Research Article

Prevalence and determinants of overweight and obesity among elderly population in an urban area of Puducherry

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Abstract

Background: Obesity has reached epidemic proportions in India, with morbid obesity affecting 5% of the country's population.

Objectives: To measure the prevalence and determinants of overweight and obesity among elderly people in our urban field practice area of Puducherry, India.

Material and Methods: A community-based cross-sectional study was carried out in Muthialpet, an urban area in Puducherry, which comes under the field practice area of Department of Community Medicine, Pondicherry Institute of Medical Sciences, Puducherry, India, from January to December 2013. Study population included 682 elderly aged 60 years and above. Data were collected by house-to-house survey using WHO STEPS questionnaire and analyzed using SPSS software, version 16.0. Simple proportions were calculated, and χ2-test was applied for statistical significance; p-value < 0.05 was considered as statistically significant.

Results: Prevalence of overweight was 41.4% and of obesity was 4.5%. Religion, education, occupation, smoking, and alcohol consumption were found to be significantly associated with overweight/obesity.

Conclusion: Prevalence of overweight was found to be high among elderly persons in the study area.

KEY WORDS: Overweight/obesity, elderly, prevalence, determinants

Introduction

Obesity is defined as an abnormal growth of the adipose tissue because of an enlargement of fat cell (hypertrophic obesity) or an increase in number of fat cells (hyperplasic obesity) or a combination of both.[1] On the basis of the distribution of fat, obesity is of two types: android and gynoid obesity. In android obesity, there is an abdominal fat distribution, and in gynoid obesity, fat is more evenly and peripherally distributed throughout the body. Android type is more dangerous than gynoid type. Prevalence of obesity is increasing in both developed and developing countries.[2] Obesity has reached epidemic proportions globally, with more than 1 billion people in the world are overweight adults, and there are around 300 million people who are obese.[3] According to a report of the World Health Organization, 2.8 million adults die each year as a result of being overweight or obese. In addition, 44% of the diabetes, 23% of the ischemic heart disease, and 7–41% of certain cancers are attributable to overweight and obesity.[3] In the twenty-first century, obesity has reached epidemic proportions in India, with morbid obesity affecting 5% of the country's population.[4] India is following a trend of other developing countries that are steadily becoming more obese. According to National Family Health Survey (NFHS-3), the overall prevalence of overweight/obesity in India was 12.1% in men and 16% in women. There was a large difference in the prevalence of overweight or obese across various states. Punjab had the highest prevalence (men, 30.3%; women, 37.5%), and Tripura had the lowest prevalence (men 5.2%; women, 5.3%).[5] Aging is a normal, biological, and universal phenomenon that refers to various effects and manifestation of old age. It is described in terms of biological, psychological, and social aspects.[6] In recent decades, as life expectancy increases, the world's older population is growing in an accelerated phase. The elderly population in India increased from 20 million in 1951 to 57 million in 1991 and is expected to be 198 million in 2030 and 326 million in 2050.[7] Elderly populations are a subset of vulnerable population as they face various challenges; health issues emerge

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as one of the important challenges faced by them. Among health issues, noncommunicable diseases are much more common in older age, which requires large quantum of health and social care. Elderly people in high- and middle-income groups are vulnerable to overnutrition and obesity as aging is usually associated with a decrease in physical activity and an increase in sedentary lifestyle. Central obesity in elderly population of India is a major health problem. In India, study conducted by Swami et al.[8] in Chandigarh estimated that prevalence of overweight and obesity among elderly in urban area was 33%. Therefore, keeping the above-mentioned aspects in view, this community-based cross-sectional study was planned to find out the prevalence and determinants of overweight and obesity among elderly people in our urban field practice area of Puducherry, India.

Material and Methods

Study Setting

This community-based cross-sectional study was conducted in field practice area of Puducherry Institute of Medical Sciences (PIMS) Urban Health Centre (UHC), Muthialpet, Puducherry, India, from January to December 2013 in an elderly population (individuals aged 60 years and older in the study area). The service area consists of a total population of 12,038 with 5,993 men and 6,045 women.

Sample Size

On the basis of 37% prevalence of overweight/obesity among elderly people as reported by Singh et al.,[9] for 5% alpha error and 10% acceptable deviation, the sample size was calculated to be 682.

Study Tools

A predesigned and pretested questionnaire was used to assess the sociodemographic variables of the participants. The WHO STEPS questionnaire was used to assess the behavioral risk factors of obesity/overweight of the participants. Dial-type weighing scale was used to measure the weight of the participants. Stadiometer was used to measure the height of the participants.

Data Collection Methods

Study subjects for this study were recruited from all the three blocks of the field practice area of UHC, Muthialpet, Puducherry, India. The first house in all the three blocks was selected randomly, and the subsequent houses were visited till the required sample size was achieved. The individuals aged 60 years and older of both the genders were recruited in the study after obtaining their written informed consent.

Statistical Methods

Data were analyzed using SPSS software, version 16.0, and proportions calculated. The $\chi 2$-test was applied to find significant difference in proportions, and p-value less than 0.05 was considered statistically significant.

Table 1: Sociodemographic characteristics of the study participants (n = 682)

	Frequency (%)
Age group (years)	
60–65	291 (42.8)
66–70	277 (40.6)
71–75	61 (8.9)
76–80	33 (4.8)
>80	20 (2.9)
Educational status	
Postgraduate	21 (3.1)
Graduate	11 (1.7)
Higher secondary	75 (10.9)
Middle	153 (22.5)
Primary	213 (31.2)
Illiterate	209 (30.6)
Occupational status	
Nongovernment employee	42 (6.2)
Self-employee	299 (43.9)
Housewife	202 (29.6)
Retired	77 (11.2)
Unemployed	62 (9.1)
Socioeconomic status	
Upper	21 (3.2)
Upper middle	208 (30.4)
Lower middle	297 (43.5)
Upper lower	141 (20.7)
Lower	15 (2.2)

Ethical Considerations

The study was approved by the ethical committee of PIMS. A written informed consent was obtained from all participants before collecting the data. For this purpose, a participant information sheet in the local language (Tamil) indicating the purpose of the study, procedure of maintaining confidentiality, and right to not to participate in this study was provided to the participants. Elderly persons found with morbidity were referred to the nearest health facility. Health education was given to them regarding their conditions.

Results

Majority of our study participants were in the age group of 60–65 years [Table 1]. Around one-third of the participants were illiterates, and 43.9% were self-employed. According to modified Kuppuswamy's Socioeconomic Scale, 2013, 43.5% belonged to lower middle class. The prevalence of overweight among elderly population was found as 41.4% and of obesity was 4.5% [Table 2].

The proportion of overweight/obesity was more in Muslims (62%) compared with other religions, and the association was significant. The proportion of overweight/obesity was found to be more among graduates (72.7%) and retired persons (53.9%). Nonsmokers and nonalcohol consumers were found to be more obese when compared with smokers and alcohol consumers [Table 3].

Table 2: Distribution of respondents as per BMI (Asian classification) (*n* = 682)

BMI	Frequency	Percentage
Underweight	11	1.6
Normal	358	52.5
Overweight	282	41.4
Obesity	31	4.5
Total	682	100

Table 3: Determinants of overweight/obesity

	Overweight/obesity		*P*-value
	Yes, *n* (%)	No, *n* (%)	
Religion			
Hindu	218 (43.3)	286 (56.7)	0.02
Muslim	31 (62.0)	19 (38.0)	
Christian	64 (50.0)	64 (50.0)	
Education			
Illiterate	72 (34.4)	137 (65.6)	0.01
Primary	105 (49.3)	108 (50.7)	
Middle	75 (49.0)	78 (51.0)	
Higher secondary	38 (50.7)	37 (49.3)	
Graduate	8 (72.7)	3 (27.3)	
Postgraduate	15 (71.4)	6 (28.6)	
Occupation			
Nongovernment employee	21 (50.0)	21 (50.0)	0.004
Self-employee	124 (41.3)	176 (58.7)	
Housewife	108 (53.5)	94 (46.5)	
Retired	41 (53.9)	35 (46.1)	
Unemployed	19 (30.6)	43 (69.4)	
Smoking			
Yes	30 (31.9)	64 (68.1)	0.002
No	283 (48.1)	305 (51.9)	
Alcohol			
Yes	34 (32.1)	72 (67.9)	0.001
No	279 (48.4)	297 (51.6)	

Discussion

Our study found that the prevalence of overweight and obesity among elderly people was 41.4% and 4.5%, respectively. Similar results were observed in a study by Singh et al.[9] in Delhi in 2004 among elderly people, which showed the prevalence of overweight/obesity to be 34% in men and 40.3% in women. IDSP risk factor survey conducted in Tamil Nadu, India, in 2007–2008 also found that the overall prevalence of overweight among elderly people was 40.5%.[10]

In our study, we found that 72.7% graduates and 71.4% postgraduates were overweight/obese, thus showing a trend that the prevalence of overweight/obesity increases with the level of education. Sugathan et al.[11] in Kerala, India, also observed in their study conducted in 2008 that professionals were more overweight/obese 32% (RR: 3.3) when compared with other educational groups. Similarly, Shukla et al.[12] in Mumbai, India, in 2002 found that persons with college education had higher risk for developing overweight (OR = 2.25).

In our study, we found that 108 (53.5%) of housewives were overweight/obese. Similarly, in a study by Shankar and Sangeetha[13] in Tamil Nadu, India, in 2011 among elderly people aged older than 60 years found that 46.9% of housewives were obese. In addition, the study by Sugathan et al.[11] in the (urban) area of Kerala, India, found that housewives had higher prevalence of obesity (37.2%) when compared with other occupation groups.

In our study, we found that 31.9% of the smokers and 48.1% of the nonsmokers were overweight/obese. Similar results were observed in a study by Shukla et al.,[12] which showed smokers had less chance of developing obesity when compared with nonsmokers (OR = 0.77). In addition, Thankappan et al.[14] in their study in Kerala, India, found similar results as tobacco users had less chance to develop obesity (OR = 0.65).[14]

In this study, we found that 32.1% alcohol consumers and 48.4% nonconsumers were overweight/obese. Thankappan et al.[14] in their study in Kerala, India, found that alcohol users have more risk to develop obesity compared with nondrinkers (OR = 1.26), whereas Erem et al.[15] in their study conducted in Turkey found that, among elderly people, the prevalence of overweight was higher (47.3%) in nondrinkers compared with alcohol consumers (38.3%). However, alcohol as a risk factor of obesity in elderly is not having consensus among various studies.

Strengths

1. This community-based study measures the burden of overweight and obesity among elderly people.
2. Several factors associated with overweight and obesity were studied using the modified WHO STEPS questionnaire with standard operational definitions, which allows comparison by other researchers.

Limitations

1. Recall bias might have occurred while documenting the details related to frequency and the amount of consumption of alcohol and tobacco products.
2. Self-reported history of physical activity and chronic diseases, especially diabetes, can be flawed owing to several factors such as lack of awareness and low educational status.

Conclusion

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

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References

1. Häger A. Adipose tissue cellularity in childhood in relation to the development of obesity. Br Med Bull 1981;37(3):287–90.
2. Prentice AM, Jebb SA. Obesity in Britain: gluttony or sloth. BMJ 1995;3(11):437–9.
3. World Health Organization. *Overweight and Obesity Fact Sheet*. Available at: http://www.who.int/mediacentre/factsheets/fs311/en/index.html on 2012 (last accessed on August 2014).
4. India facing obesity epidemic experts. *The Hindu*. October 12, 2007.
5. International Institute for Population Sciences (IIPS) and Macro International National Family Health Survey (NFHS-3), 2005–06: India: Volume I. Available at: http://pdf.usaid.gov/pdf_docs/PNADK385.pdf (last accessed on March 15, 2014).
6. Lakshmi Devi S, Roopa KS. Quality of life of elderly men and women in institutional and non institutional settings in urban Bangalore district. Res J Fam Community Consumer Sci 2013;1(3):7–13.
7. World Population Prospects. United Nations, Population division. 1995;145(1):153.
8. Swami HM, Bhatia V, Gupta AK. An epidemiological study of obesity among elderly in Chandigarh. Indian J Community Med 2005;30(1):1–5.
9. Singh P, Kapil U, Dey A. Overweight and obesity among elderly—Delhi. Indian J Med Sci 2004;58:162–3.
10. National Institute of Medical Statistics, Indian Council of Medical Research (ICMR), 2009. *IDSP Non-Communicable Disease Risk Factors Survey, Tamil Nadu, 2007–08*. Available at: http://www.icmr.nic.in/final/IDSPNCD% 20 Reports/Phase 1%20States%20of%20 India.pdf (last accessed on October 3, 3013).
11. Sugathan TN, Soman CR, Sankaranarayan K. Behaviour risk factors for non communicable diseases among adults in Kerala, India. Indian J Med Res 2008;127:555–63.
12. Shukla H, Gupta P, Mehta H, Hebert J. Descriptive epidemiology of body mass index of an urban adult population in western India. J Epidemiol Community Health 2002;56:876–80.
13. Shankar R, Sangeetha B. Prevalence of chronic energy deficiency, overweight and obesity among the geriatric population in a rural area in Tamil Nadu. Sri Ramachandra J Med 2011;4:24–9.
14. Thankappan KR, Shah B, Mathur P, Sarma PS, Srinivas G, Mini GK, et al. Risk factor profile for chronic non-communicable diseases: results of a community-based study in Kerala, India. Indian J Med Res 2010;131:53–63.
15. Erem C, Arslan C, Hacihasanoglu A, Deger O, Topbas M, Ukinc K, et al. Prevalence of obesity and associated risk factors in a Turkish population. Obes Res 2004;12(7):1117–27.

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