Research in Pharmacy and Health Sciences

Research Article

A study on the Relationship of the weight pattern with the socioeconomic status among adolescents school going children in an Indian Metropolitan City

Samar Hossain[*], **Sharma Priyanka**[1], **Talib Hossain**[2], **Surendra Mohan Mathur**

Department of Community Medicine, NIMS Medical College, NIMS University, Jaipur, India
[1]Department of Pathology, SMS Medical College, Jaipur, India
[2]Consultant Surgeon, Ministry of Health, Kingdom of Saudi Arabia

ABSTRACT

Objective: The last two decades have witnessed an increase in health care costs due to obesity and related issues among children and adolescents. Childhood obesity is a global phenomenon affecting all socio-economic groups, irrespective of age, sex or ethnicity. The study was done to find the the prevalence of obesity and overweight and their association with socioeconomic status (SES) and the risk factors. **Materials and Methods:** School based cross sectional study carried out over a period of 4 months in three schools of East Delhi. The study was carried out in 629 school children of 10–18 years of age and belonging to different socioeconomic statuses in schools in East Delhi. The obesity and overweight were considered using an updated body mass index reference. A pre-tested questionnaire was used to determine the Socio-economic status and life style factors. **Results:** The prevalence of overweight among children was higher in middle socioeconomic status groups as compared to high socioeconomic class in both boys and girls whereas the prevalence of obesity was higher in high Socio economic status group as compared to middle socioeconomic group. The prevalence of obesity as well as overweight in low SES group was the lowest as compared to other group. **Conclusion:** The findings of this study suggest that the prevalence of overweight and obesity varies remarkably with different socioeconomic development levels.

Keywords: Obesity, Overweight, Socioeconomic status, East Delhi, Adolescents

INTRODUCTION:

The proportion of children in the general population who are overweight and obese has doubled over the past two decades in developed and developing countries including India and have a rising prevalence of diabetes. Childhood obesity increases the risk of adult obesity as well as chronic health problems such as type II diabetes, hypertension and cardiovascular disease. Obesity and overweight have become a global epidemic, and it is still increasing in both industrialized and developing countries. Obesity and overweight are an increasingly prevalent nutritional disorder among children and adolescents in the world. Numerous health risks have been associated with adolescent overweight, including hypertension, respiratory disease, several orthopedic disorders, diabetes mellitus and elevated serum lipid concentrations. Due to the difficulty of curing obesity and over weight in adults and the many long-term adverse effects of childhood obesity, the prevention of child obesity has been recognized as a public health priority. Increasing evidence shows that

childhood obesity and overweight have a profound influence on morbidity and mortality in adult life [1].

Childhood obesity affects both developed and developing countries of all socio-economic groups, irrespective of age, sex or ethnicity. It has been estimated that worldwide over 22 million children under the age of 5 are obese, and one in 10 children is overweight4. A wide range of prevalence levels exist, with the prevalence of overweight in Africa and Asia averaging well below 10 per cent and in the Americas and Europe above 20 per cent [2].

In developed countries, children of low socio-economic status are more affected than their affluent counterparts7. The opposite is observed in developing countries: children of the upper socio-economic strata are more likely than poor children to be obese. Indian data regarding current trends in childhood obesity are emerging [2-3]. Etiopathogenesis of childhood obesity is multi-

factorial. Interactions between genetic, neuro-endocrine, metabolic, psychological, environmental and socio- cultural factors are clearly evident in childhood obesity. Various contributing factors to obesity and overweight are socio-economic group, family history and diet and life style of the children [3,4].

Relationship between socioeconomic status (SES) factors and to examine the effects of these relationships of obesity and overweight on children is scanty. Among adults it is likely that causality operates in either direction. Overweight in children is an antecedent of adult obesity. Therefore, the need to estimate overweight in children has been recognized as a step towards identifying high risk groups and to evolve preventive strategies for diseases associated with overweight by several countries. There are only meager data available from India [4.5].

MATERIALS AND METHODS:

The study included 629 school children in the age group of 10–18 years; 359 were boys and 270 were girls. The schools were selected from different zones in the city of East Delhi to get an equal distribution of children by socio–economic state. Government schools for low-income group (n=1)) and private schools attended by middle income (n=1) and high-income groups (n=1) were chosen. School authorities provided a list of children attending 5th to12th standard.

The questionnaire provided information on physical activity, food habits, occupation of parents and the economic status. Completed age of the children was noted. Height and weight was measured using standard procedure and BMI (kg/m^2) was calculated. Measurements were made by trained staff. Body mass index (BMI, kg/m2) was calculated on measured height and weight and was used to identify underweight, overweight and obese conditions. Influence of various factors on prevalence of underweight, normal, overweight and obesity were expressed in form of percentage. The study protocol was approved by Department of Community Medicine, NIMS Medical College, NIMS University, Jaipur, India.

RESULTS AND DISCUSSION:

The estimated prevalence of overweight among US children in 1999-2000 was more than 15%, and the value in Australia was almost 20%.41 In Brazil the prevalence of overweight among school children has tripled and increased from 4% in the 1970s to 14% in late 1990s. In Egypt 14% of children were overweight or obese in 1997. Worthy of mention,

there are still controversies over the use of a series of universal BMI cut-offs to define obesity or overweight in different populations of either adults or children. A comparison of international references still shows lower prevalence of overweight in the Eastern world. For Asian and Caucasian populations it is suggested that different BMI cut-offs should be used for obesity. However, recent studies in India and other countries revealed that obesity is becoming a growing health problem among children and adolescents.

CONCLUSION:

The findings of this study suggest that the prevalence of overweight and obesity varies remarkably with different socioeconomic development levels. An emerging finding from this study is that many young adolescents enjoy PA participation when it is under their control. This suggests that, for some children and young people, it is not physical activity 'per se' that they do not engage with, but the controlling manner in which it is enforced through schools, which they object to. For many of the pupils interviewed, PE was reducing, not increasing, their motivation to be physically active. This was in part due to the narrow range of activities offered, which only suits the skills of a minority of pupils, but largely due to the controlling behavior of some of the PE teachers [2].

One possible explanation for the different SES-overweight and obesity relationship in developing countries such as India is that the influence of SES on people's lifestyles such as diet, food consumption patterns, and public services such as health care and transportation and physical activity may differ. Richer people have better access to meat and other energy-dense foods (which are much more expensive than other foods such as vegetables) than the poor. While Middle SES groups usually consume more vegetables and fruits, which are less energy dense, than High SES groups. Sedentary behavior and physical activity in children may be predictive of body mass in late adolescence. Sleeping habit in afternoon, decreased sports and exercise have also been implicated in childhood obesity because they reduce resting metabolism results in reduction of physical activity.

Unless this epidemic is contained at a war footing, the implications of this global phenomenon on future generations will be serious. The reversibility of this disease with suitable intervention strategies should be seen as an opportunity and efforts pursued with vigour. Vegetarian diet or non-vegetarian diet did not have any effect on prevalence of underweight, overweight and obesity, but junk food eating habits

have more prevalence of obesity and overweight than underweight indicates that caloric intake is associated with increase in BMI. BMI has a strong independent association with family. History of diabetes and obesity. Children having family history of obesity were more likely to have more prevalence of obesity and overweight than those having family history of diabetes.

The present study showed that the prevalence of overweight was high among children, 14.3% in boys, 9.3% in girls. The obesity was seen in 2.9% of boys and 1.5% of girls. Obese and over-weight children participated in sports less often than normal-weight and underweight participants, similarly obese and overweight children participated in physical exercise less often than normal-weight and underweight participants. The results showed physical activities did influence change in BMI.

References:

1. Goyal RK, Shah VN, Saboo BD, Phatak SR, Shah NN, Gohel MC et al., Prevalence of Overweight and Obesity in Indian Adolescent School Going Children: Its Relationship with Socioeconomic Status and Associated Lifestyle Factors. JAPI. 2010;58:151-158.
2. Raj M, Kumar R. Obesity in children and adolescents. Indian J Med Res. 2010;132:598-607.
3. Ramachandran A, Snehalatha C, Vinitha R, Thayyil M, Sathish CK, Sheeba L et al., Prevalence of overweight in urban Indian adolescent school children. Diabetes Res Clin Pract. 2002; 57:185-190.
4. Goyal R, Shah V, Saboo B, Phatak S, Shah N, Gohel M, Patel RS, Prevalence of Overweight and Obesity in Indian Adolescent School Going Children: Its Relationship with Socioeconomic Status and Associated Lifestyle Factors. JAPI. 2010;58:151-158.
5. Dhingra S, Sachdeva M, Parle M. Findings of a retrospective study on factors responsible for depression in a Northern Indian State. J Mood Disorders. 2014;4(1):1.
6. Ji CY , Sun JL , Chen TJ, Dynamic analysis on the prevalence of obesity and overweight school-age children and adolescents in recent 15 years in China. Zhonghua Liu Xing Bing Xue Za Zhi. 2004;25(2):103-8.
7. Prasanna BT, Bengalorkar G, R Deepthi, C Muninarayan, S Ravishankar. Prevalence of overweight and obesity among adolescent school going children (12-15years) in urban area, South India. IJCRR. 2012;4(20):99-105.
8. Akbar N, Aqeel T, Noman-Ul-Haq AN, Dhingra S. Assessment of Knowledge and Dietary Misconceptions among Diabetic Patients. J Pharmacy Practice Communit Med. 2016;2(1).
9. Mandal A, Mandal GC. Prevalence of overweight and obesity among the urban adolescent english medium school girls of Kolkata, India. Italian J Public Healt. 2012; 9(3):1-6.
10. Mohanty B. The prevalence of overweight and obesity in school going children in Pondicherry, 2007-2008, Available from: http://dste.puducherry.gov.in/mohanty.pdf
11. Unnithan, S Syamakumari. Prevalence of Overweight, Obesity and Underweight among School Going Children in Rural and Urban areas of Thiruvananthapuram Educational District, Kerala State (India). Internet J Nutrition Wellness. 2007;6:1-6.
12. Mohan B, Kumar N, Aslam N, Bangbulla A. Prevalence of sustained hypertension and obesity in urban and rural school going children in Ludhiana. Indian Healt J. 2004; 56(4):310-314.
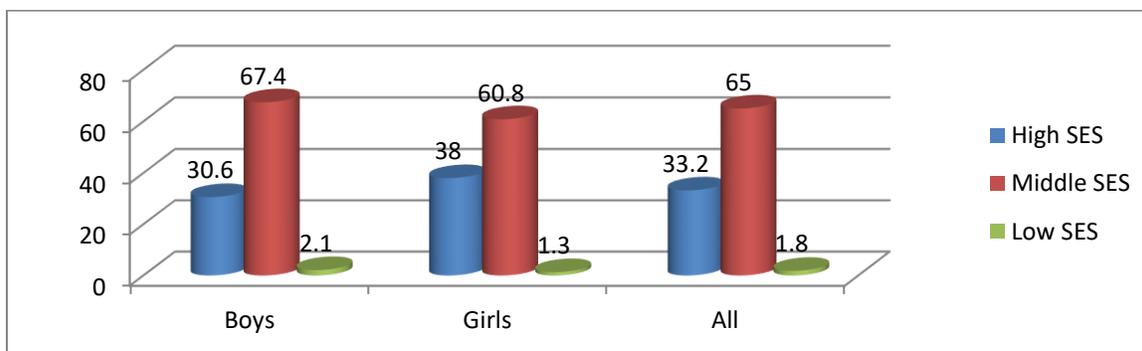
Fig. No. 1: Overall prevalence (%) of overweight and its relationships with socioeconomic status (SES) among children.

70% spent< 1 hour on exercise duration
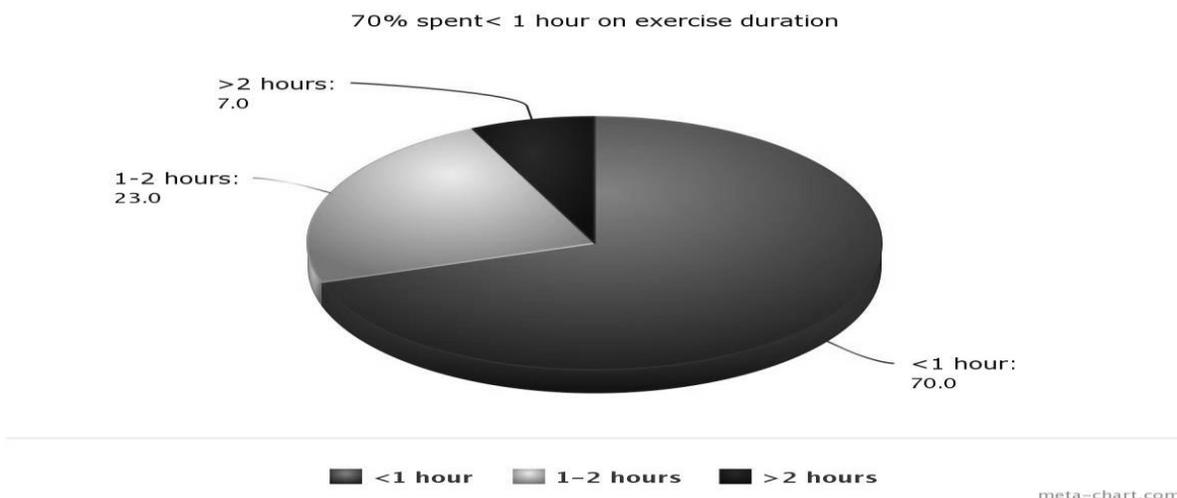
Fig. No. 2: Time spent on Exercise

37% spent 2-4 hours watching TV/computer daily
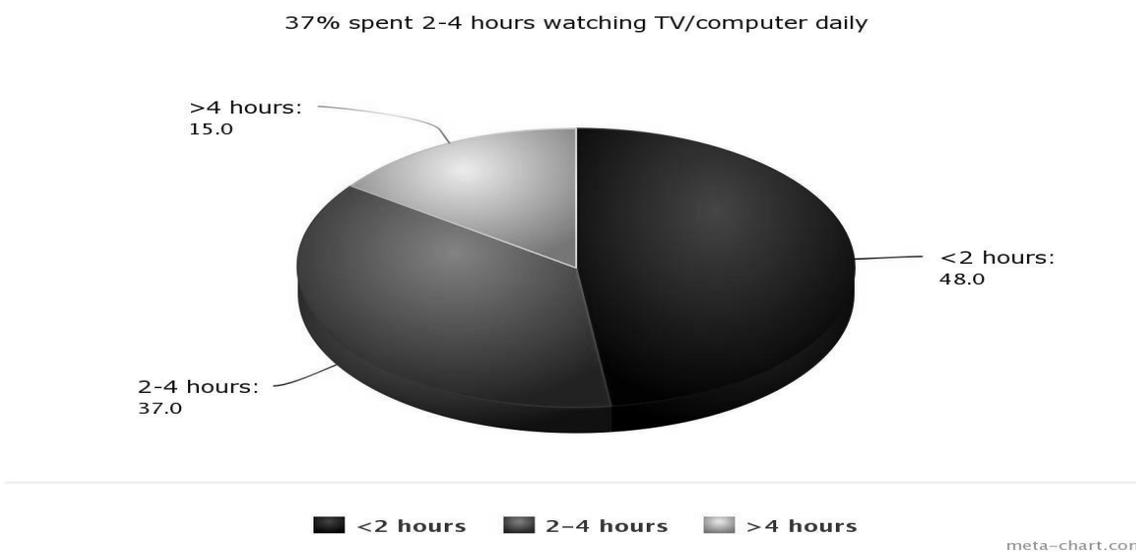
Fig. No. 3: Time spent watching T.V or Computer at home on a daily basis

Table No. 1: Effect of Junk food on Normal, Overweight and Obesity on Boys and Girls

Junk Food consumption	Normal	Overweight	Obesity
Boys	57.3	63.9	67.8
Girls	53.4	36.7	23.8