

Original article

Prevalence pattern of obesity across different age groups in a rural setting in Kerala

Ron Thomas Varghese, Vijayakumar K

Department of Community Medicine, Government Medical College,
Thiruvananthapuram, Kerala, India

Abstract

There has been a rise in prevalence of obesity and lifestyle diseases in India in the aftermath of the economic boom in the last few years^{1, 2}. Obesity if unchecked will lead to a host of lifestyle diseases. We tried to analyse if there was a trend in relation to age, in the prevalence of obesity in a rural population in Varkala, Kerala. Data was collected from PROLIFE population registry of lifestyle disease from Chemmaruthy panchayat in Varkala, through house visits and involved 3423 subjects over 20 years of age. Height and weight were measured and Body Mass Index (B.M.I) was calculated. Analysis results reveal that for the most productive age group, the 30-40 % of the population in our study setting was either obese or overweight. This indicates that we should expect a rise in lifestyle diseases in epidemic proportion in the near future.

Introduction

The prosperity of India in the economic front has started manifesting in the health sector as increased prevalence of lifestyle diseases like diabetes, hypertension, coronary artery disease and stroke^{1,2}. The root cause of all these diseases can be traced to obesity. The alarming rise of obesity and its complications especially in the rural sector as evidenced by various studies^{1,2}, has

prompted us to undertake this study regarding the prevalence of obesity in Varkala and its trends with age. These lifestyle diseases ultimately adversely affect quality of life also which in turn adversely affects productivity of the nation also³.

Research question

Is there a trend in the prevalence of obesity in relation to age in a rural setting in Kerala?

Materials and Methods

Data was collected from PROLIFE population registry of lifestyle disease, an ongoing longitudinal study by Health Action by People, Thiruvananthapuram from Chemmaruthy panchayat in Varkala, The data was collected through house visits and involved 3423 subjects over 20 years of age. Height was measured using an anthropometry rod, Weight using an electronic weighing machine with a sensitivity of 200 grams. Body Mass Index (B.M.I) was calculated using the formula $\text{weight in kilogram}/[(\text{height in meter})^2]$. Body Mass Index was then categorized into underweight (<18.5), normal (18.6-24.9), overweight (25-29.9) and obese (≥ 30). The data was then analyzed for the results.

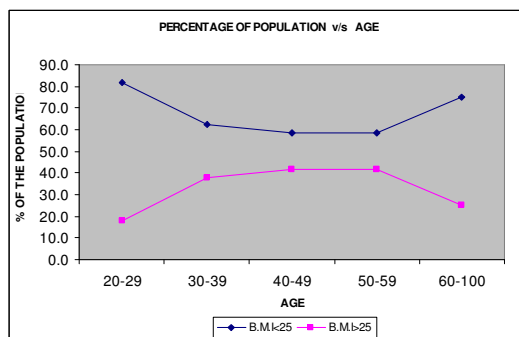
Results and discussion

The distribution of B.M.I of this rural population across age groups is given in [Table I](#). (given below references)

Figure I gives an account of percentage of overweight and obesity plotted against age groups for Body Mass Index.

Figure 1:

Graph Showing Trends of B.M.I with Relation To Percentage of Population in the Particular Age Group



From the graph it is evident that it is only in the extremes of age that there is a much higher percentage of people with B.M.I <25 (the upper limit of normal). From the mid thirties of age to the early fifties of age, a significant population have their B.M.I rising towards 25. This clearly points to the onset of obesity even in rural population in Kerala. This will have serious bearing on the nation and public health sector as the productivity will decrease, and more people are likely to develop lifestyle diseases like diabetes, hypertension and coronary artery disease at an early age.

Distribution of the obese and overweight in population

19.7 % of the overweight category was in the 20-29 year age group. Those in 30-39

year age group accounted for 28.5% of overweight and 28% of obese. Similarly those in age group 40-49 years accounted for 29% of the obese. Thus there is a bell shaped relation between prevalence of obesity and age.

Distribution of obese and overweight in each age group

18 % of those in age 20-29 years were obese or overweight which rose to 41.7 % of those in 40 – 49 years and 41.9 % of those in 50 -59 years. The rising prevalence of overweight and obese in the younger age group needs to be tackled. Those in productive age group (30 -39) accounting for more than a quarter of obese and overweight is alarming. Educating the younger age group especially those in their 20s or even among students about the adverse effects of obesity and its complications, will delay the onset of obesity by at least 10 years. This can in subsequent years decrease the prevalence in higher age groups and will in turn serve to improve the health of the coming generations.

The fact that 42 % of those in 40 -59 years were obese or overweight is a cause of concern with regard to higher propensity of Indians in general and people of Kerala to develop lifestyle diseases.

A fact we stumbled across in our study was that 41 % of subjects in the age group of 20 -29 years were underweight. The same subject can develop obesity when they are exposed to adequate food later in life and this concern needs to be addressed.

The Odds Ratio of those below 40 years to have BMI <25 was 1.5 times that of those >40 years of age is a welcome sign, that if proper education and lifestyle modification is adopted in the young, we still may be able to tackle the rising prevalence of obesity.

The Odds Ratio of those with age above 40 years to have B.M.I >25, has to be viewed with caution as studies have already shown that the bulk of diabetic subjects are in the age group of 45-65 years.⁴

Conclusion

It is during early life that the education of people towards a healthy lifestyle and good eating habits has to be started. The fall in proportion of people with higher B.M.I after the age of 55 could be because of the effect of health education and awareness regarding lifestyle diseases leading to lifestyle modifications and subsequent fall in B.M.I. If this rise in obesity prevalence is not tackled soon, Kerala will be witnessing a rise

in prevalence of lifestyle diseases also. This will place tremendous pressure on the already overburdened public health sector in Kerala that is still yet to recover from the spat of epidemics in the recent past.

Recommendation

The maximum prevalence of high B.M.I is seen in the age group of 35-55. It can be assumed that people tend to put on weight after marriage and setting up a family. If an epidemic of obesity and lifestyle diseases are to be prevented this calls for administration of nutritional counseling along with premarital or parental counseling.

References

- 1) Kutty VR, Joseph A, Soman CR. High prevalence of type 2 diabetes in an urban settlement in Kerala, India. *Ethnicity* 1999;4(4):231—9.
- 2) Kutty VR, Soman CR, Joseph A, Pisharody R, Vijayakumar K. Type 2 diabetes in southern Kerala: Variation in prevalence among geographic divisions within a region. *Natl Med J India* 2000; 13(6):284—6
- 3) Varghese RT, Salini R, Abraham P, Reeshma KK, Vijayakumar K. Determinants of the quality of life among diabetic subjects in Kerala, India *Diabetes and Metabolic Syndrome: Clinical Research and Reviews*, Volume 1, Issue 3, September 2007, Pages 173-179
[doi:10.1016/j.dsx.2007.05.005](https://doi.org/10.1016/j.dsx.2007.05.005)
- 4) Mohan V, Madan Z, Jha R, Deepa R, Pradeepa R. Diabetes-Social and Economic Perspectives in the new millennium. *Int J Diab Dev Ctries* 2004; 24:29-35

Corresponding author:

K Vijayakumar communitymedicine@gmail.com

Professor
Department of Community Medicine
Government Medical College,
Thiruvananthapuram, Kerala, India

TABLE 1:

Population Distribution with B.M.I and Age Groups

| B.M.I | | < 18.5 (in %) n=489 | 18.5 - 24.9 (in %) n=1897 | 25 - 29.9 (in %) n=848 | >= 30 (in %) n=189 | Total (in %) n=3423 |
|------------------------|----------------------|---------------------------------------|--|---------------------------------------|--------------------------------------|------------------------------------|
| AGE | | | | | | |
| 20-29 n=1071 | % Within Age Class | 19.0 | 63.0 | 15.6 | 2.4 | 100 |
| | % Within B.M.I Class | 41.5 | 35.6 | 19.7 | 13.8 | 31.3 |
| 30-39 n=780 | % Within Age Class | 10.6 | 51.5 | 31 | 6.8 | 100 |
| | % Within B.M.I Class | 17.0 | 21.2 | 28.5 | 28 | 22.8 |
| 40-49 n=535 | % Within Age Class | 8.8 | 49.5 | 31.4 | 10.3 | 100 |
| | % Within B.M.I Class | 9.6 | 14.0 | 19.8 | 29.1 | 15.6 |
| 50-59 n=398 | % Within Age Class | 9.3 | 49.2 | 33.9 | 7.5 | 100 |
| | % Within B.M.I Class | 7.6 | 10.3 | 15.9 | 15.9 | 11.6 |
| 60-100 n=639 | % Within Age Class | 18.6 | 56.2 | 21.3 | 3.9 | 100 |
| | % Within B.M.I Class | 24.3 | 18.9 | 16 | 13.2 | 18.7 |
| Total n=3423 | % Within Age Class | 14.3 | 55.4 | 24.8 | 5.5 | 100 |
| | % Within B.M.I Class | 100 | 100 | 100 | 100 | 100 |