

## Original Article

### Association between overweight and dental caries among 8-13 year old school children in Jammu city

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#### ABSTRACT:

**Background:** Childhood obesity is increasingly being observed with the changing lifestyle. There are a few studies, reporting, prevalence of childhood and adolescent obesity and overweight from different parts of India that range from 3% to 29%, and also indicate that the prevalence is higher in urban than in rural areas. Hence; the present study was planned to assess correlation between overweight and dental caries among school children. **Materials & methods:** The present investigation included assessment of correlation between overweight and dental caries among school children. A total of 500 school going children between the age group of 9 to 14 years were included in the present study. Complete demographic and clinical data of all the subjects was obtained. For collecting the information, a pre-designed proforma was used. Body weight, height and waist circumference of all the subjects was recorded and were divided into following categories: Underweight, Normal weight, Risk of overweight and overweight. All the results obtained were compiled and analyzed by SPSS software. **Results:** There were 120 normal weight males and 120 normal weight females. Overweight subjects had significantly higher DMFT/dmft score in comparison to normal weight subjects (P- value < 0.05). **Conclusion:** Overweight school children are associated with significantly higher prevalence of dental caries.

**Key words:** Dental caries, Obesity, School children

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#### INTRODUCTION

Childhood obesity is increasingly being observed with the changing lifestyle of families with increased purchasing power, increasing hours of inactivity due to television, video games, and computers, which are replacing outdoor games and other social activities.<sup>1,2</sup>

Studies conducted in many parts of the world have shown physical inactivity including lack of participation in sports activities at school or at home, and less active mode of transport to and from school to be associated with increased risk of overweight and obesity among children [3–5]. Diets high in saturated fats, sugars and refined starch have also been shown to contribute to the increasing overweight and obesity among children and adults.<sup>3-5</sup>

There are a few studies, reporting, prevalence of childhood and adolescent obesity and overweight from different parts of India (Punjab, Maharashtra, Delhi and South India) that range from 3% to 29%, and also indicate that the prevalence is higher in urban than in rural areas.<sup>6-8</sup>

Hence; the present study was planned to assess correlation between overweight and dental caries among school children.

#### Materials & methods:

The present investigation was conducted in the department of public health dentistry of the dental institute and it included assessment of correlation between overweight and dental caries among school children. A total of 500 school

going children between the age group of 9 to 14 years were included in the present study. Ethical approval was obtained from institutional ethical committee, and written consent was obtained from all the guardians of all the pediatric subjects. Complete demographic and clinical data of all the subjects was obtained. For collecting the information, a predesigned proforma was used. Modified Kuppuswamy's Socio-economic status (SES) was used for assessing the SES of the subjects.<sup>10</sup> Criteria defined by WHO was used for defining and recording dental caries in subjects.<sup>11</sup> Body weight, height and waist circumference of all the subjects was recorded and based on the criteria previously described previously in the literature, they were divided into following categories:<sup>12</sup>

- Underweight
- Normal weight
- Risk of overweight
- Overweight

All the results obtained were compiled and analyzed by SPSS software. Chi- square test was used for assessment of level of significance.

### RESULTS

A total of 500 subjects were included in the present study. There were 300 males and 200 females. Mean age of the males and females in the present study was 11.2 years and 10.5 years respectively. There were 50 underweight males and 40 underweight females. There were 120 normal weight males and 120 normal weight females. Overweight subjects had significantly higher DMFT/dmft score in comparison to normal weight subjects (P- value < 0.05).

**Table 1:** Distribution of subjects according to BMI (Body mass index)

BMI for age	Male (n)	Female (n)	Total (n)
Underweight	50	40	90
Normal weight	120	120	240
Overweight	130	40	170
<b>Total</b>	<b>300</b>	<b>200</b>	<b>500</b>

**Table 2:** Correlation of BMI and decayed, missing and filled teeth (DMFT) score

BMI for age	DMFT	deft	P- value
Underweight	50	40	0.02*
Normal weight	120	120	
Overweight	130	40	

DMFT: Decayed, missing and filled teeth,  
 dmft: Decayed, missing and filled deciduous teeth  
 \*: Significant

### DISCUSSION

In the present study, there were 300 males and 200 females. Mean age of the males and females in the present study was 11.2 years and 10.5 years respectively. There were 50 underweight males and 40 underweight females. There were 120 normal weight males and 120 normal weight females. Overweight subjects had significantly higher DMFT/dmft score in comparison to normal weight subjects (P- value < 0.05). Vohra R et al studied the magnitude of overweight/obesity and its determinants among children in Lucknow city. A list of government and private school was procured from Office of Basic Shiksha Adhikari. Three government and three private schools were selected by Simple Random Sampling. Students of 5th to 12th grades available at the time of study were included as study unit. Predesigned and pretested questionnaire was used to elicit the information on family characteristics and individual characteristics. Height and weight were measured and BMI was calculated. Children with BMI of 25 and above were considered overweight and children with BMI more than 30 were considered obese. Overweight and obesity was found to be 4.17% and 0.73%, respectively; they together constitute 4.91% for overweight/obesity. The study revealed that the important correlates of overweight/obesity were father's education, father's occupation, class, children playing outdoor games for less than 30 min, and those consuming fast foods. Children of higher classes (above 8th standard) belonging to higher socioeconomic group with less outdoor activities and consuming fast foods were more predisposed to overweight/obesity.<sup>13</sup>

Mahajan PB et al studied prevalence of obesity and overweight among school children in Puducherry. To identify any variation as per age, gender, place of residence and type of school. Children between 6 and 12 yrs were sampled using multistage random sampling with population proportionate to size from 30 clusters. Anthropometric data (BMI) was analyzed using CDC growth charts. Data was analyzed using SPSS, BMI (CDC) calculator, CI calculator and OR calculator. The prevalence of overweight (≥85th percentile) among children was 4.41% and prevalence of obesity (>95th percentile) was 2.12%. Mahe region had the highest prevalence of overweight (8.66%) and obesity (4.69%). Female children from private schools and urban areas were at greater risk of being overweight and obese. Childhood obesity is a problem in Puducherry and requires timely intervention for its control.<sup>14</sup> Mwaikambo SA et al determined the prevalence and factors associated with overweight and obesity in 1722 children aged 7–14 years (10.9 ± 1.74) attending primary schools in Dar es Salaam. Six public and four private schools were systemically selected from a total of 227 primary schools. Anthropometric measurements (weight and height) were collected using a standard protocol and Body Mass Index (BMI) was calculated. Interviews collected demographic characteristics and lifestyle factors. Multiple logistic

regression test was used to assess the influence of independent variables on overweight and obesity while controlling for confounding factors. The level of significance was set at  $\alpha = 5\%$ . Of 1,722 children 10.2% were overweight and 4.5% were obese. Overweight and obesity was higher in boys (14.9%) than girls (14.5%), higher in children attending private schools (27.7%) than public schools (5.9%). Children who walked to and from school were less likely to be overweight or obese than those who used vehicles (AOR = 0.5; 95%CI: 0.3–0.6;  $p < 0.001$ ). Those who used private cars or school buses were more likely to be overweight or obese than those who used public transport (AOR = 2.9; 95%CI: 0.2–0.7;  $p < 0.05$ ). Computer/video game use were associated with increased risk of overweight and obesity (AOR = 1.6; 95%CI: 1.1–2.3;  $p = 0.03$ ). Lunch provided by schools was associated with increased risk of overweight or obese (AOR = 6.4, 95% CI = 4.2–9.6,  $p < 0.001$ ). The findings of this study identified a number of behavioural and dietary factors that are related to overweight and obesity.<sup>15</sup>

### Conclusion

Under the light of above obtained data, the authors conclude that overweight school children are associated with significantly higher prevalence of dental caries. However; further studies are recommended.

### REFERENCES

1. Singh M, Sharma M. Risk factor for obesity in children. *Indian Paediatr.* 2005;42:183–5.
2. Gidding SS, Bao W, Srinivasan SR, Berenson GS. Effects of secular trends in obesity on coronary risk factors in children: The Bogalusa Heart Study. *J Pediatr.* 1995;127:868–74.
3. Wong JP, Ho SY, Lai MK, Leung GM, Stewart SM, Lam TH. Overweight, obesity, weight-related concerns and behaviours in Hong Kong Chinese Children and adolescents. *Acta Paediatr.* 2005;94:595–601.
4. Chu NF, Pan WH. Prevalence of obesity and its comorbidities among schoolchildren in Taiwan. *Asia Pac J Clin Nutr.* 2007;16:601–7.
5. Ramachandran A, Snehalatha C, Vinitha R, Thayyil M, Kumar CK, Sheeba L, et al. Prevalence of overweight in urban Indian adolescent school children. *Diabetes Res ClinPrac.* 2002;57:185–90.
6. Kaur S, Kapil U, Singh P. Pattern of chronic diseases amongst adolescent obese children in developing countries. [Last cited 2009 Dec 27]; *Curr Sci.* 2005 88:1052–6.
7. Huang JY, Qi S. Childhood obesity and food intake. *World J Pediatr.* 2015;11(2):101–7.
8. Nicklas TA, Baranowski T, Cullen KW, Berenson GS. Eating patterns, dietary quality and obesity. *J Am Coll Nutr.* 2001;20:599–608.
9. Duncan S, Duncan EK, Fernandes RA, Buonani C, Bastos K, Segatto AF, et al. Modifiable risk factors for overweight and obesity in children and adolescents from Sao Paulo, Brazil. *BMC Public Health.* 2011;11:585.
10. Kumar N, Shekhar C, Kumar P, Kundu AS. Kuppaswamy's socioeconomic status scale-updating for 2007. *Indian J Pediatr.* 2007;74:1131–2.
11. World Health Organization. Dentition status and treatment need: Assessment form. In: *Oral Health Surveys: Basic Methods.* 4th ed. Geneva: World Health Organization; 1997. p. 39–40.
12. Macek MD, Mitola DJ. Exploring the association between overweight and dental caries among US children. *Pediatr Dent* 2006;28:375–80.
13. Vohra R, Bhardwaj P, Srivastava JP, Srivastava S, Vohra A. Overweight and obesity among school-going children of Lucknow city. *Journal of Family and Community Medicine.* 2011;18(2):59–62. doi:10.4103/2230-8229.83369.
14. Mahajan PB, Purty AJ, Singh Z, et al. Study of Childhood Obesity Among School Children Aged 6 to 12 Years in Union Territory of Puducherry. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine.* 2011;36(1):45–50. doi:10.4103/0970-0218.80793.
15. Mwaikambo SA, Leyna GH, Killewo J, Simba A, Puoane T. Why are primary school children overweight and obese? A cross sectional study undertaken in Kinondoni district, Dar-es-salaam. *BMC Public Health.* 2015;15:1269. doi:10.1186/s12889-015-2598-0.

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