

CORRELATION BETWEEN DENTAL CARIES AND BODY MASS INDEX AMONGST 19-24 YEARS OLD UNIVERSITY STUDENTS, KARACHI

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ABSTRACT

Obesity and dental caries are both multifactorial diseases that are most commonly associated with the diet and quality of the lifestyle. Worldwide there is increase in body weight which is due to the consumption of sugar enriched drinks, junk food and a decrease in physical activity.

The present cross sectional study was conducted for six months at the Department of Operative Dentistry, Baqai Dental College from June 2014 to January 2015. The data were collected from 200 university students. A cluster sampling technique was done to assess the association between obesity and dental caries.

Slight significant association was noticed between obesity and dental caries.

Overweight /obesity and dental caries experience were slightly significantly associated with students of Baqai Medical University, Karachi. Both obesity and caries have common risk determinants and require a comprehensive multidisciplinary approach by health care professionals.

Key Words: Adults, Body mass index (BMI), Dental caries, Decayed, missed, filled teeth (DMFT), obesity.

INTRODUCTION

Obesity and dental caries are both multifactorial diseases^{1,2} that are most commonly associated with the diet and quality of the lifestyle. Obesity has reached to an epidemic in many parts of the world.³ It is not only a problem found in the adult population but has also become an increasing problem of childhood.⁴ Worldwide there is increase in body weight which is due to the consumption of sugar enriched drinks, junk food and a

decrease in physical activity.⁵ Obesity and overweight are defined as having an excess of body fat related to lean mass, with multi-factorial conditions involving psychosomatic, biochemical, metabolic, anatomic and societal alterations.⁶ Height and body weight of the subjects is measured by the body mass index (BMI) corresponding to gender and age.⁷ Underweight was defined as body mass index (BMI) <18.5, overweight as BMI 25 to 29.9 and obesity as BMI \geq 30.⁸ Prevalence of overweight and obesity from 2006 to 2009 in urban Asian Indians shows a prevalence of 11%.⁹

Dental caries on the other hand is the most prevalent problem in oral health associated with pain¹⁰ and a decrease in quality of life.¹¹ Increase affluence in caries risk is associated with increased consumption of sugar rich diet and poor oral hygiene. Studies conducted so far in developed countries showed inconsistent association between dental caries and BMI.^{12,13} One study reported an association of high BMI and low caries in primary dentition,¹⁴ and other studies report no association between BMI and dental caries.^{6,7,15,16,18-20}

University students are in a dynamic transition phase of growth and development between high school

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Received for Publication: March 10, 2017

Revised: May 23, 2017

Approved: May 23, 2017

students and adulthood.²¹ At this stage, many of them faced with the responsibilities for their personal hygiene, lifestyle and many rapid changes occur in their body and mind, and in social relationships.²² With this unusual lifestyle, many students develop a wide range of unhealthy dietary patterns.²³⁻²⁶ So it is important to focus on dietary habits in university students for their oral and personal health. The DMFT is an accepted indicator for caries experience.²⁷⁻²⁹

Present study was conducted to evaluate the relationship between body mass index and dental caries in students of Baqai Dental College, Karachi.

METHODOLOGY

This cross sectional study was conducted on University students aged 19-24 years in the Department of Operative Dentistry, Baqai Medical University, Karachi from June 2014-January 2015. The study was approved by the Ethical Committee of the University. Data were collected from 200 adult University Students and a cluster sampling technique was used to assess the relationship of obesity with dental caries.

Dental caries were diagnosed according to WHO criteria using DMFT index. All selected students were clinically examined for dental caries. An intra oral examination was performed by two calibrated examiners on a dental chair with halogen light using, mouth mirrors and dental probes. Number of decayed, missing and filled teeth was recorded for each student to calculate DMFT score.

Height and weight measurements were recorded for all the students who participated in the study. Height was measured using a stadiometer by having the subject standing straight without shoes and weight was measured by national seca personal dial type weighing machine. For the calculation of BMI, the following formula was used.³⁰

$$\text{BMI} = \frac{\text{Weight in Kilograms}}{(\text{Height in m}^2)}$$

The following categories were observed: Underweight = <18.5, Normal weight = 18.5–24.9 Overweight = 25–29.9, Obesity = BMI of 30 or greater.

A structured questionnaire was used to gather information on age, gender, address, weight, height and DMFT index. The data were analyzed for Descriptive statistics (mean and standard deviation) was calculated for each variable. Association between BMI and DMFT scores was analyzed by performing chi-square test using IBM SPSS version 22.

RESULTS

Out of 200 participants 70(34.7%) were male and 130(64.4%) were females. Four (14.8%) of males and 23(85.2%) of the females were found to be underweight. Eight (66.7%) of the females and 4(33.3%) of the males were obese. Table 1 shows distribution of BMI (Body mass Index) and gender. Descriptive statistics showed no significant differences between DMFT score and BMI (Table 2).

The highest caries index with DMFT score of 49 was found in subjects with normal weight (Table 3).

TABLE 1: DISTRIBUTION OF BMI (BODY MASS INDEX) AND GENDER

Gender	Body mass index(BMI)				Total
	Underweight	Normal	Overweight	Obesity	
Male	4(14.8%)	50(41.7%)	12(29.3%)	4(33.3%)	70
Female	23(85.2%)	70(58.3%)	29(70.7%)	8(66.7%)	130
Total	27 (100%)	120 (100%)	41(100%)	12(100%)	200

TABLE 2: DESCRIPTIVE STATISTICS FOR BMI AND DMFT INDEX

Variables	Mean ± SD	p-value
Body mass index (BMI)	2.19 ± 0.739	.108
DMFT index	3.81± 2.099	

TABLE 3: ASSOCIATION BETWEEN BMI AND DMFT INDEX

BMI	DMFT			Total D+M+F
	Decayed	Missing	Filled	
Underweight	8(13.8%)	1(33.3%)	5(21.7%)	14
Normal weight	36(62.1%)	1(33.3%)	12(52.2%)	49
Over weight	12(20.7%)	1(33.3%)	6(26.1%)	19
Obesity	2(3.4%)	0	0	2

TABLE 4: ASSOCIATION BETWEEN GENDER AND DMFT INDEX

Gender	DMFT			Total D+M+F
	Decayed	Missing	Filled	
Male	18(31%)	0	7(30.4%)	25
Female	40(69%)	3(100%)	16(69.6%)	59

When chi square test was applied for finding association between BMI and caries it came out of be statistically non-significant with p value 0.108. The present study showed that the percentage of decayed, missed and filled teeth was higher in female subjects with total DMFT score of 59 (Table 4).

DISCUSSION

Present study was done to determine the association between obesity and DMFT index in University students aged 19-25 years. Results showed that out of 130 females only 8 were found to be obese. Shahraki T et al³¹ reported that there were more obese females than males. This study showed that there was no significant association between BMI and DMFT index. Tramini et al³² and Pinto et al⁷ found no association between dental caries and BMI. Kopycka K et al³³ reported an inverse association between BMI and dental caries. Kantovitz et al¹³ reported with high level of evidence of direct association between obesity and dental caries. Alm A³⁴ in a recent Swedish study reported a strong association between obesity and dental caries in young adults.

Females had a significantly higher mean DMFT value than males. This is in line with the findings of Al Shammery et al³⁵, Salapatal et al and³⁶ Dummer.³⁷ This may be due to the fact that teeth erupt earlier in females than males which leads to prolonged exposure of the teeth to the oral environment in females.³⁸

Oral hygiene is an important factor for oral health maintenance and poor oral hygiene leads to accumulation of dental plaque which plays an important role in the etiology of dental caries.³⁹ Dental caries was found slightly more in obese female as compared to males.

CONCLUSION

It was concluded that obesity was slightly associated with dental caries in university students. Dental professionals and hygienists should play an important role in organizing preventive programs in the University to help the students to improve their eating habits and food choices.

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