

Effect of Obesity and Lifestyle on the Oral Health of Pre Adolescent Children

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ABSTRACT

Background: Worldwide estimates of childhood obesity are as high as 43 million, and rates continue to increase each year. Childhood obesity is a growing problem in the present era and it causes serious consequences in the later years. In today's society, electronic media have been thoroughly integrated into the fabric of life, with television, video games, and computers being central to both work and play. While these media outlets can provide education and entertainment to children, many researchers are concerned with the negative impact of electronic media on children.

Objective: The current study aimed to evaluate the correlation, as to how oral hygiene and periodontal health were influenced by obesity and lifestyle factors, among pre-adolescents of age of 9-12 years.

Materials and Methods: This study was conducted in schools

located around Velachery, Chennai, India. A total of 426 children of age group of 9-12 years were selected. Information on their socio-economic, dietary, oral health statuses and time spent in leisure activities were assessed by using a questionnaire, followed by BMI estimation and these variables were correlated with their oral hygiene statuses.

Results: The prevalence of poor oral hygiene and poor dietary habits was observed in children who spent more time in watching television, playing video games and using computer. Good oral hygiene was observed in children who had visited dentists in the past.

Conclusion: There is a strong association of lifestyle factors with oral hygiene in pre-adolescent children. Sedentary lifestyle, with more leisure activities, has a negative impact on the oral health of children.

Keywords: Periodontal health, Pre adolescents, Sedentary lifestyle

INTRODUCTION

Children who carry a lot of excess weight and have too much fat in their body are classed as being obese. Body mass index is acceptable for determining obesity in children who are two years of age and older. The Centers for Disease Control and Prevention has defined obesity as a BMI of greater than or equal to the 95th percentile. It is mainly caused by regularly consuming more energy (calories) from food and drink, than the body uses and by not taking up enough physical activity. Obesity in India is on the rise. Sixteen percent of 6 to 19-year-olds are overweight or obese and there has been three times increase in the recent years [1]. Overweight children are more likely to suffer from a range of chronic health problems such as cardiovascular disease, high blood pressure, diabetes, sleep apnoea and asthma; they are also more likely to be obese as adults [2]. Children who are overweight or obese are often stigmatized by their peers, which can increase the likelihood of poor self esteem, depression and the risk of social discrimination [3].

Research conducted at Harvard had first linked TV watching to obesity more than 25 years ago [4]. Watching television, using the computer, and playing video games occupy a large percentage of children's leisure times, thus influencing their physical activity levels. It has been estimated that children in the United States are spending 25 percent of their waking hours watching television and statistically, children who watch the most hours of television have the highest incidence of obesity [5]. This trend is apparent not only because little energy is expended while viewing television, but also because of the concurrent consumption of high-calorie snacks.

MATERIALS AND METHODS

Methods: A total of 426 children of age group of 9-12 years were selected from two schools in Velachery, Chennai, India. Consents were obtained from all the subjects for their participation in the study. Their socio-economic statuses, dietary habits, leisure time activities and oral hygiene practices were assessed by using a questionnaire.

Based on food pyramid guidelines [6], their weights and heights were recorded in kilograms and metres respectively, with the pre-adolescents standing on the weighing machine, wearing only their uniforms, without any footwear, standing erect against a wall-mounted measuring tape which was mounted over the weighing machine. Body mass index (BMI) was calculated as body weight (kg) divided by height² (m²).

The examinations were performed in the class rooms under field conditions by using natural light. The children were seated on a chair with high backrest and the examiner stood in front of the chair. Plane mouth mirrors and blunt dental explorers were used. Debris scores and calculus scores were recorded by examining the buccal and labial surfaces of the fully erupted maxillary first molars and maxillary right central incisors respectively and the lingual surfaces of the fully erupted mandibular first molars and mandibular left central incisors. Debris index score of an individual is calculated on basis of total debris score / number of surfaces examined. Similarly, calculus index score of an individual is calculated on basis of total calculus score / number of surfaces examined. Oral hygiene index – simplified is calculated by adding debris index score and calculus index score.

RESULTS

The results were calculated by using Pearson's Chi-square test to calculate the p-value:

1. When the association between the oral hygiene index and time spent in watching TV, playing video games and using computer per day was compared, the prevalence of poor oral hygiene was observed in children who spent more time in watching TV, playing video games and using computer [Table/Fig-1a, 1b].
2. When the association between the oral hygiene index and dental visit was compared, prevalence of good oral hygiene was observed in children who had already undergone dental visits [Table/Fig-2a, 2b].

		OHI-S			Total
		1	2	3	
Time spent on TV / Video Games / Computer in Hours	1.0000	8	16	0	24
	1.3000	1	0	0	1
	2.0000	131	111	20	262
	2.3000	1	0	0	1
	3.0000	53	54	4	111
	4.0000	4	20	3	27
	Total	198	201	27	426

[Table/Fig-1a]: Time spent on TV / Video games / Computer in hours* OHI-S

Value	df	Asymp. Sig. (2-sided)	3
Pearson Chi-Square	21.660a	10	0.017
Likelihood Ratio	25.378	10	0.005
Linear-by-Linear Association	2.640	1	0.104
N of Valid Cases	426		

[Table/Fig-1b]: Chi-square tests

		OHI-S			Total
		1	2	3	
Dental visit	0	127	82	11	220
	1	71	119	16	206
	Total	198	201	27	426

[Table/Fig-2a]: Dental visit* OHI-S

Value	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.140a	2	0.000
Likelihood Ratio	23.378	2	0.000
Linear-by-Linear Association	19.590	1	0.000
N of Valid Cases	426		

[Table/Fig-2b]: Chi-square tests

Softdrinks interval			OHI-S			Total
			1	2	3	
1.00	Time spent on TV / Video Games / Computer in Hours	1.0000	5	4	0	9
		1.3000	1	0	0	1
		2.0000	81	74	12	167
		2.3000	1	0	0	1
		3.0000	31	26	2	59
		4.0000	2	13	2	17
		Total	121	117	16	254
2.00	Time spent on TV / Video Games / Computer in Hours	1.0000	2	9	0	11
		2.0000	42	26	5	73
		3.0000	9	18	2	29
		4.0000	0	5	1	6
		Total	53	58	8	119
3.00	Time spent on TV / Video Games / Computer in Hours	1.0000	1	3	0	4
		2.0000	8	11	3	22
		3.0000	13	10	0	23
		4.0000	2	2	0	4
		Total	24	26	3	53

[Table/Fig-3a]: Time spent on TV / Video games / Computer in hours * OHI-S * softdrinks_interval

Softdrinks interval		Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
1.00	Pearson Chi-Square	13.187	10	0.213	0.203
	Likelihood Ratio	15.934	10	0.102	0.071
	Fisher's Exact Test	15.592			0.082
	Linear-by-Linear Association	2.977	1	0.084	0.087
	N of Valid Cases	254			
	2.00	Pearson Chi-Square	17.548	6	0.007
Likelihood Ratio		20.606	6	0.002	0.002
Fisher's Exact Test		17.557			0.003
Linear-by-Linear Association		3.310	1	0.069	0.081
N of Valid Cases		119			
3.00		Pearson Chi-Square	6.338	6	0.386
	Likelihood Ratio	7.366	6	0.288	0.373
	Fisher's Exact Test	5.628			0.480
	Linear-by-Linear Association	2.676	1	0.102	0.123
	N of Valid Cases	53			

[Table/Fig-3b]: Chi-square tests

[3]. When the association between the time spent in watching TV, playing videogames and using computer per day and number of times softdrinks and fast food were consumed per week was compared, it was found that children who spent more time in viewing TV, playing videogames and using computer consumed more amount of softdrinks and fast food, as they had probably been influenced due to watching advertisements for softdrinks which had been telecasted on television [Table/Fig-3a, 3b].

DISCUSSION

Obesity, dental caries and periodontal diseases are among major public health concerns which may affect children's growth and development [7]. Clustering between obesity, number of decayed, missing, and filled teeth (DMFT), television (TV) viewing, and lifestyle factors were assessed among pre-adolescents who were living in two countries, Turkey and Finland, with different developmental statuses and oral health care systems [8]. It was concluded that dental examination of any paediatric patient should include estimation of BMI, leisure time activities, and dietary habits as well as socio-economic statuses.

Television is still the most widely-viewed screen worldwide, [9] but these TV habits are part of a larger trend: Globally, people are spending more time sitting at work and at home, and there's mounting evidence that this "sit time" is a major contributor to the obesity epidemic. Sedentary activities not only TV watching, but also working at desk jobs, using computers, playing video games, driving cars, and the like burn few calories and they may replace more active pursuits [10]. Increasingly, there's evidence that watching TV and, especially, watching junk food ads on TV promotes obesity by changing mainly as to what and how much people eat, less so by changing how much they move [11]. In the present study, poor oral hygiene statuses were noticed in children who spent more time watching television, playing video games, as their consumption of softdrinks and fast foods was more and due to lack of adequate exercise.

The current periodontitis disease model emphasizes on the influence of behavioural factors which influence progression of the disease [12]. Sedentary lifestyle and unhealthy eating habits could lead to poor oral hygiene statuses and increase the tendency to develop periodontitis and obesity at young ages.

If the child or teenager is overweight, further weight gain can be prevented. Parents can help their children in maintaining their

weights in the healthy range. In infancy, breastfeeding and delaying introduction of solid foods may help in preventing obesity. In early childhood, children should be given healthy, low-fat snacks and they should be allowed to take part in moderate-vigorous physical activity every day. Older children can be taught to select healthy, nutritious foods and to develop good exercise habits.

CONCLUSION

From this study, we concluded that poor oral hygiene was observed in children who spent more time in leisure activities and that lifestyle factors could make an impact on oral hygiene and periodontal health. A need exists for addressing obesity, oral health and nutrition, jointly in health promotion strategies, to improve well-being of children and also to empower good life-style factors.

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **June 13, 2013**
Date of Peer Review: **Sep 04, 2013**
Date of Acceptance: **Jan 18, 2014**
Date of Publishing: **Feb 03, 2014**