Nutritional Assessment of Elderly Persons in Babylon

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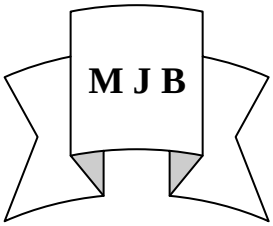

Abstract

Objective: To assess the risk of malnutrition among elderly people living in Babylon using the Mini-Nutritional Assessment (MNA) and to study the characteristics of the instrument in this patient group.

Design: A cross-sectional study using the MNA score to assess the nutritional status of eligible elderly persons from out patient clinic in Marjan hospital.

Subjects: A total of 155 out of 249 eligible elderly patients agreed to participate, men 76.7% (n= 119) and female 23.3% (n= 36).

Results: 26.5 % and 43.2 % of elderly are malnourished and at risk of malnutrition. The means of the body mass index (BMI) , mid arm circumference (MAC) and calf circumference (CC) were about 23.4 kg \m² , 26.2 cm and 29.6 cm, respectively. elderly people , who were classified as malnourished , according to the (MNA) , had the lowest (BMI), (MAC) and (CC) . When the score of the (MNA) was based on the diagnosis of the elderly, the results show that elderly subjects with more than one main diagnosis had a lowest score. Based on the score of the (MNA) test, more than 1/4 of the subjects were malnourished. Most of the subjects were consuming three meals and more than two serving of fruit and vegetables per day. It seems that food intake was satisfactory, among subjects, despite that the present of malnourished subjects reached 26.5%. The result of the (MNA) test indicates the necessary of performing National nutritional assessment for this vulnerable group of people in Iraq.

تقييم الحالة الغذائية للأشخاص المسننين

الخلاصة

أجريت هذه الدراسة على المسنين في مدينة الحلة .تم قياس مؤشر كتلة الجسم (BMI) ومحيط منتصف الذراع و محيط الساق. كذلك استخدام الاختبار المختصر لتقييم الحالة الغذائية، و المصمم خصيصا لتقييم الحالة الغذائية للمسنين. نتائج الدراسة بان ٢٦,٥% و٤٣,٢% من المسنين مصابين بسوء التغذية ، و خطورة الإصابة بسوء التغذية على التوالي . وقد كان متوسط مؤشر كتلة الجسم و محيط منتصف الذراع و محيط الساق ٢٣,٤ كغم \ م٢ و٢٠ ٢٦ سم و٢٩,٦ سم على التوالي . ووجد بان المسنين المصابون بسوء التغذية ، حصلوا على أدنى القيم في مؤشر كتلة الجسم و محيط منتصف الذراع و محيط الساق . كما حصل المسنون الذين لديهم أكثر من تشخيص مرضي على اقل نتيجة في التقييم المستخدم بطريقة الاختبار المختصر .

استنادا إلى نتيجة التقييم في هذه الدراسة، نجد إن أكثر من ربع المسنين مصابون بسوء التغذية. هذا وقد وجد إن معظم المسنين يتناولون ثلاث وجبات كاملة أو أكثر من حصتين من الفواكه و الخضروات في اليوم . مما يشير إلى إن الطعام الذي يتناوله المسنون في بيوتهم كافي . وعلى الرغم من ذلك ، وصلت نسبة المصابين بسوء التغذية الى٢٦,٥ بالمائة علية تستدعي النتائج إلى ضرورة عمل تقييم غذائي لهذه المجموعة من المجتمع.

Introduction

Older adult are a potentially vulnerable group for malnutrition [1]. Nutritional status is influenced by numerous factors such as dentition, neuropsychological problems and mobility and may be related to other health concerns [2]. Increasing ill health and increasing disability are

linked with nutritional risk indicators [3, 4]. The nutritional status of newly hospitalized elderly patients or institutionalized elderly is often poor[5], even upon discharge these people's nutritional status may remain poor and require strict attention in other care settings and at home (6). In the present situation where old people with disabilities are encouraged to live in their own homes, it is important that accurate information is available about their health and nutritional status.

Nutrition screening of older adults is extremely difficult; the shortcomings of existing screening tools don't make the problem any easier [7]. Some of the screening methods can only be administered by trend clinicians, Biochemical markers are time consuming and expensive to use in nutritional evaluation, and the criteria for their interpretation in old age are unclear [8]. A comprehensive tool Assessment (MNA), this tool is designed for purposes of identifying the risk of malnutrition in the frail elderly and identifying those who may benefit from early intervention, MNA has been validated in three successive studies of more than 600 elderly [9].

It includes the anthropometric measures of weight and height and derived body mass index (BMI), which are reliable and simple tools to use [8].

Knowledge about the use of MNA in Iraq is limited, the present study setout to obtain information about the nutritional status of elderly by using the MNA.

Material and Methods

A cross sectional study using MNA score to assess the nutritional state of eligible elderly (≥ 65 years old) randomly selected from out patient clinic in merjan hospital for period between May – June /2007. Patient with sever cognitive impairment were excluded.

A total of 155 out of 249 agreed to participate, men (n = 119, 76.7%), female (n= 36, 23.3 %). The data were collected with a structured questionnaire that was divided into:

* 4 questions to determine body mass index (BMI)
*Mid – Arm Circumference (CC)
* Weight loss during last three months
* Global Assessment (6 questions related to life style, medications, and mobility).
* Dietary Questionnaires (6 questions, related to number of meals food and fluid intake, and autonomy of feeding)
* Subjective assessment (2 questions related to self – perception of health and nutrition)[9].

A score of less than 17 points is regarded as indication of malnutrition, 17 – 23.5 points indicate a risk of malnutrition and > 23.5 points indicate that the person is well nourished. In addition, the aim was to obtain more accurate information about eating habits for further use. Psychological stress was defined as if he /she suffered bereavement recently or any cute disease or an aggravation of a chronic disease in the past 3 months. the consumptions of fruit and vegetables was covered by if consumption two or more servings fruit and vegetables per day, consumption of markers for protein intake as at least one serving of dairy products (milk, cheese, yogurt) per day, two or more servings of legumes or eggs per week or(meat, fish or poultry) every day Neurological problems in the case of mild dementia were recorded on the basis of subjective impression. Patients on medication asked if take more than 3 prescription drugs per day or if suffers from any skin ulcer or pressure sores.

The question concerning fluid (water, juice, coffee, tea, milk) which is

consumed per day by(less than 3) cups,(3-5) cups, (more than 5) cups, loss of appetite, digestive problems, chewing or swallowing difficulties over the past 3 months, weight loss during the last 3 months, mobility, number of meal does the patient eat daily, mode of feeding if the patient unable to eat without assistance or self fed with some difficulty or without any problem, self view of nutritional status and health status and any history of chronic diseases were recorded.

Mid arm circumference, calf circumference (CC), body mass index (BMI) (weight in Kg / (height in m2) all were assess to the patients. A problem related to eating and digestion were named as chewing and swallowing problem, problems in eating because of dry mouth, constipation, diarrhea, indigestion and other problem are also recorded.

The histories of chronic diseases were recorded

Results were expressed as mean values ± SD and percentage.

Also using one way analysis of variance (one way-ANOVA) and student's test, correlation by SPSS.

Results

A total of 155 out of 249 of an eligible elderly took part. The main reasons for non-participation were fatigue or being to ill.

The mean age of the elderly is 70.3 ± 5.3. The average BMI, MAC, CC value for whole elderly (n=155) was 23.4 kg/m², 26.2 cm and 29.6 cm respectively (table 1).

The nutritional status of investigated elderly is presented in table 2 , 26.5 % of subjects were malnourished, 43.2% of subjects were at risk of malnourished and the remaining subjects were considered to be well nourished according to MNA .

The mean MNA value were 13.8, 21, 25.1 points for malnourished, at risk for being malnourished and the well-nourished elderly subject respectively (table 2).

The mean values of BMI, MAC, CC according to the three MNA categories show in(table 3) which are compared using one way analysis of variance (one way ANOVA).

Elderly people, who were classified as malnourished according to MNA test, had the lowest BMI, MAC and CC. The elderly people who were classified at risk of being malnourished had a lower CC compared with the well-nourished (table 3).

No significant difference in the BMI and MAC value was observed between those who were classified as at risk of being malnourished and the well-nourished subjects (P> 0.05).

The MAC and CC were found to be significantly correlation with BMI (R=0.53, P< 0.001 and R= 0.61, P<0.0001 respectively), MAC and CC (R=0.54).

There was a significant negative correlation between age and BMI (P<0.001).

A significant correlation between MNA score and individual questions are presented in table 4 and only five of MNA questions (self-perceived nutritional status, skin problem, use of drink, ability to eat, independence) showed no significant correlation to total MNA score(P>0.05).

In the MNA question 127, 82% took more than three prescription drugs per day and 36% (n=56) had suffered psychological stress or acute disease in the past three months. 58 %(n=90) regarded their health status as poorer than other in comparison with other people of the same age, 26% (n=40) were unable to give such an estimation, about 16% considered their health as good. 15% (n=23) had skin problem.

13% (n=20) view self as being malnourished and 35 %(n=54) were unable to estimate their nutritional

status and the remain views self as having no nutritional problem.

29% (n=45) reported a loss of weight of more than 3 kg during preceding 3 months.

52% (n=81) dose not know if any weight loss during the last three months, 19% (n=29) were had wt loss between 1 and 3 kg during the last three months. 6.5% of participants had mild dementia and 93.5% with no neuropsychological problem.

Most elderly (82.4%) were taking more than 2 servings of fruits or vegetables per day and most elderly(89.7%) drunk more than 5 cups of fluid per day. Most of the subjects (85%) consuming 3 meals, and no one ate less than 2 meals

74 % of elderly had moderate lost of appetite, 4% had sever loss of appetite and 22% with no loss of appetite.

82% of elderly able to get out of house or go out door compare to 13% able to get out of bed but dose not get out the house and 5% of patients are bed bound.

About 67% of elderly in this study live independency. 56% of the elderly self-fed without any problem, and 35% self fed with some difficulty and 9% are unable to eat without assistance. 49% (n=76) of them eat at least one serving of dairy products (milk, cheese, yogurt) per day and 12 %(n=19) eat (meat, fish or poultry) every day and 39% of them eat two or more servings of legumes or eggs per week.

Most of the patients (n=144, 93%) had at least one problem associated with eating and digestion. the most frequency were constipation (n=82, 53%), dry mouth (n=31, 20%) andindigestion (n=42, 27%). chewing and swallowing were problem for 35% (n=54). Diarrhea was a problem for a few participant (n=5, 3%). Those who had chewing and swallowing problems had a significantly lower MNA score than others ($p<0.001$). Dry mouth together with chewing and swallowing problems lowered the MNA score even further ($p<0.0001$).

Approximately 18 % (total number 28) out of all elderly were diabetic. 8 subjects out of the 28 diabetic subjects was classified as malnourished (MNA<17). Approximately (46%, 27%, 19.5%) out of all malnourished subjects have more than 1 main diagnosis, hypertension, DM respectively, the elderly with more than one main diagnosis had the lowest MNA score (mean 16.6 ±3.7) (table 5).

Discussion

The study was performed to assess the nutritional status of elderly persons by using MNA. According to MNA, about 43.2 % of all patients in this study were at risk for malnutrition and 26.5 %were malnourished. Both of these groups were characterized by lower BMI.

Depending on the score of the test, elderly subjects involved in the study were classified in the following categories:

1- Well-nourished (MNA points 24-30).

2- At risk of malnutrition (MNA points 17-23.5).

3- Malnourished (MNA points 17).

The number of malnourished persons was higher to that found by Saletti (3%), Murphy (16%) in hospitalized patients [10, 11].

The difference in the mean MNA points is influenced by the major difference in BMI. The mean BMI value in this study was 23.4 kg/m². Earlier studies have reported similar BMI values, by a mean BMI of 23.7 kg/m² [11]. The percentage of elderly subjects classified a set border of being malnourished and malnourished reached to 69.7 % compare to earlier study found 64% [10].

Score of neuropsychological problems depend on review patient medical

record, ask relative who can provide information about the severity of the patient's neuropsychological problem (dementia) Neurological problems in the case of mild dementia were recorded on the basis of subjective impression , in this study 93.5% with no neuropsychological problem . Most of the subjects (85%) consuming 3 meals, and no one ate less than 2 meals
In addition, 35% of our respondents were unable to estimate their nutritional status and 13% (n=20) view self as being malnourished with 26% were unable to estimate their health status.

Earlier research has nonetheless shown that subjective assessments of health do have predictive value [12]. Christensson concluded that 'self-experienced health status' had the most predictive value in MNA classifications [13].

The questions concerning the amount of drinks, 89.7% of participate drunk more than 5 cup of fluid per day, this can be explained by people in our study had problem with eating such as dry mouth (20%) so tended to drink more than others. Iraqi habit of drink tea could play a significant role of drinking this reasonable amount of fluid. In similarly to saletti the amount of liquids consumed by the participants in this study was quite satisfactory.

The score for protein intake, only 12% of participants eat (meet, fish or poultry) every day; this may be due to finance causing, loss in appetite (74%) or due to eating and digestion problem (93%). The complex relation between oral health and nutrition has been highlighted in earlier studies (14). The same applies to the relation of nutrition and function [4].

The questions concerning independency, this questions refers to the normal living conditioning of the individuals, its purpose is to determine if the person is dependant on others for care, 67% of elderly in this study live independency.

The questions concerning medical drugs shows 82% of patients took more than three prescription drugs daily.

Medication goes hand in hand with chronic diseases: chronically ill patients will probably have medication. Chronic diseases can affect energy intake and contribute to poor nutritional status [15].

On the other hand, different drugs reduce saliva production and can further threaten oral health (16). In the study by Griep [12], the number of medications appeared to be the clinically most relevant parameter explaining low MNA score in the elderly. Problems related to eating were rather common in our study when Chewing problems (35%) and reduced appetite (74%) can lead to a reduced nutritional intake and thus to a poor nutritional status.

The number of eating problems and their relation to the MNA score clearly revealed the importance of identifying special problems related to eating and digestion.

These problems need to be given closer attention in patient care because of their cumulative effects and influence on diet intake [17].

The MNA is a practical, quick, easy test, non-invasive and cost effect instrument allowing for rapid nutritional evaluation. It used to identify persons with under nutrition in which persons, identified as 'at risk of being malnourished ' or "malnourished " on the MNA test, would receive additional nutritional assessment in an attempt to pinpoint the specific nutrient deficiencies of the elderly to do the necessary medical and nutritional interventions .

In conclusion, although the number of subjects involved in the study was small, the results of the (MNA)

indicated the necessary of performing national nutritional assessment for elderly subjects in the community. More attention needs to pay to these vulnerable groups of people.

Table 1 mean and standard deviation of anthropometric measurement for elderly patients

Anthropometric measurements	Mean ± SD*
BMI(kg/m2)	23.4 ± 6.8
MAC(cm)	26.2 ± 5.3
CC(cm)	29.6 ± 5.5

* SD (standard deviation)

Table 2 Mean, standard deviation and percentage of elderly subjects in the three MNA categories.

MNA categories	Mean ± SD	N	%
Malnourished MNA <17 points	13.8 ± 2.5	41	26.5
At risk of malnutrition MNA ≤ 17-23.5 points	21.0 ± 1.9	67	43.2
Well-nourished MNA ≥ 24 points	25.1 ± 1.5	47	30.3

Table 3 Body mass index, mid-arm circumference and calf circumference in the three mini-nutritional assessment (MNA) categories.

Anthropometric measurements	Malnourished MNA 17 points N= 41	At risk of malnutrition MNA 17-23.5 points N= 67	Well-nourished MNA 24 points N= 47	Significance level p-value
BMI(kg/m2)	19.1 ± 7.1	24.6 ± 7.8	26.5 ± 4.3	0.005
MAC(cm)	22.4 ± 3.8	26.1 ± 5.6	28.6 ± 3.3	<0.001
CC(cm)	25.2 ± 4.8	28.9 ± 5.4	33.1 ± 4.4	<0.005

Table 4 Correlations (r) of MNA questions to total MNA score (n=155)

MNA question	r (p –values)
Independency	0.04 (>0.05)
Use of drink	0.06 (>0.05)
Skin problems	0.09 (>0.05)
Ability to eat	0.10 (>0.05)
Self perceived nutritional status	0.09(>0.05)
Weight loss during the last 3 months	0.61 (<0.001)
Psychological stress	0.52 (<0.001)
Food intake decline	0.48 (<0.001)
Self-perceived health status	0.3 (<0.001)
MAC	0.42(<0.001)
Mobility	0.0.22(<0.01)
Numbers of meals eaten per day	0.28 (<0.001)
CC	0.24(>0.01)
Three prescription drugs per day	0.22(<0.01)
Use vegetables and fruits	0.17(<0.05)
Neuropsychological problems	0.16 (<0.05)
Protein intake	0.48(<0.001)

Table 5 The Mini-Nutritional Assessment (MNA) points in the elderly according to the diagnosis

Diagnosis group	Numbers (%)	MNA≥24 NO.	MNA≥17-23.5 NO.	MNA<17 NO.	MNA Mean ± SD
Diabetes	28 (18%)	15	5	8	21.6 ±6.1
Hypertension	39(25%)	8	20	11	18.7 ±5.9
Heart/lung diseases	21(13.5%)	8	11	2	22.2 ±3.8
Musculoskeletal	9(6%)	2	7	0	23.4±6.1
> 1 main diagnosis	51(33%)	11	21	19	16.6 ±3.7
Others	7 (4.5%)	3	3	1	22.4 ±2.0

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