Elderly Health Journal 2015; 1(1): 16-21.
Shahid Sadoughi University of Medical Sciences, Yazd, Iran
Journal Website : http://ehj.ssu.ac.ir

Original Article

Nutritional Status and Related Factors in Elderly Nursing Home Residents

Zahra Bostani Khalesi[1], Mahshid Bokaie[2*]

[1.] Department of Midwifery, School of Nursing and Midwifery, Guilan University of Medical Science, Rasht, Iran
[2.] Department of Midwifery, School of Nursing and Midwifery, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

A B S T R A C T

Article history
Received 25 Feb 2015
Accepted 29 Apr 2015

Introduction: A challenge for health care providers is that there will be a distinct rise globally in the number of elderly people aged 80 years and over. Malnutrition is a well-known problem among elderly people. The aim of this study was to determine nutritional status and its associated risk factors in elderly nursing home residents in Tehran, Iran.

Methods: The cross-sectional study was carried out among 385 elderly people aged 60 years or elder in 2014. All subjects who were attending to daily care centers for elderly people entered the study voluntarily. Mini Nutritional Assessment (MNA) tool was used to evaluate nutritional status.

Results: Of participants, 13.25% were malnourished according to MNA, 60% were at risk for malnutrition, and 26.75% were well fed. In other words, 73.25% of elderly people were at risk of or suffering from Malnutrition. Nutritional status of the elderly based on MNA, was significantly associated with history of acute illness or stress, recent mobility problems, nervous mental depression, personal views about nutrition and health status.

Conclusion: Considering the high percentage of elderly people eat risk or suffering from malnutrition in nursing homes, the need for nutritional interventions seems to be crucial.

Keywords: Malnutrition, Nutritional Status, Older Adults

Citation: Bostani khalesi Z, Bokaie M. Nutritional status and related factors in elderly nursing home residents. Elderly Health Journal. 2015; 1(1): 16-21.

Introduction

A challenge for health care providers is that there will be a distinct rise globally in the number of elderly people aged 80 years and over (1). Malnutrition is a frequent and serious problem in the elderly (2) and caused by loss or imbalance in energy, protein, vitamins and minerals intake and leads to consequences such as loss of function, disability, decreased quality of life and mortality (3). It is more common and increasing in the older population (4); currently 16% of those > 65 years and 27% of those > 85 years are classified as malnourished (5). Aging is accompanied by physiologic changes that can negatively impact nutritional status (6). Sensory impairments, such as decreased sense of taste and smell, which occurs with aging, might result in reduced appetite (7). Poor oral health and dental problems might also lead to difficulty in chewing, inflammation, and a monotonous diet that is poor in quality, all of which increase the risk of malnutrition (8). Energy needs decrease as the age increases; however, the need for most nutrients remains relatively unchanged resulting in an increased risk of Malnutrition (9). Early detection of malnutrition is important (6). Non-invasive method can detect malnutrition and prevention of long-term complications arising from the malnutrition (3). The purpose of nutritional screening is early detection of patients are malnourished or at risk of malnutrition (10). A research in UK 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 (11). In Sweden, one third of the elderly residents living in some kind of nursing homes were malnourished (12) regarding this problem, Iran is of no exception (13). Several

* **Corresponding Author:** Department of Midwifery, School of Nursing and Midwifery, Shahid Sadoughi University of Medical Sciences, Yazd, Iran. **Tel:** +989131538064, **Email address:** mah_bokaie@yahoo.com

[DOR: 20.1001.1.24236179.2015.1.1.4.7]

investigations regarding nutritional status in nursing homes in Iran have demonstrated the same results, that malnutrition is a serious problem in nursing homes, demanding special attention (13- 15). The aim of this study was to determine nutritional status and its associated risk factors in elderly nursing home residents in Tehran, Iran.

Methods

Procedures

This cross-sectional study was conducted on 385 elderly aged 60 years or older (211 women and 174 men) living in nineteen nursing- homes in Tehran (public and private) in 2013 to 2014. The regional ethics committee of Tehran University of Medical Sciences approved the protocol of the study. After explaining the study, a written informed consent was taken from eligible participants. Sample size was determined based on the information derived from a similar study (6, 11) considering a confidence level of 95%, Z = 1.96, d =0.05, 385 samples was calculated to be included in the study. Participants voluntarily accepted to take part in the study. Subjects with Alzheimer disease and other cognitive disorders were excluded from the current study because they were unable to answer the questionnaires accurately.

Data collection

The data collection was carried out using Mini Nutritional Assessment (MNA) with five additional questions. The MNA which developed by Guigoz et al. is a reliable, feasible and non-invasive screening tests for evaluating nutritional status in elderly people(16). This questionnaire composed of 18 different questions and anthropometric measures for ranking participants in three levels (malnutrition with scores less than 17, at risk of malnutrition with 17 to 23.5 scores and normal status with 24 to 30 scores) (17). The MNA questionnaire has been translated into many languages and is being utilized in several countries (9, 13). This questionnaire can be completed rapidly and easily (in about 10 minutes). It consists of brief questions and simple measurements which may be conducted by physicians or healthcare professionals. In a study by Gazzotti et al. on diagnostic values of the MNA, the sensitivity of the questionnaire was found to be 96% with 98% specificity and 97% predictive value to distinguish malnourished cases (18). According to one study evaluating the Persian-translated version of the MNA used for Iranian elderly population, the sensitivity, specificity, positive and negative predictive values were 88%, 62%, 57%, and 89%, respectively (14). Demographic characteristic of subjects (age, gender, current disease) were collected through a questionnaire.

Statistical analysis

Quantitative and qualitative variables were compared between nutritional status categories using independent samples student *t*-test and Chi-square tests, respectively. Binary logistic regression was used to examine the association between demographic and other factors, and the likelihood of malnutrition among elderly. The data were analyzed using SPSS software (version 16). P- value < 0.05 was considered as statistically significant.

Results

Totally 385 elderly from nineteen nursing homes in Tehran, Iran participated in this study from 2013 to 2014; of which 61.3% were female. The mean (± SD) age of study population was 76.1 ± 3.5 years, of which 52.2% were aged 60 to 74 years old. Table 1 shows demographic characteristics of participants.

Table 1. Frequency Distribution of Demographic characteristics of participants

Demographic characteristics		N	%
Gender	Female	211	54.8
	Male	174	45.2
Level of Education	Illiterate	323	86.5
	Under Diploma	31	8.05
	Diploma	18	4.7
	Higher than diploma	3	0.8
Diseases	Yes	197	77.1
	No	88	22.85
Years of residence in a nursing home (N)	<5	302	78.44
	5-10	80	20.8
	>10	3	0.8

The Logistic regression analysis did not show a significant relationship between nutritional status and maintenance center (p = 0.02). Multivariate logistic regression analysis identified the following factors as independent risk factors for malnutrition in elderly patients: 1) age of patients (OR =1.01, 95% CI: 1.0–1.6; p = 0.01). Logistic regression was adjusted for confounders such as age of patients, sex and the type of elderly nursing home. Of participants 77.1% had a history of chronic disease. The most prevalent were hypertension and diabetes, respectively. Among patients 13.25% were suffering from malnutrition, 60% were at risk of malnutrition, and 26.75% were well-fed. In other words, 73.25% of seniors surveyed were at risk of or suffering from malnutrition.

In this study, 4% of people consumed less than 3 drugs daily, 96% of those who consumed more than 3 drugs per day were suffering from malnutrition, and the proportion of older people took every day less than 3 drugs showed no statistically significant difference. Significant association between nutritional status of the elderly and drug use was seen (p = 0.02); Also, 80 % of patients with a history of acute illness or stress in the last 3 months were in poor nutritional

[DOR: 20.1001.1.24236179.2015.1.1.4.7]

status (p = 0.001). In the malnutrition group, 35.3% of the people had the ability to move, while 64.7% were not able to move, which is statistically significant t (p = 0.001). Among participants, 41.2 percent of people with dementia or severe depression, 45.1% of those with mild dementia and 13.7% of the elderly with neuropsychological problems were suffering from malnutrition, the differences which are statistically significant. Among people with neuropsychiatric problems, in comparison with those who had other mental problems, malnutrition are higher 86.3% compared to 13.7%, which represents older people with depression, were most affected by malnutrition (p > 0.001). Elderly people who are accustomed to daily reading, watching TV and listening to radio, talking to others, praying, walking and helping others experienced less malnutrition 72.54% compared to 27.45%, which represents a positive impact of such the activities on nutritional status (p > 0.01). Compared to those unable to eat independently 69.9% (optimal nutrition) dedicated to those who eat without help and the significant difference between the two groups (p > 0.01) means that the ability of the elderly to eat had an effect on nutritional status the distribution factors examined in the elderly are summarized in Table 3.

Table 2. Distribution of nutritional status according to maintenance centers (public/private)

Nutritional status	Without malnutrition		At risk of malnutrition		With malnutrition		Total	
Centers	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Public	82	30.7	147	55.05	38	14.2	267	69.35
Private	21	17.8	84	71.18	13	11	118	30.6

Table 3. Distribution of factors studied in elderly

Factors studied		Without malnutrition		At risk of malnutrition		With malnutrition	
		N	**%**	**N**	**%**	**N**	**%**
Elder's assessment of nutritional status	No comments	27	26.21	23	9.95	16	31.37
	No problem	48	46/6	121	52.4	18	35.3
Ability to eat	Poor nutrition	28	27.18	87	37.7	17	33.33
	Using eat	12	11.65	38	16.45	31	60.8
	With hardly eat	18	17.47	137	56.3	9	17.7
	Eat without help	72	69.9	56	24.24	11	21.6
Daily consumption of drugs	More than 3 drugs	15	14.56	208	90.04	49	96
	Less than 3 drugs	88	85.43	23	9.95	2	4
Ability to move	Ability	95	92.23	187	80.95	18	35.3
	Not Ability	8	7.8	44	19.04	33	64.7
How spending Time	Rest	17	16.5	112	48.48	37	72.54
	Activities	86	83.5	119	51.55	14	27.45
Neuropsychiatric problems	Severe dementia or depression	0	0	17	7.35	21	41.2
	Mild dementia	0	0	23	10.8	23	45.1
	No problem neuropsychiatric	103	100	91	82.6	7	13.7
Met with relatives	Once a week	21	20.4	41	17.74	5	9.8
	Less than 5 days	7	6.8	12	5.2	7	13.8
	Once a month	63	61.17	59	25.54	12	23.5
	Quarterly	19	18.4	37	16	9	17.7
	No meeting	8	7.8	82	35.5	18	35.3
Disease or acute stress in the last 3 months	Yes	1	0.9	19	8.22	41	80.4
	No	102	99	212	91.77	10	19.6
Elder evaluation of their health status compared with peers	They are not well	21	20.4	22	9.52	29	56.86
	Not sure	8	7.8	25	10.82	9	17.7
	Persons as well as peer	35	34	154	66.66	12	23.5
	Better than peers	39	37.9	30	12.98	1	1.96

[DOR: 20.1001.1.24236179.2015.1.1.4.7]

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 (1). Studies in developed countries show that multiple chronic illness, nutritional deficiency, and functional disabilities are common features of old age which can cause malnutrition (19, 20). The primary purpose of this study was to determine the prevalence of malnutrition and related risk factors in elderly residents of nursing homes in Tehran, Iran.

In the current study, the prevalence of malnutrition and its relationship with influencing factors in elderly were assessed. The prevalence of malnutrition in our study was 16%, similar to the results obtained by Afkhami et al. (14). This was 12.8% in the Aliabadi study (13) and 7% in the Ulgeretal study (20) and Saha Set et al. (22) which was higher than our study.

The malnutrition in elderly people who cannot eat (60.8%) was three times more prevalent than those who eat without help. This study and other studies in Tehran (14, 22) and Spanish (23) illustrated statistically significant relationship between the nutritional status of other people and their ability to eat. The study, showed that the elderly who were unable had the ability to move were more likely be exposed to malnutrition. It may be due to isolation and lack of communication with others, unfavorable psychological conditions leading lead to loss of appetite and subsequently inadequate food intake (15). Timpini showed that there is a significant relationship between movement ability and the elderly nutritional state based on MNA, which is similar to the results of this study (24). In a study in Japan, the people who had neuropsychiatric problems in the month preceding the study are more at the risk of malnutrition, which is similar to the result of this study (25).

Conclusion

This study showed that nursing home dwelling older people are at an increased risk of inadequate diet and malnutrition, and Inadequate diet and malnutrition are associated with a decline in functional status, impaired muscle function, decreased bone mass, immune dysfunction, anemia, reduced cognitive function, poor wound healing, and delay in recovering from surgery, and higher hospital and readmission rates and mortality. Thus, nutritional and dietary program and educational programs tailored to the elderly who provide their needs, it is necessary to improve the situation.

Study limitations

Limitation of the study was that the qualitative research methods were not adopted which might lead to unreliable results, hence more detailed assessment of the factors contributing to nutritional status of the study population.

Conflict of interest

The authors declare no conflicts of interest.

Acknowledgements

We would like to thank all residents of the nursing homes, their relatives, managers and staff members, who participated in this study and without whom this work would not have been accomplished.

References

1. WHO. International plan of action on ageing: report on implementation; 115th Session; 2004. Available from: http://apps.who.int/gb/archive/pdf_files /EB115/B115_29-en.pdf. Accessed at 17 Jul 2014.
2. Ribeiro RSV, Rosa MI, Bozzetti MC. Malnutrition and associated variables in an elderly population of Criciúma, SC. Revista Da Associação Médica Brasileira. 2011; 57(1): 56-61.
3. Raynaud-Simon A, Revel-Delhom C, Hebuterne X. Clinical practice guidelines from the French health high authority: nutritional support strategy in protein-energy malnutrition in the elderly. Clinical Nutrition. 2011; 30(3): 312-9.
4. Karmakar PS, Pal J, Maitra S, Ghosh A, Sarkar N, Das T, et al. Prevalence of malnutrition and its correlation with various diseases in elderly patients in a tertiary care centre in eastern India. Journal of the Indian Medical Association. 2010; 108(11): 754-6.
5. Vellas B, Villars H, Abellan G, Soto ME, Rolland Y, Guigoz Y, et al. Overview of the MNA--Its history and challenges. The Journal of Nutrition, Health & Aging.2006; 10(6): 456-63.
6. Saikia AM, Mahanta N. A Study of nutritional status of elderly in terms of body mass index in urban Slums of Guwahati city. Journal of the Indian Academy of Geriatrics. 2013; 9: 11-14.
7. Vedantam A, Subramaniam V, Rao NV, John KR. Malnutrition in free living elderly in rural South India: Prevalence and risk factors. Public Health Nutrition. 2010; 13(9): 1328-32.
8. Samnieng P, Ueno M, Shinada K, Zaitsu T, Wright F, Kawaguchi Y. Association of hyposalivation with oral function, nutrition and oral health in community-dwelling elderly Thai. Community Dental Health. 2012; 29(1): 117-23.
9. Lahiri S, Biswas A, Santra S, Lahiri SK. Assessment of nutritional status among elderly population in a rural area of West Bengal, India. International Journal. 2015; 4(4): 569.
10. Boulos C, Salameh P, Barberger-Gateau P. The AMEL study, a cross sectional population-based survey on aging and malnutrition in 1200 elderly

[DOR: 20.1001.1.24236179.2015.1.1.4.7]

Lebanese living in rural settings: Protocol and sample characteristics. BMC Public Health. 2013 12; 13: 573

11. Russell CA, Elia M. Nutrition screening survey in the UK in 2007: Nutrition screening survey and audit of adults on admission to hospitals, care homes and mental health units. British Association for Parenteral and Enteral Nutrition; 2008.
12. Saletti A, Lindgren EY, Johansson L, Cederholm T. Nutritional status according to mini nutritional assessment in an institutionalized elderly population in Sweden. Gerontology. 2000, 46(3): 139-45.
13. Aliabadi M, Kimiagar M, Ghayour-Mobarhan M, Shakeri MT, Nematy M, Ilaty AA, et al. Prevalence of malnutrition in free living elderly people in Iran: a cross-sectional study. Asia Pacific Journal of Clinical Nutrition. 2008; 17(2): 285-9.
14. Afkhami A, Keshavarz S.A, Rahimi A, Jazayeri S.A, Sadrzadeh H. Nutritional status and associated non-dietary factors in the elderly living in nursing homes of Tehran and Shemiranat, 2004. Journal of the Iranian Institute for Health Sciences Research. 2008; 7(3): 211-17. [Persian]
15. Abbaspour N, Wegmueller R, Kelishadi R, Schulin R, Hurrell RF. Zinc status as compared to zinc intake and iron status: a case study of Iranian populations from Isfahan province. International Journal for Vitamin and Nutrition Research. 2013; 83(6): 335-45.
16. Guigoz Y, Lauque S, Vellas BJ. Identifying the elderly at risk for malnutrition. The mini nutritional assessment. Clinics in Geriatric Medicine. 2002; 18(4): 737-57.
17. Guigoz Y. The mini nutritional assessment (MNA) review of the literature. What does it tell us? The Journal of Nutrition, Health & Aging. 2006; 10(6): 485-87
18. Gazzotti C, Albert A, Pepinster A, Petermons J. Clinical usefulness of the mini nutritional assessment (MNA) scale in geriatric medicine. Journal of Nutritional Health of Aging. 2000; 4(3): 176-81.
19. Gariballa S. Nutrition and older people: special considerations relating to nutrition and ageing. Clinical medicine. Journal of the Royal College of Physicians of London. 2004; 4(5): 411-4.
20. Rolland Y, Perrin A, Gardette V, Filhol N, Vellas B. Screening older people at risk of malnutrition or malnourished using the simplified nutritional appetite questionnaire (SNAQ): a comparison with the mini nutritional assessment (MNA) tool. Journal of the American Medical Directors Association. 2012; 13(1): 31-4.
21. Ulger Z, Halil M, Kalan I, Yavuj B, Cankurtaran M, Güngör E, et al. Comprehensive assessment of malnutrition risk and related factors in a large group of community-dwelling older adults. Clinical nutrition. Official Journal of the European Society of Parenteral and Enteral. 2010; 29(4): 507-11.
22. Saha S, Basu A, Ghosh S, Saha AK, Banerjee U. Assessment of nutritional risk and its associated factors among elderly women of old age homes of south Suburban Kolkata, West Bengal, India. Journal of Clinical and Diagnostic Research. 2014; 8(2): 118.
23. Cuervo M, Garcia A, Ansorena D, Sanchez-Villegas A, Gonzalez M, Astiasaran I, et al. Nutritional assessment interpretation on 2207 Spanish community-dwelling elders through the Mini Nutritional Assessment test. Public Health Nutrition. 2009; 12(1): 82-90.
24. Timpini A, Facchi E, Cossi S, Ghisla MK, Romanelli G, Marengoni A. Self-reported socio-economic status, social, physical and leisure activities and risk for malnutrition in late life: a cross-sectional population-based study. The Journal of Nutrition, Health & Aging. 2011; 15(3): 233-8.
25. Saka B, Kaya O, Ozturk GB, Erten N, Karan MA. Malnutrition in the elderly and its relationship with other geriatric syndromes. Clinical Nutrition. Official Journal of the European Society of Parenteral and Enteral. 2010; 29(6): 745-8.

[DOR: 20.1001.1.24236179.2015.1.1.4.7]