

Original Article

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Determinants of Nutritional Status of Elderly Patients in A Tertiary Hospital in Southern Nigeria

Ibanga Eyo Ekong Comfort Udobang

Department of Community Health, University of Uyo, Lecturer, Nigeria

Background: The study was conducted to assess the influence of income, loneliness and loss of teeth on the nutritional status of the elderly inpatients in a tertiary hospital. In old age, inappropriate dietary intake contributes significantly to both chronic and acute morbidity, and illness affects food intake and further compromises resistance to diseases.

Methods: A cross sectional design was used for the study. Systematic random sampling technique was adopted until the minimum sample size of 412 was attained. A pre-tested 20 item questionnaire was used to collect data for the study. Chi square was used to determine the influences of various determinants at significant level of 0.05.

Result: There was a significant association ($X^2=28.05$; $p=0.014$) between nutritional status and number of people staying with respondents most of the time. In our setting, there is no gainsaying the fact that the traditional aspect of the elderly desiring to have people around them is still a desirous social norm.

Conclusion: The elderly may have adapted to the various degrees of loss of teeth they are fraught with since there was no significant association between tooth loss and nutritional status of the elderly.

Key words: Nutritional Status, Southern Nigeria, Elderly patients

Introduction

Diet, health and illness are intimately intertwined; this applies to all age groups but is most relevant to the elderly. Indeed, in old age, inappropriate dietary intake contributes significantly to both chronic and acute morbidity, and illness affects food intake and further compromises resistance to diseases. A well balanced diet and adequate nutrition are fundamental to preventive and therapeutic management in the elderly with a primary aim of improving the quality of life rather than increasing longevity (1-3).

Beathie & Nichols opined that eating well is important at any age (2). But, health issues and physical limitations sometimes make it difficult for seniors to get the nutrients they need for a balanced diet. Poor nutrition

and malnutrition occur in 15 to 50 percent of the elderly population. But the symptoms of malnutrition (weight loss, disorientation, light headedness, lethargy and loss of appetite) can easily be mistaken for illness or disease. Every cell and tissue in the body requires continued adequate nutrition in order to perform its function adequately; otherwise, various illnesses may result (4).

Mayer opined that there is need for people to learn the types of food for them, ignorance leads to poor food choices foods with high level of fat, salt, sugar and cholesterol can cause over weight (7). The period between the ages of 45 and 65 years of age brings with it a variety of subtle changes in the body's structure and function. Thus older members of the society experience such

Corresponding Author: Ibanga Eyo Ekong; Department of Community Health, University of Uyo, Lecturer, Nigeria
E-mail: ibangeky@yahoo.com

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changes as decrease in bone mass and density degenerative changes in joint cartilage, decrease in visual acuity, decrease in capacity to do engage in physical work, decrease in basal energy requirement, decrease in sexual function, increase sexual function, increase in vertebral compression, increase in adipose tissue (5, 6).

Guthrie points out that ageing, in theory begins with conception, but during the period of growth the anabolic or building up processes exceed the catabolic or degenerative changes (5). In most countries of the world, people of 60 years and above are recognized as the elderly. World health organization (WHO) considers people of 65 years and above as being in the class of the elderly/aged. Daily, demographic studies point to the fact that the population growth of the aged all over the world is at an alarming rate, so much so that it is estimated that by 2030, there will be three times as many old people as there would be by 2010. The implication of this is that the world is facing the phenomenon of a graying population, which requires special attention as regards nutrition.

World Health Day 2012, celebrated on the 7th of April had as its theme "Aging and Health, Good health adds life to years" with a focus on how good health helps older people to lead full and productive lives. Oluronbi also observed that the age dependency ratio in Nigeria in a 2010(10). World Bank report published in 2012 was 6.329 percent. The United Nations expected that the population of older people would have risen from 6.4 million in 2005 to 25.5 million in 2050.

Determinants of nutritional status refer to those things and factors that play a determining and decisive role in the development of health outcomes. Valerie opined that nutritional status is one's health in relation to one's diet (14). How well one's body function is a direct reflection of what he eats, how much he eats and the balance between the two. Odenigbo (2010) added that nutritional status is the state of the body as expressed according to scientifically tested parameters which include weight, height and body mass index (BMI)(9).

Beathie and Nichols observed that some of the most common reasons for poor nutrition in the elderly include decrease in sensitivity, side effects of medication poor dental health, financial burden, lack of transportation, loneliness, physical difficulty, forgetfulness malnutrition can only be prevented by offering them nutritional dense foods, food enhance with aromas and flavours, making eating a social event, encouraging healthy snacking, taking them to the store, maintaining food storage and giving reminders (1). However, Charlton and Rose

mention household food insecurity, civil strife and effects of HIV/AIDS as determinants of nutritional status in the elderly (4).

The intake of food by an individual is affected by several factors at each stage of his development. One of the stages of development that require close assessment is old age or senescence. Guthrie had explained that the improvement in medical technology, environmental hygiene and nutrition have meant that more people are now living longer even in developing countries (5). The extension of life has meant also that more of the complications of ageing, both physiologic and psychological, have become evident and this calls for more thorough study of the period of old age (*60 years and above*). Shock explained that the human being is a product of his genetic heritage as well as his past and present environment including injuries, infections, stresses, fatigues, nutritional imbalances and emotional trauma associated with them (11). It therefore implies that the longer a person lives the more complex he or she becomes. The physical and physiologic variations found among the elderly (*60 years and above*) make them a very heterogeneous group.

The longer one lives the more likely he is to lose his teeth (5, 12). The lower his socio-economic status the less likely he is to replace the teeth with satisfactory dentures. The American Dental Association estimates that of every one hundred 70 years olds 28 men and 38 women have lost all their teeth and 80 percent of these each fail to replace them with ill fitting dentures (11). When foods high in cellulose such as fruits and vegetables which are difficult to chew, are eliminated from the diet the bulk of the diet is reduced with the resultant decrease in gastric motility and problems of defaecation (6).

Caniggia had reported that there is a decline in the number of taste buds at age 70 to 36% of what was the case at age 30. This explains why there is often a decreased interest in food with increase in age with a diminished number and sensitivity of taste buds; with this it is understandable that much of the pleasure of eating is removed, thus the aging process is a barrier to good nutrition since it leads to a decrease in appetite (10).

Swanson compared the nutrient intake of 1000 Iowa women at ages 30 to 39 with those of women over 70 and reported a decrease in intake of calories, protein, ascorbic acid and calcium. The relative and absolute amounts of meat, fish and poultry in the diet of the subjects remained constant (12).

Kelly, Ohlson and Harper (2007) conducted a study of food selection among 114 Michigan women and reported a higher mortality rate (35%) among those getting less than 40% of the recommended allowances of one or more nutrients. Watkins (2005) showed that 44% of the households had diets that were evaluated as good while 25% had poor diets. Poor diets were defined as those containing less than two thirds of the recommended allowances for one or more nutrients. It was observed that households that had diets that were low in protein also had diets low in four other nutrients: thiamine, calcium, vitamin A and ascorbic acid. Thiamine was lacking in the diets of 40% of the households, calcium, vitamin A, and ascorbic acid were low in 30% of the households.

The purpose of this study was to identify the determinants of nutritional status of the elderly in the University of Uyo Teaching Hospital. Specifically, this study was conducted to achieve the following objectives:

- To assess the influence of income on the nutritional status of the elderly inpatients in University of Uyo Teaching Hospital.
- To ascertain the influence of loss of teeth on the nutritional status of the elderly inpatients in University of Uyo Teaching Hospital.
- To ascertain the influence of loneliness on nutritional status of the elder inpatients in University of Uyo Teaching Hospital.

Study Design

A cross sectional research design was used for the study. Samples were drawn from elderly patients in a tertiary institution from a population of all elderly patients visiting the hospital during the period of the study. 40 elderly patients recruited for 20 days gave a total of 800 patients which was the sampling frame. Using the formula for calculating sample size for cross-sectional studies and allowing for attrition 412 was achieved. Sampling fraction was determined by dividing the sample frame by the sample size ($800/412=1.94$). So the sampling fraction was 2.

Thereafter, systematic random sampling technique was adopted for this study. The sampling frame consisted of all the elderly people that visited the hospital during the period of study every second patient in the sampling frame was used as a respondent until minimum sample size was attained. A pre-tested 20 item questionnaire was developed and was used to collect data for the study. Ethical clearance was obtained from the management of University Uyo Teaching

Hospital (UUTH) and the questionnaire was carefully explained to the respondents with assurance of strict confidentiality prior to administration. The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 17.0 for windows. Chi square was used to determine the influences of various determinants at significant level of 0.05.

Results

The mean age of respondents was 70.2 years (65-91years) with a standard deviation of 5.8. Other results are as shown in the tables. *Table-1* shows 62.6 % respondents were in an existing marital union and that 46.8% respondents had a monthly income of between 10,000-20,000 naira. 52.7% of respondents had some degree of loss of teeth.

Table-1: Personal and Socio-demographics of Respondents

Characteristic	Frequency	%
Marital Status		
divorced	38	9.2
married	258	62.6
separated	31	7.5
widowed	85	20.6
Monthly Income		
<10,000	104	25.2
>30,000	63	15.3
10,000-20,0000	193	46.8
21,000-30,000	52	12.6
Loss of Teeth		
don't know	13	3.2
no	182	44.2
yes	217	52.7

Table-1 shows 62.6 % respondents were in an existing marital union. *Table-2* shows that 46.8% respondents had a monthly income of between 10,000-20,000 naira. *Table-3* shows that 52.7% respondents had some degree of loss of teeth. There is no significant association ($X^2=4.750$; $p=0.314$) between nutritional status and loss of teeth.

Table-2: Association between nutritional status and income

Monthly Income	Well Nourished	Risk for Malnutrition	Malnourished	X^2 , df; Significance
<10,000	61	20	23	13.632; 6; 0.034
>30,000	35	17	11	
10,000-20,0000	93	63	37	
21,000-30,000	31	6	15	
Total	220	106	86	

Table-3: Association between nutritional status and loss of teeth

MNA Score				
Missing Teeth	Well Nourished	Risk For Malnutrition	Malnourished	X ² ;Df; Significance
No	5	5	3	4.75; 4; 0.314
Yes	100	39	43	
Total	115	62	40	
	220	106	86	

Table-2 shows a significance in association between nutritional status and monthly income of respondents, $X^2=13.632$; $p=0.034$. There is no significant association ($X^2=4.750$; $p=0.314$) between nutritional status and loss of teeth. Table-4 shows there was a significant association ($X^2=28.059$; $p=0.014$) between nutritional status and number of people staying with respondents most of the time.

Table-4: Association between nutritional status and loneliness

MNA Score				
	Well Nourished	At Risk For Malnutrition	Malnourished	X ² ;Df; Significance
	20	14	5	28.059; 14; 0.014
0	7	3	3	
1	50	41	22	
2	73	24	20	
3	37	10	18	
4	5	5	3	
5	11	4	11	
6	17	5	4	
Total	220	106	86	

Discussion

The mean age of respondents was 70.2 years, ranging from 65-91 years, with a standard deviation of 5.8. A higher proportion of respondents (62.6%) were in an existing marital union, 20.6% of them were widowed and 7.5% were separated. Among the respondents, 46.8% earned, cumulatively, between 10,000-20,000 naira. Only 12.6% of them earned between 21,000-30,000 naira. It is interesting to note that majority of respondents (52.7%) had varying degrees of loss of teeth.

The level of literacy among the respondents had those that attended primary school (43.7%), no formal education (15.8%), and tertiary education (15.3%). With regards to loneliness, 28.4% of respondents had at least 2 other people staying with them at home, but 3.2% of them had no companion at home.

There was a significant association between nutritional status and monthly income of respondents, $X^2=13.632$; $p=0.034$ with the implication that a better nutritional status was attained when the cumulative monthly income was adequate. This agrees with the assertion of Beathie and Nichols (2012) that financial burden among others greatly influenced nutritional status of the elderly. However, Charlton and Rose (2001) disagrees with this assertion, claiming that factors such as household food insecurity, civil strife and effects of HIV/AIDS are better determinants of nutritional status in the elderly.

It was observed that there was no significant association ($X^2=4.750$; $p=0.314$) between nutritional status and loss of teeth. This disagrees with a study by Le Bovit (2005) that chewing difficulties as a result of loss of teeth results in indigestion and further loss of interest in food. Musacchio et al. (2007) also asserts that loss of dentition negatively impacts on nutritional status of the elderly in contrast to the finding of this study.

There was a significant association ($X^2=28.059$; $p=0.014$) between nutritional status and number of people staying with respondents most of the time. This is in consonance with studies by Beathie and Nichols (2012) which stated that loneliness along with other factors negatively impacted on nutritional status of the elderly. The feeling of anxiety or loneliness was lacking in 63.7% of the respondents in a Bangladesh study by Uddin et al (2010). This is in contrast with the findings in this study where only 3.2% respondents were completely lonely with the implication that about 96.8% respondents were not lonely.

Conclusion

This study found a significant association between nutritional status and monthly income of respondents, and with loneliness. In our setting, there is no gainsaying the fact that the traditional aspect of the elderly desiring to have people around them is still a desirous social norm.

It can also be concluded that the elderly may have adapted to the various degrees of loss of teeth they are fraught with, since there was no significant association between tooth loss and nutritional status of the elderly.

The following recommendations are presented:

- i. The government should establish a social security system for the elderly so that they do not completely lack income per time.
- ii. The of old people's home would go a long way towards addressing the issue of loneliness in the elderly.
- iii. There is a need for health promotion among the elderly to enable them adapt appropriately to the problem of loss of teeth and the need for adequate nutrition.

Conflict of Interest

The authors declare that no conflict of interest exists in publishing this article.

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