



DENTAL CARIES AND BODY MASS INDEX IN CHILDREN.

Dental Science

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ABSTRACT

Aim - The purpose of this study is to find whether any correlation exists between dental caries and body mass index.

Materials and Method – 80 Patients were divided into two groups. Group A with no caries or mild caries and Group B with moderate or severe caries after oral examination. Height and weight of the patients were taken and body mass index was calculated.

Results- The results show that patients in group B were slightly underweight than patients in group A. Statistically no significant values were obtained for BMI and dental caries.

Conclusion – More factors are involved in prevalence of caries and malnutrition in children. BMI cannot be used as a sole tool to correlate dental caries and nutritional status of the child as the degree of significance is very less.

KEYWORDS

Caries, BMI, nutrition

INTRODUCTION

Dental decay is the most common childhood disease in India and worldwide and most of the decay remains untreated because of lack of awareness and unaffordability. Most of the dental decay remains untreated which in turn has significant impacts of general health and quality of life.

Research has shown a strong association between sucrose ingestion and development of early childhood caries (ECC).[1-7] High sucrose diets are of concern because it has been suggested that such diets may be low in micronutrients and may compromise nutrient intake.[8] Early research concluded that children with dental caries with at least one pulpally involved tooth can weigh less than those without it. There is lack of nutrition when the child is not able to eat solid food due to difficulty in chewing which may lead to malnourishment in children. Thus dental caries may significantly influence the dietary intake of children especially when it is associated with pain and discomfort thereby reducing the quality of life.

On the other hand High sugar intake is reported to be more common among overweight and obese children than those with normal weight. Because of the increasing trend of sedentary lifestyle and indulgence in consumption of junk food obesity is on rise. Overweight and obese people are at increased risk of developing medical and psychological problems. Thus the eating pattern among overweight or obese children may be a risk factor in common for caries and overweight. In developing nations children suffer from a dual risk of malnutrition and obesity. Recently, United Nation International Children's Emergency Fund (UNICEF) reported that about 146 million children below 5 years of age were underweight.

Studies have shown that children with ECC who needed treatment had lower mean weights than those without need for treatment. The aim of the present study is to investigate the association between dental caries and low BMI highly prevalent among children in India.

MATERIALS AND METHOD

This study was carried out in the department of Pedodontics and Preventive Dentistry, Bharati Vidyapeeth Dental College and Hospital, Pune.

The study was first explained to the parents and then an informed consent was obtained from them. 80 children aged 4-9 years with at least one pulpally involved tooth were included in the study. All the children belonged to lower socioeconomic status. Dental examination was carried out after drying teeth with air and using a mirror and explorer. DMFT and def indices were recorded.

After dental examination the height and weight of the children were determined.[12] An accepted method to evaluate an individual's body weight is through calculation of body mass index(BMI). BMI is an

anthropometric index of weight and height that is defined as body weight in kgs divided by height in meters squared (keys et al, 1972). BMI was recorded using the formula

$$BMI = \text{weight (kg)} / \text{height (m)}^2$$

Using the age and gender specific criteria given by CDC subjects were categorized as:

Normal weight- 14-17

Underweight- <14

Overweight- >17

Dental examination and data collection was carried out by a single examiner.

RESULTS

Out of 80 cases, 28 were between 4-6 years and 52 were between 7-9 years. (table 1)

Age	Number of cases	Percentage (%)
4 - 6	28	35.0
7 - 9	52	65.0
Total	80	100.0

Table 1

Patients with more than 6 carious lesions were 34. Patients with 3-5 carious lesions were 14 and those with no caries or at most 2 carious lesions were 32. (table 2)

Caries index	Number of cases	Percentage (%)
0 - 2	32	40.0
3 - 5	14	17.5
≥ 6	34	42.5
Total	80	100.0

Table 2

30 out of 34 children with severe caries were underweight, 3 were normal weight and 1 was overweight 20 out of 32 children with no caries or mild caries were normal weight and 8 were underweight, 4 were overweight. 10 out of 14 children with moderate caries were underweight. (table 3)

BMI	Number of cases	Percentage (%)
Underweight	48	60.0
Normal	27	33.8
Overweight	5	6.3
Total	80	100.0

Table 3

By using Fisher's exact test p-value <0.001 therefore statistically there is no significant association between BMI and Caries index. (table 4)

Caries index	BMI group			p-value
	Underweight	Normal	Overweight	
0 - 2	8 (16.67%)	20 (74.07%)	4 (80.0%)	<0.001
3 - 5	10 (20.83%)	4 (14.81%)	0	
≥ 6	30 (62.50%)	3 (11.11%)	1 (20.0%)	
Total	48	27	5	

Table 4

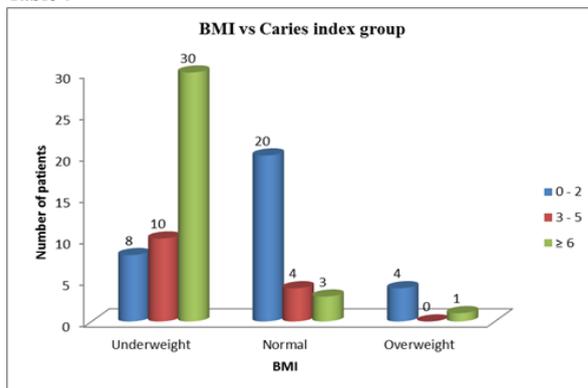


Fig 1: BMI vs Caries Index Group

DISCUSSION

Like weight-for-stature, BMI is a screening tool used to identify individuals who are underweight or overweight. BMI is not a diagnostic tool (Barlow and Dietz, 1998).

The analysis was limited because the comparison with reference values required the categorization of the data into age, gender, and percentile groups. This resulted in subcategories that were too small for accurate statistical testing of groups or means.

Despite the limitations, the clinical importance of this study is that dental caries among children has been identified as a risk marker for under-nutrition. While this study identified an at-risk population, it cannot establish a causal relationship between caries and BMI. The results suggest, however, that physicians and dentists treating young children should consider that severe caries is a risk marker for undernutrition. For physicians, nutritional deficiencies should alert them to the possibility that severe ECC is present and is a possible explanation for the deficiencies in their patients. For dentists, children presenting with severe ECC should be considered at risk for nutritional deficiencies that may affect long-term health and well-being.

CONCLUSION

Thus it can be concluded that BMI cannot be used as a sole tool to

correlate dental caries and nutritional status of the child as the degree of significance is very less. Other factors like socioeconomic status, pulp involved teeth, biologic factors, genetic factors, social and cultural factors, environmental and lifestyle factors and many others do have a role to play in the caries process. More longitudinal studies with higher sample size are needed to confirm this association.

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