Original Research Article

Prevalence of dental caries among children attending the dental outpatient department in Government Dharmapuri Medical College and Hospital

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Abstract

Background: Dental caries is a public health problem in developing countries like India. Among Oral diseases the dental caries is important public health problem in India and predominantly a disease of childhood Methodology. **Aims and objectives:** To assess the prevalence of dental caries in children. To determine the age at which children are most susceptible to dental caries in mixed dentition period. To assess if dental caries in children show sex predilection. To provide base line data for planning dental services for children. **Study Design:** The study was carried out in the department of dental surgery from September 2016 – August 2017 at Government Medical College and Hospital, Dharmapuri, Tamil Nadu, India. Clinical examination intra-orally was done for all children below 13 years using sterile mouth mirror and explorer under dental unit light. Two thousand one hundred forty seven children were examined of which 1378 children showed the presence of Dental caries. In the present study cavitation has been considered, indicative of caries lesson in accordance with criteria recommended by WHO 1994. **Result:** In this present study 2147 children were examined and of these 1378 had dental caries with a slight predilection towards male children. The prevalence of dental caries was 64.2% Also the maximum prevalence was seen among the age group of 3-6 years showing that the primary teeth were more affected than permanent dentition. The statistical analysis was done using the SPSS version 16. **Conclusion:** Oral health care in rural areas are often limited due to shortage of dental man power, financial constraints and lack of perceived need for dental care among rural masses. This research would probably be helpful in making future plans concerning the best methods to lower the level of such oral diseases and make necessary improvements in health system especially in the field of oral and dental health problems. Epidemiological data play a vital role in updating recent trends of diseases and treatment needs.[21]

Key Word: Caries, children, Dharmapuri, prevalence.

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INTRODUCTION

Dental caries is a public health problem in developing countries like India. Among the oral diseases the dental caries is an important public health problem in India and predominantly a diseases of childhood[1,2]. Dental caries is an infections microbial diseases of multifactorial origin in which diet, host and microbial flora interacts over a period of time in such a way so as to encourage demineralisation of tooth enamel will resultant caries formation. Dental health is often neglected by vast majority of population. Oral health in rural areas is often limited due to shortage of dental man power, financial constraints and lack of perceived need for dental care among rural masses[3]. Dental caries is a lifetime disease and higher priority risk group is the children. As around 90% of school children and most of the adults have been affected by Dental caries, hence it has been considered as the most important global health burden[4]. The World

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Health Organisation (WHO) has ranked Dental caries as number three among all chronic non-communicable disease that requires Worldwide attention for prevention and treatment[5]. Since no study showing the prevalence of dental caries has been done in this region and to recommend various preventive measure the present study was undertaken in the Department of Dental Surgery at Government Dharmapuri Medical College and Hospital, Dharmapuri, Tamilnadu, India.

MATERIAL AND METHODS

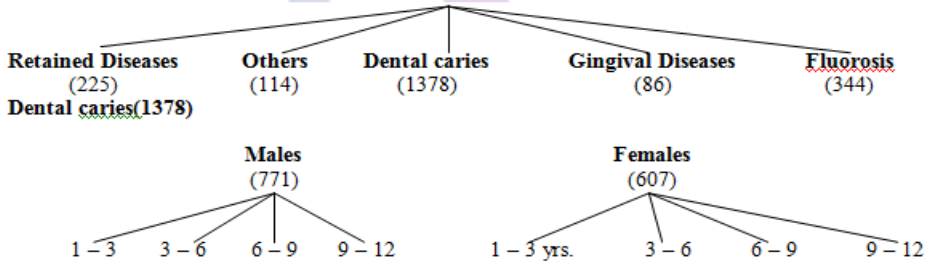
- To assess the prevalence of Dental caries among the various oral diseases in children below 13 years.
- To determine the age at which children are most susceptible to dental caries in mixed dentition period.
- To assess if Dental caries in children shows sex predilection.
- To provide baseline data for planning dental services for children in Dharmapuri District.

Study Design

The study was carried out in the Department of Dental Surgery from September 2016 to August 2017 in the Department of Dental Surgery at Government Dharmapuri Medical College and Hospital, Dharmapuri, Tamilnadu, India. Clinical examination intra-orally was done for all children below 13 years using sterile dental mouth mirror and sterile explorer under dental unit light. Two thousand one hundred and forty seven children were examined, for various oral diseases and grouped under the following[1] Dental caries. retained deciduous, Dental flurosis, gingival diseases and others. Of the 2147 children examined 1165 children were males and 982 children were females. Among the various oral diseases most children (i.e.) 1378 showed the presence of Dental caries of which 771 were males and 607 were females. The localised prevalence data is essential not only to understand the disease but also play a vital role in prevention and treatment planning. Dental caries is a multi factorial infectious microbial disease of teeth that result in located dissolution and destruction of calcified tissue often resulting in cavitation[6]. In this study the presence of cavitation has been considered to be indicative of carious lesion in accordance with criteria recommended by the WHO 1994[7,8,9]. According to World Health Organisation (WHO 1997) detection of dental caries in surveys has been performed at cavitations level because examiners frequently cannot reliably assess the non cavitation lesson.

Total Sample Size: 2147

Various Dental Diseases



RESULTS

In this present study 2147 were examined of which 1165 (66%) were males and 982 (62%) were females who attended the Dental Outpatient department over a period of one year from september2016 to August 2017. Of the total children 1378 had dental caries of which 771were males and 607 were females. The prevalence of dental caries was 64.2% among all the children. The statistical analysis was done using SPSS version16 and the tests done were students t-test and chi-square and confidence Interval at 95% and the p Value was <0.05 set as significant. Table 1. shows the distribution of dental caries gender wise. In this we see that the prevalence was 56% in male children and 44% were among female children. With the p-value as 0.03 there is a significant predilection towards male gender for prevalence of dental caries. in Table 2. shows the age group wise distribution of dental caries along with distribution among each group between male and female children. the age group distribution was 1-3 yrs, 3-6yrs, 6-9yrs and 9-13yrs. Among the various age groups the maximum percentage of prevalence of dental caries was seen in the age group of 3-6yrs which was 443.5%. In this age consists mainly of children with primary dentition. With increasing age there is a decrease in the prevalence of caries with only

8.9% of children in the age group of 9-13yrs having dental caries. Comparison using the student t-test gives a p value of <0.001 when it was compared between the 1-3 and 3-6 yr age group which is highly significant showing that there is high prevalence of dental caries in the 3-6 yr age group. There is decreasing p value showing that with the increase in age there is a decrease in the prevalence of dental caries.

Table 1: Distribution of dental caries among gender

Dental Caries	Total	Percentage	Chi-Square Test
Males	771	56%	
Females	607	44%	4.470
Total	**1378**	**100%**	

Table 2: Distribution of dental caries among age groups

Age Groups	Children With Caries	Boys (%)	Girls (%)	Percentage Among All Cases Of Dental Caries
1-3	118	58%	42%	8.6%
3-6	600	57%	43%	43.5%
6-9	537	54%	46%	39%
9-13	123	56%	44%	8.9%

t-test value 23.09, p Value <0.001 95% CI =36.75 - 43.585

DISCUSSION

The World Health Organisation (WHO) has recognised dental caries as pandemic and reported its prevalence among school children ranging from 60 – 90%[10]. The history of diagnosing dental caries began in 1883 by W.D. Miller who found bacterial involvement in caries development. Shafer (1993) defined dental caries as an irreversible microbial diseases of calcified tissues of the teeth characterised by demineralisation of inorganic protein and destruction of organic substance of the teeth which often leads to cavitation[11]. In this study the prevalence of dental caries 64.2% which is very far from the goals sets by FDI and WHO. Dental caries in primary teeth has been widely studied in many countries and it is known to be one of the most common oral disease of childhood[12] similar finding is present in our study. The prevalence of dental caries is higher in primary dentition, when compared to permanent dentition.[13]. This could be attributed to the fact permanent teeth have lower susceptibility to dental carries. It may also be because children of 12 years had just finished to change dentition. It could also be due to lower content of calcium in deciduous teeth and structured difference that may increase caries susceptibility in deciduous teeth[3]. In developing countries children have high prevalence of dental caries affecting primary dentition than permanent dentition[14]. In 1981, WHO and foreign direct invested (FDF) World Health Federation jointly formulated goals for oral health to be achieved by the year 2000 AD as 50% of 5 – 6 years old to be free of dental caries. In the present study the dental caries in the age group of 3 – 6 was found to be 43.5% which is very far from the goals set by FDI and WHO. Our findings that boys showed greater caries lesion in comparison to girls was similar to Mitlal *et al*[1] and Mahesh Kumar *et al*[15] studies in contradiction to Mishra and Shee[16] Mwakatobe and Mumghambo[17] and Shingare *et al*[18]. The increase prevalence of dental caries in boys than girls, can be attributed to more priority given to boys than girls in Asian Society[19] regardless of the socio-economic class which manifest itself in the longer feeding of sons compared to daughter. It may also be due to the habit of taking refined sugars during their longer stay outside. Moreover female are found to have better oral hygiene. Ismail *et al* found gender to be a dental caries predictors with boys being more affected than girls and this variation could be attributed to the different age group and geographic location of the study[20]. In the present study dental caries in the age group 1 – 3, 3 – 6, 6 – 9, 9 – 12, were studied. The caries status in the primary dentition was assessed in children of 4 – 6 years and this age group is regarded as global monitoring age group and international comparison age group for general and oral status. In the present study 43.5% of the children in age group of 3 – 6 years showed the presence of caries. Grewal *et al*, Goyal *et al*, Dash *et al* studies shows as increase in prevalence till 6 – 9 years of age often which then is a decrease in caries prevalence until the age of 12 and 15 years[21,10,13]. The present study also shows similar result. The result was supported by Mishra and Shee[16] in 1979 and Mahish *et al*[15] in 2005. This is because of longer exposure of primary molars in 6 – 9 years of age. After that there is exfoliation of teeth and eruption of permanent teeth which have lower susceptibility to dental caries and not exposed to factors responsible for caries for longer time. The reason suggested for decrease in caries prevalence after the age of 10 was due to increase in the level of manual dexterity of child improving the oral hygiene, increased awareness about oral health and caries deciduous molars being replaced by newly erupted premolar by the age of 12 years. Other suggested reason was the increases in salivary IgA immunoglobulin around eight years of age which inhibits the attachment and adherence of oral bacteria to the epithelial and tooth surface and neutralises the localised exotoxin and enzymes that contribute to disease process. Dental health is often neglected by majority of population. The dental caries prevalence is high in those children because of negligence or lack of awareness about the importance of primary teeth, improper brushing technique and dietary habits, ignorance and lack of motivation. Awareness among students can be generated by school dental programmes and by way of school teachers because they

are the role model for the students. Parents should be educated on the importance of good and hygiene practice. Health education should be incorporated within the regular activities of school education particularly female education can help to solve the problem in future. Mobile dental clinics would probably help in reaching rural areas that lack dental sources. Preventive measures, campaigns including topical fluoride application, fissure sealants and healthy diet promotion would do a lot help to improve the situation of oral and dental health in young children. Fluoride varnish application to all primary teeth as early as possible, educating the teachers as well as the parents about best hygiene methods and tooth paste to be used by preschool children, making regular dental checkups to the children and going them adverse about healthy nutrition. Awareness to the public may be increased by using audio visual communications such as radio, television, magazines and public notice.

CONCLUSION

This baseline study indicate the dental caries as a major public health problem and lack of preventive care facilities as well as awareness among the children in this region. This research would probably be helpful in making future plans concerning the best methods to lower the level of such and disease and make necessary improvements in health system especially in the field of oral and dental health problem. Epidemiological data play a vital role in updating recent trends of disease and treatment need[21].

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