to combat morbid sequences.

Aim: Assessing the nutritional status and its association with the food system for male residents of elderly homes in Cairo, Egypt.

Methods: 200 male residents were randomly selected from 7 elderly homes in Cairo. Data was collected via questionnaires, including demographic characteristics, and past medical history. The MNA questionnaire was used to gather information regarding nutritional risk. Focused dietary assessment and assessing the feeding system in the elderly home using a questionnaire was performed.

Results: Among the 200 participants, 17(8.5%) were malnourished, 96 (48%) were at risk of malnutrition and 87 (43.5%) were well nourished. The presence of refrigerators and eating in dining room were significantly associated with good nutritional status.

Conclusions: The high prevalence of nutritional risk mandates regular screening of elderly home residents. This will allow early nutritional intervention and timely prevention of further nutritional and functional deterioration. The relation between nutritional risk and the food system requires increased awareness of proper food system characteristics in a residential care facility.

Keywords: Malnutrition in Elderly homes, residential care in Egypt.

Background:

Malnutrition is a state of deficiency, imbalance or excess of energy, protein and other nutrients having adverse effects on the body and poor clinical outcomes.¹

Malnutrition, low body mass index (BMI) and unintentional weight loss are risk factors for mortality and have a negative influence on the functional status and psychosocial well-being of the elderly population.² The research of Otero et al. 2002 in Brazil investigating the mortality associated with malnutrition among the elderly shed light to the importance of this matter and the crucial need to pay more attention to this population and intervene whenever necessary.³

The prevalence of malnutrition reported in the residents of the nursing homes has a wide range among different populations. One reason might be the lack of extended

researches regarding nutritional deficiencies in nursing homes. Another reason might be the fact that malnutrition in this vulnerable population can easily be neglected by the nurses and other staff.⁴

Elderly residents in nursing homes are at an increased risk of malnutrition due to a variety of factors including sensory loss, chewing and swallowing problems, a decrease in or loss of appetite, mobility restrictions, cognitive impairment, depressed mood and acute or chronic diseases demanding the use of multiple medications.⁵

Food and environmental conditions that may affect intake should be considered in a continuing evaluation. Consideration of food preferences, food consistency, food temperature, and snacks should be included. Provision of pleasant, well-lighted, unhurried mealtimes

in a social environment may increase intake. ⁶

The institutional setting, which may have rigid routines, low staffing levels and un-homely environment, may exacerbate the existing medical problem, by minimizing the positive aspects of enjoyment and social contact. Similarly, a narrow range of food choices is associated with poorer nutritional status. ⁷ As a vicious cycle this inadequate dietary intake and malnutrition contributes not only to the progression of already existing chronic diseases such as cardiovascular disease, osteoporosis or mental disorders but can also predispose the subject to various acute health problems such as infection or dehydration. ⁸

About this problem, Egypt is of no exception. Investigations regarding nutritional status in nursing homes in Egypt have demonstrated the same results, that malnutrition is a serious problem in nursing homes, demanding special attention. Population ageing is expected to be experienced in our country, therefore it is important to consider and address the needs and concerns of this group, which might have direct impacts on their well-being and quality of life.

Methods

Through a stratified random sampling from public and private nursing homes in Cairo, Egypt, 7 nursing homes were selected and 200 elderly male residents were chosen as the study population. The inclusion criteria were: being elderly males, aged 60 years and older, living in elderly home and period of stay was at least 6 months and accepting to participate in the study. The exclusion criteria were: having extreme illnesses (end stage diseases such as end stage liver disease and end stage renal disease) and intentional regimen to lose weight.

Data on the subjects’ demographic characteristics and nutritional and health status were gathered during 2015 to 2017. Demographic characteristics included age, gender, educational level, marital status, smoking status, alcohol consumption. Medical history and drug history were taken from the resident or caregiver to assess health status. Quick general and local examination was done.

To assess the risk of malnutrition in the subjects the Mini Nutritional Assessment (MNA) tool was used.

The Mini Nutritional Assessment (MNA) 9 has been designed and validated to provide a single, rapid assessment of nutritional status in elderly patients in outpatient clinics, hospitals, and nursing homes. The MNA test is composed of simple measurements and brief questions that can be completed in about 10 min. The sum of the MNA score distinguishes between elderly patients with: adequate nutritional status, MNA ≥24; protein-calorie malnutrition, MNA < 17; at risk of

malnutrition, MNA between 17 and 23.5. With this scoring, sensitivity was found to be 96%, specificity 98%, and predictive value 97%. The MNA scale was also found to be predictive of mortality and hospital cost. Most importantly is the possibility to identify people at risk for malnutrition, scores between 17 and 23.5, before severe changes in weight or albumin levels occur. These individuals are more likely to have a decrease in caloric intake that can be easily corrected by nutritional intervention.

As regards food system in the elderly home, our questionnaire included asking about number of residents per room, presence of refrigerator inside resident room, if the resident eats in dining room or not, is there food variability more than 2 times per week, availability of providing an alternative meal if the resident requested, presence of dietician in the elderly home

Statistical analysis

The collected data were coded, tabulated, and statistically analyzed using IBM SPSS statistics (Statistical Package for Social Sciences) software version 22.0, IBM Corp., Chicago, USA, 2013.

The level of significance was taken at P value < 0.05 , otherwise is non-significant. The p-value is a statistical measure for the probability that the results observed in a study could have occurred by chance.

Results

Two hundred elderly males from seven elderly homes in Cairo participated in this study during 2015 to 2017. The mean (±SD) age of study population was 71.4 (±7.6) years, **Table (1)** shows demographic characteristics of the studied cases, about one third of the studied cases were married, more than half of them were educated ≥5 years, about quarter of cases were smokers.

Among The 200 participants, 17(8.5%) of them were malnourished, 96 (48%) were at risk of malnutrition and 87 (43.5%) were well nourished; this was done by using The Mini Nutritional Assessment (MNA)

Table 2: Demographic characteristics of the studied cases

Items	Mean± SD	Range
Age (years)	71.4±7.6	60.0–97.0
	N	%
Marital status		
Married	67	33.5
Single	34	17.0
Widow	76	38.0
Divorced	23	11.5
Education		
Illiterate	45	22.5
<5 years	43	21.5
≥ 5 years	112	56.0
Smoking	54	27.0
Alcohol	0	0.0

Table 2: Comparison between grades of nutrition regarding food system in elderly homes

Items	Well (N=87)	At risk (N=96)	Mal. (N=17)	P
Single resident	19 (21.8%)	19 (19.8%)	3 (17.6%)	#0.900
Refrigerator	41 (47.1%) a	23 (24.0%) b	1 (5.9%) c	#<0.001*
Dining Room	38 (43.7%) a	24 (25.0%) b	1 (5.9%) c	#<0.001*
Food variability	62 (71.3%)	59 (61.5%)	8 (47.1%)	#0.112
Alternate Food	26 (29.9%)	36 (37.5%)	3 (17.6%)	#0.215
Dietician	30 (34.5%)	39 (40.6%)	6 (35.3%)	#0.679

^ANOVA test with post hoc tukey test, Chi square test, &Fisher's Exact test with post hoc Boferroni test, *Significant

Food variability means provision of more than two choices of food per week.

Alternate food means availability of providing an alternative meal if the resident requested.

According to univariate analysis, a significantly better nutritional status ($P < 0.001$) was found among elderly who have a refrigerator in his room, and also residents eating in dining room had better nutritional status when compared with those eating in their rooms, shown in table (2).

Discussion

Malnutrition is associated with significantly increased morbidity and mortality in independently living elderly, as well as the residents of nursing homes and hospitalized patients.¹⁰

The primary purpose of this study was to determine the relation between different grades of malnutrition and food system in elderly homes' residents in Cairo, Egypt.

The current study demonstrated that among the 200 participants, 8.5% of them were malnourished, 48% were at risk of malnutrition and 43.5% were well nourished; this was done by using The Mini Nutritional Assessment (MNA).

This was consistent with the study conducted by El Zoghbi et al.¹¹ among 111 older adults, living in three long stay institutions in Beirut, which showed that 14 (12.6%) were malnourished, 54 (48.7%) were at risk of malnutrition and 43 (38.7%) had an adequate nutritional status.

Regarding the demographic criteria, the current study showed that the mean age of malnourished group was significantly higher than those at risk and those who were well nourished.

This was compatible with what was conducted by Kruijenga et al.¹² in their study that showed a significant association between aging and malnutrition in elderly.

Being alone in the room may help the resident to feel more comfortable, but on the other hand this can lead to emotional isolation, lack of motivation to prepare a meal that lonely he will eat. A frequent problem among the elderly is the emotional isolation due to loss of a partner or close friend. This emotional isolation is detrimental to health, and mortality has been well demonstrated.¹³

Our study showed that having refrigerator inside the room, eating in dining room had a protective role against malnutrition in elderly living in elderly homes. No doubt that providing all residents a choice of food and beverages, based on the available menu and in a manner suitable to each Resident's ability and/or limitations e.g. visual, verbal or written, has an important role in improving resident's appetite and thus improving his nutritional status.

So, the current study recommends monitoring and supervision during dining, including meals, snacks and other food-related activities, to promote Residents' safety, comfort, independence and dignity in eating and drinking, to monitor Residents' overall response to the meal service/pleasurable dining program and to monitor each Resident's nutritional well-being.

Conclusion

While many older adults remain healthy and eat well, those in poorer health may experience difficulties in meeting their nutritional needs. Meeting the diet and nutrition needs of older people is crucial for the maintenance of health, functional independence and quality of life. Elderly home play an important role in provision of comfortable environment for residents to achieve better nutritional status for them. Higher nursing staffing levels were associated with decreased likelihood of malnutrition. Long term care

professionals may use this study to inform quality improvement efforts to targeting individuals at high risk for poor nutrition in their facilities.

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Corresponding Author: Jamil MA: zizo567@hotmail.com