Assessment of Knowledge Regarding Nutrition Among Elderly in Rural Area, Sharkia Governorate

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Abstract

Background: Nutrition plays a survival role in maintaining healthy aging by preventing some diseases and controlling others. **Aim of the study**: Assess the knowledge regarding nutrition among the elderly in rural areas, Sharkia Governorate **Subjects and Methods**: **Research design:** Descriptive design was adopted to carry out this study. **Setting:** The study was conducted at Mobasher Village, Sharkia Governorate, Egypt. **Subjects:** purposive sample of 60 elderly subjects who fulfilled the study inclusion criteria. **Tools of data collection:** A structured interview questionnaire was used for data collection. It was composed of three parts. **Part I:** Elderly demographic characteristics, **Part II:** Medical history, and **Part III:** General nutritional knowledge. **Results:** The study reveals that only (16.7%) of the studied elderly had satisfactory knowledge regarding nutrition, also the study shows that knowledge scores had statistically significant positive correlations with the elderly's educational level. Meanwhile, this score had a negative correlation with the elderly age. **Conclusion:** It is apparent from this study that extremely poor nutritional knowledge was experienced by most of the elderly. **Recommendations:** Develop a nutritional education program appropriate for the elderly's age, socioeconomic status, and level of education.

Keywords: Elderly, Knowledge, Nutrition, Rural area , Sharkia Governorate.

Introduction

People are living longer all around the planet. Most people nowadays can expect to live well into their sixties and beyond. Every country around the globe is seeing population growth, as well as an increase in the number of elderly people. By 2030, one out of every six persons on the planet will be 60 years old or older. The number of people aged 60 and more is expected to rise from 1 billion in 2020 to 1.4 billion by 2050. By 2050, the global population of adults aged 60 and up will have doubled (2.1 billion). Between 2020 and 2050, the number of people aged 80 and more is predicted to treble, reaching 426 million) [(1)].

Nutrition in the elderly has become a concern due to the numerous negative effects of malnutrition on older people's overall health, well-being, and autonomy. Diet and lifestyle, along with maintaining healthy body weight, are critical in maintaining health for people of all ages, but they are especially important for healthy aging. Maintaining a healthy nutritional status has significant health and well-being implications, including delaying and reducing disease risk, maintaining functional independence, and supporting ongoing independent living [(2)].

The relationship between a healthy diet and successful aging. Healthy eating habits have been linked to better aging and well-being in the elderly, including mental health and cognition, cardiometabolic risk, physical and bone health, and meaningful life experiences. Furthermore, when followed as part of a healthy lifestyle, healthy eating habits can have a variety of positive consequences. A healthy diet is a vital component of a healthy lifestyle which increases the likelihood of individual aging successfully [(3)].

Nutritional knowledge (NK) is broadly defined as understanding concepts and processes connected to nutrition and health, such as diet and health, diet and disease, main nutrient sources, and dietary guidelines and

recommendations[4]. Nutrition knowledge is considered one of the factors affecting food intake [5]. Nutrition knowledge is a significant factor in eating behavior and nutritional status. Understanding areas of inadequate knowledge can lead to educational activities to lower the risk of nutritional deficiencies and promote healthy aging [6].

Nurses are situated to provide nutrition education to the elderly [7]. Nurses belong to one of the most trusted groups of professionals and have immediate access to the elderly in a variety of settings regularly. Because nutrition is known to improve health status, prevent disease, or prevent complications from the existing disease, promoting proper nutrition in all people should be of utmost importance [8]. Educating and training clinicians to deliver nutrition interventions is critical to improve population health [9].

Significance of the study:

The elderly are weak people who have many diseases at the same time. They go through many physical, psychological, and social changes related to age, which can compromise the appetite, intake, and absorption of nutrients, leading to the risk of malnutrition and affecting their nutritional status. In addition, elderly people do not have enough information about good nutrition or good eating habits may be due to a lack of health education sources and low education level among elderly in rural areas, nutrition plays a critical role in the promotion of health and prevention of disease as well as control most common diseases among elderly such as diabetes mellitus and hypertension, Hence, the present study was be designed to assess the knowledge regarding nutrition among elderly in rural areas, Sharkia Governorate

Aim of the study:

The current study aimed to assess the knowledge regarding nutrition among the elderly in rural areas, Sharkia Governorate.

Research Questions:

What is the level of knowledge regarding nutrition among the elderly in rural areas, Sharkia Governorate?

Subjects and methods:

Research design:

A descriptive design was used to carry out this study

Study setting:

The current study was carried out at Mobasher Village, sharkia governorate, Egypt.

Study subjects:

A purposive sample was composed of 60 elderly aged 60 years or above. Independent in performing their daily and instrumental activities, agreeing to participate in the study, and being able to communicate was selected in the recruitment of this study.

Sample size calculation:

The sample size was calculated by using a statistical computer program (EPI-Info software version 6.04) at a power of 80% and a confidence limit of 95% and assuming the prevalence of poor nutrition knowledge among the elderly was (49 %) before the educational program compared to 9%and 4%of them in the immediate post-program evaluation and 3monthes follow up [10], So the estimated sample size was calculated to be 60 participants.

Sampling technique:

A multistage cluster sampling technique was the most appropriate method for the selection of the elderly to be included in the study as the following:

- First stage (selection of District): The study was conducted at Sharkia Governorate, which consists of 23 districts. The researcher used a simple random sampling technique to select the district. Accordingly, Elibrahemya District was selected, and the total number of elderly in this district was 12266 elderly.
- Second stage (selection of Village): Elibrahemya District consists of 18 villages; the researcher used a simple

random sampling technique to select the village. Consequently, Mobasher Village was selected and the total number of elderly in this village was 759 elderly.

- Third stage (selection of participants): Systematic random sampling technique was used to recruit the participant elderly in the study. An ordered list containing names of all elderly in Mobasher Village was obtained from the mayor of the village. The researcher selected the participants as follows:
  - Interval = 759\60= 12, 65 ≃ 13.
  - The starting point was selected randomly.
  - From the list each thirteenth elderly was selected until the desired purposive sample was completed.

Tools of data collection:

The following tool was used to collect the necessary data. **Tool: A structured interview questionnaire** that consisted of three parts.

Part (1): Demographic characteristics of the studied elderly: this involved personal data of the studied elderly such as (age, sex, material status, level of education, occupation, source & sufficiency of income, and living with others or alone)

Part (2): Medical history of the studied elderly: This part was intended for collecting information about the medical history of the studied elderly. It involved questions about chronic diseases (e.g., hypertension, diabetes mellitus, renal diseases, respiratory system diseases, heart diseases, liver diseases, digestive system diseases, and arthritis).

Part (3): General Nutritional Knowledge Questionnaire: This part includes 21 questions are used to test a broad range of nutritional knowledge among the elderly like sources of vitamins, minerals, and other food elements, diabetic and hypertensive diet, healthy balanced diet, daily dietary requirement, Beneficial & harmful food, Health problems & food, daily fluid requirements, and nutrition mistakes.

Scoring system:

The total number of questions is twenty-one, for each question one correct answer scored one grade and zero for the wrong answer or doesn't know. The knowledge scores were depending on the number of grades the participant obtained regarding all questions. The total grade was computed out of twenty-one (21) grades and knowledge were considered satisfactory if the percent score was 60% or more (>12.6 grade) and inadequate if less than 60% (< 12.6 grade).

Content validity & Reliability:

Once prepared, the tool was presented to a panel of three experts from the Community& Geriatric Health Nursing, community medicine department, Zagazig University, and the Department of Community Health Nursing at the Faculty of nursing, Fayoum University. They assessed the tools for clarity, relevance, application, and comprehensiveness. This constituted the content validation of tools. All recommended modifications were applied. The reliability of the tool was tested by measuring its internal consistency. It demonstrated a good level of reliability with Cronbach's Alpha.

Fieldwork

Once permission was granted to proceed with the study, the researcher started to prepare a schedule for collecting the data. The fieldwork was carried out within nine months, starting from the beginning of August 2021 up to the end of April 2022. Three days per week. Each elderly was interviewed individually at the elderly's home with considering the preventive and precaution measures to be protected from COVID-19.

Pilot study:

Before performing the main study, a pilot study was carried out on 6 elderly from the study setting, constituting about 10% of the calculated sample for the main study. They were selected randomly from the selected village and were later excluded from the main study

sample of research work to assure stability of the answers. The purposes of the pilot study were to test the questions for any obscurity and to assess the practicability and feasibility of using the structured interview questionnaire sheet for the elderly. It also helped the researcher to determine the time needed for filling out the forms, which turned out to be 20 to 30 minutes. The tools were finalized after doing necessary modifications according to the pilot study results.

Administrative and ethical considerations:

The study protocol was approved by the Research Ethics Committee at the Faculty of Nursing, Zagazig University. Written informed consent for participation was obtained from each elderly who agree to participate in the study after a full explanation of the aim of the study before conducting the interview. Participants were allowed to refuse the participation, and they were notified that they could withdraw at any stage of the data collection interviews; also they were assured that the information would be confidential and used for the research purpose only. The researcher assured maintaining anonymity and confidentiality of the subjects' data. The researcher's phone number and all possible communication methods were identified to the participants to return at any time for any explanation.

Official permission for data collection and implementation of the intervention was obtained by submission of official letters issued from the Dean of the Faculty of Nursing at Zagazig University to the Mayor of the village. Moreover, the researcher visited the study setting, met with the mayor of the village, explained to him the study aim and the importance of the study and its procedures, and asked for his cooperation.

Statistical analysis:

The statistical analysis of data was Data entry and statistical analysis were done using SPSS 23.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables and means and standard deviations and medians for quantitative variables. Cronbach alpha coefficient was calculated to assess the reliability of the developed scales through their internal consistency. The McNemar test was used to determine if there are differences in a dichotomous dependent variable. Qualitative categorical variables were compared using the chi-square test. Whenever the expected values in one or more of the cells in a 2x2 table were less than 5, Fisher's exact test was used instead. multiple linear regression analysis was used after testing for normality, and homoscedasticity, and an analysis of variance for the full regression models was done. Statistical significance was considered at a p-value <0.05

Results:

Part I. Demographic characteristics of the studied elderly.

Among 60 studied elderlies, 75% of their age was from 60 to 69 years, with a mean of age of 65.47±5.66 years. As regards their gender and marital status, it was obvious that 51.7% and 71.7% respectively of the elderly were females and married. Likewise, 41.7 % of the elderly were working as farmers, (65% and 91.7% respectively) of them had sufficient income and were living with families as shown in **(Table 1)**.

Figure 1 sketches that 63.3% of the studied elderly were illiterates, followed by those who can read & write (15%) then highly educated (11.7%).

Part II. Medical History of elderly

Table 2 demonstrates that 76.7% of the studied elderly were having chronic diseases with a mean number of diseases of 1.5 ± 1.2 and the most common diseases were hypertension (46.7%) followed by Arthritis (45.0%).

Part III. Knowledge of the elderly regarding nutrition:

Table 3 explains the knowledge of elderly regarding nutrition. Regarding the table 30%, 73.3%, 25.0%, and 11.7% of

the studied elderly had satisfactory knowledge regarding to nutrients (elements) of nutrition, beneficial and harmful food, health problems & food and nutritional mistakes) respectively.

As noticed in **Table (4)** only 16.7% of the studied elderly had Satisfactory Knowledge.

Table 5 points to statistically significant relations between the total knowledge of the studied elderly, their age and level of education p>0.05. It is obvious from the table that the total knowledge was satisfactory among the elderly with the age group 60-69years (90.9%).on other hand, the total knowledge was unsatisfactory (81.5%) among illiterate elderly.

Table 6 illustrates that the independent negative predictors for knowledge scores were elderly's age, gender, and income. Conversely, the elderly's marital status, educational level, current work, and having chronic diseases were independent positive predictors for knowledge scores. The model explains 32% of the variation in knowledge scores.

Discussion:

Nutrition is a fundamental component of human life as an integral factor in the presentation of diseases, genes, or phenotypes, as well as an influencing factor on behavior and culture Chan et al [(11)]**.** The role of diet in successful aging is not transparent, and as such, is still being investigated by Tyrovolas et al [(12)]. Consuming a balanced, nutritious diet is important for maintaining health, especially as individuals age Melzer et al [(13)].

Concerning demographic characteristics, it is clear from the results of the current study that the mean age of the studied elderly was 65.47± 5.66 years and their age ranged between 60-80 yrs.; this might be due to the presence of a larger individuals number of this age group in Egypt as confirmed by the central agency for public mobilization and statistics [CAMPS] CAPMAS [(14)]. Which estimated the number of elderly in Egypt reached 7.3 million in 2020. This result is nearly in agreement with Rashid et al [(15)] in India, which found that the average age of the studied elderly was 68.2 ± 0.4. Likewise, Arthur et al [(16)] in Ghana, found that the target population for the study was who were 60 years and above.

Moreover, the current study findings revealed that most of the study sample were female. This might be attributed to that the life expectancy of females in Egypt was more than males, so the number of females was greater. Women live longer than men in nearly all populations today Zarulli et al [(17)]. This finding goes in the same line with Acar Tek et al [(18)] in Ankara, the capital of Turkey, which found that the majority of the elderly were female. This is in harmony with Pellay et al [(19)] study conducted in three French cities, which mentioned that more than half of their study subjects were female. Similarly, Whitelock & Ensaff [(20)] in northern United Kingdom found that three-quarters of the study sample was female.

Also, the current study results showed that slightly less than three quarters of the studied elderly were married, and slightly less than two-thirds were illiterate. Married; this could be due to traditions, norms, and customs in the Muslim World, which dictate that men's and women's relationships be formalized through marriage. Illiterate: this could be due to the fact that the studied elderly were living in rural areas where there was a lack of interest in education and they were preoccupied with farming This result is confirmed by studies in Taiwan by Muga et al [(21)], Li [(22)], and Razon et al [(23)] in rural areas of Bangladesh, who reported that most of the study sample were married.Similarly, Machón et al [(24)] in Gipuzkoa (Spain) found that most of the elderly were illiterate.

In terms of medical history, the current study discovered that the most of study samples were having chronic conditions, with a mean number of diseases of 1.5 ± 1.2, and the most common comorbid diseases are hypertension, arthritis, and diabetes mellitus. This could be because ageing comes with an increase in disease

burden and the decline in human organ and body functions Drenth-van Maanen et al [25] . Additionally, aging is a natural process defined by the gradual, time-dependent decline of biological and behavioral functions, for which individuals of the same chronological age show variability Thomas et al [26], so individuals are more vulnerable and susceptible to chronic disease development. The present finding is in agreement with the results of studies carried by Bore [27] in Moiben sub-county, Uasin Gishu County, areas in Kenya, and Jaul & Barron [28] revealed that the majority of the elderly had chronic diseases. Similarly, Aly et al [29] in Assiut City.

In connection with knowledge regarding nutrition among the studied elderly. The present study demonstrated a major deficiency in the knowledge of the elderly regarding nutritional aspects; overall, nearly one-fifth of the studied elderly had satisfactory nutritional knowledge.

The elderly in this study had unsatisfactory knowledge, which might be attributable to a variety of factors as the current study was carried out in a rural area where there is lack of health care services and health education sources. Additionally, most of the studied elderly were illiterates, Similar results were reported among the elderly in Abu Khalifa village, Ismailia, Egypt, by Shalaby et al [30] who showed that the total knowledge was poor. In the same way, the results of a study in the Medan city area, Indonesia by Nasution et al [31] mentioned that the majority of the elderly have less knowledge about nutrition.

This deficiency was found in the majority of knowledge categories examined, including nutrients elements, beneficial and harmful food, health problems & food and nutritional mistakes. In agreement with the present study finding, a study in Copenhagen by de Morais[32] who found that older patients have limited knowledge about specific needs for energy and protein and the importance of nutrition for their physical functioning.

Therefore, the first indictor of nutritional knowledge was associated with education level. Education has an important part in one's nutritional health since it influences one's ability to make trustworthy and informed food choices. In support of this, the multivariate analysis in the current study demonstrated that the education level was a statistically significant positive predictor of the elderly's total knowledge. This meant low education levels associated with low nutritional knowledge scores, "illiterate elderly had unsatisfactory nutrition-related knowledge". These findings are in harmony with the findings of the study conducted by Ong et al [33], in Singapore, who found that there was a relation between nutritional knowledge and level of education.

Another indicator for nutritional knowledge was associated with age. In the current study, age had a negative correlation with nutritional knowledge scores. most of the studied elderly were in the 60-69 age group and this factor might play an important role in improving their nutritional knowledge in this group rather than the older group, who couldn't remember information as well as the young group, Therefore, the lower the age, the higher the nutritional knowledge. In the same vein, a study in Europe by Jeruszka-Bielak et al [34] that revealed higher nutritional knowledge was associated with younger age. As well, a study by Kliemann et al [35] that showed nutrition knowledge is associated with demographic characteristics such as gender, age, level of education, and socio-economic status.

Conclusion:

It is apparent from this study that poor nutritional knowledge was experienced by most of the elderly. Nutrition knowledge is associated with demographic characteristics such as age, and level of education; age had a negative correlation with nutritional knowledge score. Meanwhile, the education level had a positive correlation with nutritional knowledge scores.

Recommendations:

Given the study findings, the following recommendations are proposed:

1- Developing a nutritional education program appropriate for the elderly's age, socioeconomic status, and level of education is recommended.

2- Further studies are needed to evaluate the effect of a nutritional education program on nutritional knowledge and status among the elderly on large scale.

Table 1: Demographic characteristics of the studied elderly (N=60)

Demographic characteristics	(n=60)	
	Frequency	Percent
Age group: /year		
60-	45	75.0
70-80	15	25.0
Mean ± SD (range)	**65.47± 5.66 (60 – 80)**	
Gender		
Male	29	48.3
Female	31	51.7
Marital status		
Married	43	71.7
Unmarried [Widower/ divorced single]	17	28.3
Occupation before retiree		
Housewife	7	11.7
Crafts	10	16.7
Farmers	25	41.6
Employee	18	30.0
Current occupation		
Work	23	38.3
Not work	37	61.7
Monthly Income		
Sufficient	39	65.0
Insufficient	21	35.0
Living with whom		
Alone	5	8.3
With family	55	91.7

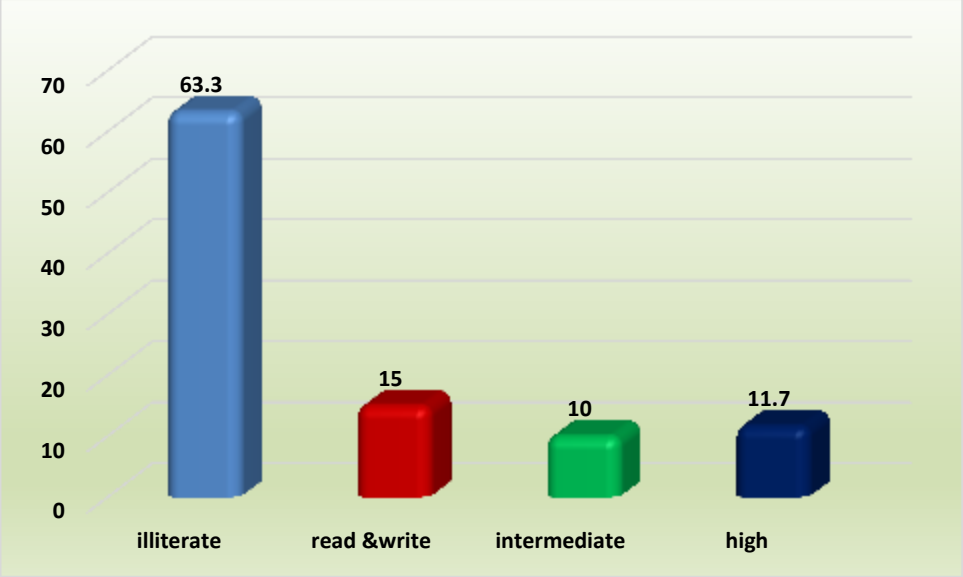

Figure 1: Education level of the studied elderly (n=60)

Table (2): Medical history of the studied elderly (N=60)

Medical history	(n=60)	
	Frequency	Percent
Have chronic diseases:		
Yes	46	76.7
No	14	23.3
Types of chronic diseases:		
HTN	28	46.7
DM	24	40.0
Respiratory diseases	2	3.3
Heart	2	3.3
Liver	4	6.7
Renal	4	6.7
Arthritis	27	45.0
Total no. of chronic diseases:		
1-2	30	50.0
3- 4	16	26.7
Mean ± SD	**1.5 ± 1.2**	
(range)	**(0– 4)**	

Table (3): Distribution of Knowledge items regarding nutrition among the studied elderly:

Knowledge items	(n=60)		*McNemar Test*	(p-value)
	No	%		
Nutrients[elements]:				
Satisfactory Knowledge	18	30.0	16.06	**.002****
Unsatisfactory Knowledge	42	70.0		
Beneficial and harmful food:				
Satisfactory Knowledge	44	73.3	21.04	**.000****
Unsatisfactory Knowledge	16	26.7		
Health problems & food:				
Satisfactory Knowledge	15	25.0	18.33	**.003***
Unsatisfactory Knowledge	45	75.0		
Nutrition mistakes:				
Satisfactory Knowledge	7	11.7	38.02	**.000****
Unsatisfactory Knowledge	53	88.3		

: Significant* *: Highly significant*

Table (4): Total Knowledge regarding nutrition among the studied elderly:

Knowledge items	(n=60)		*McNemar Test*	(p-value)
	No	%		
Total Knowledge score 60%+:				
Satisfactory Knowledge	10	16.7	21.043	**.000****
Unsatisfactory Knowledge	50	83.3		
Paired t-test				
Total Knowledge mean score:	7.63±4.24		30.64	**.000****

***: Highly significant*

Table (5): Relation between total knowledge of the studied elderly and their demographic characteristics

Characteristics		Total knowledge				X^2 Test	P
		Satisfactory n=33		Un satisfactory n= 27			
		No.	%	No.	%		
Age group (years)	60 –	30	90.9	15	55.6	9.89	**.002***
	70 –	3	9.1	12	44.4		
Gender:	Male	18	54.5	11	40.7	Fisher	.312
	Female	15	45.5	16	59.3		
Marital status:	Married	26	78.8	17	63.0	1.83	.176
	Unmarried	7	21.2	10	37.0		
Education	Illiterate	16	48.5	22	81.5	13.59	**.004***
	Read & write	4	12.1	5	18.5		
	Intermediate	6	18.2	0	0.0		
	University / post	7	21.2	0	0.0		
Occupation before retiree:	Housewife	3	9.1	4	14.8	5.51	.138
	Crafts	5	15.2	5	18.5		
	Farmers	11	33.3	14	51.9		
	Employee	14	42.4	4	14.8		
With whom you live	Alone	1	3.0	4	14.8	2.70	.10
	With family	32	97.0	23	85.2		
Income	Sufficient	21	63.6	18	66.7	Fisher	1.0
	insufficient	12	36.4	9	33.3		
Having chronic disease	Yes	27	81.8	19	70.4	1.08	.297
	No	6	18.2	8	29.6		

Table (6): Best fitting multiple linear regression model for knowledge score

	Items	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.608	.508		3.163	.003	.588	2.629
	Age	-.381	.174	-.332	-2.189	.033*	-.731	-.032
	Gender	-.122	.145	-.123	-.842	.404	-.414	.169
	Marital status	.039	.142	.036	.276	.783	-.246	.325
	Educational level	.092	.038	.340	2.435	.018*	.016	.168
	Current work	.185	.134	.181	1.378	.174	-.084	.455
	Income	-.017	.137	-.016	-.124	.902	-.292	.258
	Having chronic diseases	.090	.141	.076	.633	.529	-.194	.373
		Model ANOVA		F=3.54	p<0.05	R-square=0.32		

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