



Assessment of Nutritional Status of Urban Elderly Women in Midnapore Town, Paschim Medinipur, India

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Resumen

Introducción: Se realizó un estudio transversal entre 114 mujeres ancianas en Mitra Compound de la ciudad de Midnapore, distrito de Paschim Medinipur, Bengala Occidental. Todos los participantes pertenecen a 60-85 años de edad. El objetivo del estudio es conocer el estado nutricional de las ancianas urbanas y los factores que influyen en el estado nutricional de las participantes. **Métodos:** Se utilizaron el índice de masa corporal (IMC), la circunferencia de la cintura (WC), la relación cintura-cadera (WHR), la circunferencia de la parte media del brazo (MUAC) y la relación cintura-altura (WHTR) para evaluar el estado nutricional de los participantes. **Resultados:** Se ha observado mayor preobesidad (39,5%) entre los participantes. Además, la obesidad central se encuentra más entre los participantes según WC (55,3%), WHR (56,1%) y WHTR (75,4%). **Conclusión:** En este estudio, el MUAC muestra una asociación significativa con el grupo de edad y el nivel educativo. No se ha encontrado ningún otro factor asociado que influya en el estado nutricional de los participantes. La alarmante tasa de preobesidad indica que se deben realizar intervenciones nutricionales adecuadas en el futuro.

Palabras Clave: Estado nutricional, Ancianas, Preobesidad

Abstract

Introduction: A cross-sectional study has been conducted among 114 elderly women in Mitra Compound of Midnapore town, Paschim Medinipur district, West Bengal. All of the participants belong to 60-85 years of age. The objective of the study is to find out the nutritional status of urban elderly women and the factors influencing the nutritional status of the participants. **Methods:** Body Mass Index (BMI), Waist Circumference (WC), Waist Hip Ratio (WHR), Mid Upper Arm Circumference (MUAC), and Waist Height Ratio (WHTR) have been used to evaluate the nutritional status of the participants. **Results:** Higher pre-obesity (39.5%) has been observed among the participants. Also, central obesity is found more among the participants according to WC (55.3%), WHR (56.1%), and WHTR (75.4%). **Conclusion:** In this study, MUAC shows a significant association with age group and educational status. No other associated factor has been found to influence the nutritional status of the participants. The alarming rate of pre-obesity indicates proper nutritional interventions have to be done in the future.

Keywords: Nutritional status, Elderly women, Pre-obesity

Introduction

As per demography, the number of old age people is rapidly growing. The total number of elderly population was 524 million in 2010 which is going to double in 2050. It was estimated that the number of elderly women will increase to 373 million from 107 million in Asia in 2025. The people of 60+ age are put together under the old age group. In India, 8.1% of the total population is old age according to the census 2011 (Agarwala et al. 2016; Jadhao & Dass 2020). Even more than 50% elderly population is underweight. The increasing percentage of the elderly population in India indicates a decrease in the mortality rate and an improvement in medical services (Meenu et al. 2014). Due to age, different organs of the body change and the individual faces different health hazards like gastrointestinal problems, swallowing problems, constipation, diabetes, osteoporosis, etc. Old age people are vulnerable to malnutrition. Due to a lack of nutritional intake, the old age population faces problems related to the immune system, weakness of bone, osteoporosis, etc. Malnutrition among the old age population is multi-factorial. Besides lack of nutritional intake, several social and behavioral factors like age, economic dependence, depression,

and loss of appetite are important factors of malnutrition (Derbie et al., 2022). Nutritional risk impacts the quality of life of the individual.

A study conducted in Israel showed that 18.5% were malnourished and 81.5% were prone to malnutrition. This study showed that less education and less physical functioning influence malnutrition (Feldblum et al., 2007). Another study conducted in Singapore showed that the prevalence of overweight was 33.4% which is more if compared to the Indian and Chinese populations. A high prevalence (79.8%) of WHR has been observed which increases with age (Fauziana et al., 2016). Another study in South India stated that the prevalence of overweight (61.76%) was more than the prevalence of underweight (18.77%). BMI and MUAC both significantly vary with age (Boyanagari, et. al. 2018). Body Mass Index (BMI) and Mid Upper Arm Circumference (MUAC), education, family income, and smoking history have been the best parameters to evaluate the nutritional status of the elderly population. It was seen that the prevalence of malnutrition is higher among women and it has an association with income. Because women earn less than men and it is statistically significant (Feldblum et al., 2007; Meenu et al., 2014; Damiao et al., 2017). Malnourished people experience chewing problem, and nausea if compared to others (Feldblum, et al., 2007). Different studies have been conducted on the nutritional status of children or the adult population but the Nutritional status of elderly people have been neglected. Only a few studies have been done (Derbie et al., 2022; Damiao et al. 2017). Hence, I have selected to study the nutritional status of urban elderly women.

Objective: The objective of the study is

1. To find out the nutritional status of the urban elderly women of Midnapore town, Paschim Medinipur, West Bengal.
2. To find out the associated factors influencing the nutritional status of studied participants.

Materials and Methods

This is a cross-sectional and ex post facto research. The study is conducted in Mitra Compound of Midnapore town. A total of 114 female old age participants are taken for the study who are either 60 or above years of age. Participants who cannot stand on their own and are willing to participate in the study have been included. A pre-structured schedule has been prepared to collect data. Socio-demographic variables (age, sex, education, occupation), income, and anthropometric variables (Height, Weight, Mid Upper Arm Circumference, Waist Circumference, Hip Circumference), and Physical activity has been used to collect data. Body Mass Index, Waist Hip Ratio, and Waist Height Ratio are the derived variables. Anthropometric instruments like Martin's anthropometric rod, standard weighing scale, and measuring tape have been used to collect the anthropometric data. SPSS version 16.0 has been used for statistical analysis. The standard cut-off of WHO 2005 for BMI has been used to get the BMI category. According to different studies, the cut-off for WC, WHR, WHTR, and MUAC for adult women are set to 80 cm, 0.80, 0.50, and 22 cm (James et al., 2018) respectively. Mean, Standard Deviation (SD), and pattern of nutritional status of the said population have been observed. A chi-square test has been done to find the association between nutritional status and socio-demographic factors. P value is set to ≤ 0.05 as standard.

Results

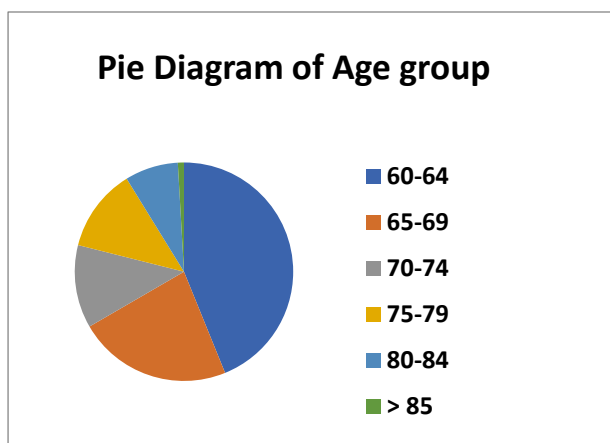


Figure no.1

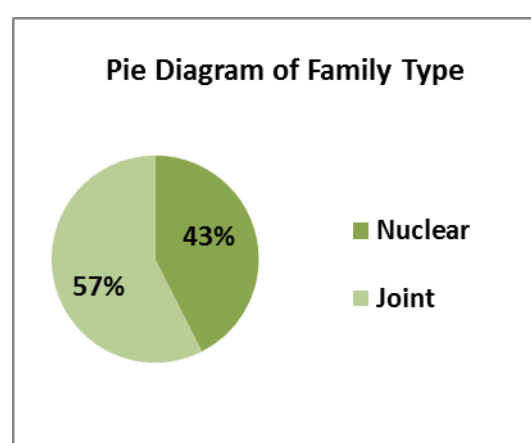


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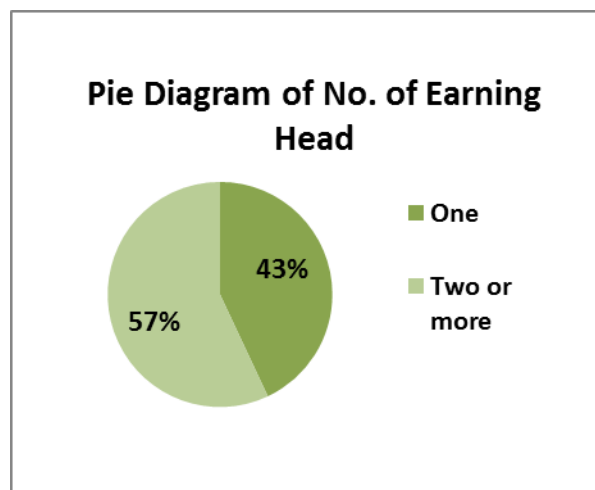


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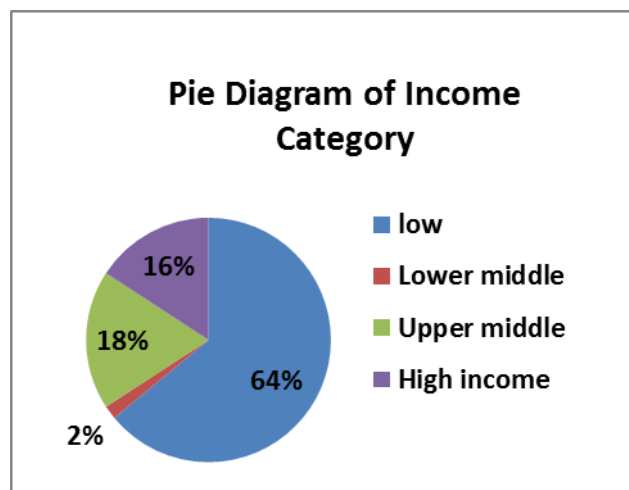


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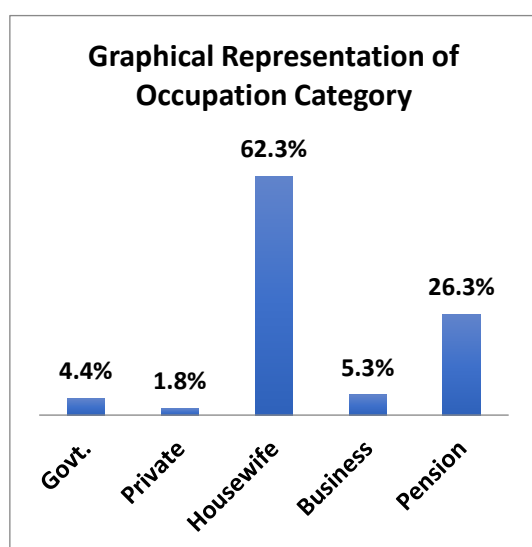


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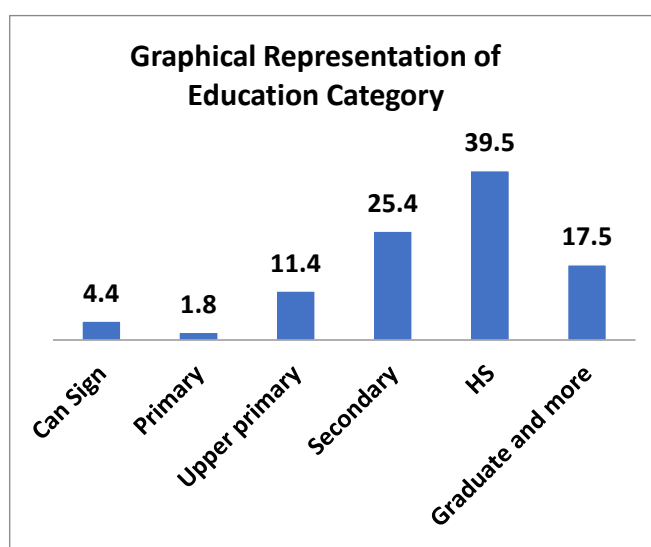


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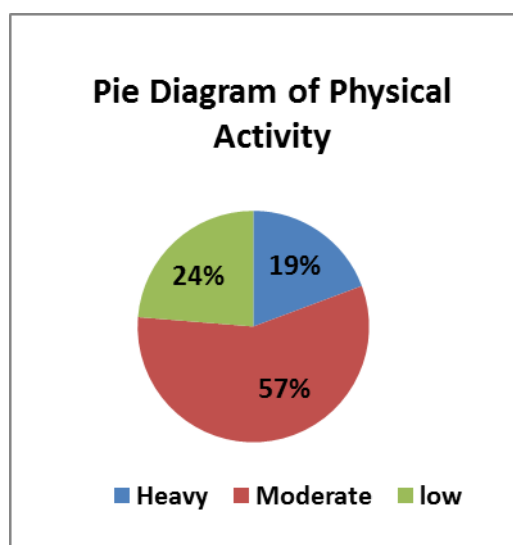


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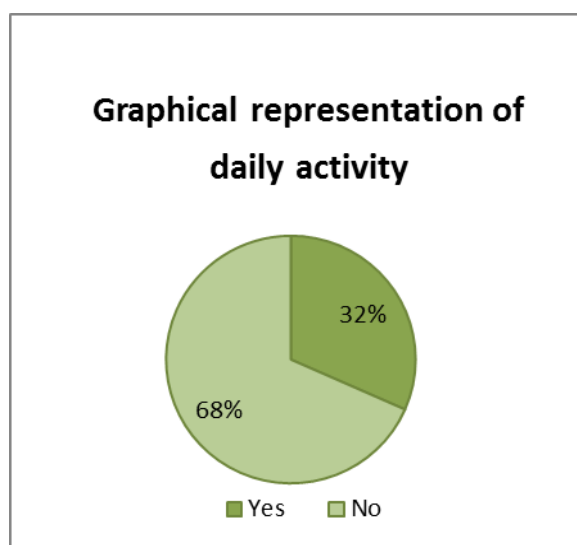


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Table 1. The Mean and Standard Deviation of Age, Anthropometric and Derived Variables of the Population

AGE	HEIGHT	WEIGHT	MUAC	WC	HC	BMI	WHR	WHTR
67.80	150.09	56.81	25.11	81.35	94.95	25.13	0.85	0.54
6.54	6.43	10.79	2.72	9.28	8.63	4.15	0.06	0.06

Table 2. Nutritional Status of Urban Elderly Women of Midnapore Town

BMI Category	n	%	WHTR category	n	%	MUAC category	n	%
Underweight	7.0	6.1	Normal	28	24.6	Normal	100	87.7
Normal weight	48.0	42.1	Central Obese	86	75.4	Under-nutrition	14	12.3
Pre obesity	45.0	39.5						
Obesity class I	13.0	11.4	WHR category	n	%	WC category	n	%
Obesity class II	1.0	0.9	Normal	50	43.9	Normal	51	44.7
			Central Obese	64	56.1	Central Obese	63	55.3

Table 3. Association Between Anthropometric Variable and Socio-demographic Variables

Association Between MUAC category and Education Category				Association Between MUAC category and Age Group			
Education	Under nutrition	Normal	Chi-square value	Age Group	Under nutrition	Normal	Chi-square value
Can Sign	2	3	P value= 0.07	60-64	5	45	P value= 0.05
Primary	1	1		65-69	3	23	
Upper primary	3	10		70-74	2	12	
Secondary	4	25		75-79	0	14	
HS	3	42		80-84	4	5	
Graduate and more	1	19		> 85	0	1	

Discussion

In this study among 114 individuals, 43.9% of participants belong to the 60 to 64 years age group and 22.8% of participants belong to the 65 to 69 years age group. The mean age of the participants is 67.80 years and the standard deviation is 6.54 which is less than 72.65 years which Jadhao and Dass (2020) have found in their study among 351 individuals (Jadhao & Dass, 2020). In his study, Jadhao found that the prevalence of normal individual is 25%, and 58.6% of individuals belongs to the malnutrition category. But in the present study, the prevalence of normal individuals is high (42.1%) and pre-obesity was found among 39.5% of participants (Using BMI cut off- 2005). another study by Meenu showed that the prevalence of Pre-obesity is 40.6% which is more than my study (Meenu et al., 2014). A study by Boyanagari resulted that, the prevalence of overweight (61.76%) was found to be more than underweight (18.77%) (Boyanagari et al., 2018). It was observed that the participants were less active (68.4%) and only 57% of the participants are used to perform daily activities. This may cause the increasing rate of Pre- obesity (39.5%) in the present study among the old age population.

In a study conducted in Germany, it was observed that the prevalence of pre-obesity at 60+ age is 49.5% which is higher than the USA (35.4%). This study stated that, in between 1999 and 2009, a remarkable shift from

pre-obesity to obesity has been observed (Westphal & Doblhammer, 2014). In this study, the prevalence of the participants who have completed higher secondary education is more (39.5%) followed by secondary education (25.4%). A study by Kansal (2016) showed that the prevalence of pre-literate is high (46.31%) followed by higher secondary education (12.63%) in his study (Kansal et al., 2016).

Most of the participants (62.3%) are housewives and only 4.4% and 1.8% of individuals used to do Government and private jobs respectively. Among them, 26.3% of participants are pension holders. The monthly income of the participants has been categorized according to World Bank classification which shows that less than 1036 Rs per month belongs to the low-income category, the lower-middle-class category range is 1036 -4045 Rs, upper middle-class category range is 4046-12535 Rs and more than 12535 Rs belongs to high-income category. The majority of the individual (64%) belongs to the low-income category group. In a study, Wunderlich stated that BMI can be used to determine the nutritional status of the elderly population but BMI does not show a linear relationship with obesity. Then WC may be a more accurate measurement (Wunderlich et al., 2012). Another study showed that WC is actually a useful measurement for screening obesity. The increasing obesity and physical activity are related. He showed that, the mean and SD of WC are 86.34 and 13.14 respectively which is more than my study (Yunita & Sartika, 2018).

In the present study, the mean and SD of WC are 81.35 and 9.28 respectively. According to the WC category, the prevalence of Central obesity is 55.3%, which is more than the normal category (44.7%). But no association has been found between physical activity and walking with WC. In the present study, it has been found that the prevalence of central obesity according to WHR category is 56.1% which is less than the result (79.8%) which Fauziana and associates (2016) found in their study conducted in Singapore. They have opined that homemakers are more prone to get central obesity (Fauziana et al, 2016). But the present study does not find any association between the two. Like WC, also WHTR can be a proxy indicator to assess obesity among the elderly population. In the present study, the prevalence of WHTR is 75.4% which is higher than the result (overweight- 40.6%; very overweight= 38.6%; obese- 56.7%) found by Nagar in a study conducted in Gujrat (Nagar et al., 2022).

A study in South West Ethiopia showed that MUAC has a positive association with age and can be used as a screening tool to assess nutritional status (Dereje et al., 2022). According to the MUAC category, the prevalence of undernutrition is 12.3% using the cut of point 22 for females which is more than 8.24% as studied by Boyanagari et al. (2018). The present study has found a significant association between MUAC and the education category (chi-square value - 0.076). Boyanagari et al. (2018) stated that MUAC measurement is a good anthropometric measurement to detect undernourishment in the elderly population (Boyanagar et al., 2018). A significant association also has been observed between MUAC and age group (Chi-square value- 0.05). No other significant association has been observed between anthropometric variables and socio-economic or demographic variables in this study.

Conclusion

This study shows a varied result as the prevalence of pre-obesity (39.5%) has been found among the participants which are of great concern. On the other hand, MUAC shows a significant association with age group and education category. It was observed that the frequency of physical activity is not satisfactory. It was over mentioned that, obesity is increasing at an alarming rate hence, proper intervention is needed. Also, nutritional awareness is necessary among the participant. Though assessment of nutritional status of elderly population is neglected but priority should be given to the elderly population for good health and better quality of life of the individuals.

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Conflicts of Interest

The author has no conflict of interest to declare.

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