Nutritional Assessment of Elderly People Attending Geriatric Clinics, Baghdad 2024

[1]Heba Amori Mohammed
MBChB

[2]Ghiadaa Rifaat Hamid
FICMS/CM

[1]Corresponding author, Al-Numaan Teaching Hospital
Email; hibaamoori@gmail.com
[2] Literature at Al-Kindey college of medicine

Abstract

Background: Malnutrition is a comprehensive term to describe under- and overnutrition, but it is primarily used for undernutrition. It is recognized as a critical health issue in older adults worldwide due to its serious consequences, such as increased morbidity, healthcare costs, and mortality. Malnutrition poses a significant concern among older patients in rehabilitation settings, leading to poorer recovery of functional capabilities and an increased risk of hospitalization and institutionalization. Contributing factors include reduced physical function, socioeconomic status, and polypharmacy.

In recent years, obesity rates have significantly risen across all age groups, including older adults. Beyond the well-known risks of cancer and cardiovascular diseases, obesity in the elderly is also linked to diminished functional abilities and cognitive impairments.

Aims of study: The aims of this study are to assess the nutritional status of elderly people attending geriatric clinics in Baghdad during the year 2024, and to find the association between nutritional status and certain sociodemographic factors.

Patients, material and Methods: A Cross sectional study design that included 360 participants during the period from 1st of March 2024 through August 2025, the sample was collected from primary health care centers and teaching hospitals from both sides of Baghdad city. A questionnaire was used for data collection method. Descriptive statistics was presented using tables and graphs.

Chi-square test was used to find out significantly association between related category variables. P-value < 0.05 was considered as discrimination of significance.

Conclusions: This study highlights a significant risk of malnutrition among elderly contributors, representing a serious public health issue. Complete nutritional assessments and targeted interventions are essential, including education and meal assistance. Further research should focus on identifying contributing factors and evaluating intervention effectiveness.

Key words: Nutritional Assessment, Elderly, Malnutrition, Baghdad, Iraq.

Introduction:

Malnutrition is a widespread problem, affecting the global population at some life stage. This public health epidemic targets everyone, but the most affected groups are elderly persons, poverty people, young children, adolescents, and those who are with illness and have a compromised immune system. Malnutrition includes both undernutrition (wasting, stunting, underweight, and mineral- and vitamin-related malnutrition) and overnutrition (overweight, obesity, and diet-related noncommunicable diseases). [1, 2]

Aging is an expected and extremely complex, multifactorial process, is characterized by the progressive degeneration of organ systems and tissues. It is largely determined by genetics and influenced by a wide range of environmental factors, such as diet, exercise, exposure to microorganisms, pollutants. [3]

The prevalence of malnutrition shows a varied international range. In developed countries, the prevalence of malnutrition and risk of malnutrition may range from 4.2% to 52.1% in elderly living in nursing homes. [3] In developing countries, the phenomenon remains less explored although some papers suggest higher rates of malnutrition among elderly. [4]

Diet and lifestyle, coupled with maintenance of a healthy body weight are important in the maintenance of health central for healthy aging. Maintaining a good nutritional status has significant implications for health and wellbeing, delaying and decrease the risk of developing disease, maintaining functional independence and thus promoting continued independent living.[5]

A number of physiological changes occur in the elderly due to advanced age. These changes affect the individual's daily life, working life, habit status and communication with the environment. However, aging alone doesn't cause all of the age-related changes. Sedentary lifestyle, environmental conditions and stressful life also cause changes due to aging. [6]

Older people are particularly vulnerable to nutritional issues and poor nutrition during old age can cause a number of complications including the weakened immune system, chronic health problems such as Type 2 diabetes, hypertension (high blood pressure), cardiovascular diseases and osteoporosis. The causes of malnutrition during old age can be economic constraints, lack of nutrition awareness, poor nutrient absorption and other psychological factors such as dementia, confusion etc. Decreased bone mass and bone density cause porous, light and fragile bones which results in osteoporosis. [7] Malnourished patients are at risk for fragility fractures resulting in postoperative complications, increased mortality, and decreased functional status after geriatric orthopedic surgeries. [8]

Obesity among elderly populations is a matter of increasing concern. Elderly obesity is a pathophysiological complex issue, and predictions regarding obesity-related comorbidity and weight management are challenging. As individuals age, changes in the body composition, such as increase in fat mass and decrease in muscle mass, are observed even in the absence of changes in body weight and body mass index. [9]

Overnutrition is a complex multifactorial condition that accumulated excess body fat leads to negative effects on health. Overnutrition continues to accelerate resulting in a pandemic that shows no significant signs of slowing down any time

soon. Raised body mass index (BMI) is a risk factor for noncommunicable diseases such as diabetes, cardiovascular diseases, and musculoskeletal disorders, resulting in dramatic decrease of life quality and expectancy. The main cause of obesity is long-term energy imbalance between consumed calories and expended calories. [10]

It is a common assumption that malnutrition in developing country is associated with undernutrition due to food insecurity. However, nutrition transition and lack of dietary diversity lead to heightened prevalence of overnutrition. It is well recognized that middle income countries are experiencing a double burden of overnutrition related issues (overweight–obesity and non-communicable disease) alongside the undernutrition issues. [11]

Aims of the study:

1- To assess the nutritional status of elderly people attending geriatric clinics in Baghdad during the year 2024

2- To find the association between nutritional status and certain sociodemographic factors.

Patients, material and Methods:

A Cross sectional study design that included 360 participants during the period from 1st of March 2024 through August 2025, the sample was collected from primary health care centers and teaching hospitals from both sides of Baghdad city. A questionnaire was used for data collection method. Descriptive statistics was presented using tables and graphs. Chi-square test was used to find out significant association between related category variables. P-value < 0.05 was considered as discrimination of significance.

The questionnaire form was developed by the researcher and the supervisor as modified mini nutritional assessment questionnaire which comprised the following parts:

Part (I): Embraced information about demographic data consistent with age, gender, marital status, education, living status, monthly income, and employment.

Part (II): Questions that generally assess the geriatric nutritional status according to mini nutritional assessment form as follow: The digestive problem, any digestive disease like GERD, DU, chronic constipation, chronic abdominal pain, chronic diseases, and number of medications per day for chronic medication only.

Part (III): Measurements:

BMI (Body Mass Index).

Mid Arm Circumference (MAC).

The questionnaire was translated to Arabic and then retranslated to English, the purpose of that entertainment was to upsurge the accuracy and validity.

The study participants were categorized depending on total score achieved into:

-Malnourished < 17

-At risk of malnutrition (17-23)

-Normal nutritional status ≥24.

The total score was 30.

Inclusion criteria

All elderly people who are going to be available at the time of data collection and willing to participate in the study, adjoining that their ages are 60 years and above, and physically capable of attending the interview.

Exclusion criteria

Tired elderly patients as: those who suffer from terminal illness, End stage disease, or other condition that may affect the interview or make the measurement more difficult.

Ethical issue: The official approvals for this study were attained, represented by the approval of Al-Kindey College of Medicine/ Baghdad University, in addition to the necessary approvals from the relevant Health Directorates. After a thorough explanation of the study objectives to the elderly participants, taking a verbal consent from each one of them to participate in the study through their full choice; data were collected through an anonymous interview.

Statistical Analysis:

Data was introduced into Microsoft Excel Sheet 2019 and loaded into the SPSS (Statistical Package for Social Sciences) version (26). Parametric data were presented as mean and standard deviation. Categorical data presented as numbers and percentages. Independent samples t-test was used to analyze the difference between numerical data, along with *chi*-square test and Fisher exact test were used to test homogeneity and to compare categorical data. P-value < 0.05 was considered as discrimination of significance.

Results:

Total study sample was 360 participants. Participants' mean age was 67.16± 5.796 years with the range of 60-89 years. The highest proportion 38.3% (138) was within age group (65-70 years) as shown in table 1.

Table 2 shows that Older age group (>75 years) had significantly a higher proportion of malnutrition (21%) than other age groups.

Participants who had chronic disease 73(83.9%) had significantly a higher proportion of malnutrition than those who had not (Table 3).

Table 4 shows that participants who have GIT problems 65 (74.7%) composed a significant higher risk for malnutrition.

Table 5 shows that individuals with GIT problems had significantly lower mean MNA scores (19.30) compared to those without (22.64) (p = 0.02).

Table 6 shows that individuals consuming fewer than 3 meals per day had significantly lower mean MNA scores.

Table (1): The socio-demographic characteristics of the study sample (n =360).

Variables		No.	%
Age groups	< 65 years old	137	38.1
	65 - 70 years old	138	38.3
	71 - 75 years old	55	15.3
	> 75 years old	30	8.3
Gender	Male	201	55.8
	Female	159	44.2
Education level	Not educated	147	40.8
	Primary	70	19.4
	High school	71	19.7
	College and higher	72	20.0
Marital status	Single	7	1.9
	Married	305	84.7
	Divorced	6	1.7
	Widow	42	11.7
Monthly income	Low	140	38.9
	Intermediate	173	48.1
	Intermediate to high	47	13.1
	High	0	0.0
Work status	Retired	285	79.2
	Still working	75	20.8
	No	360	100.0

Table (2): The distribution study sample according to the nutritional status based on MNA and socio-demographic characteristics No.=360.

Variables		Nutritional status						P- value
		Normal		At risk		Malnutrition		
		No.	%	No.	%	No.	%	
Age groups	< 65 years old	35	57.4	87	41.0	15	17.2	<0.001*
	65 - 70 years old	22	36.1	85	40.1	31	35.6	
	71 - 75 years old	4	6.6	29	13.7	22	25.3	
	> 75 years old	0	0.0	11	5.2	19	21.8	
Gender	Male	34	55.7	119	56.1	48	55.2	0.988*
	Female	27	44.3	93	43.9	39	44.8	
Education level	Not educated	16	26.2	78	36.8	53	60.9	<0.001*
	Primary	19	31.1	37	17.5	14	16.1	
	High school	14	23.0	44	20.8	13	14.9	
	College and higher	12	19.7	53	25.0	7	8.0	
Marital status	Single	1	1.6	5	2.4	1	1.1	0.010**
	Married	52	85.2	186	87.7	67	77.0	
	Divorced	3	4.9	0	0.0	3	3.4	
	Widow	5	8.2	21	9.9	16	18.4	
Monthly income	Low	19	31.1	78	36.8	43	49.4	<0.001**
	Intermediate	29	47.5	100	47.2	44	50.6	
	Intermediate to high	13	21.3	34	16.0	0	0.0	
Work status	Retired	35	57.4	168	79.2	82	94.3	<0.001*
	Still working	26	42.6	44	20.8	5	5.7	

Table (3): Distribution of participants according to the nutritional status based on MNA, history of chronic diseases and medications No.=360.

Variables		Total score						P- value
		Normal		At risk		Malnutrition		
		No.	%	No.	%	No.	%	
Chronic diseases	Yes	25	41.0	125	59.0	73	83.9	<0.001*
	No	36	59.0	87	41.0	14	16.1	
Medications per day (3 and above)	Yes	6	9.8	126	59.4	69	79.3	<0.001*

Table (4): Distribution of study sample according to the nutritional status based on MNA and history of GIT problems No.=360.

Variables		Nutritional status						P- value
		Normal		At risk		Malnutrition		
		No.	%	No.	%	No.	%	
GIT problems	Yes	16	26.2	110	51.9	65	74.7	<0.001*
	No	45	73.8	102	48.1	22	25.3	

Table (5): Association between MNA scoring and key health variables of older adults, No.=360.

Variables		MNA score		*P*-value
		Mean	S. D.	
GIT problems	Yes	19.30	4.23	0.02
	No	22.64	3.73	
Weight loss	Yes	18.78	3.32	0.01
	No	22.04	3.89	
Chronic diseases	Yes	19.89	4.02	0.034
	No	22.55	4.26	
Number of medications (≥3)	Yes	19.26	3.62	0.019
	No	22.96	4.29	

Table (6): Relationship between dietary components, frequency, intake, and MNA scores, No.=360

Variables		MNA score		*p*-value
		Mean	S.D.	
No. of meals (less than 3/day)	Yes	18.29	3.71	0.012
	No	22.37	3.95	
Milk& dairy products (less than1serving/day)	Yes	19.69	3.85	0.0189
	No	22.10	4.48	
Eggs& legumes (less than 2 servings/week)	Yes	19.39	4.06	0.03
	No	21.78	4.24	
Meat, fish or poultry (less than 1 serving/day)	Yes	19.52	3.75	0.019
	No	22.02	4.46	
Vegetables &fruits (less than 2 servings/day)	Yes	19.21	4.18	0.021
	No	22.03	4.05	

DISSCUTION:

The majority of participants in this study were aged between 65-70 years, aligning with the finding from a 2018 study conducted in Belgaum [12] and also corelated with study done in Baghdad city. Males constitute a slightly higher proportion (55.8%) compared to females (44.6%), a trend consistent with the research from north Karnataka India 2022, [13] individuals with no formal education were overrepresented among those experiencing malnutrition, a result compare to study in Punjab India 2020. [14]

The percentage of elderly participants in our study who exhibited normal nutritional status was determined to be 16.94%. The low percentage of elderly members exhibiting normal nutritional status advocates a high prevalence of nutritional difficulties, potentially ranging from vitamin deficiencies to severe undernutrition, highlighting the need for attention and intervention in this people. This result is comparable to the findings of a previous study conducted in America in 2005. [15]

The research findings revealed that a substantial proportion (83.9%) of elderly participants suffering from chronic diseases was also experiencing malnutrition. Chronic diseases can subsidize to malnutrition in the elderly through several pathways, including disease-related factors, medication side effects, decrease physical activity, and social and economic factors, creating a bidirectional relationship where malnutrition worsens chronic disease outcomes and vice versa. This result is consistent with the findings of a previous study conducted in the Netherlands in 2011. [16]

The prevalence of malnutrition was significantly higher among elderly patients who were taking three or more medications (79.3%). Many medications can interfere with nutrient absorption, diminish appetite, or cause gastrointestinal problems like nausea, vomiting, or diarrhea, all of which can play apart to malnutrition. The more medications a person takes, the higher the risk of these side effects This finding is comparable to the results of a study conducted in Bangladesh in 2002. [17]

The current results indicated that a substantial proportion (58.89%) of the elderly individuals in our sample were at risk of malnutrition A substantial portion of the elderly contributors in this study are at risk of malnutrition, potentially due to dietary unfitness, underlying medical conditions, social aspects, and economic limitations, which can lead to numerous health problems including weakened immune system, muscle loss and weakness, slowed wound healing, and cognitive decline.. This finding is consistent with the outcomes of similar studies carried out in Australia in 2013 and India in 2020. [18, 19]

Consistent with findings from a previous study conducted in 2022, our results demonstrate a strong association between reduced meal frequency and malnutrition in elderly patients. Specifically, 66.7% of participants consuming fewer than 3 meals per day exhibited signs of

malnutrition, supporting the importance of dietary intake as a adjustable risk factor for this condition. [20]

Conclusions

This research highlighted the importance of assessing the nutritional status of elderly individuals attending geriatric clinics in Baghdad. The findings will provide important insights into the prevalence of nutritional inadequacy and their association with sociodemographic factors. The findings emphasize the necessity for broad nutritional assessments and suitable interventions, including dietary education, meal assistance programs, and addressing social and economic barriers.

Recommendations

1. Implement Routine Nutritional Screening:

A routine nutritional screening protocols for all elderly individuals, particularly those with chronic diseases or taking multiple medications, to find those at risk of malnutrition early.

2. Encourage Dietary Education and Counseling:

Develop and apply targeted nutritional education programs for elderly people and their caregivers, focusing on the importance of balanced diets, adequate protein intake, and consumption of fruits, vegetables, and dairy foodstuffs.

3. Enhance Access to Nutritious Foods:

Rise access to low coast and nutritious foods for elderly individuals, especially those with inadequate mobility or economic restrictions. This may include meal delivery services, community food programs, and partnerships with local food market stores.

4. Support Regular Physical Activity:

Encourage elderly people to participate in regular physical activity, adjusted to their abilities, to improve appetite, muscle mass, and overall health.

References

1. Dukhi N. Global Prevalence of Malnutrition: Evidence from Literature. In: Malnutrition. 2020.
2. Kılıç O, Özkalkanlı MY, Yılmaz F, Altay T. Comparison of malnutrition screening tests in predicting postoperative complications in elderly patients with femur fracture. Ain-Shams Journal of Anesthesiology. 2022;14(1).
3. Ahmed Hassan FE, Mahmoud Abd El-Aziz N, Abd-El Hameed Abd-ELaziz S. Assessment of Students' Knowledge and Attitudes Related to Physiological Changes of Elderly People in El-Azhar Univeristy at Assuit City, Egypt. Assiut Scientific Nursing Journal. 2020;8(20.0).
4. Jamil NF, Salih AA, Sadiq MA, Shaker SH. Assessment of nutritional status of elderly people in Baghdad. Annals of the Romanian Society for Cell Biology. 2021;25(1):4457-65.
5. Jones, J.; Duffy, M.; Coull, Y.; Wilkinson, H. Older people living in the community—Nutritional needs, barriers and interventions: A literature review. Available online: http://www.scie-socialcareonline.org.uk/older-people-living-in-the-community-nutritional-needs-barriers-and-interventions-a-literature-review/r/a11G00000017xKZIAY (accessed on 23 March 2015).
6. AĞAR A. Yaşlılarda Ortaya Çıkan Fizyolojik Değişiklikler. Ordu Üniversitesi Hemşirelik Çalışmaları Dergisi. 2020;3(3).
7. Kumari MrsM. A Study on Dietary Habits of Elderly People in Hyderabad. Int J Res Appl Sci Eng Technol. 2020;8(5).
8. Youngman T, Rinehart D, Sorich M, Oberstar J, McCarthy T. Nutritional Considerations in Geriatric Orthopedics. Vol. 11, Current Geriatrics Reports. 2022.
9. Kim TN. Elderly obesity: Is it harmful or beneficial? Vol. 27, Journal of Obesity and Metabolic Syndrome. 2018.
10. Atta, S. . (2024). Navigating the Complex Nature of Obesity Between Being A Chronic Disease or Personal Responsibility: Have You Betrayed Your Body or Have Your Body Betrayed You?. Clinical Medicine And Health Research Journal, 4(4), 970–974.
11. Irawati D, Ekawanti A, Josafat A. Nutritional profile in Indonesian elderly subpopulation. Jurnal Kedokteran dan Kesehatan Indonesia. 2020;11(2).
12. Patil DJ, Shindhe MM. Nutritional status assessment of elderly using MNA tool in rural Belagavi: a cross sectional study. Int J Community Med Public Health. 2018;5(11).

13. Nekar MS, Joshi AR, Bant DD. Geriatric Depression and Its Association with Geriatric Malnutrition: A Cross-Sectional Study in Hubballi, North Karnataka. National Journal of Community Medicine. 2022;13(3).

14. Raza HA, Amir RM, Bilal MQ, Afzal S. Knowledge , Attitude and Practices Regarding Malnutrition Among Rural Women in Punjab ,. Journal of Agrriculture and rural sociiology. 2020;58(2).

15. Nadya Kagansky, Yitshal Berner, Nira Koren-Morag, Luiza Perelman, Hilla Knobler, Shmuel Levy, Poor nutritional habits are predictors of poor outcome in very old hospitalized patients, The American Journal of Clinical Nutrition, Volume 82, Issue 4, 2005, Pages 784-791, ISSN 0002-9165,.

16. Mei-ju Chi, Cheng-yi Lee, Shwu-chong Wu, The prevalence of chronic conditions and medical expenditures of the elderly by chronic condition indicator (CCI), Archives of Gerontology and Geriatrics, Volume 52, Issue 3, 2011, Pages 284-289, ISSN 0167-4943,.

17. Islam, S. K. N., Hossain, K. J., Ahmed, A., & Ahsan, M. (2002). Nutritional status of drug addicts undergoing detoxification: prevalence of malnutrition and influence of illicit drugs and lifestyle. British Journal of Nutrition, 88(5), 507–513.

18. Van Bokhorst-de van der Schueren MAE, Lonterman-Monasch S, de Vries OJ, Danner SA, Kramer MHH, Muller M. Prevalence and determinants for malnutrition in geriatric outpatients. Clinical Nutrition. 2013;32(6).

19. Khandelwal R, Kapil U, Gupta A. Epidemiological Determinants of Malnutrition Status among Geriatric Population Residing at High Altitude Region of Rural Uttarakhand, India. Proceedings of the Nutrition Society. 2020;79(OCE2).

20. Stéphane Jouneau, Chloé Rousseau, Mathieu Lederlin, Alain Lescoat, Mallorie Kerjouan, Pierre Chauvin, David Luque-Paz, Stéphanie Guillot, Emmanuel Oger, Laurent Vernhet, Ronan Thibault, Malnutrition and decreased food intake at diagnosis are associated with hospitalization and mortality of idiopathic pulmonary fibrosis patients, Clinical Nutrition, Volume 41, Issue 6, 2022, Pages 1335-1342, ISSN 0261-5614,