DENTAL CARIES;
FREQUENCY AND DETERMINANTS AMONG PATIENTS ATTENDING DENTAL OUT PATIENT DEPARTMENT IN BAHAWAL VICTORIA HOSPITAL BAHAWALPUR
(Corrected Article / Repeat Publication)

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ABSTRACT... Objective: To find out the prevalence and determinants of dental caries among patients attending dental OPD. **Design:** Descriptive Cross sectional study. **Place & Duration:** Dental out Patient Department, Bahawal Victoria Hospital and period was August till November, 2010. **Methodology:** Data was collected with the help of predesigned Questionnaire. A Convenient sample of 05 eligible respondents was examined on daily basis till completion of sample size. Caries was assessed by using DMFT scale. Analysis of data was carried out with the help of computer SPSS version 11. Chi square test was used to see the association between different variables,(brushing at night, daily brushing, sugary food intake) define the variables. The level of significance was taken as $p<.05$. **Results:** Among study population (52%) were male and (53%) were urban dwellers. Dental caries was present in 97% of the patients & DMFT Score increased with increase in age. Commonly associated habits (with caries) included lack of daily brushing of teeth ($P<.01$), lack of brushing at night ($p<.001$), and daily intake of sweets ($p<.005$). **Conclusions:** Frequency of dental caries was high with advancing age. Significant relationship of Dental Caries was found with oral hygiene and surgery foods.

Key words: Dental carries, DMFT, Oral health, Sugary foods.

INTRODUCTION

Dental caries is the most prevalent oral disease with high morbidity potential. There is no geographic area in the world whose inhabitant does not exhibits some evidence of dental caries. It affects both sexes, all races, all socioeconomic status and all age groups. It causes pain and discomfort and financial burden. Worldwide, most of children and greater than ninety percent of adults, have experienced dental caries. The disease is more prevalent in Latin America, Middle East, South Asia and least prevalent in China[1]. Dental caries is a disease in which food sugar on teeth converts to acid which in turn demineralises hard tooth structure. It means that mineral contents of teeth are sensitive to high acidity due to production of lactic acid. Tooth is in constant state of demineralization (by acid production) and remineralization (from fluoride) between the tooth and saliva. Dental caries is the most common chronic childhood disease being five times more common than childhood asthma. Dental caries is a primary pathological cause of tooth loss in children[2].

Ninety one percent of 12 years age in Herzegovina[3], 62%-90% adults in developed and developing countries,

62% adults in Baghdad[4] and 63.4% in India[5] are affected with the Dental Caries. In this disease prevalence increases with age; it may be due to use of denture or shift from complex to simple sugar and poor oral hygiene. Presentation of caries is highly variable, however risk factors, and stages of development are similar[6]. A survey report by National Health and Nutrition Examination Survey(NHANES) United States (1999-2004) in adults aged 20-64 showed that there is decline in dental caries from 97% in 1970's but prevalence is still high i.e. 92%; and it is even higher in developing countries more than 95%[2].

Another survey conducted in rural Mexico children under fifteen years of age showed Dental caries prevalence ranges from 94.7% to 100% in studied children and DMFT score was 15.4 ±11.1 to 26.6±15.2 in children reported with drinking beverages containing sugar and candies etc[7]. The decreased prevalence of dental caries in developed countries is usually attributed to better oral hygiene practices and preventive measures such as fluoride treatment[8]. Other social factors like regular check-ups, oral hygiene also helped in the conservation

of teeth among people. There has been slight reduction of caries in United States over last thirty years[7].

A survey conducted in Karachi revealed that most of the children(>40% among them 85% were untreated) of 9-18 years of age were suffering from caries[9]. Another survey, conducted among school children in three major cities (Lahore, Karachi, Islamabad)of Pakistan showed 60-90% of them were suffering from caries[10]. In Saudi Arabia a survey result showed high frequency of disease among females of 15-60 years of age DMFT score[11]. 59 (sd 4.25) attending a dental hygiene clinic in Riyadh[11]. A survey conducted in Turkey showed that strength of disease increased with the increase in age by having high DMFT scores[12]. The main risk factors related to tooth decay are frequency of sweet intake, ability to brush teeth, shift from complex to simple sugar and poor oral hygiene. Its prevalence among population and its extent among individual varies. It also varies over time and area. Awareness regarding oral hygiene decreases the prevalence of dental caries among people living in developed countries[13].

PURPOSE OF STUDY
To find out the prevalence and determinants of dental caries among patients attending Dental Out Patient Department Bahawal Victoria Hospital, Bahawalpur.

Operational Definition
Dental caries was assessed on the basis of DMFT (Decayed, Missed, Filled tooth) index. According to criteria formulated by WHO, inter-oral examination was performed on each patient of our study population and caries was identified by scoring according to the following criteria[14].

Sound Teeth
Hard, calcified structure set in alveolar processes of the jaw for biting and mastication of food.

Decayed
Destruction of outer surface of tooth in the form of cavity.

Filled with decay
Tooth with any substance (plastic, metal etc.) inserted in its prepared cavity accompanied by pathological calcification.

Filled With no decay
Tooth with any substance (plastic, metal etc) inserted in its prepared cavity not accompanied by pathological calcification.

Missing as a result of caries
Absence of teeth due to caries
Missing due to any other reason:
Absence of teeth due to any other reason i.e; trauma etc.

Fissure sealant
It is thin plastic substance that is painted over teeth as an anti-cavity measure to seal out food particles and acid produced by bacteria.

Bridge abutment
A prosthetic device used to replace missing tooth.

Unerupted tooth
Tooth which does not break out from its crypt through surrounding tissue.

All teeth were divided into four quadrants which are explained as follows:

First quadrant
It extends from 1st right upper incisor to 3rd right upper molar tooth and was numbered from 11-18.

Second quadrant
It extends from 1st left upper incisor to 3rd left upper molar and was numbered from 21-28.

Third quadrant
It extends from 1st left lower incisor to 3rd left lower molar tooth and was numbered from 31-38.

Fourth quadrant
It extends from 1st right lower incisor to 3rd right lower incisor and was numbered from 41-48.

Sugary food
Frequent use of candies, chocolates, amount of cups of coffee & tea with sugar, use of confectionaries like cakes and muffens, drinking beverages containing sugar ect. were assessed by giving score. If patient score was 2 then he/ she was considered as taking sugary food.

SCORING of sugary food
If a person takes any two or more of above mentioned things for three days in a week for a period of one year he os scored as 1; if he takes them for more than 3 days in a week for a period of 1 year he is scored as 3.

Brushing Daily
If a person brushes after rising up in the morning.

Brushing at night
If a person brushes before going to bed (even though he brushes in the day as well).

Setting
Dental out patient department of Bahawal Victoria Hospital Bahawalpur.

Duration
August till November 2010.

Sample size
At confidence level 5 and precision 0.5; calculated sample size was 385, it was raised to nearest round figure 400.

Study Design
It was a Descriptive Cross Sectional study.

Sampling Technique
Non Probability Convenient Sampling Technique.

Inclusion Criteria
All patients from age 11-70 years who gave consent to participate as a study population were included.

Exclusion Criteria
Patients having chronic debilitating disease(carcinoma, tuberculosis, diabetes), on prolonged steroid therapy(more than one month), and with BMI less than 18 (BMI was calculated before getting information from patient by using height and weight scale).

Data Collection & Analysis
A pre-designed questionnaire was used as a tool of data collection from eligible respondents. A quota of consecutive five eligible respondents of dental caries was examined on daily basis during office hours at study place (first respondent was taken as the one who entered the dental OPD at 9am) and was examined for necessary information. Caries was assessed by using DMFT scale (given by WHO and annexed above)[14] in all the teeth on dental chair by visual examination with the help of mirror, probe and light by trained medical students and proper monitoring was done to ensure the quality of data. Data was analyzed by using SPSS version11. Statistical significance of collected data was calculated by using chi square test.

RESULTS
Among study population 52% were males and rest of 48% females. Among them majority (53%) were urban dwellers (table-I). Dental caries was found to be present in 97% with mean DMFT score of 26.85±1.34. In age group 11-20 years mean DMFT was 14±1.22, DMFT Score was increased with increase in the age i.e. at 61-70 years of age it was 45±15.67 (table-II). Common associated habits were lack of daily brushing of teeth (p<.01), lack of night brushing (p<.001), daily intake of sweets (p<.005). (table-III).

DISCUSSION
Prevalence of dental caries in the conducted research was 97%. This finding is similar to the findings of study conducted by Roberts et al[2], Zukanovic A[3], Guido JA[7], and Hingorio MR et al[10]. Mean DMFT Score was26.85 sd ±1.34 similar to that of study conducted in rural Mexico by Guido JA[7].The strength of disease increased with increasing age, it is shown by increasing DMFT score i.e, 14 at the age of 11-20 and 45 at the age of 61-70 results were similar to survey conducted in Turkey by Amal N et al[12]. Significant relationship was found with daily brushing, brushing at night, and sugary food. Similar results were found in study conducted by Guido JA[7] and Gati B, et al[13].

WHO CRITERIA:

18 17 16 15 14 13 12 11 21 22 23 24 25 26 27 28

Crown

48 47 46 45 44 42 41 31 32 33 34 35 36 37 38

Crown

Permanent teeth crown	Status
0.	Sound
1.	Decayed
2.	Filled, With Decay
3.	Filled, Not Decay
4.	Missing, as a result of caries
5.	Missing, any other reason
6.	Fissure sealant
7.	Bridge abutment
8.	Unerupted tooth

Individual's DMFT score: ....

Table-I. Residential status of patients.				
Residential status	Number of patients		Total	%age
	Males	Females		
Urban	130	82	212	53
Rural	80	108	174	47
Total	210	190	400	100

LIMITATIONS OF THE STUDY

DMFT Index is one of the most common methods of assessing Dental Caries prevalence among population because it is done without x-ray imaging. It underestimates real prevalence of Dental Caries.

CONCLUSIONS

Frequency of dental caries and strength of DMFT score was high in our study population. The strength of dental caries increased with the advancing age. Significant relationship of Dental Caries was found with daily brushing, brushing at night and sweet intake.

RECOMMENDATIONS

Oral disease like caries is not life threatening but may have expensive treatment modalities[15]. It can be prevented or controlled by adopting new paradigm in public health dentistry like use of fluoride, brushing at night, low intake of refined carbohydrates, periodic oral checkups, etc. Oral health programs should be conducted to create awareness in community especially at school level. Brushing skill should be taught to children because they act as agent of social change.
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Table-II. Distribution of Age, Gender and DMFT scores of patients.					
Age of patients (years)	Gender		Total	%age	Mean DMFT score
	Male	Female			
11-20	60	70	130	11.40	14 ± 1.22
21-30	74	16	90	9.48	17 ± 1.79
31-40	38	36	74	8.6	34 ± 3.95
41-50	20	54	74	74	38 ± 4.4
51-60	12	12	24	4.89	40 ± 8.1
61-70	06	02	08	2.89	45 ± 15.67
Total	210	190	400	20	26.85 ± 1.34

Table-III. Distribution of brushing ha bits and sweet intake. When you say brushing daily do you mean in the morning only? what about those people who brush both in the morning and night and after meals											
Variables	YES					NO					P-value
	Male	Female	Total	%	Mean DMFT	Male	Female	Total	%	Mean DMFT	
Brushing daily	158	152	310	77.5	22.7±1.27	52	38	90	22.5	32.9±3.6	<.01
Brushing at night	94	34	128	32	13±1.1	11.6	156	272	68	30.6±1.9	<.001
Sweet intake	152	104	256	64	29.5±1.8	58	86	144	36	16.9±1.4	<.005

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Human beings, by changing
the inner attitudes of their minds,
can change the outer aspects of their lives.

William James (1842 - 1910)