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Protein Consumption Practices of Aged (60 and Above) Women in Nsukka Local Government Area, Enugu State, Nigeria

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Abstract

The study focused on protein consumption practices of aged women in Nsukka Local Government Area (LGA) of Enugu State, Nigeria. Specifically, it determined common protein foods (plant and animal sources) consumed by aged women, frequency of consumption of protein foods, factors that hinder consumption of protein foods by aged women, and ways of improving the consumption of protein by aged women. The study adopted a descriptive survey design. Questionnaire was used for data collection. Population for the study was made up of aged women in the area of study. Mean and standard deviation were used for data analysis. Findings of the study show seven plant protein sources (consumed by the aged women. These include *okpa* (*vigna subterraea)* (, black beans (*caviar criolla)* , and others. There are also six animal protein sources (. These include, crayfish (, fish ( ), beef (, and others. Other findings are various frequencies of consumption of protein sources, (, including, "once daily" (, five times weekly (, and others. Further findings are eight factors that hinder protein consumption (by the aged women. These include, "food not always available" (, lack of strength most times to prepare food ((, protein food are costly (, and others. More findings are 13 ways of improving protein consumption among the aged women (. These include, that health providers should guide aged women in protein consumption (, cultural/religious restrictions that hinder protein consumption by aged women to be scrapped by government (and others. Based on the findings six recommendations were made for improving protein consumption of the aged women.

Key words: Protein, Consumption, Practices, Deficiency, Aged, Women, Frequency.

Introduction

Healthy aging is very important for individuals. This is determined by various factors, including adequate nutrition (Nowson, et al., 2015). Aging is characterized by a decline in skeletal muscle mass and loss of muscle strength, which are collectively termed sarcopenia (Traylor et al, 2018). Sarcopenia increases the risk of falls and fractures, dependent living, morbidity and mortality (Janseen, 2010). Protein high diet has been associated with better clinical outcomes, especially in the elderly population. These positive clinical outcomes include preservation of skeletal mass, higher bone mineral content, reduced fracture risk and improved wound healing (Best

and Appleton, 2013). Evidence has shown that older adults need more dietary protein than younger ones to support good health, promote recovery from illness and maintain functionality (Jurgen, 2013).

Protein needs of the aged include the types, quality and quantity of protein needed by the individual (Mahan and Escot, 2016). Protein needs of the aged are influenced by the amount of protein required for maintenance of existing lean body mass, plus allowances for the amount required to accrue additional lean body mass during the stage of old age. The estimated protein need for the aged women is 1.0 gram to 1.3 gram protein per kg of body weight per day. Women over 65 years should take in about 1gram to 1.2 gram of protein/kg of body weight per day to both gain and maintain muscle mass and function. By age 65, one needs the combination of exercise and high- quality protein (Paddon- Jones, 2015).

Protein deficiency can sometimes result in a flaky dermatitis or irritation of the skin, especially on the back of the thighs and on the buttocks (Bihuniak, 2017). Lack of certain proteins in the skin's protective barrier can make skin more vulnerable to allergens and other irritants. Protein deficiency could make an individual prone to fluid retention around ankles and feet. Protein deficiency leads to loss of muscle tissue, weakness, reduced resistance to disease, kidney and heart problems, and contributes to the deficiency disease kwashiorkor in children. Protein deficiency in adults produces a loss of body tissue protein, heart abnormalities, severe diarrhea, and other health problems (Byrd- Bredenner et al, 2013). It is therefore necessary that the aging and aged consume adequate quantity and various sources of animal and plant proteins including those in the area of this study.

In general, proteins should contribute 10-35 percent of total energy intake. Food and Agricultural Organization (FAO) (2016), recommendation for daily protein consumption is put at 60 gram per person out of which 35 gram is expected to be from animal source. For aged women the daily whole body protein turnover rate is 5.7g/kg body weight (Yusuke et al, 2021). This means that, approximately 400 gram mixed proteins are turned over every day for a 70kg adult individual. Behind that number, a large proportion of amino acids are recycled and reutilized for protein synthesis (Nishimura et al, 2021), while some are lost via oxidation for energy production and the formation of urea to scavenge nitrogen. Since proteins are essential for healthy living, there is need for aged women to consume adequate protein. According to Berg, Tymoczko and Stryer (2012), proteins are major constituents of enzymes, antibodies, hormones, and body fluids such as blood.

In the area of this study, there are abundant food sources of protein, some of which are plant based and others animal based. These sources include, among others, beef lean, lean chicken, pork chop, eggs, low fat milk, fish, bambara nut, *vigna subterranean* (*okpa*), cow pea, *vigna unguiculata* (*fio-fio*), *phaseolu vulgaris* (*olaludi*), soya bean, black beans, (*Vigna sinenssis)* (*apama*), soya
bean. In spite of these protein sources, various factors appear to hinder adequate consumption of protein foods by the aged women in the area. It is therefore necessary to study issues relating to the consumption of protein foods by the aged

women, with a view to evolving ways of enhancing such consumption.

Purpose of the Study

The major purpose of the study was to investigate protein consumption practices of aged (60 and above) women in Nsukka LGA. Specifically, the study determined:

1. common protein foods sources (plant and animal) consumed by aged women in Nsukka LGA
2 frequency of consumption of protein foods by aged women in Nsukka LGA
3 factors that hinder the consumption of protein foods by aged women in Nsukka LGA
4 ways of improving the consumption of protein by the aged women in Nsukka LGA.

Research Questions

The study answered these research questions:

1. what are the common protein foods sources (plant and animal) consumed by the aged women in Nsukka?
2. what is the frequency of consumption of protein foods by the aged women in Nsukka?
3. what factors hinder the consumption of protein food by the aged women in Nsukka?
4. what are the ways of improving the consumption of protein food by the aged women in Nsukka?

Methodology

Design of Study: The study adopted a descriptive survey design.

Area of Study: The study was carried out in Nsukka LGA in Enugu state, of Nigeria. The LGA is made up of 31 villages. There are urban, marginally urban, and rural areas in the LGA. The study focused on the rural areas. The rural areas were grouped into five wards for the purpose of the study.

Population for the Study: The population for the study consisted of all the aged (65 years and above) women in the rural areas of Nsukka LGA. The exact size of the population could not be accertained at the time of the study. They were mostly illiterate women. Some of them could still farm around their houses while others depended completely on their families.

***Sample for the study*:** Four wards were purposively selected from the five wards in the area of the study based on estimated number of the aged women in the wards. The four wards that had the highest estimated numbers of aged women were selected. Two women groups were selected from each of the four wards to give eight groups. Then 21 aged women were purposively selected from the eight groups to give a sample of 168 women who were aged 65 years and above. These 168 aged women formed the sample for the study.

Instrument for Data Collection: Instrument for data collection was questionnaire. It had five sections, covering the specific purposes and research questions of the study. It was developed based on literature review and the specific purposes. A 4-point scale response mode was adopted for each of the questionnaire items. The 4-point scale ranged from 4, 3, 2 and 1. The instrument was validated by three universities lecturer in Food and Nutrition. To establish the reliability of the instrument 10 copies were administered to aged women outside the sample of the study. Data obtained were analyzed using Cronbach Alpha. A coefficient of 0.79, reliability index was obtained.

***Data Collection Method*:** One hundred and Sixty-eight (168) copies of questionnaire were administered by hand with the help of two trained research- assistants. Since majority of the respondent were illiterate, the questionnaire served as an interview schedule. Only 152 copies were properly completed and retrieved. This represents 90.47 percent return.

***Method of Data Analysis*:** The data collected were analyzed using means, and standard deviation. Based on the 4-point scale of the instrument mean of 2.50 and above (2.50) was taken as a cut-off mean for decision making on the findings. A mean of 2.50 was considered, "consumed", "source", "frequency", "hindering", factors" and "ways of improvement" for specific purposes/research questions Nos 1, 2, 3 and 4 respectively.

Findings of the study

Table 1: Mean Responses on Plant Protein Sources Consumed by Aged Women in Nsukka, LGA.

S/No	Plant Protein Sources Consumed		SD	Remarks
1.	*Okpa*'(*Vigna subterranea*)	3.40	0.78	C
2.	Mushroom (*Jacaum,ex,Fr.kummer)*	1.45	0.82	NC
3.	Brown bean '*olaludi*'(*Phaseolu vulgaris*)	1.28	0.35	NC
4.	*Soya bean* (*Glycine max*)	1.24	0.64	NC
5.	Black beans (*Caviar criolla*)	2.68	0.88	C
6.	'*Apama*' bean (*Vigna sinenssis*)	3.25	0.54	C
7.	' *Fio- fio*'(*Vigna unguiculata*)	3.02	0.66	C
8.	Iron beans (*Phaseolus polyanthus*)	2.84	0.72	C
9.	Moi- moi (*Thau|Matoccus daniellii*)	2.81	0.31	C
10.	Walnuts (*Genus juglans*)	2.52	1.16	C

=Mean, SD = Standard Deviation, C = Consumed, NC = Not Consumesd, N = 152

Table 1 shows plant protein food sources consumed by the aged women. Any mean item with a mean of 2.50 and above is considered as a protein source consumed by the aged. The Table shows that seven out of the 10 plant protein sources obtained mean scores of 2.50 and above ( ). These are therefore sources consumed by the aged women.

Table 2: Mean Responses on Animal Protein Consumed by Aged women in Nsukka

S/No	Animal Protein Food Consumption		SD	Remarks
1.	Eggs	2.42	0.72	NC
2.	Chicken	2.54	0.71	C
3.	Milk	2.29	1.05	NC
4.	Pork	2.67	0.40	C
5.	Beef	2.90	0.68	C
6.	Turkey	1.46	0.37	NC
7.	Fish	2.60	0.30	C
8.	Crayfish	3.67	0.83	NC

9.	Cheese	1.32	0.70	NC
10.	Yogurt	1.90	0.72	NC
11	Chevon (Goat)	2.82	0.88	C
12	Mutton (Sheep)	1.35	0.91	NC

=Mean, SD = Standard Deviation, C = Consumed, NC = Not Consumesd, N = 152

Table 2 shows that six out of the 12 animal protein sources obtained mean scores of . These six animal protein sources are crayfish ( ), fish ( ), and others are with the animal protein sources consumed by aged women.

Table 3: Mean Responses on Frequency of Protein Consumption by Aged Women in Nsukka LGA

S/N	Frequency of protein consumption		SD	Rmks
	I Consume Protein Foods:			
1	Once daily	2.52	0.60	AFM
2	Twice daily	2.40	0.84	BFM
3	Three times daily	2.20	0.72	BFM
4	Four times daily	1.34	0.96	BFM
5	Once in a week	1.20	0.77	BFM
6	Twice weekly	2.32	1.04	BFM
7	Three times weekly	2.38	0.88	BFM
8	Four times weekly	2.45	0.96	BFM
9	Five times weekly	3.20	1.10	CMR
10	Six times weekly	2.54	0.86	AFM
11	Seven times weekly	2.60	0.54	AFM
12	Once in two weeks	1.32	0.64	BFM
13	Once in three weeks	1.12	0.90	BFM
14	Once in a month	1.04	0.50	BFM

=Mean, SD = Standard Deviation, AFM = Above Frequency Mean, BFM= Below Frequency Mean, N = 152

Table 3 shows the frequency or regularity of protein consumption by the aged women. The Table reveals that only four items obtained sources of..... The remaining 10 items have mean scores less than 2.50 ( ).

Table 4: Mean Responses on Factors that Hinder Consumption of Protein Foods by Aged Women in Nsukka LGA.

S/N	Factors that Hinder Consumption of Protein Foods		SD	Remarks
1.	Foods not always available	2.70	0.70	HF
2	Poor appetite due to health condition	2.62	1.04	HF
3.	Lack of strength most time to prepare food	3.76	1.09	HF
4.	High cost of protein food	3.20	1.06	HF
5.	Culture/religious prohibitions on food choice/consumption	2.24	0.77	NHF
6.	Dislike for some of the foods	1.89	0.31	NHF
7.	No advice on nutrition	3.20	0.80	HF
8.	Consumption of protein not considered necessary	2.44	1.20	NHF
9.	Difficulty to access some preferred food items	3.20	1.13	HF

10.	Some protein sources are too expensive	3.07	1.05	HF
11	Non availability of money to purchase preferred food items	3.20	0.86	HF
12	Family members don't like some foods I prefer	2.40	0.92	NHF

=Mean, SD = Standard Deviation, HF Hindering Factor, NHF = Not Hindering Factor, N = 152

Table 4 shows eight factors that hinder the consumption of protein (by aged women in Nsukka LGA. The other four factors with mean scores less than 2.50 are considered non-hindering factors.

Table 5: Mean Responses of Ways of Improving Protein Consumption Practices of the Aged Women in Nsukka LGA.

S/No	Ways of improving protein intake practices		SD	Remarks
1.	Health provider should guide the aged women of protein consumption practices	3.82	0.90	IW
2.	Aged women should attend nutrition classes organized by government agencies	3.43	0.64	WI
3.	Aged women should consider their health when picking meals	2.78	1.09	WI
4.	Caregivers should prepare adequate protein rich meals for the women	3.39	0.60	WI
5.	Communities should pay a regular visit to the aged for support	2.74	0.77	WI
6.	Dietitians/nutritionist alone to be in charge of advising the women on protein needs	3.89	0.31	WI
7.	Home economists should create awareness of role of protein sources among the women.	3.80	0.90	WI
8.	Cultural/religious restriction related on food consumption to be scrapped by government	3.70	0.80	WI
9.	Government should provide food for the aged women	2.35	0.76	WI
10.	NGOs should organize nutrition education programmes for the women	3.09	1.05	WI
11	Households should cook meals for aged women based on their nutritional requirements	2.94	1.02	WI
12	Communities should organize workshops for aged women on their nutritional requirements	2.02	0.86	NWI
13	Women groups should pull resources together to buy food stuffs in bulk and share to cut cost.	2.99	0.77	WI
14	Home Economists should carry out more research on how to improve protein intake practices of aged women	3.04	0.68	WI
15	Government should provide food subsidy for aged women	3.12	0.54	WI

=Mean, SD = Standard Deviation, WI Way of Improvement, NWI = Not Way of Improvement, N = 152

Table 5 shows 14 out of 15 items in the Table obtained mean scores higher than 2.5 (.....This shows that each of the 14 ways can improve the protein consumption practices of the aged women in Nsukka LGA.

Discussion of findings

Findings on plant protein sources consumption by the aged women in Nsukka LGA show seven sources of plant protein ((commonly consumed by the women. These are assorted types of legume which are very popular in the area of the study. They are commonly grown and consumed, especially *okpa* (*Vigna subterranean)* ((, *apama* bean (*Vigna sinenssis*) (, *fio-fio* (*Vigna ungulate)* (. findings on animal protein sources consumed show that the sources with the highest mean scores are crayfish ((and fish (. It is necessary to observed that findings show that aged women have fairly wide varieties of protein both plant and animal sources that they can choose from for consumption.

Th findings on frequency of consumption of protein meal among aged women show low regularity of consumption of protein consumption by the women, which is mostly once daily (2.50). This means that availability of protein for consumption does not translate into actual consumption. The findings on frequency is consistent with those of National Health and Nutrition Examination Survey (NHANES) (2013), which indicate that in 2006 the average protein intake (g/meal) among women aged 51–71 year age group was 11.9 ± 0.4 (breakfast), 17.9 ± 0.5 (lunch) and 30.4 ± 0.7 (dinner) with snacks constituting 7.4 ± 0.3. The intake (g/meal) in men was higher and accounted for 15.8 ± 0.5, 23.2 ± 0.8, 43.5 ± 1.0 and 10.5 ± 0.5, respectively. Results from this study have also confirmed that the same pattern was observed in a ≥71 year's group. However, the amount of protein consumed in each meal was lower in both sexes, in comparison to the younger age group (Berner, Becker and Wise, 2013). Results of this present study are also consistent with those of Gray-Donald, St-Arnaud et al. (2014) which indicate that adults aged 70 years and older had low protein intake (<0.8g/kg BW/day). The finding of this present study are also consistent with those of Volpi *et al* (2013), which indicate that many elderly individuals are not consuming enough dietary protein to meet their needs. Their study showed that approximately 10 percent – 25 percent of elderly women studied consume less than the recommended dietary allowance which is 0.8 gram of protein/kg of body weight/day.

Finding on the factors that hinder consumption of protein food by the aged women intake indicate, among others such factors as high cost of protein foods, some do not know the importance of protein. These findings are consistent with those of Herforth, et al., (2020) that show that price, and affordability are the key barriers to accessing sufficient, safe, nutritious foods to meet dietary needs. Findings also indicated that the costs of protein foods are often five times more than that of energy sufficient diets. The study found that about three billon aged women people cannot afford the minimum cost of healthy animal protein diet. This reveals that cost is an enormous barrier to the consumption of animal protein diet.

The result of ways of improving the aged women's protein intake practices reveals that there is need for nutrition education among aged women on importance of protein intake practices, allowing dietitians/nutritionist to be advising the aged women on protein intake practices, also Home Economists should create awareness on the

importance of consuming protein foods since the respondents has poor knowledge. This finding is related to a study carried out by Haveman-Nies, et al., (2022) that revealed that 80 percent of the respondents of the study were not aware of the importance of protein intake. The findings are also related with findings by Jeruszka, et al., (2018) which show that good nutrition related knowledge was associated with lower BMI in aged women. The findings are also related to those of Spronk, et al., (2021) which show that higher nutrition-related knowledge resulted in better dietary behaviour, mostly a higher intake of protein, fruits and vegetables. Other related findings are Kok, et al., (2016) and Marije, et al., (2020) who reported that awareness about the importance of an adequate protein intake and the problem associated with malnutrition was low among aged women.

Conclusion

It was observed from the study that plant protein source is more consumed by the aged women than the animal sources. Frequency of consumption commonly adopted by the aged women in Nsukka is insufficient. Hence, there is a need for the aged women to adopt an adequate protein intake practices which will help to improve their nutritional status and also help to prevent protein deficiency related diseases. An adequate protein consumption in terms of quality and quantity without necessary supplementation could have impact on lean mass and skeletal muscle mass. Adequate protein intake is one of the key nutritional factors to maintenance of healthy aging.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Non governmental organizations (NGOs) should put in place appropriate programme on the importance of protein intake for the aged women.
2. Government health provider should evolve ways of promoting protein consumption among the aged women
3. Government should empower rural dwellers in to produce more plant protein food and rear livestocks in order to increase aged protein consumption and distribution to the urban centre.

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