

Prevalence of Dental Caries Among Residents of Bhopal City

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ABSTRACT

Aim: In present study we tried to analyze the role of different factors in the occurrence of dental caries.

Material & Method: Oral examination was carried out in a sample of 2430 residents of Bhopal city, in various camps organized by Mansarovar Dental College in different location of Bhopal.

Results: Prevalence of dental caries was higher in males than in females, among tobacco users more prevalence of caries was found, persons with low socio economic status were having more carious lesions and people with mixed (vegetarian and non-vegetarian) diet.

Conclusion: Prevalence of dental caries in Bhopal city highlights the need for a dental health program to target specific segments of population through public health education program.

Keywords: Prevalence, Dental Caries.

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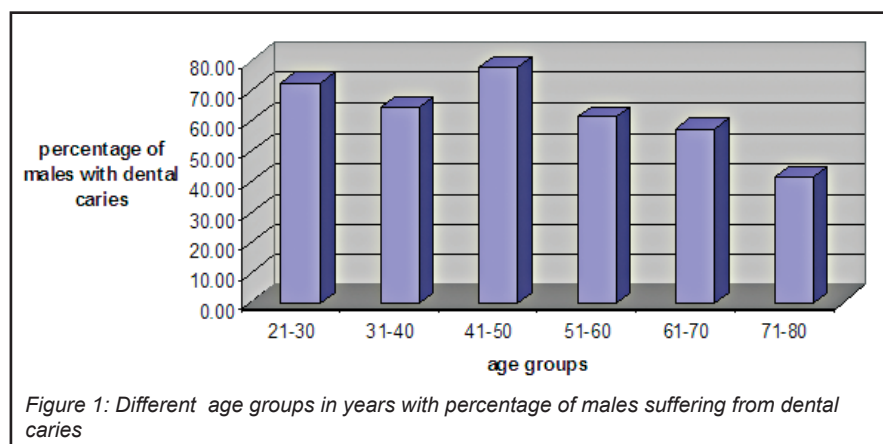
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INTRODUCTION

There are practically no geographic areas in the world whose inhabitants do not exhibit caries. Dental caries is considered as the most prevalent disease in humans secondly only to common cold. Various theories have been proposed to explain the etiology for dental caries. Lactobacillus acidophilus along with a combination of other bacteria such as streptococcus mutans and actinomyces species is closely associated with the

causation of dental caries.

Dental caries is a disease with multifactorial causes, the prevalence and incidence of dental caries in a population is influenced by a number of risk factors such as age, sex, ethnic group, dietary patterns and oral hygiene habits. Despite several attempts to cure and prevent the disease its prevalence has increased over the last couple of decades. Present study was designed to assess the prevalence of dental caries in



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Table 1: Prevalence of Dental Caries in males

Age group	No. of patients Male	No. of patients with dental caries	No caries	Per-centage	Chi squ	p value
21-30	225	163	62	72.44		
31-40	296	191	105	64.53		
41-50	294	229	65	77.89	33.148	<0.0001
51-60	197	121	76	61.42		
61-70	89	51	38	57.30		
71-80	24	10	14	41.67		

Bhopal city.

Most of the Indian studies that have been published focused on school children (1, 2) and only a few studies have been done amongst adults (3, 4). This study was performed on adult residents of Bhopal.

MATERIALS AND METHODS

A cross sectional community based

survey was conducted during December 2011 to March 2013. Ethical approval for the study was taken from college ethical committee. Study sample comprised 2430 residents of Bhopal. All these cases were taken from the camps organized by Mansarovar Dental College in various locations in Bhopal exclusively for this study. Patients were given due incentives and

nutritious diet as per the protocol of the study after examination. Dental caries is a chronic disease and take a long time to de-mineralize the dental enamel, but the patients were asked for duration from when they are feeling visual symptoms like discoloration and questioned for any feeling of sensitivity or pain. Patients consent was taken and oral examination was conducted using a disposable illuminated mouth mirror and a blunt ball ended probe with an end diameter of 0.5 mm. All teeth were examined in a systemic manner using FDI nomenclatures. Only definite cavitations of the tooth surface were regarded as dental caries to reduce examination confusion regarding diagnosis and exclusion of intact de-mineralized lesion. Patients were asked to rinse mouth thoroughly before examination, then the teeth were dried with cotton swab and dental caries were recorded. DMFT index was used where D represents number of decayed teeth, M is the number of missing teeth and F is the number of filled teeth and T is used to denote tooth. Chi square test and Z test were used and p value was taken out. Patients were referred to Mansarovar Dental College for further treatment.

RESULTS

During this study we tried to analyze the number of persons affected with dental caries in different gender, age, dietary habit, tobacco intake, socio-economic status. Occurrence of dental caries was found to be higher in males with age group 41-50 years when compared (Fig 1) (Table 1). Females showed higher prevalence as compared to males, age group between 21-30 years showed higher prevalence than the other age group, (Fig 2) (Table 2). We also compared the dental caries in person with different dietary factors. We found that caries were more in people consuming a non vegetarian diet (fig 3) (table 3). We also compared presence of dental caries in tobacco users and non tobacco users. Occurrence was found to be more in tobacco users (fig 4, 5) (table 4, 5). Study was also done

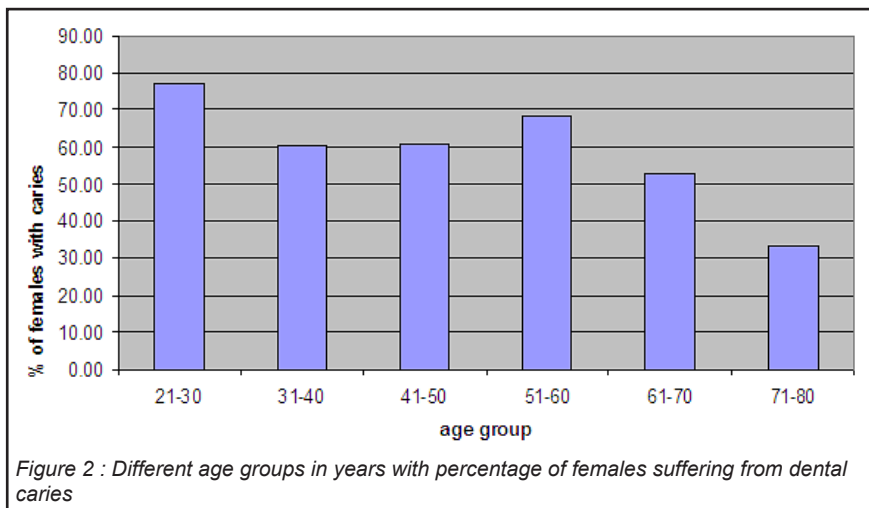


Figure 2 : Different age groups in years with percentage of females suffering from dental caries

Table 2: Relationship between age group & Dental caries

Age group	No. of patients Female	No. of patients with dental caries	No caries	Per-centage	Chi squ	p value
21-30	222	171	51	77.03		
31-40	347	209	138	60.23		
41-50	402	246	156	61.19	34.292	<0.0001
51-60	216	148	68	68.52		
61-70	100	53	47	53.00		
71-80	18	6	12	33.33		

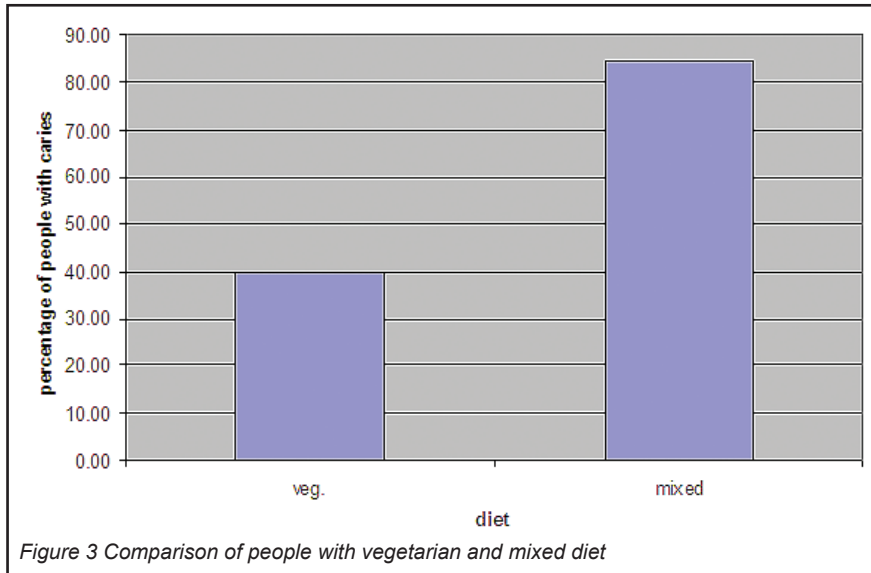


Table 3: Relationship between Diet and Dental caries

Diet habit	No. of patients	Patients with caries	Not caries	Per-centage	Chi squ	p value
Veg.	1021	408	613	39.96	520.582	<0.0001
Mixed	1409	1190	219	84.46		

to evaluate correlation between dental caries and the socioeconomic status and occurrence was found to be more in low socioeconomic status (fig 6) (table 6). Distribution of caries according to the type was considered, occlusal pit and Fissure caries was predominantly seen (fig 7)

DISCUSSION

Dental caries a multi-factorial disease influenced by many factors including age, sex(5), diet, microorganisms, trace-elements, saliva, genetic predisposition and tooth morphology(6, 7).

The grouping of subjects according to

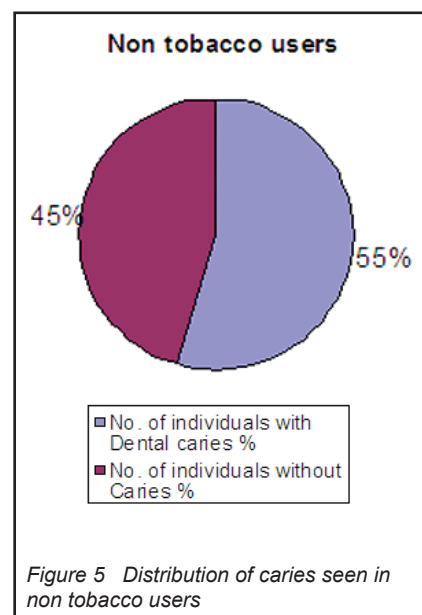
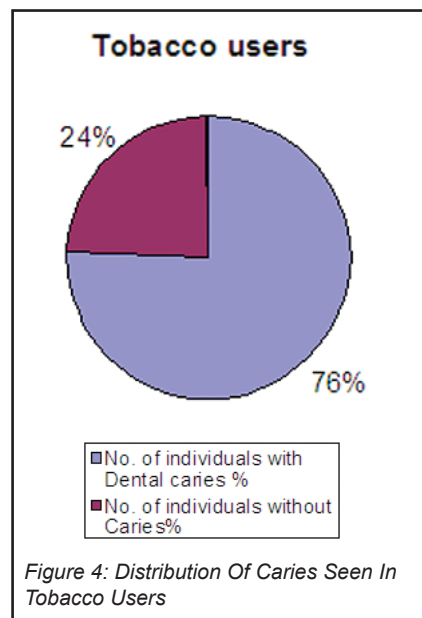
Table 4: Association between tobacco consumption & Dental caries

Tobacco consumption	No. of individuals with dental caries	% Of individuals with dental caries	No. of individuals without caries	% Of individuals without caries	Total	Chi squ	P value
Yes	954	75.96	302	24.04	1256	119.988	<0.0001
No	644	54.86	530	45.14	1174		
Total	1598	65.76	832	34.24	2430		

Table 5 : Association between Socio economic status & dental caries

Socio economic status	No. of patients	No. of patients with dental caries	Not caries	Per-centage	Chi squ	p value
Low	1540	1097	443	71.23	55.926	<0.0001
High	890	501	389	56.29		

the socio-economic status encompasses the influence of income, education, and social environment. Prevalence of dental caries was high in low socio economic status because of their poor oral hygiene practice, lack of awareness, improper food intake and family status. This finding is similar to study conducted by Sogi. G and Baskar D.J (2001) which was found to be statistically significant(chi sq.value 119.98,p <0.0001) (8). Out of the total participants 1125 were male and 1305 were female. 68% of male have dental



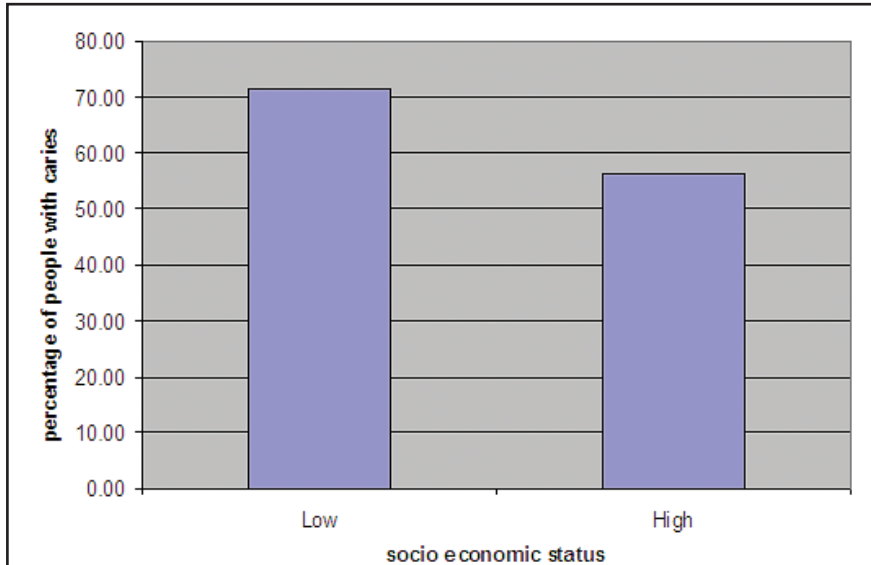


Figure 2 : Different age groups in years with percentage of females suffering from dental caries

Table 6: Prevalence of Dental Caries by type

Type of Caries	No. of Patients	No. of Patients with dental caries	Per-centage	Z Test of proporation (over all)	p value (over all)
Root caries		128	8.0		
Recurrent caries		16	1.0	Z Value > 1.96	< 0.05
Smooth surface caries		207	13.0		
Occlusal Pit & Fissure caries		1247	78.0		

caries and 63.8% of female have dental

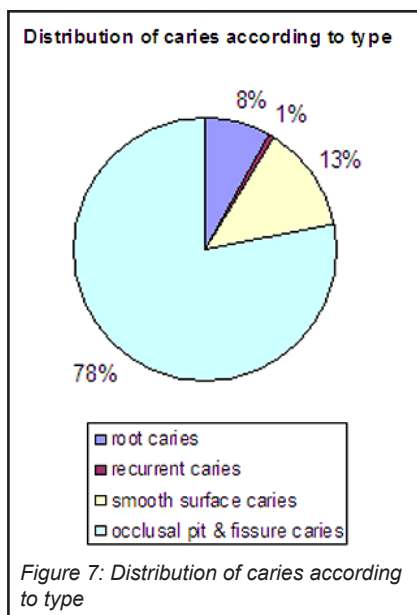


Figure 7: Distribution of caries according to type

caries. Findings are consistent with a study done by Vacher (1), Auckland and Bjelkaroe (9). On the contrary, girls were found to have higher caries prevalence, which was found to be statistically significant (chi sq. value 34.148, p value < 0.0001) in some research works, the variation could be attributed to the different age groups and geographic locations studied in the surveys. Caries prevalence among vegetarians was lower which was found to be statistically significant (chi sq. value 520.58, p value < 0.0001); findings are in accordance with observation of Srinivas and Gangwar et al (10) which may be attributed to sticky nature of food (11). Different forms of tobacco usage and its relationship with prevalence of caries was studied and found more in tobacco users which is statisti-

cally significant (chi sq. value 119.988, p value < 0.0001). Usage of smokeless tobacco shows positive contributing factor for higher incidence of dental caries. High levels of fermentable sugar and sweeteners in smokeless tobacco can stimulate growth of cariogenic bacteria (12, 13). Extracts from chewing tobacco with higher sugar content increased in vitro growth of lactobacillus. Decreased buffering effect and possible lower pH of saliva in smokers may indicate increased susceptibility to caries. Higher number of lactobacilli and streptococcus mutans in smokers may indicate caries susceptibility (14, 15). Higher incidence of caries is experienced by the use of tobacco in any form (16). Root surface caries is usually related with poor health of gingival area, we have found relatively high occurrence of root caries among males including tobacco chewers, which usually results in unhealthy gingival. Highest prevalence of occlusal pits and fissure caries which was found to be statistically significant (Z test of proportion was applied, Z > 1.96, p value < 0.05) can be correlated with the architecture of these sites, which is more retentive to carry food substances and is not fully exposed to flushing action of saliva. The bio-film tends to form and mature in these locations on the tooth including approximal surface cervical to the contact point, and along the gingival margin especially during eruption. These areas are relatively protected from mechanical wear by tongue, cheeks, abrasive food, and tooth brushing. Thus, these are the sites where caries lesions may become visible. Similar observations have been obtained by many scientists indicating that, there is a relative lack of proper preventive procedures for such type of caries.

CONCLUSION

High caries prevalence in the sub-urban area of Kolar indicates enormity of oral health problems and low awareness about oral health, study revealed need for accessible and affordable oral health

services. This work is a small effort towards understanding factors associated with dental caries. Caries prevention is based upon attempts to increase the resistance of the host, lower the number of micro-organisms in contact with the tooth and modify the substrate by selecting non-cariogenic food-stuff and reduce the time that substrate is in the mouth by limiting frequency of intake. Further studies comprising larger sample size and factors affecting dental caries are suggested.

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