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**Dr. Humaira AH Ansari**  
Associate Professor, Tahaffuzi  
wa SamajiTib, Dr. MIJT,  
Unani Medical College f,  
Versova Andheri - W,  
Mumbai, Maharashtra, India

**Dr. Asfia Tarannum**  
Associate Professor, Moalejat,  
Dr. MIJT Unani Medical  
College, Versova, Andheri -w,  
Mumbai, Maharashtra, India

**Dr. Niamatbi Maqbool Khot**  
Professor, Amraze Niswan wa  
Hmul Qabalat wa  
Naumaulood, Dr. MIJT Unani  
Medical College, New Delhi,  
India

**Corresponding Author:**  
**Dr. Humaira AH Ansari**  
Associate Professor, Tahaffuzi  
wa SamajiTib, Dr. MIJT,  
Unani Medical College f,  
Versova Andheri - W,  
Mumbai, Maharashtra, India

## Retrospective study to evaluate the association between good oral hygiene and prevalence of dental caries in a school aged children

**Dr. Humaira AH Ansari, Dr. Asfia Tarannum and Dr. Niamatbi Maqbool Khot**

### Abstract

Dental caries is a breakdown of teeth due to acids made by bacteria. Dental caries is caused by the action of acids on the enamel surface. The acid is produced when sugars (mainly sucrose) in foods or drinks reacts with the bacteria present in dental bio film on the tooth surface. Dental caries is a major oral health problem in most industrialized countries affecting 60 – 90% school children and the vast majority of adults. Dental caries is a preventable public health problem. In the present study, association between good oral hygiene and prevalence of dental caries has been evaluated in a General health check-up camp at Ideal High School, Powai Mumbai – 400076. Data was obtained through screening and questionnaire. The data collected was presented in tabular form and statistical evaluation was done. In the present study, strong association between dental caries and bad oral hygiene has been noticed.

**Observation:** In present study total 232 primary school pupils were screened for dental caries, out of which 56 students were found to be affected by dental caries. It shows that 24% of prevalence of dental caries in a students with bad oral hygiene and malnutrition.

**Conclusion:** Children with bad personal hygiene and bad dietary habits were affected more by dental caries. Good oral hygiene and dietary habits were advocated. They were asked to consult dentist for further management.

**Keywords:** Dental caries, oral hygiene, malnutrition, personal hygiene

### Introduction

Oral health is a key indicator of overall health, well-being and quality of life. WHO defines oral health as “ a state of being free from chronic mouth and facial pain, ‘oral and throat cancer, oral infection sores (periodontal gum) disease tooth decay, tooth loss and other diseases and disorders that limit an individual’s capability in biting, chewing, smiling, speaking and psychosocial well-being [1].

### Oral Diseases and Conditions

Several oral diseases and conditions account for most of the oral disease burden they include dental caries, tooth decay (periodontal gum) diseases oral cancer, oral manifestations of HIV, orodental trauma, cleft lip and palate, and noma. Almost all diseases and conditions are either largely preventable or can be treated in their early stages. The global burden of disease study 2016 estimated that oral diseases affected at least 3.58 billion people worldwide, with caries of the permanent teeth being. The most prevalent of all conditions assessed. 2.4 billion people suffers from caries of permanent teeth and 486 million children suffer from caries of primary teeth [2]. The prevalence of oral disease continues to increase notably due to inadequate exposure to fluoride and poor access to primary healthy marketing sugars tobacco and alcohol leads to growing consumptions of unhealthy products [2].

### Dental Caries

The dental caries status was assessed by decayed, missing and filled (DMFT) index using the WHO criteria 1997. Dental caries is an important public health problem and is also the most prevalent oral disease among children and adults in the world. This significant but preventable public health problem interferes with normal foods intake, speech, self-esteem and routine activities affecting overall health status of the children. Dental caries is a multifactorial microbial disease of the teeth, those results in localized dissolution and destruction of the calcified tissues often resulting in cavitation [3]. There is a high prevalence of dental caries worldwide involving the people of all region and society [4].

Voluminous literature exists about dental caries levels in Indian population [5].

**Materials and Methods**

**Inclusion Criteria**

**Age:** 5-11 YRS

**Sex:** BOTH

**Class:** Primary from 1<sup>ST</sup> to 5<sup>TH</sup>

The tooth was considered carious (d component), if a cavity, including untreated dental caries.

The missing (m component) included filled teeth.

The treatment done (t component) considered already treated.

**Exclusion Criteria**

1. Early stages of dental caries and questionable lesions were excluded and considered sound
2. Children with systemic disease and suffering from acute infection or had past history of infection with in last 6 months were excluded from the study.
3. Age less than 5 years and more than 11 years.
4. Preprimary and secondary class students.

**Clinical Examination:** Standard aseptic precautions were applied. All the recordings were carried out in day light and the child was made to sit on an ordinary chair, facing away from a direct sunlight [6]. The oral examination of the study subjects was conducted in a school using a plane mouth mirror under the light of torch and a community periodontal index probe (CPI) as instructed by WHO; CPI probes are used especially in epidemiological surveys to remove debris over tooth, thus improving the visualization [7].

**Sociodemographic Information:** During the examination of school children, a questionnaire was used to fill out personal data such as name, age, gender and occupational and income status of the parent, permanent address, oral hygiene methods and diet chart.

**Data Analysis**

**Risk factors for dental caries**

1. Tooth Location (MOLAR / PREMOLAR). These teeth have lots of grooves pits and ceramics and multiple roots.
2. Certain Foods/ Drinks: Foods that get cling with the surface of teeth e.g.; milk, ice cream, honey, sugar, soda, dried fruits, cakes, hard candies, chips, mints and dry cereals.
3. Frequent Snacking or Sipping: Frequent use of snack or sip of sugar syrup.
4. Flouride Deficiency: Younger and older age group common in young teenagers.
5. Dry Mouth: Lack of saliva which prevents flushing of food particles, resulting in plaque.
6. Heart Burn: Gerd, reflux stomach acid flows in mouth use to reflux, causing erosion of dentine.
7. Eating Disorders: Anorexia, bulimia, can lead to significant tooth erosion and cavities. Repeated vomiting damages enamel.

**Complications:** Pain, tooth abscess, swelling or pus around a tooth, damaged or broken teeth, chewing problems, positioning shifts of teeth, after tooth loss

**Prevention**

1. Good oral and dental hygiene.
2. Brush with fluoride tooth paste after meal (at least twice a day).
3. Drink tap water.
4. Avoid frequent snacking and sipping.
5. Eat tooth healthy foods.
6. Avoid sticky foods.
7. Rinsing mouth after each meal.

Association between sugar consumption and dental caries:DMFT score tends to rise with sugar consumption [8].

**Mechanism**

Demineralization of enamel dentine or cemented is caused by organic acids that are generated by so called acidonegic bacteria in the plaque, when these bacteria feed upon fermentable carbohydrate [9]. **PLAQUE:** It is found naturally on teeth, thus prevents the colonization of host are pathogenic micro-organisms.in individuals with a high frequency sugar diet or with a severely compromised saliva flow the levels of potentially carcinogenic bacteria can increase beyond those compatible with enamel health [10].

Caries is a unique multifactorial infectious disease. It is generally accepted that saliva secretion and salivary components secreted in saliva are important for dental health. Dental caries is a coplex phenomenon involving internal defense factors such as saliva, tooth surface, morphology, general health and nutritional and hormonal status and a number of external factors eg, diet, the microbial flora colonizing the teeth oral hygiene and fluoride availability [11].

Dental caries, otherwise known as tooth decay is one of the most prevalent chronic diseases of the people worldwide Individuals are susceptible to the disease throughout their life time. The disease develops in both the crowns and roots of teeth and it can arise in early childhood [12]. The approach to primary prevention should be based on common risk factors where as secondary prevention and treatment should focus on management.

**Observation**

In present study following things are observed.

**Table 1: Sex**

Male	Female	Total
21	35	56
37.5%	62.5%	

Total number of male students examined were 92, out of which 21 had dental caries where as total number of female students examined were 140, out of which 35 had dental caries.

**Table 2: Age**

Age Group	No of Students
5-7 YRS	12
7-8YRS	22
8-9 YRS	6
9-11 YRS	6
11-12 YRS	10
TOTAL	56

Above study shows that maximum number of students was affected by dental caries fall in the age group of 7-8 yrs.

**Personal Hygiene**

**Table 3:** Brushing Teeth

Brushing Teeth	Once a day	Twice a day
No of students	182	50

**Table 4:** Gargle after meal

Yes	No
32	200

**Dietary Habits**

**Table 5:** Drinking Water between Meals

Yes	No
45	187

**Table 6:** Tooth paste used

Floouride Rich	Herbal Tooth Powder	Not Known
80	50	102

**Table 7:** Junk food and candy consumption

Yes	No
202	30

**Table 8:** Consumption of excess of sugar and sweet

Yes	No
150	80

**Table 9:** Presence of malnutrition

Under Weight	60
Short for height	15
Total	56

**Table 10:** Presence of any co morbid condition:

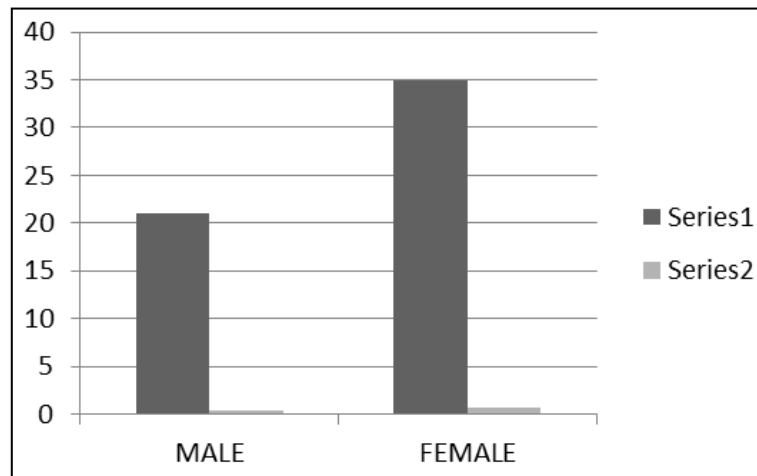
Hyperacidity	50
Gastro esophageal reflux disease	30

**Table 11:** DMFT score

D	M	F	T
25	15	06	10

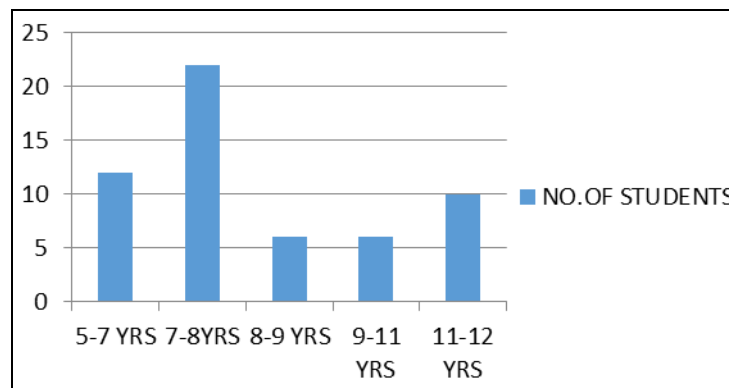
25 students were categorized under D; dental caries component, 15 students were categorized under M,; missing teeth component, 06 students were categorized under F; filling teeth component, 10, students were categorized under T; treatment taken component.

**Results and Discussion**



**Fig 1:** Sex

Above statistical analysis shows that female students were affected more than the male students in the present study.



**Fig 2:** Age

Above study shows that maximum number of students was affected by dental caries fall in the age group of 7-8 yrs.

### 3.3. Personal hygiene

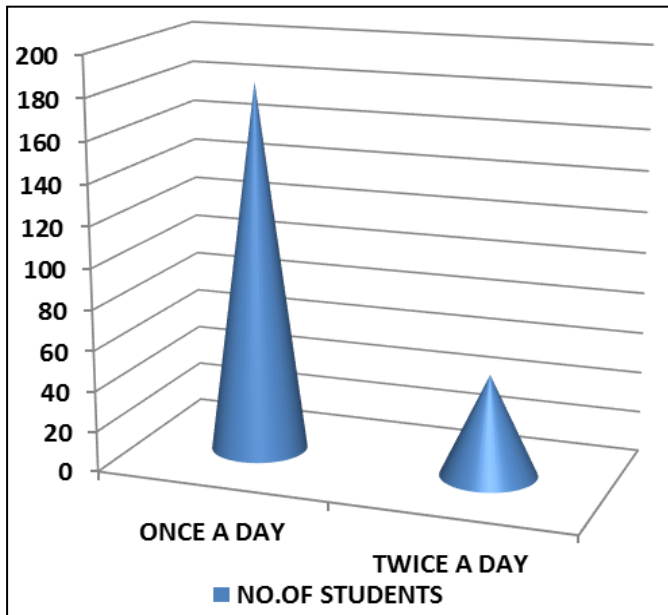


Fig 3: Brushing Teeth

Above study shows that maximum number of students was brushing their teeth once a day was affected by dental caries fall in the age group of 7-8 yrs.

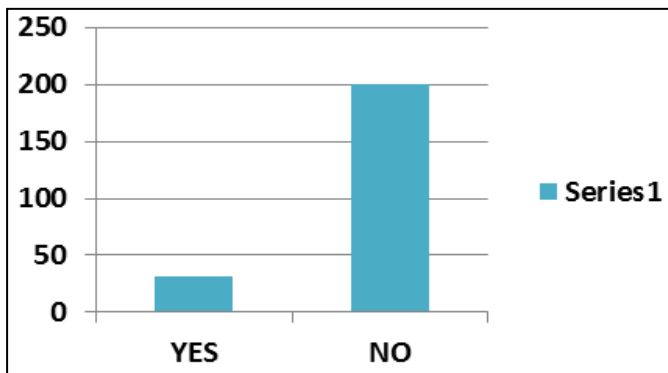


Fig 4: Gargle after Meal

Maximum number of students were not doing gargle after meal.

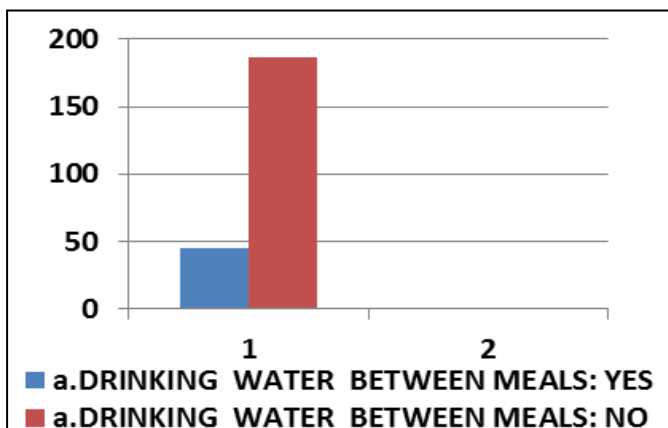


Fig 5: Drinking water between meals

Maximum number of students were not drinking water between meals.

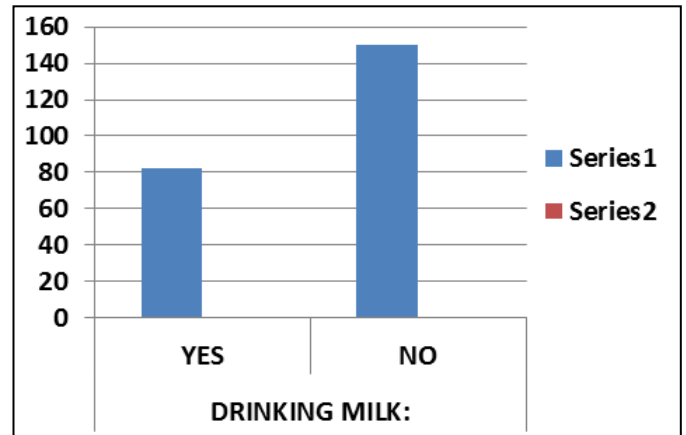


Fig 6: Drinking milk

Maximum number of students doesn't have habit of drinking milk every day.

#### Result

It is observed that students with habit of regular drinking milk were affected less than who are not drinking milk. Consumption of junk food, candy, excess of sweets and sugars are directly proportional to the prevalence of dental caries. Presence of co-morbid conditions like hyperacidity and GERD influence the prevalence of caries. Lastly, in the above study dental caries was categorized on dmft score. 25 students were categorized under d' component i.e. damaged teeth 15 students were categorized under m' component i.e. missing, 6 students were categorized under f' component i.e. filling. Where-as 10 students were categorized under t' component i.e. treatment taken.

#### Conclusion

The above retrospective study conducted in one private school of Mumbai, IDEAL HIGH SCHOOL POWAI MUMBAI. Above study shows that dental caries is a common oral health problem of school age group. Total number of students examined were 232 out of which 56 students were diagnosed with dental caries on dmft score i.e.24%. It is evident from above study that prevalence of dental caries is more in the age group 7-8 yrs. Also pupils who were having bad oral hygiene and faulty dietary habits and malnourished were affected more as per dmft score. In general all students were advised to maintain good oral hygiene, take balanced diet, keep doing physical activities to maintain general as well as oral health. The pupils who had dental caries were advised to take proper treatment to avoid rest of the teeth from getting affected. Thus we can conclude that presence of dental caries in school age children is very much influenced by nutritional status and personal and oral hygiene.

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