



Is There A Correlation With Caries Incidence In Permanent Molars With Caries In Primary Molars - Retrospective Study

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Introduction:

Primary teeth have much thinner enamel than permanent teeth, which makes it easier for a cavity to spread, and spread quickly. The aim of the study is to assess the correlation with caries incidence in primary molars with caries in permanent molars.

Materials and methods:

Retrospective study, DMFT index of permanent 1st molar and primary molars are evaluated among the population visiting a dental hospital in Chennai. Data of 2973 patients who had visited a Private dental clinic from June 2019 to March 2021 were reviewed. Patients from 6 to 10 years were noted. This was followed by Excel tabulation and imported in SPSS. Among 2973 patients visiting dental clinics, 563 patients in the hospital database were diagnosed with caries in both primary and permanent molars. There was a significant correlation between patients with caries in primary and permanent molars with age groups involved in this study.

Results:

The total sample included 563 patients with age group of 6 to 10 years, of whom 62.88% (354) had DMFT of primary teeth and 47.42% (209) had DMFT of permanent teeth.

Conclusion:

From this study, it can be concluded that DMFT scores were higher among age groups 6 - 10 year old patients and proper diet counseling and on spreading awareness on dental care among parents, can reduce the DMFT scores among the pediatric population.

Keywords: Dental caries, Permanent molars, Primary molars, DMFT, innovative technique

Introduction

Destruction or breakdown of enamel content in the tooth structure results in dental caries. [1] The breakdown is a result of acid produced by the bacteria on fermentable carbohydrate [2]. Caries been the preventable disease can be eliminated by good

oral hygiene patient education, fluoride and sealants. [3] Primary teeth in children can aid in adequate nutrition to the children, any disturbance in the primary results in pain and difficulty in food intake [4]. Caries can affect the quality of life in

children [5]. Prevention through proper education can aid in complete elimination of the disease. [6].

The DMFT indices which is the most common community based evaluation composed of decayed, missing and filled tooth or surfaces. [7]. Several studies have examined the correlation between caries prevalence in the primary and permanent dentition at different ages [8]. Hill, et al., examined the correlation between caries prevalence in the primary dentition at age six with the caries prevalence in the permanent dentition at ages up to fourteen [9]. The majority of the population which Hill examined received fluoridated water from birth or early childhood. Caries have been the commonest infectious disease in children [10]. Most of the epidemiological studies uses the dmft indices to evaluate the prevalence and severity of the disease. [11] Proper evaluation can help us to plan preventive strategies to reduce the burden of caries. [12].

Children tend to have multiple caries lesions due to poor oral hygiene maintenance, high intake of sugary content, improper feeding practices, and less fluoride intake. [13] Many prevalence studies worldwide have indicated high caries in developing countries. Many have pointed out that children are most commonly affected by carious lesions [14]. Good oral hygiene can help in adequate nutritional intake, better quality of life [15]. The whole maxillofacial complex plays an important role in self esteem and proper nutrition [16].

Adequate research have pointed out that caries in primary teeth can result in carious lesions in permanent teeth due to the highly acidic environment, inadequate plaque control measures and lack of knowledge. [17]. Gray et al. , remarked that history of three or more primary molar caries might be the best predictors for PFM caries development at the age of 7 [17,18]. Similarly, in another research conducted among the Chinese children, authors found a strong correlation between the primary and permanent teeth caries and they emphasized the importance of assessing the caries status in predicting the future risks of caries and also they highlighted the importance of implementing the preventive programs [17–19]. The Decayed, Missing, Filled (DMF) index has been used for almost 80 years and is well established as the key measure of caries experience in dental epidemiology [20]. The DMF Index is applied

to the permanent dentition and is expressed as the total number of teeth or surfaces that are decayed (D), missing (M), or filled (F) in an individual [21].

While taking dmft index the teeth not erupted and teeth which are removed for some other reason rather than dental caries are excluded [21,22]. When the tooth has restoration and secondary caries around the margins are considered to be dental caries and marked as D [21,22]. Tooth which are extracted due to dental caries should be marked as M. When a permanent filling is present, or when a filling is defective but not decayed, this is counted as an F. Teeth when it has fractured and restored are not counted as an F [23].

The aim is to determine the correlation with caries incidence in primary molars with caries in permanent molars, which is conducted to pave the way for future prevention programs, was to determine DMFT index of first permanent molars and dmft. Extensive research published by our research team members are included in various high impact journals [24–33] [34–43]

Materials And Methods :

Study setting:

This was a retrospective analysis of the patients reported to a private dental hospital in Chennai during the study time frame. All the patients were selected based on random sampling methods. This study was approved by the Institutional Review Board.

Sampling

The patient population was 1344 patients in a private hospital from June 2019 to March 2021. Patients with age groups between 6 to 10 years were noted. Among 563 visiting university dental hospitals were diagnosed with caries in primary and permanent molars. The demographic and clinical data especially age, sex, teeth involved and DMFT were retrieved from the Dental records. All the data were entered in excel format and calculated using SPSS.

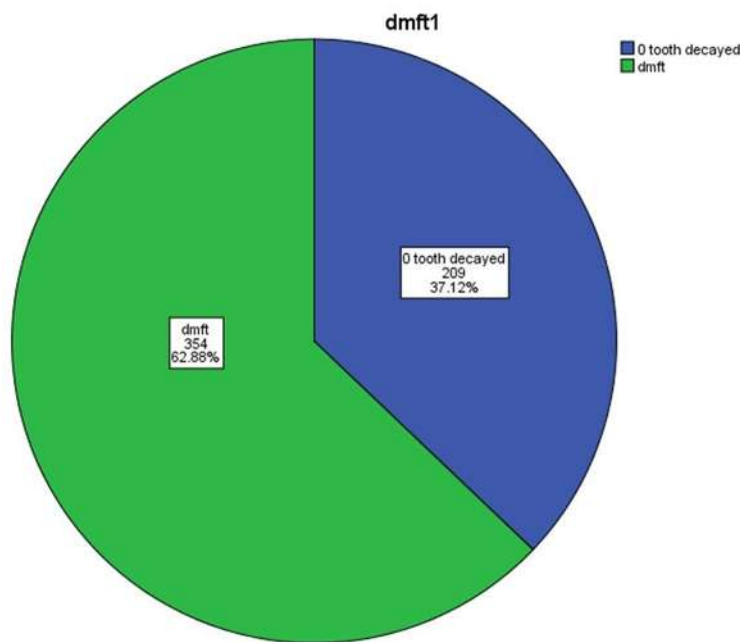
Result :

Caries prevalence varies with the age of the children. The study evaluated children from 6 to 10 years of age. The total sample included 563 patients with age group of 6 to 10 years, of whom 62.88% (354) were dmft of primary teeth and 37.12% (209) of patients with 0 tooth decayed as shown in graph 1. 47.42 %

(267) were DMFT of permanent teeth and 52.58% (296) of patients with 0 tooth decayed as shown in Graph 2. Graph 3 shows the status of the DMFT by gender : it can be seen that non-significant differences between male and female participants were found in all 5 age groups. Graph 4 represents the status of the DMFT by age groups : we found

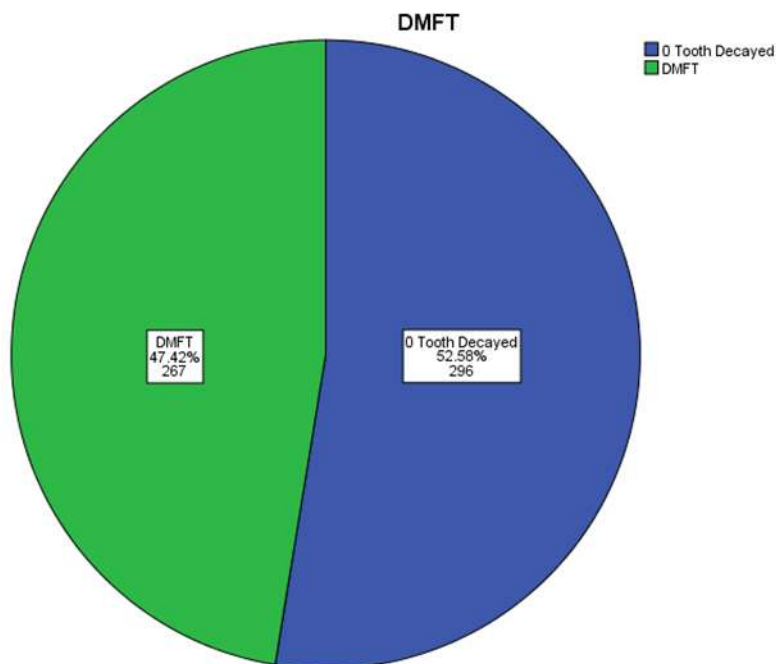
significant differences ($p < .05$) with 6 - 7 year older individuals having fewer healthy teeth and a higher DMFT percentage. Graph 5 represents the status of dental caries involvement by gender as shown in figure 4, the study found that there is no significant difference between gender and the DMFT (not significant p value > 0.05).

Graph 1:



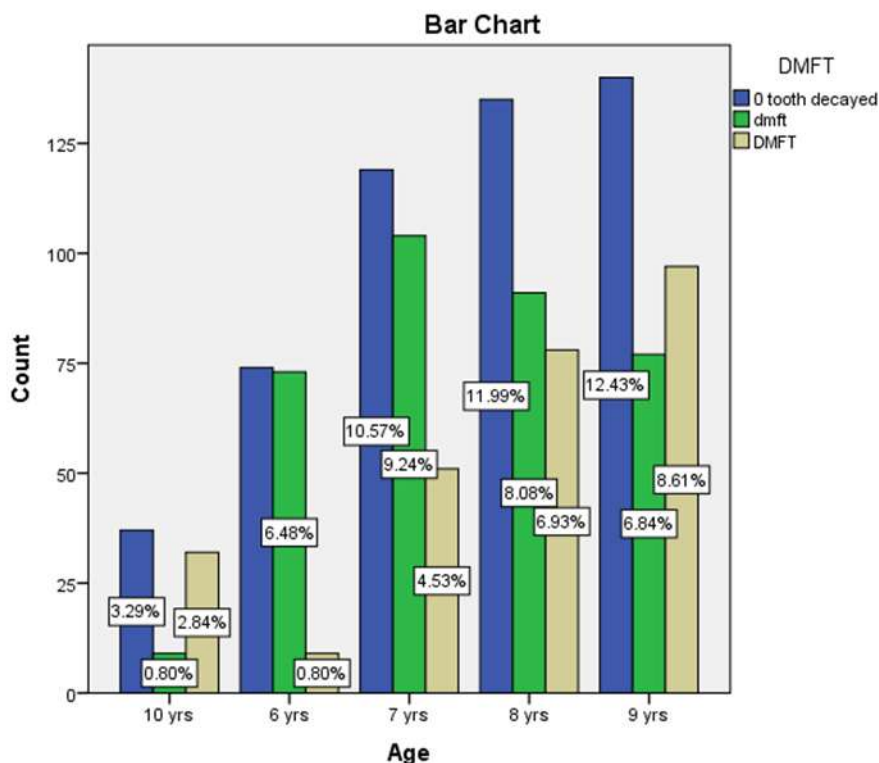
Graph 1, represents the distribution of percentage dmft of primary molars. From the above graph, dmft of primary molars were about 62.88%; 37.12% of the population teeth were found to be no decayed or filled tooth.

Graph 2 :



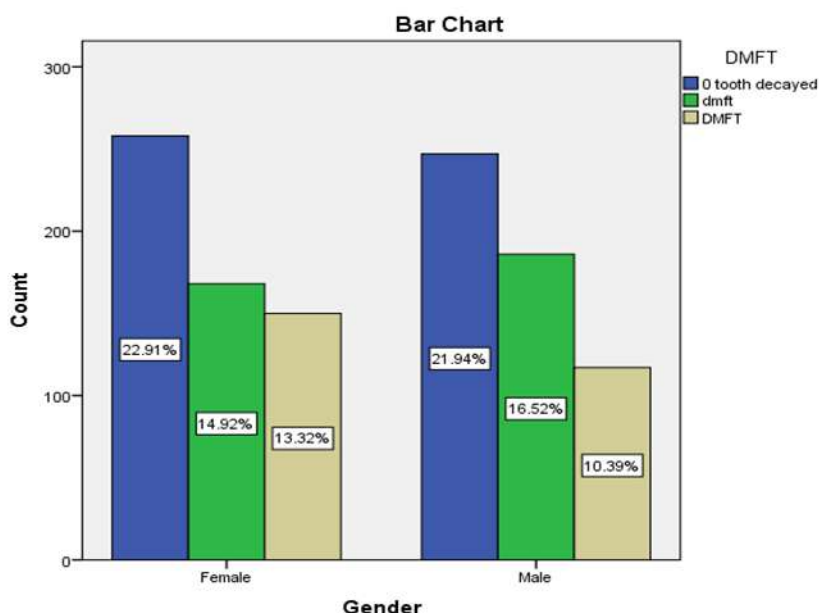
Graph 2, represents the distribution of percentage of permanent molars. From the above graph, DMFT of permanent molars were about 47.4% which denoted green color, blue color denoted 52.58% of the population teeth were found to have no teeth decayed.

Graph 3:



Graph 3, represents the distribution of percentage of DMFT in each age group correlation of primary molars and permanent molars. From the above graph, DMFT of permanent molars were about, blue color denotes that percentage of population presented with 0 teeth decayed, with age group of 6 years 6.57%, with age group 7 years 10.57% , with age group 8 years 11.99%, with age group 9 years 12.43% and with age group 10 years 3.29% of populations were seen with 0 teeth decayed. Green color denotes that percentage of DMFT of primary molars with various age group, with age group of 6 years 6.48%, with age group of 7 years 9.24%, with age group of 8 years 8.08%, with age group of 9 years 6.84% and with age group of 10 years 0.80% were seen. Yellow color denotes the DMFT of permanent molars with various age groups, with age group of 6 year 0.80%, with age group of 7 years 4.53%, with age group of 8 years 6.93%, with age group of 9 years 8.61% and with age group of 10 years 2.84% were seen.

Graph 4:



Graph 4, represents the percentage distribution of gender among the population involved in the present study. From the above graph, blue color denotes the population with no decayed teeth , 22.91% in male and 21.94% female. Green color denotes the DMFT of primary teeth, 14.92% in male and 16.52% in females. Yellow color denotes the DMFT of permanent teeth, 13.32% in male and 10.39% in females.

Discussion :

The present study correlated the caries status in the first permanent molars with that of the full permanent dentition (DMFT Index) of populations with age group from 6 to 10 years old. Based on the results of this study, the mean DMFT score with higher percentage of primary molars 62.88% (figure1) and permanent molars were about 47.42% respectively (figure 2). Carie sis the infectious disease of microbial origin affecting the organic and inorganic structures of the tooth structure.

From a community point of view the dmft index is the most common;y available matrix to evaluate the prevalence of caries among the population. Hence it

is mandatory to periodically evaluate the dmft index to estimate the success of any preventive therapies in variou regions of the world. From the present study, there is a significant difference between dmft and DMFT index of first permanent molars according to age groups (figure 3). Similarly to the study conducted by kamiab et al, there was a significant variation when they correlated DMFT index and age group. The permanent molars should be protected from caries once they erupt into the oral cavity, the initial surface should be protected by any preventive strategies.

From the present study, no statistically significant difference was found between dmft and DMFT index of first permanent molars according to gender (figure 4), which was comparable to the results of Đuričković *et al.* This result may be due to the greater importance of personal hygiene than gender differences in caries incidence. These results are inconsistent with the study of Wang *et al.*, which can be attributed to the cultural differences in the communities concerning different interests for oral health care in different genders.

Certain limitations, such as the sample size, which was not large enough to generalize the results. Dietary habits, socio-economic status, and education of parents also proved useful as important determinants of dental caries. Further studies are needed to evaluate dental status and moreover, investigation of other effective factors on dental caries seems crucial.

Conclusion :

From this study, it can be concluded that dmft scores were higher among age groups 6 - 10 year old patients, which can be attributed to poorly managed diet plan, economic conditions and lack of awareness about need for dental care. With proper diet counseling and spreading awareness on dental care among parents, we can improve the DMFT scores among the pediatric population.

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