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Original Research Article

A community based study on prevalence of obesity among urban population of Shivamogga, Karnataka, India

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ABSTRACT

Background: Obesity is a most prevalent malnutrition all over the world. It is estimated by the WHO that globally, over 1 billion (16%) adults are overweight and 300 million of these (5%) are obese. The highest rise in the number of obese is noted in the countries with fast growing economies especially of South East Asia. In India the prevalence of obesity is 12.6% in women and 9.3% in men. In other words, more than a 100 million individuals are obese in India. Objectives: To assess the prevalence of obesity in urban population of Shivamogga.
Methods: A cross sectional study was conducted in Urban Shivamogga Study was conducted during February 1st to July 30th 2016 for 6 months. Data was collected from house hold members aged 15-64 years. The calculated sample size was 2000. Subjects were interviewed using a prestructured and pretested questionnaire adopted from WHO STEPS I and II, approaches for non-communicable diseases risk factors surveillance, after modifying to suit the local requirements (questions about Obesity and overweight were considered for study).
Results: The prevalence of high BMI among study subjects was nearly fifty percent (45.6%). The prevalence of obesity in the study subjects was 31.6%, the prevalence was more in females (34.9%) compared to males (28.4%). The prevalence of central/ abdominal type of obesity was 41.2%.
Conclusions: This community based study demonstrated high prevalence of obesity and overweight among the productive population of urban Shivamogga.

Keywords: Body mass index, Non-communicable diseases, Obesity, Overweight, Waist circumference

INTRODUCTION

India is experiencing a rapid health transition, with large and rising burdens of chronic diseases, which were estimated to account for 53% of all deaths in 2005. Earlier estimates projected that the number of deaths attributable to chronic diseases would rise from 3·78 million in 1990 (40·4% of all deaths) to 7·63 million in 2020 (66·7% of all deaths).[1] Many of these deaths occur at relatively early ages. Compared with all other countries, India suffers the highest loss in potentially productive years of life, due to deaths from cardiovascular disease in people aged 35 - 64 years (9·2 million years lost in 2000). By 2030, this loss is expected to rise to 17·9 million years - 940% greater than the corresponding loss in the USA, which has a population a third the size of India's. Obesity is one of the important risk factors for non-communicable diseases.[2] One of the commonest expressions of unhealthy diet, often combined with lack of physical activity, is obesity. Obesity is a most prevalent malnutrition all over the world. It is characterized by abnormal growth of adipose tissue. Indeed, we are amidst an epidemic of obesity.[3] Obesity is arbitrarily considered to be present when the fat content of the body is greater than 25% of body mass in men and 30% in women.[2,4] Over the past two decades there has been a dramatic rise in the prevalence of obesity throughout the world. It is estimated by the WHO that

globally, over 1 billion (16%) adults are overweight and 300 million of these (5%) are obese.[4] The highest rise in the number of obese is noted in the countries with fast growing economies especially of South East Asia. As many as 250 million people in the third world countries suffer from obesity. In India the prevalence of obesity is 12.6% in women and 9.3% in men. In other words, more than a 100 million individuals are obese in India. We are truly in the midst of an obesity epidemic, which has serious health ramifications. Obesity is associated with a higher risk of mortality and morbidity, as it is the very important risk factor of Non Communicable diseases like cardiovascular diseases like ischemic heart disease and Diabetes mellitus.[1]

Hence a community based study on prevalence obesity in Shivamogga city among 15-64 years of population was undertaken, with the intention that the results of this study will provide necessary inputs for effective non communicable disease control in this region.

Objective

To assess the prevalence of obesity in urban population of Shivamogga, Karnataka, India.

METHODS

An observational community based cross sectional study was conducted in Urban Shivamogga. Kote and old Thirthahalli road area wards were selected by simple random sampling method. Study was conducted during February 1st to July 30th 2016 for 6 months, after getting clearance from Institutional Ethical committee (IEC). Data was collected from house hold members aged 15-64 years, who are residents of study area (Study subjects). With 5% prevalence of NCD risk factors (according to previous nationwide study), the calculated sample size is 1900, for our convenience we have made it 2000. There are around 429 house-holds (with 4000 population) come under the study area, we were visit each and every house hold in the area and collect the information from people between age group of 15-64 years (as a part of intern training and family studies), among the collected data, 2000 (sample size) data was taken randomly and analyzed. Help of Interns and post graduates of the department were taken to collect the data (it is also a part of their urban field training). Permission of the required authority was taken.

All subjects in the sample were informed about the purpose of the study. After obtaining the written informed consent they were interviewed using a prestructured and pretested questionnaire adopted from WHO STEPS I and II, approaches for non-communicable diseases risk factors surveillance, after modifying to suit the local requirements (questions about Obesity and overweight were considered for study).[5]

Step 1: Information on socio-demographic variables and behavioral NCD risk factors

Step 2: Physical measurements - Height, weight, waist circumferences were measured using standardized instruments and protocols.[6]

Data was analysed by XL spread sheet, results are documented in proportions and percentages with appropriate statistical tests.

RESULTS

Socio-demographic factors

Total participants in the study were 2000, comprised of 1000 males and1000 females (Table 1). Majority (78.5%) of the subjects were belonging to Hindu religion, followed by Muslims (20.6%) and Christians (0.9%) (Table 2). Majority of the participants were literate (83.3%), while few were illiterate (16.3%). Among the literates more than a half of the participants were studied up to PUC and above (Table 3). Most of the participants were home makers (32.5%), followed by unskilled workers (21.5%) and semiskilled (1.8%) workers (Table 4).

Table 1: Distribution of participants by sex.

Participants	Number	Percentage (%)
Men	1000	50
Women	1000	50
Total	2000	100

Table 2: Religion of participants.

Religion	Number	Percentage (%)
Hindu	1570	78.5
Muslim	412	20.6
Christian	18	0.9
Total	2000	100

Table 3: Education Status.

Education status	Number	Percentage
No Formal Schooling	326	16.3
Primary School	190	9.5
Middle School	290	14.5
High- School	230	13
PUC- Degree	449	22.5
Post- Graduation	339	16.9
Others	176	8.8
Total	2000	100

Table 4: Occupation of participants.

Occupation	Number	Percentage
Professional	38	1.9
Semi professional	80	4
Clerical/ Shop/ Farm	281	14.1
Skilled Worker	195	9.8
Semi-skilled worker	37	1.8
Unskilled Worker	430	21.5
Home maker	650	32.5
Students	289	14.4
Total	2000	100

Obesity and overweight

The prevalence of high BMI [overweight and obesity (BMI $\geq$ 23 kg/m^2) among study subjects was near fifty percent (45.6%). The prevalence of high BMI in females was higher (50.3%) as compared to males (41.1%). The prevalence of obesity (BMI $\geq$25 kg/m^2) in the study subjects was 31.6%, the prevalence was more in females (34.9%) compared to males (28.4%) (Table 5).

The prevalence of central/ abdominal type of obesity was 41.2%. Central type of obesity was more prevalent in females (45.6%) as compared to males (36.8%). This difference was statistically highly significant (P<0.001) (Table 6).

Prevalence of generalized obesity showed an increasing trend with increasing age but a steep fall in the curve was seen after 54 years, when compared with truncal obesity which also showed an increasing trend with age but was almost stationary after 55 years of age.

Table 5: Prevalence of obesity and over-weight.

Obesity and over weight	Men Number (%)	Women Number (%)	Total Number (%)
Normal	590 (59)	496 (49.6)	1086 (50.43)
Over weight	127 (12.7)	154 (15.4)	281 (14.05)
Obesity	284 (28.4)	349 (34.9)	633 (31.6)
Total	1000 (100)	1000 (100)	2000 (100)

X^2= 17.4, P<0.05 Significant.

Table 6: Prevalence of abdominal type of obesity.

Abdominal type of obesity	Men Number (%)	Women Number (%)	Total Number (%)
Present	368 (36.8%)	456 (45.6%)	824 (41.2%)
Absent	824 (41.2%)	544 (54.4%)	1176 (58.8%)
Total	1000 (100%)	1000 (100%)	2000 (100%)

X^2= 97.7, P<0.001, Highly Significant.

DISCUSSION

The risk factors of today are the diseases of tomorrow. Identifying these risk factors in populations occupies a central place in the surveillance system because of the importance of lag time between exposure and disease. Therefore, public health strategies have to be driven by the motive of identifying risk factors in populations, and countries need to know the profile of risk factors of populations in different settings.

Obesity is an important in the pathogenesis of hypertension, dyslipidemias, diabetes mellitus, which, together with hyperinsulinemia, make up the 'deadly quartlet' for the metabolic syndrome.[3,8] In the present study, obesity was seen in 31.5% of the study subjects. The results of the present study corroborate with the prevalence of obesity in India as depicted by WHO/SEARO- NCD profile in the range of 20-40% in the urban area.[7] This Finding is also supported by the studies conducted by Ranjan Tiwari et al, Mohan V et al, study from urban industrial population from north India and Meenakshi BM et al (29.8%).[7-10] The study clearly demonstrated that prevalence of obesity was higher in females (34.9%) compared to males (28.4%). These findings are supported by the study conducted by Suguthan TN et al.[11] In contrast to our findings, studies conducted by Gupta R et al, Prabhakaran D et al and Meenakshi BM et al showed more prevalence among men, compared women.[7,10,12] According to findings of the present study, the obesity was more among people belonging to affluent class, higher occupation level and higher education status, these findings are similar to the study conducted by Tiwari et al in Gwalior.[9]

About 41.2% of the participants were found to have high waist circumference above the proposed recommended

levels for Indians. It was alarming to note that females had higher abdominal obesity than males (Males- 36.8% and Females- 45.6%). Similar trend was seen in other studies by Mohan V et al, Meenakshi BM et al, study conducted in Jaipur and Thankappan KR et al.[13]

CONCLUSION

This community based study demonstrated high prevalence of obesity and overweight among the productive population of urban Shimoga. Strengthening the evidence for NCD prevention and control by assessing its burden and risk factors through NCD risk factors surveillance. A nationwide initiative has to start to create awareness among the people of community regarding the harmful effects of obesity, with main focus on adolescents and adults.

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REFERENCES

1. Agarwal S, Basannar DR, Bhalwar R, Bhatnagar A, Bhatti VK, Chatterjee K et al. Textbook of Public health and Community Medicine. Pune: AFMC in collaboration with WHO, India. 2009 :1041-101.
2. Park K. Textbook of Preventive & Social Medicine. 20thed. Jabalpur: Banarsidas Banot. 2009 : 315-349.
3. Dhaar GM, Robbani I. Foundations of Community Medicine. 2nd ed. Noida (UP): Elsevier; 2008: 544-63.
4. Baride JP, Kulkarni AP. Text Book of Community Medicine. 3rd ed. Mumbai: VORA Medical Publications; 2006. p 497-98
5. WHO STEPS Instrument: Core and Expanded. The WHO STEPwise approach to Surveillance of chronic non-communicable diseases risk factors [Online]. [cited 2008 July 6]; Available from: URL:http://asaha.com/ebook/UNzE1MTg-/Part-5 STEPS-Instrument-Overview.pdf.
6. Aboobakur M, Latheef A, Ahmed JM, Sheena Moosa, Ravindra MP, Anand Krishnan, Dorairaj Prabhakaran. Surveillance for non-communicable disease risk factors in Maldives: results from the first STEPS survey in Male. Int J Public Health. 2009;55(5):489-96.
7. Mehan MB, Surabhi S, Solanki GJ. Risk factors profile of Non-communicable diseases among middle –income (18-65 years) free living urban population of India. Int J Diab Der Crres. 2006;26:169-76.
8. Mohan V, Shantirani CS, Deepa R. Glucose Intolerance (Diabetes and IGT) in a selected South Indian population with special reference to family history, obesity and lifestyle factors- The Chennai Urban Population Study (CUPS 14). J Assoc Physicians India. 2003;51:771-7.
9. Ranjana T, Dhiraj S, Neeraj G. A Cross Sectional Study to Determine Prevalence of Obesity in High Income Group Colonies of Gwalior City. Indian J Community Medicine. 2009;34(3):218-22.
10. Prabhakaran D, Shah P, Chaturvedi V, Ramakrishnan L, Manhapra A, Reddy KS. Cardio vascular risk factor prevalence among men in a large industry of Northern India. Natl Med J India. 2005;18:59-65.
11. Sugathan TN, Soman CR, Sunkaranarayana K. Behavioural risk factors for non-communicable diseases among adults in Kerala, India. Indian J Med Res. 2008;127:555-63.
12. Gupta R, Gupta VP, Sarna M, Bhatnagar S, Thanvi J, Sharma V, et al. Prevention of coronary heart disease and risk factor in an urban Indian population Jaipur Heart – II. Indian Heart J. 2002;54:59-66.
13. Thankappan KR, Bela 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.

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