ORIGINAL RESEARCH PAPER

Dentistry

PREVALENCE OF DENTAL CARIES IN CHILDREN AGED 3-6 YEARS ALONG ITS ASSOCIATING FACTORS IN MATHURA CITY

KEY WORDS: Children, Dental caries, Indices, Prevalence

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ABSTRACT

A study of prevalence and associating factors of dental caries was undertaken in 3-6 year-old children from Mathura city. A total of 300 children were examined. Dental caries was examined visually and observations were recorded. Oral diseases and conditions have a significant impact on general health; some poor general health conditions also affect oral health status. The oral cavity is a portal of entry as well as the site of disease for microbial infections that affect general health status. The increasing prevalence of dental caries needs dental health programmes,which target the specific segments of the population. Overall, dental and oral health care in India is not in optimal condition. There is, therefore, an urgent need to prevent the rising dental diseases in India.

Introduction

Dental caries is the major wide health issues that continues to negatively affect the oral cavity of children globally. According to the WHO, dental caries is defined as "the localized, post-eruptive, pathological process of external origin involving softening of the hard tooth tissue and proceeding to the formation of a cavity."[1]

Once it occurs, its manifestation persists throughout life, even after the lesion is treated. Dental caries is increasing in India and it is important that steps be taken to cure this trend, because this may lead to crippling consequences on the functional component of the oral cavity. Diet has been associated with the prevalence of dental caries for centuries. In the field of research into caries etiology, diet has probably received more attention than any other subjects.[2] There is no doubt that dietary and oral hygiene habits are affected by income, education, and social environment.[3] The preschool period is the time when deleterious oral habits, the caries patterns and the risk factors are being established. It is the ideal time to intervene and establish a healthy trend which can have a lifelong influence. The detection and the prevention of early dental caries is very necessary, because the recent clinical studies have confirmed that the presence of early dental caries is one of the most accurate measures which can predict the children who are at a risk for future tooth decay. Since no studies are available as per our knowledge regarding the prevalence and its risk factors associated with dental caries among the preschool children in Mathura city, the study is conducted.

METHOD AND MATERIALS

The study was undertaken by the Department of Pediatric and Preventive Dentistry, K.D. Dental college and hospital, Mathura, Uttar pradesh to evaluate the prevalence of dental caries in primary dentition and its associating factors among school children in Mathura city.

Study population:

The study population was selected from various schools located in Mathura city based on socioeconomic status. Children belonging to the low socio-economic groups were those studying in the government schools and the high socioeconomic group comprised of children studying in private schools.

SAMPLE SIZE Distribution

A total number of 300 school going children between the age of 3 to 6 years in Mathura city are examined.

SCHEDULING:

The data collection was scheduled during the school working hours. An average of 100 children were examined per day

Data analysis

Data concerning the independent variables were collected using a self-structured questionnaire. A questionnaire consists of gender, socioeconomic status, diet, brushing technique, parents education and income, dmft/DMFT scores and plaque score. The area for conducting examinations was planned and arranged for maximum efficiency and ease of operation. The children were seated in an ordinary chair that was positioned to ensure adequate day light to facilitate the examination. The recorder was made to sit close enough to the examiner so that the instructions and codes can be easily heard and the examiner can see that findings are being recorded correctly.The A part of the profoma was recorded by the examiner whereas B part was given to the children for their parents and were collected the very next day.

RESULT

Age, School and gender wise distribution of subjects

Totally 300 children were sampled for the study. Out of the 300 children 171 were boys and 129 were girls. The number of study subjects from each age groups of 3, 4, 5, 6 were 46, 64,107 83 children respectively.

Age and class wise distribution of subjects in different sex
The proportion of boys and girls in each age group were almost equal. Distribution of subjects between private and government schools were also similar.

Oral habits behaviour predicting high dmft values of student

Descriptives		N	Mean	SD	Stat value	P value
Teeth cleaning	Yes	295	1.61	2.33	T=2.03	0.04*
	No	5	3.80	4.71		
Frequency of cleaning	0	7	4.71	4.19	F = 22.92	0.001**
	1.00	186	2.13	2.42		
	2.00	107	.59	1.68		
Method of cleaning	Tooth brush	291	1.53	2.23	T=25.24	0.001**
	Finger and other	9	5.44	3.94		
Type of toothpaste	Tooth Powder	12	5.83	5.90	F= 40.84	0.001**
	flourdated	230	1.11	1.69		
	Non flourdated	58	2.91	2.29		
Frequency of meals	2.00	86	1.33	2.06	F=1.07	0.34
	3.00	208	1.78	2.53		
	4.00	6	1.50	1.37		
Frequency of sugar	.00	33	0.30	0.17	F=65.30	0.001**
	1.00	142	0.59	1.22		
	2.00	83	2.72	2.72		
	3.00	28	4.07	2.41		
	4.00	14	4.92	2.43		
Plaque Index value	1	269	1.45	2.30	T=4.31	0.001**
	2	31	3.35	2.48		

*Significant

In tooth Cleaning there was significant difference between the one who do not clean their teeth regularly and the children who clean their teeth regulary with T value of 2.03 and a P value of 0.04. There was significant difference between the children who clean their teeth once and children who clean their teeth more than once with T value of 22.92 and a P value of 0.001. There was significant difference between the participants who use toothbrush and in participants who use finger and other method of cleaning with T value of 25 .24and a P value of 0.001. The mean def value was found to be significantly lower in participants using fluoridated toothpaste as compared to participants using non-fluoridated toothpaste w ith t value 40.84 and p value 0.001. The test results found a non significant association of dmft and daily intake of food with a F value of 1.07 and a P value of 0.34. The test results found a significant association of def and daily intake of sugar w ith a F value of 65 .30 and a P value of 0.001. The test results found a significant association of def and PI with a T value of 4.31 and a P value of 0.001.

Dental caries prevalence in gender

Group	Present	Absent	Chi square value	P value
Male	85	86	0.42	0.51
Female	69	60		

The mean def index value in the primary dentition group was 1.60±2.50 in males and 1.68±2.31 in females. The test results found a non-significant difference between the sexes w ith t value 0.2 8 and p value 0.77.

Dental caries prevalence in association with type of food

Group	Present	Absent	Chi square value	P value
Veg	146	136	0.36	0.54
Non Veg	8	10		

The mean of def index value was 1.64±2.39 in vegetarians and 1.83±a2.55 in non-vegetarians . The test results found a significant difference between vegetarians and non-vegetarians with a T value of 0.33 and a P value of 0.73.

Age and educational level of parents in relation to dental caries status

Descriptives		N	Mean	SD	Stat value	P value
Age of Mother	26-30	64	2.00	3.23	F= 1.05	0.38
	31-35	141	1.48	2.03		
	36- 40	73	1.83	2.33		
	41 - 45	20	0.95	1.65		
	46 - 50	2	2.00	2.82		
Age of Father	26-30	13	3.46	5.82	F= 2.26	0.04*
	31-35	83	1.63	2.18		
	36- 40	148	1.46	1.98		
	41 - 45	40	1.87	2.45		
	46 - 50	16	1.37	1.78		
Highest Education of parents	illiterate	52	2.21	2.32	F= 1.38	0.25
	High school	23	1.43	2.19		
	Higher secondry	89	1.69	2.28		
	Graduate & more	136	1.44	2.50		

The mean of def index value was 2.00±3.23 in participants whose mother age between26-30 years 31-35 years, 1.48±2.03 in participants whose mother age was between 31-35 years, 1.83±2.33 in participants whose mother age was between 36-40 years,

0.95±1.65 in participants whose mother age was between 41 - 45 years and 2.00±2.82 in participants whose mother age between 46-5O years. The test results found a non association between def and age of mother with a F value of 1.05 and a P value of 0.38.

The mean of def index value was 3.46±5.82 in participants whose father age between 26-30 years, 1.63±2.18 in participants whose father age was between 31-35 years, 1.46±1.98 in participants whose father age was between 36-40 years, 1.87±2.45 in participants whose father age was between 41-45 years and 1.37±1.78 in participants whose father age between 46-5O years. The test results found a significant association between def and age of father w ith a F value of 2.26 and a P value of 0.04.

The mean of def index value was 2.21±2.32 in participants whose parents were illiterate, 1.43±2.19 in participants whose parents highest education was high school, 1.69±2.2 8 in participants whose parents highest education was higher secondary school and 1.44±2.50 in participants whose parents were graduate and post graduate. The test results found a no association between def and parent education with a F value of 1.38 and a P value of 0.25 .

Discussion

Dental caries is usually considered the most widespread persistent dental predicament that occurs during the early juncture of existence. It is one of a major public health oral disease which hinders the achievement and maintenance of oral health in all age groups.

The main objective of the study was to find the prevalence and associated factors of dental caries in primary dentition. The prevalence of dental caries was found to be 51.33% in the study samples. This shows a high prevalence of caries in the 3-6 year old children, and it may be attributed to various risk factors. The caries experience in the present study was found to be increasing significantly from 3 years to 6 years age group. The severity of caries also increased with increasing age, it was further inferred from the study that the 6 year old children were at 1.99 times higher risk of having caries. This increasing trend may be partly due to increased consumption of sugar containing food, change in dietary habits and non use of proper oral hygiene measures. Caries experience with age advancement might also be due to more exposure of teeth to the oral environment, as caries is a continuous and cumulative process.

In tooth cleaning the one who do not clean their teeth regularly have high prevalence of dental caries as compared to the children who clean their teeth regulary. The children who clean their teeth once are more prone to caries as compared to the children who clean their teeth twice. There was significant difference between the participants who use toothbrush and in participants who use finger and other method of cleaning.

In studying the eating habits of children, it was observed that there was an increasing trend with number of sweets eaten per day and the prevalence of dental caries.

The mean dmft and dmfs scores were also found to be higher in children eating more sweets. The odds of having dental caries were 8.7 times higher in children eating more sweets.

There was a statistically significant difference in the caries prevalence between the two sexes. Similar to this study, Vacher[4], Aukland[5] and Bjelkaroey, and Gaikwad[6] and Indurkar observed a higher caries experience in boys than in girls. On the contrary, girls were found to have higher caries prevalence by Mishra[7] and Shee, Saimbi et al[8], and Singh et al[9].

The prevalence of caries in the middle socio-economic group was higher followed by lower middle socioeconomic group than the high socio-economic group. The difference in the dmft and DMFT scores according to socio-economic status was statistically, highly significant. These findings are in accordance withthe observations of Singh et al and Chandra and Chawla[10] on the contrary observed a higher caries prevalence in children belonging to the high socio-economic status. Ghandour[11] classified children into three socio-economic groups - low, middle and high, but did not find any statistically significant difference between the caries

prevalence within these groups. The caries prevalence among vegetarians was lower. The difference in the dmft/DMFT was not found to be statistically significant between the vegetarian and mixed diet group. These findings are in accordance with the observations of Srinivas and Gangwar et al[12]. and Mishra and Shee observed 58.8 and 60.5% caries prevalence between the vegetarian and nonvegetarians, respectively.

Caries appears to be a disease of poverty, as much as of neglected health. It is also clear that caries can lead to some distressing health consequences, which the poor section of society can ill afford. Preventive approaches seem to be a viable alternative to tackle the seemingly overwhelming problem of dental caries. The results of the study shows high prevalence of dental caries which could further lead to complication and crippling resulting in other health problems. Caries preventive efforts should be focused on young children as the benefits are cumulative.

CONCLUSION

The prevalence of dental caries and its relation with various risk factors was estimated in 300, participants aged between 3-6-year-old school going children of Mathura city. Following conclusions were drawn from this study.

1. A strong correlation was seen between sugar consump-tion and caries, with the prevalence increasing with increasing sugar exposure.
2. Caries prevalence have statistically significant relation with oral hygiene habits.
3. Caries prevalence was lower among vegetarians.
4. The children belonging to the low socio-economic sta-tus had higher caries prevalence than those belonging to the high socio-economic status.
5. Caries prevalence showed variation in relation to sex.

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