A STUDY ON PREVALENCE OF OVERWEIGHT AND OBESITY AND FACTORS INFLUENCING OBESITY AMONG SCHOOL GOING ADOLESCENTS IN CHENNAI, 2016

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Abstract: BACKGROUND - In India there is an increasing trend of childhood obesity. Obesity leads to many co-morbid conditions. This global problem can have dire consequences for the future generations and can emerge as a great challenge for obese children into their adulthood unless appropriate action is taken at the right time.

OBJECTIVES - 1) To determine the prevalence of overweight and obesity among school going adolescents in Chennai. 2) To identity factors influencing obesity among school going adolescents.

MATERIALS AND METHODS - This was a cross-sectional study done amongst 329 school students using a pre-tested, structured questionnaire and by taking anthropometric measurements to get their BMI. The data was then analysed using SPSS version 21.0.

RESULTS - The overall prevalence of overweight and obesity were found to be 14 percent and 6 percent respectively among the adolescents. Fourteen percent of boys and 15 percent of girls were overweight and about 7 percent of boys and 6 percent of girls were obese. Factors like watching television for more than 2hours per day, playing outdoor games for less than 1 hour per day, daily consumption of junk food and eating out more than thrice a week were significantly associated with obesity.

CONCLUSION - This study revealed the need for immediate corrective measures to be taken by family members and school authorities to encourage physical activities among children to combat the problem of overweight leading to obesity.

Keyword: Obesity, Overweight, Body Mass Index

INTRODUCTION
Childhood obesity is an increasingly problematic concern faced by public health globally (1). At present, many developing countries are facing the burden of childhood underweight coupled with obesity. India is no exception to this epidemic (2). It has been found that 50 to 80 percent of obese children grow up to become obese adults (3). Increase in health care costs due to obesity and related issues among children and adolescents have been witnessed in the last twenty years (4). Childhood obesity affects all socio-economic groups. It involves multiple factors like genetic, neuroendocrine, metabolic, psychological, environmental and socio-cultural factors. Obesity leads to many co-morbid conditions like metabolic, cardiovascular, psychological, orthopaedic, neurological, hepatic, pulmonary and renal disorders (4). Type 2 diabetes mellitus, the early-onset metabolic syndrome, subclinical inflammation, dyslipidaemia, coronary artery diseases and adulthood obesity are some of the important diseases associated with this growing pandemic.

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High socioeconomic status, residence in metropolitan cities, unawareness and misconception about nutrition, marketing by multinational food companies, increasing academic stress, and poor facilities for physical activity are important determinants of childhood obesity at present (5). Many South-East Asian countries, including India, are undergoing an economic and nutritional...
transition, associated with a change in dietary habits, decreasing physical activity, and rising prevalence of obesity(6). Obesity being a preventable and treatable condition, childhood period is the ideal time to focus on its preventive aspects. A holistic approach to combat the childhood obesity epidemic require multidisciplinary activities that include; influencing policy makers and legislation, mobilizing communities, establishing coalitions and networks, educating the community as well as enhancing and reinforcing individual awareness and skills. The implications of this global problem on future generations will be a great challenge to health care system unless appropriate action is taken at right time (4). Thus, helping children protect their health is an important public health priority. Interventionsal measures should be taken at family, school and physical environment level to combat the problem of overweight/obesity. The present study is one such attempt to know the magnitude and create awareness on this problem and is being conducted in schools of Chennai, where studies have been deficient in the recent past.

To determine the prevalence of overweight and obesity among school going adolescents aged 10 – 14 years in Chennai district. To identify the risk factors associated with obesity among the adolescents.

**OBJECTIVES:**

**SAMPLE SIZE**

The sample size was estimated to be 329 based on an estimated prevalence of overweight /obesity of 26.4% (7), with 95% confidence interval, and an estimated 5% absolute precision to obtain an age and gender-specific representative sample of children and 10% non-response rate. The sample size was estimated for an infinite population by using the formula $4pq/d^2$.

**SAMPLING METHODOLOGY**

**TOOLS AND DATA COLLECTION**

Trained investigators weighed all the adolescents without shoes and heavy clothing, using a weighing (bathroom) scale (the weight nearest 0.5 kg) and a stadiometer was used to measure the height (nearest 0.1 cm) of each child, using standard procedures. The questionnaire contained sociodemographic details (includes age, sex, residence and religion), dietary habits and physical activity profile. Questions on physical activity included participation in sports and games, physical exercises and time spent in watching television. Questions on dietary habits included diet preferences for junk foods like chocolate, biscuits, chips and soft drinks. Data was entered into MS Excel spreadsheets and the analysis by Chi-square was done using SPSS v21 software. BMI was calculated as weight (in kg) / height (in m2) using the BMI calculator developed by CDC Atlanta. Adolescents were categorized into two groups namely overweight (eighty-fifth percentile) and obese (ninety-fifth percentile).

**RESULTS**

**PREVALENCE OF OVERWEIGHT AND OBESITY. (FIG.1)**

The overall prevalence of overweight among adolescents was 14% and obesity was 6% [FIG. 1]. The prevalence of overweight was 14% among boys and 15% among girls; while 7% and 6 % of boys and girls were obese, respectively.

**DISCUSSION**

The overall prevalence of overweight and obesity among adolescents in the study was found to be 14% percent and 6%, which was consistent with a recent study done in China (1,8). A similar study done in Bihar by Misra et al in urban schools showed the prevalence of overweight to be 14.4% and obesity to be 2.8 % (9). A meta-analysis done by Midha et al showed prevalence of overweight and obesity as 12.64% and 3.39% respectively (10). A study done in Nagpur by Deoke et al showed a lower prevalence than this study (11). A lower prevalence of overweight and obesity than the present study was found in a study done in India.
In the present study important determinants of childhood obesity were consumption of junk food, watching television for more than 2 hours and eating outside food more than thrice in a week. Statistically significant association was found between these factors and obesity. Harish ranjani et al, malik et al and caprio et al also found that Childhood obesity was largely influenced by the increased intake of high calorie foods (12)(13)(14)(15). Raj M et al and Goyal RK et al showed sedentary activities to have a direct correlation to increased body weight (16,17). These findings suggest that children involved in watching television for long hours, eating junk food and outside food frequently are at higher risk of obesity. Thus watching television for more than 2 hours, eating junk food and outside food frequently were important contributors towards overweight and obesity in this study population. This study had some limitations like it was done in urban schools on ly and non-school going children were not included. However, strength of the study remained in the fact that it provided an overview of burden of childhood obesity among representative sample of children between 10 and 14 years and will be helpful for future comparisons by the public health personnel and policy makers.

CONCLUSION

The study points to various lifestyle issues which appear to have significant impact on obesity in Children. The Environment of a Child including the technological advancement seem to have a considerable impact on Child’s routine such as watching television for more than 2 hours, junk food fad. The study indicates the need to devise meaningful interventional measures to be taken at individual, family, school, community and physical environment level to combat the problem of overweight/obesity. To bring out a decisive change in the trend, a comprehensive and practical approach including inculcating active and healthy lifestyle is a must to ensure a healthy future for the nation. The study points to various lifestyle issues which appear to have significant impact on obesity in Children. The Environment of a Child including the technological advancement seem to have a considerable impact on Child’s routine such as watching television for more than 2 hours, junk food fad. The study indicates the need to devise meaningful interventional measures to be taken at individual, family, school, community and physical environment level to combat the problem of overweight/obesity. To bring out a decisive change in the trend, a comprehensive and practical approach including inculcating active and healthy lifestyle is a must to ensure a healthy future for the nation. The study points to various lifestyle issues which appear to have significant impact on obesity in Children. The Environment of a Child including the technological advancement seem to have a considerable impact on Child’s routine such as watching television for more than 2 hours, junk food fad. The study indicates the need to devise meaningful interventional measures to be taken at individual, family, school, community and physical environment level to combat the problem of overweight/obesity. To bring out a decisive change in the trend, a comprehensive and practical approach including inculcating active and healthy lifestyle is a must to ensure a healthy future for the nation. The study points to various lifestyle issues which appear to have significant impact on obesity in Children. The Environment of a Child including the technological advancement seem to have a considerable impact on Child’s routine such as watching television for more than 2 hours, junk food fad. The study indicates the need to devise meaningful interventional measures to be taken at individual, family, school, community and physical environment level to combat the problem of overweight/obesity. To bring out a decisive change in the trend, a comprehensive and practical approach including inculcating active and healthy lifestyle is a must to ensure a healthy future for the nation. The study points to various lifestyle issues which appear to have significant impact on obesity in Children. The Environment of a Child including the technological advancement seem to have a considerable impact on Child’s routine such as watching television for more than 2 hours, junk food fad. The study indicates the need to devise meaningful interventional measures to be taken at individual, family, school, community and physical environment level to combat the problem of overweight/obesity. To bring out a decisive change in the trend, a comprehensive and practical approach including inculcating active and healthy lifestyle is a must to ensure a healthy future for the nation.

RECOMMENDATIONS

Mainstay of intervention would be at primary and secondary level to combat the problem of obesity.

INTERVENTIONS AT INDIVIDUAL LEVEL:

Creating awareness in children by parents being a role model. Encourage physical activity. Avoid using food as a reward or punishment. Extra-curricular activities like dancing, martial arts should be encouraged.

INTERVENTIONS AT FAMILY LEVEL:

Helping children in a healthy start on life by providing balanced nutrition to pregnant mothers, promoting exclusive breastfeeding, avoidance of catch-up obesity in children and keeping record of growth velocity under guidance of physicians. Restricting TV/computer time to less than an hour per day. Inculcating the habit of playing outdoor games for an hour a day Curtailing the tradition of storing junk foods at home. Restricting on eating out frequently.

INTERVENTION AT COMMUNITY LEVEL:

Health walks and healthy food festivals can be organised regularly. Workshops for newly married women and parents on Children-specific nutrition information to be conducted. Safe walk/bicycle routes to school should be provided.

INTERVENTIONS AT SCHOOL:

Imparting training programmes for teachers regarding nutrition and importance on physical activity. Banning un-healthy food in cafeteria. Enhancement of school curriculum by incorporating lessons on nutrition and physical activity. Physical education.

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SURVEILLANCE

Initiate community-based research. Periodic monitoring of obesity status of children and creating a data base (8).

REFERENCES

7. Prevalence of Overweight and Obesity Among School Children and Adolescents in Chennai. SONYA JAGADESAN, RANJAN HARISH, PRIYA MIRANDA, RANJU UNNIKRISHNAN, RANJUT MIHAN ALAVIA AND VISHWANATHAN MIHAN From Madras Diabetes Research Foundation and Dr Mihans Diabetes Specialities Centre, Chennai, India.