Nutritional status of the elderly attending public polyclinics in Benghazi city, Libya

Faiza Nouh¹*, Mariam Omar¹, Manal Younis², Moftah Younis³

¹Department of Nutrition, Faculty of Public Health, Benghazi University, Benghazi, Libya
²Royal College of Obstetrics and Gynecology, Cumh Cork University Maternity Hospital, Cork, Ireland
³MRCP(I), FRCPC, MBChB. Associated professor, University of Saskatchewan, Canada

Received: 24 July 2017
Revised: 23 September 2017
Accepted: 25 September 2017

*Correspondence:
Dr. Faiza Nouh,
E-mail: faiza.nouh@uob.edu.ly

ABSTRACT

Background: Ageing brings various physiological and non physiological changes which influence the nutritional status.

Methods: A cross-sectional study extended from 1st December 2007 to 15th April 2008 on elderly of both sexes attending public polyclinics in Benghazi city.

Results: 6.5% was the prevalence of malnutrition. 36.8% was the percentage of elderly at risk of malnutrition. Age, sex, occupation, income inadequacy to food, oral problems, dysphagia, constipation and dehydration, activity level, chronic disease, food intolerances and BMI all these factors were the various physiological and non-physiological factors associated with the nutritional status of the subjects.

Conclusions: Outpatients elderly in Benghazi should be routinely screened and assessed if needed, for malnutrition or its risk.

Keywords: Nutritional assessment, MNA, Malnutrition, Elderly, Outpatients, Libya

INTRODUCTION

The United Nations (UN) and the World Health Organisation (WHO) have agreed to have the age of 60 years and more refer to elderly or older populations.1-4 The elderly (≥60 years) currently form 6.2% of the total population of Libya. It is projected the percentage of elderly people of both genders will increase to 7.4% after two years in 2018 and 9.5% at the quarter of the present century.4 Ageing is generally associated with degenerative changes leading to a decline of a number of physiological functions that can impact nutritional status like a reduction in lean body tissue, a resultant decrease in basal metabolic rate (BMR), altered gastrointestinal function, sensory function deficits, changes in the oral cavity, central nervous system changes, decline in the immune function, along with changes in renal functions and fluid regulation.5-11 Mini Nutritional Assessment (MNA) is a very simple, quick, patient friendly, inexpensive, very sensitive, specific and reliable screening instrument for elderly. MNA has been validated in a series of studies to assess the geriatric population.12-17 The older populations in the developing countries as a whole are growing more rapidly and Libya are no exception. The increase in the number of elderly in Libya, its related health implications and the need to not just assess but also to identify the basic and underlying cause of poor nutritional status in this age group justifies planning and designing the present study.12-18 The objectives of this research to study the nutritional status of the elderly attending public polyclinics in Benghazi and to identify the physiological and non-physiological factors that are associated with malnutrition.
METHODS

A cross-sectional study extended from 1st December 2007 to 15th April 2008. Inclusion criteria are all elderly of both sexes who ≥60 years and attending polyclinics in Benghazi. 508 patients were finally enrolled for the study giving a response rate of 90%. Informed consent was obtained from the subjects who were also assured of the confidentiality of the information collected. The research was approved by the administration of the concerned polyclinics.

Questionnaire

The questionnaire included information about socioeconomic characteristics, physical activity level, food intolerances and nutritional supplement, chronic diseases and surgery, physiological or food related problems and (MNA) section. Height and weight measurements were used to calculate Body Mass Index (BMI). 15-21

Statistical analysis

Data was exported to SPSS V.21. All data was coded prior to being entered in a computer but the scores for the MNA were entered as a quantitative value. A Chi square test was carried out to see if there was any statistically significant association between the nutritional status of the subjects and various physiological and non-physiological factors.

RESULTS

The subjects (n=508) 43.5% were males and 56.5% were females. The total means age ±SD was 66.2 years ±6.4. (67.7%) of subjects were married. 52.0% of the subjects were either illiterate or could only read or write. The retired/unemployed formed; 39.2% and 45.7% respectively. (70.7%) subsided on monthly family incomes of less than 250 Libyan Dinars (LD). (67.3%) of subjects their incomes was inadequate to purchase nutritious food. (94.3%) of them lived with family. Among those who lived alone, more than half prepared their meals themselves. (9.4%) of the subjects were immobile (Table 1-3).

Table 1: Socioeconomic characteristics and nutritional status.

| Characteristics | Percentage of subjects | Total |
|-----------------|------------------------|-------|
|                 | Normal | Malnourishment risk | Malnourished |       |
|                 | NO.    | %                  | NO.          | %    | NO.    | %    | NO.    | %    |
| Age             |        |                    |              |      |        |      |        |      |
| 60-74           | 270    | 59.6               | 160          | 35.3 | 23     | 5.1  | 453    | 100  |
| 75-84           | 15     | 33.3               | 22           | 48.9 | 8      | 17.8 | 45     | 100  |
| ≥ 85            | 3      | 30.0               | 8            | 50.0 | 2      | 20.0 | 10     | 100  |
| Total           | 508    | 100                |              |      |        |      |        |      |
| Male            | 118    | 53.4               | 82           | 37.1 | 21     | 9.5  | 221    | 100  |
| Female          | 169    | 59.0               | 105          | 36.6 | 12     | 4.2  | 287    | 100  |
| Total           | 508    | 100                |              |      |        |      |        |      |
| Occupation      |        |                    |              |      |        |      |        |      |
| Employed        | 49     | 63.6               | 27           | 35.1 | 1      | 1.3  | 77     | 100  |
| Unemployed      | 132    | 56.9               | 93           | 40.1 | 7      | 3.0  | 232    | 100  |
| Retired         | 107    | 53.8               | 67           | 33.7 | 25     | 12.6 | 199    | 100  |
| Total           | 508    | 100                |              |      |        |      |        |      |
| Income adequacy |        |                    |              |      |        |      |        |      |
| Yes             | 100    | 60.2               | 63           | 38.0 | 3      | 1.8  | 166    | 100  |
| No              | 188    | 55.0               | 124          | 36.3 | 30     | 8.8  | 342    | 100  |

80.3% of the subjects had teeth problem. 48.6% and 48.2% of the subjects had oral problem and constipation respectively. 21.1% and 25.8% of the subjects had dysphagia and dehydration. 98.4% of the subjects had at least one chronic disease. 17.8% stated that they were on a special diet. 67.5% had not undergone surgery of any kind. 92.1% did not have any food intolerance (Table 4-6).

77.1% were overweight and/or obese. (97.1%) of the subjects had a mid-upper arm MAC equal to or greater than 22 cm. 97.9% of the subjects their calf circumferences CC was 33 cm or more (Table 7).

(MNA) screening

(57.9%) of subjects did not report any loss of appetite. (49.4%) of the subjects did not have any weight loss. 10% of the subjects loss of 1-2 kg. (86%) of the subjects were mobile. (54.5%) of the subjects suffered a psychological stress or acute disease. (91.9%) of the subjects did not have psychological problem. 35.8% of...
the subjects taking more than three daily drugs. 39.9% of the subjects had pressure sores or skin ulcers at the time of the study. As a result of screening the subjects using the MNA 243 (47.8%) had possible malnutrition. Those 243 subjects will proceed to the assessment step.

**MNA assessment**

Out of the assessment group of the MNA, 42% have no nutritional problem. 35.8 of the assessment group consume more than three different types of medications daily and 40% had pressure sore or skin ulcers (Table 9).

When the results from both screening and assessment steps of the MNA were combined it was found that out of the total 508 subjects, the mean prevalence of malnutrition was 6.5% (9.5% for males and 4.2% for females) while that of at risk of malnutrition was 36.8% (37.1% among males and 36.6% among females). Those found to be normal according to the MNA were 56.7%: 53.4% and 59.2% among males and females respectively (Table 10).

**Table 2: Socio-economic characteristics of subjects.**

| Characteristics                  | Male |          | Female |          | Total |          |
|----------------------------------|------|----------|--------|----------|-------|----------|
|                                  | Number | %       | Number | %       | Number | %       |
| Marital status                   |       |         |        |         |       |         |
| Unmarried                        | 9     | 4.1     | 6      | 2.1     | 15    | 3.0     |
| Married                          | 179   | 81.0    | 165    | 57.5    | 344   | 67.7    |
| Widow/widower/ divorcee         | 33    | 14.9    | 116    | 40.4    | 149   | 29.3    |
| Total                            | 221   | 100     | 287    | 100     | 508   | 100     |
| Educational level                |       |         |        |         |       |         |
| Illiterate                       | 71    | 32.1    | 193    | 67.3    | 264   | 52.0    |
| Basic education                  | 118   | 53.4    | 82     | 28.6    | 200   | 39.4    |
| Secondary and its level          | 22    | 10.0    | 9      | 3.1     | 31    | 6.1     |
| University degree                | 10    | 4.5     | 3      | 1.0     | 13    | 2.6     |
| Total                            | 221   | 100     | 287    | 100     | 508   | 100     |
| Family income (LD)               |       |         |        |         |       |         |
| <250                             | 134   | 60.6    | 225    | 78.4    | 359   | 70.7    |
| 250<500                          | 80    | 36.2    | 59     | 20.6    | 139   | 27.4    |
| ≥500                             | 7     | 3.2     | 3      | 1.0     | 10    | 2.0     |
| Total                            | 221   | 100     | 287    | 100     | 508   | 100     |
| Living arrangement               |       |         |        |         |       |         |
| Alone                            | 15    | 6.8     | 14     | 4.9     | 29    | 5.7     |
| With others                      | 206   | 93.2    | 273    | 95.1    | 479   | 94.3    |
| Total                            | 221   | 100     | 287    | 100     | 508   | 100     |
| Physical activity level          |       |         |        |         |       |         |
| Immobile                         | 22    | 10.0    | 26     | 9.1     | 48    | 9.4     |
| Sedentary                        | 43    | 19.5    | 59     | 20.6    | 102   | 20.1    |
| Moderate                         | 99    | 44.8    | 135    | 47.0    | 234   | 46.1    |
| Low active                       | 57    | 25.8    | 67     | 23.3    | 124   | 24.4    |
| Total                            | 221   | 100     | 287    | 100     | 508   | 100     |

**Table 3: Activity level and the nutritional status of the subjects.**

| Activity level | Percentage of subjects | Total |
|----------------|------------------------|-------|
|                | Normal | Risk of malnourishment | Malnourished |       |
|                | No.    | %       | No.    | %       | No | % |
| Immobile       | 8      | 16.7    | 23     | 47.9    | 17 | 35.4 | 48 | 100 |
| Mobile         | 280    | 60.9    | 164    | 35.7    | 16 | 3.5  | 460 | 100 |
| Sedentary      | 53     | 52.0    | 39     | 38.2    | 10 | 9.8  | 102 | 100 |
| Moderate       | 148    | 63.2    | 82     | 35      | 4  | 1.7  | 234 | 100 |
| Low active     | 79     | 63.7    | 43     | 34.7    | 2  | 1.6  | 124 | 100 |
Table 4: Physiological and food related problems.

| Physiological food problem | Present | Percentage of subjects | Total | Association |
|----------------------------|---------|------------------------|-------|-------------|
|                            |         | Normal | Malnourishment Risk | Malnourished |       |
|                            |         | NO.    | %                  | NO.       | %    | No | %     | No | %     |
| Oral cavity                | Yes     | 118    | 47.8              | 100       | 40.5 | 29 | 11.7  | 247 | 100   |
|                            | No      | 170    | 65.1              | 87        | 33.3 | 4  | 1.5   | 261 | 100   |
| Dentition                  | Yes     | 223    | 54.7              | 152       | 37.3 | 33 | 8.1   | 408 | 100   |
|                            | No      | 65     | 65.0              | 35        | 35.3 | 0  | 0     | 100 | 100   |
| Dysphagia                  | Yes     | 45     | 42.1              | 50        | 46.7 | 12 | 11.2  | 107 | 100   |
|                            | No      | 243    | 60.6              | 137       | 34.2 | 21 | 5.2   | 401 | 100   |
| Constipation               | Yes     | 127    | 51.8              | 97        | 39.6 | 21 | 8.6   | 245 | 100   |
|                            | No      | 161    | 61.2              | 90        | 34.2 | 0  | 0     | 100 | 100   |
| Dehydration                | Yes     | 61     | 46.6              | 52        | 39.7 | 18 | 13.7  | 131 | 100   |
|                            | No      | 227    | 60.2              | 135       | 35.8 | 15 | 4.0   | 377 | 100   |

Table 5: Medical characteristics of the subjects.

| Chronic disease | Percentage of subjects | Total | Association |
|-----------------|------------------------|-------|-------------|
|                 | Normal | Malnourishment risk | Malnourished |       |
|                 | NO.    | %                  | NO.       | %    | No | %     |
| Yes             | 277    | 55.4              | 188       | 37.6 | 35 | 7.0   | 500 | 100   |
| No              | 8      | 100               | 0         | 0    | 0  | 0     | 8   | 100   |
| Systems number  |        |                    |           |      |     |       |     |       |
| 1               | 110    | 64.3              | 56        | 32.7 | 5  | 2.9   | 171 | 100   |
| 2               | 116    | 54.0              | 91        | 42.3 | 8  | 3.7   | 215 | 100   |
| ≥3              | 54     | 47.4              | 40        | 35.1 | 20 | 17.5  | 114 | 100   |
| Characteristics | Male    | Female            | Total |     |     |       |     |       |
| Disease         | No      | %                  | No       | %    | No | %     |
| Yes             | 34      | 15.5              | 55       | 19.6 | 88 | 17.8  |
| No              | 185     | 84.5              | 226      | 80.4 | 411| 82.2  |
| Total           | 219     | 100               | 281      | 100  | 500| 100   |
| Surgery         | Yes     | 77     | 34.8              | 88       | 30.7 | 165 | 32.5 |
| No              | 144     | 65.2              | 199      | 69.3 | 343| 67.5  |
| Total           | 221     | 100               | 287      | 100  | 508| 100   |
| Diet            | Yes     | 9      | 11.7              | 8        | 9.1  | 17  | 10.3 |
| No              | 68      | 88.3              | 80       | 90.9 | 148| 89.7  |
| Total           | 77      | 100               | 88       | 100  | 165| 100   |

Table 6: Food intolerance and the nutritional status.

| Percentage of subjects | Total |       |
|------------------------|-------|-------|
|                        | Normal | Malnourishment Risk | Malnourished | |
|                        | No     | %      | No     | %     | No     | %     |
| Yes                    | 13     | 32.5   | 17     | 42.5  | 10     | 25.0  | 40 | 100 |
| No                     | 275    | 58.8   | 170    | 36.3  | 23     | 4.9   | 468| 100 |
Table 7: Anthropometric characteristic and the nutritional status.

| BMI category | Normal | Risk of malnourishment | Malnourished | Total | Association |
|--------------|--------|------------------------|--------------|-------|-------------|
|              | NO %   | NO %                   | NO %         | NO %  |             |
| Underweight  | 26.3   | 5                      | 36.8         | 7     | 19          | 100 |
| Normal       | 34.0   | 33                     | 42.3         | 41    | 23.7        | 23  | 97          | 100 |
| Overweight   | 63.8   | 250                    | 35.8         | 140   | 0.8         | 3   | 392         | 100 |

| MAC/ CC Frequency | Male | Female | Total | Association (p<0.05) |
|-------------------|------|--------|-------|----------------------|
| MAC               | No % | No %   | No %  |                      |
| 21 < 22           | 3    | 2.7    | 4     | 3.1                  | 7   | 2.9 |
| ≥ 22              | 109  | 97.3   | 127   | 96.9                 | 236 | 97.1 |
| Total (N)         | 112  | 100    | 131   | 100                  | 243 | 100 |
| CC                | No % | No %   | No %  |                      |
| < 31              | 4    | 3.6    | 1     | 0.8                  | 5   | 2.1 |
| ≥ 31              | 108  | 96.4   | 130   | 99.2                 | 238 | 97.9 |
| Total (N)         | 112  | 100    | 131   | 100                  | 243 | 100 |

Table 8: Screening of the subjects.

| Characteristics   | Male         | Female        | Total        |
|-------------------|--------------|---------------|--------------|
|                   | Number | %     | Number     | %     | Number   | %     |
| Appetite loss     |         |       |             |       |          |       |
| Severe loss       | 28      | 12.7  | 23          | 8.0   | 51       | 10.0  |
| Moderate loss     | 68      | 30.8  | 95          | 33.1  | 163      | 32.1  |
| No loss           | 125     | 56.6  | 169         | 58.9  | 294      | 57.9  |
| Total             | 221     | 100   | 287         | 100   | 508      | 100   |
| Weight loss       |         |       |             |       |          |       |
| >3 kg             | 15      | 6.8   | 15          | 5.2   | 30       | 5.9   |
| Does not know     | 79      | 35.7  | 97          | 33.8  | 176      | 34.6  |
| 1-2 kg            | 21      | 9.5   | 30          | 10.5  | 51       | 10.0  |
| No weight loss    | 106     | 48.0  | 145         | 50.5  | 251      | 49.4  |
| Total             | 221     | 100   | 287         | 100   | 508      | 100   |
| Mobility          |         |       |             |       |          |       |
| Bed or chair bound| 10      | 4.5   | 5           | 1.7   | 15       | 3.0   |
| Able to leave bed | 28      | 12.7  | 28          | 9.8   | 56       | 11.0  |
| Goes out          | 183     | 82.8  | 254         | 88.5  | 437      | 86.0  |
| Total             | 221     | 100   | 287         | 100   | 508      | 100   |
| Psychological     |         |       |             |       |          |       |
| Yes               | 120     | 54.3  | 157         | 54.7  | 277      | 54.5  |
| No                | 101     | 45.7  | 130         | 45.3  | 231      | 45.5  |
| Total             | 221     | 100   | 287         | 100   | 508      | 100   |
| Neurological      |         |       |             |       |          |       |
| Severe depression | 2       | 0.9   | 3           | 1.0   | 5        | 1.0   |
| Mild dementia     | 21      | 9.5   | 19          | 6.6   | 40       | 7.9   |
| No psychological problem | 19 | 89.6 | 265 | 92.3 | 463 | 91.9 |
| Total             | 221     | 100   | 287         | 100   | 508      | 100   |
| Screening         |         |       |             |       |          |       |
| Normal            | 109     | 49.3  | 156         | 54.4  | 265      | 52.2  |
| Possible malnutrition | 112 | 50.7  | 131         | 45.6  | 243      | 47.8  |
Table 9: Assessment of nutritional status of the subjects.

| Characteristics                  | Male                          | Female                        | Total                        |
|----------------------------------|------------------------------|-------------------------------|------------------------------|
|                                  | Number | %    | Number | %    | Number | %    |
| View of nutritional status       |        |      |        |      |        |      |
| Being malnourished               | 14     | 12.5 | 9      | 6.9  | 23     | 9.5  |
| Uncertain                        | 60     | 53.6 | 58     | 44.3 | 118    | 48.6 |
| Have no nutritional problem      | 38     | 33.9 | 64     | 48.9 | 102    | 42.0 |
| Total                            | 112    | 100  | 131    | 100  | 243    | 100  |
| View of health status            |        |      |        |      |        |      |
| Not good                         | 26     | 23.2 | 26     | 19.8 | 52     | 21.4 |
| Does not know                    | 48     | 42.9 | 49     | 37.4 | 97     | 39.9 |
| As good                          | 34     | 30.4 | 45     | 34.4 | 79     | 32.5 |
| Better                           | 4      | 3.6  | 11     | 8.4  | 15     | 6.2  |
| Total                            | 112    | 100  | 131    | 100  | 243    | 100  |
| Lives independently              |        |      |        |      |        |      |
| Yes                              | 112    | 100  | 131    | 100  | 243    | 100  |
| No                               | 0      | 0    | 0      | 0    | 0      | 0    |
| Total                            | 112    | 100  | 131    | 100  | 243    | 100  |
| >3 prescription drugs            |        |      |        |      |        |      |
| Yes                              | 43     | 38.4 | 44     | 33.6 | 87     | 35.8 |
| No                               | 69     | 61.6 | 87     | 66.4 | 156    | 64.2 |
| Total                            | 112    | 100  | 131    | 100  | 243    | 100  |
| Pressure sores                   |        |      |        |      |        |      |
| Yes                              | 43     | 38.4 | 54     | 41.2 | 97     | 39.9 |
| No                               | 69     | 61.6 | 77     | 58.8 | 146    | 60.1 |
| Total                            | 112    | 100  | 131    | 100  | 243    | 100  |
| Full daily meals                 |        |      |        |      |        |      |
| 1                                | 2      | 1.8  | 2      | 1.5  | 4      | 1.6  |
| 2                                | 42     | 37.5 | 44     | 33.6 | 86     | 35.4 |
| 3                                | 68     | 60.7 | 85     | 64.9 | 153    | 63.0 |
| Total                            | 112    | 100  | 131    | 100  | 243    | 100  |
| Protein intake                   |        |      |        |      |        |      |
| < 1                              | 39     | 34.8 | 44     | 33.6 | 83     | 34.2 |
| 2                                | 56     | 50.0 | 55     | 42.0 | 111    | 45.7 |
| 3                                | 17     | 15.2 | 32     | 24.4 | 49     | 20.2 |
| Total                            | 112    | 100  | 131    | 100  | 243    | 100  |
| >2 servings of fruits or vegetables|      |      |        |      |        |      |
| No                               | 79     | 70.5 | 88     | 67.2 | 167    | 68.7 |
| Yes                              | 33     | 29.5 | 43     | 32.8 | 76     | 31.3 |
| Total                            | 112    | 100  | 131    | 100  | 243    | 100  |
| Eat with assistance              |        |      |        |      |        |      |
| 0                                | 0      | 0    | 1      | 0.8  | 1      | 0.4  |
| Self fed with difficulty         | 35     | 31.3 | 23     | 17.6 | 58     | 23.9 |
| Self fed only                    | 77     | 68.8 | 107    | 81.7 | 184    | 75.7 |
| Total                            | 112    | 100  | 131    | 100  | 243    | 100  |

Table 10: Nutritional status of all the subjects.

| Characteristics                  | Male                          | Female                        | Total                        |
|----------------------------------|------------------------------|-------------------------------|------------------------------|
|                                  | Number | %    | Number | %    | Number | %    |
| Normal                           | 118    | 53.4 | 170    | 59.2 | 288    | 56.7 |
| Risk of malnourishment           | 82     | 37.1 | 105    | 36.6 | 187    | 36.8 |
| Malnourished                     | 21     | 9.5  | 12     | 4.2  | 33     | 6.5  |
| Total                            | 221    | 100  | 287    | 100  | 508    | 100  |
DISCUSSION

6.5% was the mean prevalence of malnutrition among elderly in Benghazi. In various global studies using the MNA, the outpatient elderly had a 4% mean prevalence of malnutrition. Age group was inversely with nutritional status. Ageing is generally associated with a decline in various physiological functions and leading to malnutrition. Increasing age has been linked with a higher incidence for disease which causes malnutrition. Female gender was associated with better nutritional status in this study. This could however be partly attributed to the higher mean age of males in this study.

Occupation was associated with the nutritional status of the elderly. Availability of money to purchase food is perhaps the most important factor affecting food intake in many retired elderly. The self perceived adequacy of income to purchase nutritious food was associated with nutritional status of the elderly in this study. The increase in medical illnesses among the elderly, bring with it the need for prescription medications. Drugs represent a significant expense for elderly and its purchase, may limit the amount of money available for food.

Activity level was associated with the nutritional status of the subjects. Restricted mobility because of arthritis, shakiness or lack of coordination as a result of neuro-degenerative changes can make food preparation, eating and/or cleaning up rather difficult tasks.

Oral problems, dentition problem, dysphagia, constipation and dehydration were associated (p<0.05) with the nutritional status of the subjects. Reduced salivary flow and power of mastication limit the variety of foods eaten and lead to malnutrition. Loss of teeth makes chewing difficult, and increased risk for poor nutritional status due to a decreased or modified food intake. The cause of dysphagia while being caused by a variety of medical illnesses nevertheless be solely age related, it results in a reduced dietary intake which may lead to malnutrition.

The constipation in the elderly may be due to inadequate fluid and fibre intakes as well as secondary to drug therapy. Dehydration common among the elderly. Insufficient fluids lead to nausea, headache, constipation, urinary tract infection and confusion.

Subjects with chronic diseases had a lower percentage of normal nutritional status. The numbers of chronic diseases among elderly increase with age and likely to involve a larger number of systems as than younger. Poor health and increasing number of medical illnesses have been associated with impaired nutritional status.

Both the presence and the type of food intolerance were associated with the nutritional status of the elderly. Older people report more discomfort with eating certain foods. Efforts to avoid eating these offending foods may lead to exclusion of nutritious foods from diet.

BMI was associated with the nutritional status of the subjects. However even in the group with normal BMI, some subjects were found to be at risk malnutrition and actually malnourished. BMI alone does not detect many patients at risk of malnutrition among outpatient elderly. Being under weight is a greater problem with graver medical consequences than being overweight among the elderly. Some under nutrition occurs as a result of unhealthy weight loss in elderly.

General assessment domain

Elderly people who have limited social interaction may experience decreased food intake, lack of appetite and depression. Depression is an independent predictor of nutritional risk. Pressure ulcers are a potential problem in the immobilised; poor nutrition may increase its risk. Dementia becomes increasingly prevalent with increasing age. Limited data there is shows that profound changes in the desire to eat and feeding ability occur during dementia. The elderly are more likely to use a combination of drugs over a long period of time. The elderly drug users are more likely to suffer adverse side effect, including food-drug interactions.

Diet assessment domain

The loss of ability to smell and taste is age related and results in appetite suppression leading to malnutrition. Missing of meals is a sign of poor nutrition among older adults. Diets of the elderly frequently lack dairy products, fruits and vegetables. Daily intakes of fruits, vegetables, whole grains and dairy products, lean meat, fish, poultry and legumes ensures the provision of nutrients that are found to be most at risk in the diets of elderly. Functional disability and feeding problems put the elderly at an increased risk of poor nutrition. There is a difference in the self perception of health among elderly. Elderly at nutritional risk are the ones who report poor or fair self reported health.

CONCLUSION

The mean prevalence of malnutrition was 6.5% among Benghazi elderly outpatients belonging to various public polyclinics while that of those at risk malnourishment was 36.8% highlighting the need for an earlier preventive approach through identification of country and region specific risk factors followed by appropriate intervention.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Suitor CJW. Promoting sound eating habits during childhood and adulthood. In: Nutrition, principles and application in health promotion. 2nd edition.
2. WHO. Definition of an older or elderly person Available at: http://www.who.int/healthinfo/survey/ageingdefolder/en/index.html. Accessed on 3 August 2017.
3. Barker HM. Nutrition and older people. In: Nutrition and Dietetics for Health Care. 9th edition. New York: Churchill Livingston; 2009: 129-38.
4. WHO. Keeping fit for life: Meeting the nutritional needs of older persons. Geneva: World Health Organisation; 2002.
5. Rabin DL. Characteristics of elderly population. In: Clinical aspects of aging. 3rd edition. Reichel E, ed. Baltimore: Williams and Wilkins; 2011: 487-494.
6. Horwath C. Nutrition and ageing. In: Essentials of human nutrition. 2nd edition. Mann J, ed. New York: Oxford University Press; 2002: 551-565.
7. Kennedy ET. Evidence for nutritional benefits in prolonging wellness. Am J Clin Nutr. 2006;83:410-4.
8. U.S. Bureau of Census, International Data base, Washington, 2006 Available at: http://www.census.gov/cgi-bin/pc/idbsprd. Accessed on 3 August 2017.
9. Brownie S. Why are elderly individuals at risk of nutritional deficiency? Int J Nurs Pract. 2006.
10. Rosenberg IH. Nutrition and ageing. In: Human nutrition and dietetics. 10th edition. Garrow JS, James WPT, Ralph A, eds. London: Churchill Livingstone; 2005: 465-470.
11. Dudek SG. Adult health issues and nutrition consideration for older adults. In: Nutrition handbook for nursing practice. 3rd edition. Philadelphia: Lippincott; 2008: 345-74.
12. Calkin E. Nutrition in the elderly. In: Practice of geriatrics. 2nd edition. Philadelphia: WB Saunders Company; 1992: 19-32.
13. Ozeraitiene V, Butenaite V. The evaluation of bone mineral density based on nutritional status, age and anthropometric parameters in elderly women. Medicina. 2006;42(10):836-42.
14. White JV, Ham RJ. Older adults. In: Medical Nutrition and Disease. 3rd edition. Hark L, Morrison G, eds. Massachusetts: Blackwell Publishing; 2003: 175-189.
15. Viswanathan R. Undernutrition in older people: A serious and growing global problem. J Postgrad Med. 2003;49:352-60.
16. Lovat LB. Age related changes in the gut physiology and nutritional status. Gut. 2016;38:306-9.
17. Snowman MK. Nutrition for older persons. In: Nutrition in health and disease. 17th edition. Pennsylvania: JB Lippencott Company; 2012: 345-360.
18. Reichel E. Essential principles in care of the elderly. In: Clinical aspects of aging. 3rd edition.
19. Boyce JM, Shome GR. Effect of ageing on smell and taste. Post grad Med J. 2006;82:239-41.
20. Bennett J, Creamer H. Oral health maintenance. In: Nursing management of the elderly. 2nd edition.
21. Carnevali DL, Patrick M, eds. Philadelphia: JB Lippincott Company; 2016: 164-179.
22. Gariballa SE. Nutrition and older people: special consideration for ageing. Clin Med. 2004;4:411-3.
23. Viswanathan R, Newbury JW. Malnutrition in older people: screening and management strategies. Aust Fam Physician. 2004;33(1):799-805.
24. Charlton KE, Rose D. Nutrition among older adults in Africa: The situation at the beginning of the millennium. J Nutr. 2001;131:2424-8.
25. Bales WB. What does it mean to be “at nutritional risk”? Seeking clarity on behalf of the elderly. Am J Clin Nutr. 2001;74:155-6.
26. United Nations. Report of the Second World Assembly on Ageing. New York: United Nations; 2002.
27. Gray LC. Health assessment of the elderly patients. Aust Fam Physician. 2004;33(10):795-7.
28. Guigoz Y. The Mini Nutritional Assessment (MNA). Review of literature- What does it tell us? J Nutr Health Aging. 2006;10(6):466-85.
29. Calkin E, Ford D, Katz PR. Preventive assessment. In: Practice of geriatrics. 2nd edition. Philadelphia: WB Saunders Company; 2012: 119-135.
30. Lemnan WJ. Screening elderly patients. A taste well suited to healthy visitors. Br Med J. 2010;300:694-5.
31. Keller HH, McKenzie JD, Goy RE. Construct validity and test retest reliability of the seniors in the community risk evaluation for eating and nutrition questions. J Gerontol. 2001;56:552-8.
32. Beck AM, Overton I, Schroll M. Validation of Residents Assessment Instrument triggers in the detection of undernutrition. Age Ageing. 2000;28:1184-90.
33. Zohoori N. Nutrition and healthy functioning in the developing world. J Nutr. 2001;131:2429s-32s.
34. World Health Organisation. Country profile. Libyan Arab Jamahiriya. Health status indicator. [online] 2001 [cited 2008 March 21] Available from URL: http://www.emro.who.int/emrinfo/index.asp?Ctry=li
35. Worthington-Roberts B, Karkeck JM. Nutrition. In: Nursing management of the elderly. 2nd edition. Carnevali DL, Patrick M, eds. Philadelphia: JB Lippincott Company; 2016: 189-218.
36. Davies L. Risk factors for malnutrition. In: Nutrition in the elderly. Horwitz A, MACFadyen DM, Munro H, Scrinehaw NS, Steen B, Williams TF, eds. Oxford: Oxford University Press; 2009: 153-166.
37. Mold JW. Nutritional assessment and dietary recommendation. In: Ambulatory geriatrics. 2nd edition. Yoshikava TT, Cobb's EL, eds. St Louis: Mosby; 2008: 154-164.
38. Barasi ME, Mottram RF. Nutrition in special age groups. In: Human nutrition. 4th edition. London: Edward Arnold; 2007: 141-164.
39. Smolin LA, Grosvenor MB. Energy balance and weight management. In: Nutrition science and application. 4th edition. London: Wiley; 2003: 176-215.