Original Research Article

Prevalence and factors associated with overweight and obesity among elderly people in a semi-urban area of Chennai

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ABSTRACT

Background: Obesity is a medical condition in which excess body fat has accumulated that increases the risk of many adverse health conditions. Obesity being a risk factor facilitates the onset and severity of non-communicable diseases. The objectives of the study were to determine the prevalence of overweight and obesity among elderly people residing in a semi urban area of Chennai and to measure the association between selected factors associated with overweight and obesity among the study population.

Methods: A community-based cross-sectional study was carried out in Adayalampet and Nazrathpet, a semi urban area near Chennai, which comes under the field practice area of Department of Community Medicine ACS medical college, Chennai, Tamil Nadu India, during the month of November. Study population included 251 elderly aged 60 years and above. Data were collected by house-to-house survey using pre designed questionnaire and analyzed using SPSS software, version 16.0. Simple proportions were calculated, and chi square test was applied for statistical significance; p value <0.05 was considered as statistically significant.

Results: The prevalence of overweight was found to be 30.7% with a 95% CI (24.99-36.41) and obesity was 8.3% (4.89-11.71). Diet, alcohol consumption, physical activity gender, education are associated with overweight/obesity and were statistically significant.

Conclusions: The prevalence of overweight and obesity, among elderly people was moderate to high among our study population. Hence concerned efforts through behavior change communication intervention are required to reduce the burden of overweight/obesity among the community.

Keywords: Overweight/obesity, Elderly, Prevalence, Semi urban area

INTRODUCTION

Obesity is a medical condition in which excess body fat has accumulated that increases the risk of many adverse health conditions.[1] The main cause of obesity due to the imbalance between calorie intake and energy expenditure. Obesity being an risk factor facilitates the onset and severity of non communicable diseases. Body mass index (BMI) is widely used to determine whether a person is affected by excess weight or obesity. This is a measurement that accounts for a person weight and height. As the BMI increases, the likelihood of being affected by obesity increases as well. It's commonly known and scientifically proven that obesity predisposes to many diseases. In fact, the majority of organs and body systems are negatively affected by obesity. Diabetes, hypertension, high cholesterol, heart disease, physical disability and certain cancers are encountered in patients affected by obesity. According to WHO report 2016, more than 1.9 billion adults aged 18 years and above were overweight. Among them 650 million adults were obese. The prevalence of overweight was found to be

almost equal among male and females and slightly higher prevalence of obesity (15%) among women than men (11%). The worldwide prevalence of obesity nearly tripled between 1975 and 2016.[2] Non communicable risk factor survey conducted in many states of India between 2007-2008 showed high prevalence of overweight in all the age groups except in 15-24 years group, the prevalence of overweight was higher among females than males and in urban areas.[3] According to the Indian Council of Medical Research, NCDs accounts for more than half of all the causes of mortality in India. The proportion of elderly population in India is increasing and projected to be 326 million by 2050.[4] Overweight and obesity affects all age groups including elderly people. The risk of NCD which is higher among elderly further increases if the individual is obese or overweight. Obesity is a preventable condition with behavioural and lifestyle changes. Supportive environments and communities are fundamental in shaping people's choices of healthy lifestyles. Only limited studies are conducted on overweight and obesity among elderly individuals in south India. Therefore this study was planned to find out the prevalence and associated factors with overweight and obesity among elderly people in our field practice area near Chennai.

Objectives

- To determine the prevalence of overweight and obesity among elderly people residing in a semi urban area of Chennai.
- To measure the association between selected factors associated with overweight and obesity among the study population.

METHODS

A community-based, cross-sectional study was carried out in (Adayalampattu and Nazrathpet) in November 2015. Elderly population aged 60 years and above who are residing in the study area were included in the study. Those people who are critically ill and mentally challenged i.e., not able to comprehend and give response to the survey were excluded from the study. The sample size was calculated based on the literature review, with the prevalence of overweight and obesity among elderly people (37%) from Singh, et al study done in Delhi, with 95% Confidence interval and 17% of relative precision, calculated sample size was 236.[5] Sample size achieved was 251. In the study area, individuals were interviewed using a structured questionnaire. The questionnaire was designed by the research team. Face validity and Content validity of the questionnaire had been checked. Questionnaire captured data regarding socio demographic details of the study population, dietary behaviours, history of alcohol and smoking, physical measurements etc. Data was collected by trained interns (Provisional MBBS doctors in their internship periods). The first house in both the areas was selected randomly and the subsequent houses were visited till the required sample size was achieved. After getting their informed consent, investigator introduced themselves to the family members, all information were obtained from them and then moved on to the next house. Anthropometric measurements such as height, weight were measured for each participants. Data was entered in MS Excel & analyzed by SPSS (Statistical Package for Social Science) 17.0 version. Descriptive statistics like proportions were calculated, Chi square test was used to compare the proportions between the groups. P value less than 0.05 was considered as statistically significant.

Ethical considerations

Informed written consent was obtained from all the study participants before the start of data collection. Data collected was kept confidential and used only for research purpose.

Operational definitions

Elderly people: According to Govt. Of India, those individuals who have attained the age of sixty years and above, are defined as elderly people.[6]

Educational status[7]

Illiterate: Those who cannot read and write or no formal education.

Primary school: Those who studied/passed up to class V.

Middle school: Those who studied/passed up to class VIII.

High school: Those who studied/passed up to class IX/ X.

Higher secondary: Those who studied/passed up to class XI/ XII.

Graduate: Those who passed BA, B Sc. degree or its equivalent.

Post-graduate: Those who passed MA, M Sc., MBA, MCA, M Phil, M Tech, MD, MS, MDS or its equivalent.

Nuclear family: It consists of the married couple and their children while they are still regarded as dependants.[8]

Joint family: It consists of a number of married couples and their children who live together in the same household. All the men are related by blood and the women of the household are their wives, unmarried girls and widows of the family kinsmen.

Three generation family: This tends to be a household where there are representatives of three generations.

Body mass index[9]

It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m^2). BMI classification as shown in (Table 1).

Table 1: BMI classification.

BMI	Classification
Less than 18.5	Underweight
18.5-24.99	Normal
25-29.99	Overweight/pre-obese
≥30	Obesity

Vegetarian: Those who consume only vegetarian food.

Mixed: Those who consume both vegetarian and non-vegetarian food.

Physical activity: Person doing mild physical activity like walking, yoga etc. for at least 10 minutes continuously per day.[10]

RESULTS

Out of 251 participants interviewed, majority of our study participants were in the age group of 60–65 years 147 (58.2) (Table 2) and most of study participants were females 138 (55%), according to modified B.G. Prasad classification (2014). Maximum of the study population belonged to Class 4 category of socio-economic status 93 (37.1%), about 123 (49%) of study participants were illiterates. Majority of study participants were unemployed 168 (66.9%). Maximum no of study participants were Hindus 234 (93.2%), majority of the participants are from nuclear family 98 (39%) and 156 (62.2%) are living in pucca house.

Table 2: Socio demographic profile of the study population.

Variable	Frequency	Percentage (%)
Age (in years)		
60-65	147	58.2
66-70	55	21.9
71-75	26	10.4
76-80	15	6.0
>80	8	3.5
Gender		
Male	113	45
Female	138	55
Socioeconomic status B.G. Prasad classification		
>5113 Class I	13	5.2
2557-5112 Class II	46	18.3
1533-2556 Class III	72	28.7
767-1532 Class IV	93	37.1
<766 Class V	27	10.7
Education		
Illiterate	123	49
Primary	49	19.5
Middle	34	13.5
High school	30	12
Higher secondary	08	3.2
Undergraduate	05	2
Postgraduate	02	0.8
Occupation		
Employed	83	33.1
Unemployed	168	66.9
Religion		
Hindu	234	93.2
Christian	06	2.4
Muslim	11	4.4
Type of family		
Nuclear family	98	39
Joint family	87	34.7
Three generation family	66	26.3
Type of house		
Pucca	156	62.2
Semi-Pucca	70	27.8
Kuccha	25	10

Table 3: Distribution of study respondents as per BMI.

BMI	Frequency	Percentage
Underweight	28	11.2
Normal	125	49.8
Overweight	77	30.7
Obesity	21	8.3
Total	251	100

Table 4: Determinants of overweight/obesity.

Socio demographic variables	Overweight/obesity		Total (%)	P value
	Yes (%)	No (%)		
Sex				
Male	36 (31.9)	77 (68.1)	113 (100)	
Female	63 (45.7)	75 (54.3)	138 (100)	0.26
Total	99 (39.4)	152 (60.6)	251 (100)	
Education				
Illiterate	34 (27.6)	89 (72.4)	123 (100)	
Literate	64 (50)	64 (50)	128 (100)	0.02
Total	98 (39.4)	153 (60.6)	251 (100)	
Alcohol				
Yes	28 (60.9)	18 (39.1)	46 (100)	
No	71 (34.6)	134 (65.4)	205 (100)	0.001
Total	99 (39.4)	152 (60.6)	251 (100)	
Diet				
Vegetarian	9 (21.4)	33 (78.6)	42 (100)	
Mixed	90 (43.1)	119 (56.9)	209 (100)	0.009
Total	99 (39.4)	152 (60.6)	251 (100)	
Physical activity				
Yes	60 (32.6)	124 (67.4)	184 (100)	
No	39 (58.2)	28 (41.8)	67 (100)	0.001
Total	99 (39.4)	152 (60.6)	251 (100)	

Prevalence of overweight among study participants was 30.7% with a 95% CI (24.99-36.41) and obesity was 8.3% 95% CI (4.89-11.71) (Table 3).

Comparing gender, it was found that females are more overweight/obesity (45.7%). than males (31.9%) Association was found statistically significant. Comparing literates and illiterates, it was found that literates are more overweight/obesity (50%) than illiterates (27.6%). Association was found statistically significant. Comparing alcoholic consumers and non-alcohol consumers it was found that persons who consume alcohol are more overweight and obese (60.9%) than non-consumers. Association was found statistically significant. It was found that those who consume mixed diet are more overweight and obese (43.1%) than who consume vegetarian diet (21.4%). Association was found statistically significant. It was found that those who are not engaging in physical activity are more overweight and obese (58.2%) than who are engaging in physical activity (32.6) Association was found statistically significant (Table 4).

DISCUSSION

In our study, the overall prevalence of overweight was 30.7% with a 95% CI of (24.99-36.41) and obesity was 8.3% (4.89-11.71). Whereas a study done in Chandigarh by Swami et al found that the prevalence of overweight and obesity was 33.14% and 7.54% respectively.[11] Similarly a study done by Singh et al found that the prevalence of overweight/obesity was 37%.[6] In the above studies the minor differences in the prevalence from our study might be due to the different study setting between the studies. Our study was done in a semi-urban area, whereas the above studies were conducted in urban areas. In our study we found that 45.7% of females and 31.9% of males were overweight/obese. Females were found to be more overweight/obese as compared to males. Similar results had been observed in IDSP risk factor survey done in Tamil Nadu in which the prevalence among female respondents was high (48.8%) compared with males (32.1%).[12] Bhardwaj et al in Nagpur had found that 45.9% and 11.3% were overweight/obese in men while 49.2% and 15.9% of females were overweight and obese respectively.[13] Thus most of the studies show that females have higher prevalence of overweight and obesity. This

may be due to the fact that women living as homemakers tend to remain indoors for most of the time thus having sedentary lifestyle. In this study we found that 60.9% of alcohol consumers and 39.4% of non-consumers were overweight/obese. Similarly Thankappan et al in a study in Kerala found that alcohol users have more risk to develop obesity compared to non-drinkers.[14] In a study by Erem et al in Turkey found that among elderly people the prevalence of overweight was 47.3% among non-drinkers while among drinkers it was 38.3%.[15] Kaplan et al from their study in Canada among elderly persons also stated that no role of alcohol as a risk factor for developing obesity.[16] Since alcohol as a risk factor of obesity in elderly is not in consensus among studies done internationally, further extensive exploration is required in this regard. In our study we found that literates are more overweight/obesity 50% compared to illiterates, with a trend showing that the prevalence of overweight/obesity increasing with the level of education. Sugathan et al in Kerala also found that professionals are more overweight/obese 32% as compared to other educational groups.[17] Persons with higher education in our country are usually involved in occupation which may require sedentary life style. On the other hand persons with lower educational qualification tend to be in occupation requiring either moderate or severe physical exertion. This may be the reason for the prevalence of overweight to be higher in persons with high education.

CONCLUSION

The prevalence of overweight and obesity, among elderly people was moderate to high among our study population. Hence concerned efforts through behavior change communication intervention are required to reduce the burden of overweight/obesity among the community.

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