

Prevalence of Tooth Wear in Children and Adolescents - A Survey Based Research

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Abstract :

Aim : To study the prevalence of tooth wear in children and adolescents of age group 12-16 in different schools.

Objective : To assess the prevalence of tooth wear in students from different schools.

Background : Non carious loss of tooth tissue is called as tooth wear . Three main process involved in causing tooth wear are attrition , abrasion and erosion .mild tooth wear is a physiological effect of ageing . Over consumption of acidic food and drinks can also cause erosive tooth wear . Certain disorders such as Down's syndrome can also lead to tooth wear. This study is done in order to find out the incidence of tooth wear among the students of various schools and to find the leading causes for tooth wear.

Reason : This study is done in order to understand the causes and also help in the prevention and better treatment for tooth wear. It also helps the patients to lead a better quality of life.

Keywords: Adolescents, Children, Erosion, Tooth wear

INTRODUCTION:

Non carious loss of tooth tissue is called as tooth wear . Three main process involved in causing tooth wear are attrition , abrasion and erosion. Dental erosion is the "loss of dental hard tissue superficially by a chemical process that does not involve bacteria" (1). The prevalence of dental wear is not well recognised and preventive measures for tooth wear is rarely reported (2). In addition to this , the difference in examination standards such as scoring systems, samples and groups examined makes it difficult for the comparison of the outcomes of epidemiological studies(3). Intact dental hard tissue makes such as dentin , enamel cementum helps to maintain the integrity of dentition., (4) and the loss of these tissues can have significant consequences for the patient. Idiopathic , Extrinsic , intrinsic are the types of erosive tooth wear , implying that, according to the case history, the acids producing tooth destruction may be of unknown, exogenous or endogenous origin (5). Over consumption of acidic food and drinks can also cause erosive tooth wear . Certain disorders such as Down's syndrome can also lead to tooth wear. Erosive tooth wear in children is a common condition. In children and adolescents (like in adults), chemical, biological and behavioural factors and their interplay are possible reasons for this condition (5) . Frequent and excessive consumption of specific dietary elements such as citrus fruits, lemon juice, orange juice, fruit squashes, cola-flavoured soft drinks and citrus flavoured drinks have all been implicated. Unusual eating, drinking and swallowing habits; for example holding an acid beverage in the mouth before swallowing, increases the contact time of an acidic substance with the teeth and thus increases the risk of erosion. It can be stated that dietary factors represent the most important external risk factor for children to develop dental erosion (7).

Prevention of erosive tooth wear is an essential component of managing the condition and protecting the dentition against further damage. When this substance loss begins at an early age, in this age the chance of losing teeth is high

a lifetime if no adequate preventive measures are performed (8)(9). Restorative therapies for erosion are another essential factor in the management of the condition. Simple,conservative and effective that's how it has to be, adhesive materials are used and the predation of Teeth has to that require minimal preparation of the teeth in order to be effectively adapted to the remaining tooth structure.

Erosive tooth wear seems to be a problem for the dental profession in this millennium. However, it is more worrying when this condition is found in an alarming proportion among children. If this condition is not controlled and stabilised, the child may suffer from severe tooth surface loss, tooth sensitivity, over closure, poor aesthetics, or even dental abscesses in the affected teeth (10). Since, there is not currently enough data to draw conclusions about the prevalence of dental erosion, more studies are needed in order to better understand the epidemiology of this destructive condition. Hence, this study was performed to assess the prevalence and severity of dental erosion among 12 to 16 year-old school children and to determine the potential risk factors for dental erosion.

MATERIALS AND METHODS :

This cross-sectional survey was conducted in school children of age group 12 to 16 school located in rural ,semiurban and Urban parts of Tirunelveli, Tuticorin and Kanyakumari districts of Tamilnadu. Children of the age group of 12-16 , who were present on the day of examination and were willing to participate, with positive parental consent, were included. Children who were medically compromised, not willing to participate and did not have parental consent were excluded from the study.

All the children of the above said age group were allowed to participate in the study and there were 257 of them who participated in it . A questionnaire was designed to record information about , dental hygiene practices, food habits,brushing habits and risk factors for tooth wear.. The

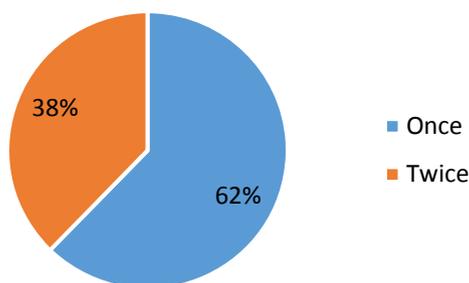
questionnaire was also explained by me in Tamil for the better understanding of subjects.

Permission to examine the school children was obtained from the Principals of respective schools . Informed consent was received from the children as well as from the parents of those children who were willing to participate. The study was scheduled to be conducted in the months of October to November 2015 (approximately 2 months).

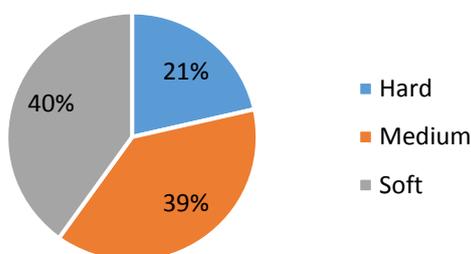
After receiving permission from the school authority, the questionnaires were distributed to the school children to be filled in the classroom under the supervision of the examiner. It was made sure that no discussion took place amongst the students while filling the questionnaire. The filled pro forma were returned to the examiner after 15-20 min. The pro forma were checked and any incomplete forms were asked to be completed. After pro forma were collected , basic idea about awareness of dental hygiene and health was given to the children and teachers for duration of 10 min. The health talk primarily focused on oral hygiene maintenance.

RESULTS :

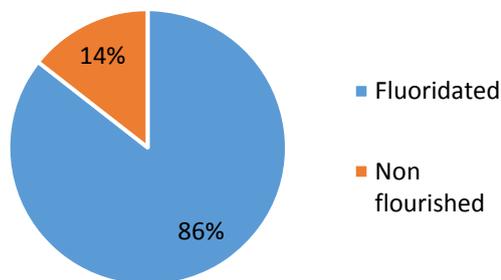
1) How many times do you brush a day?



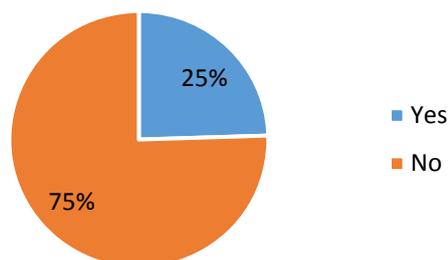
2) Which type of tooth brush do you use?



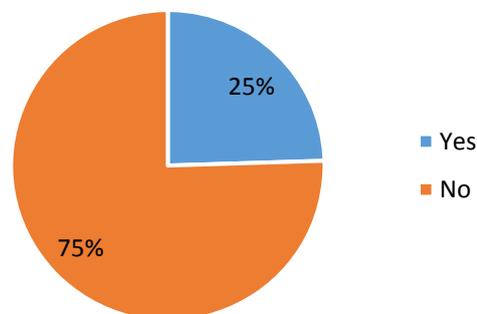
3) What type of tooth paste do you use ?



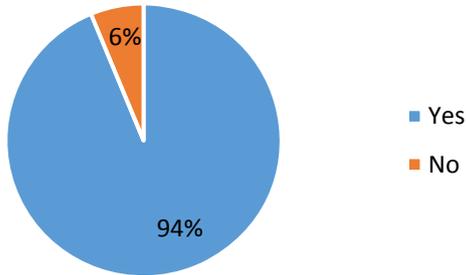
4) Do you brush your teeth hard ?



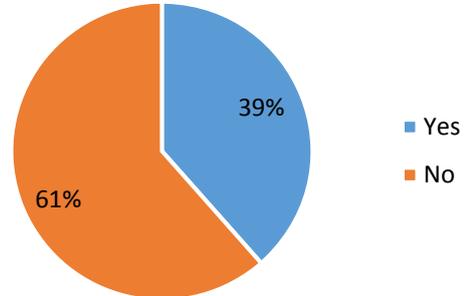
5) Are you under any medication?



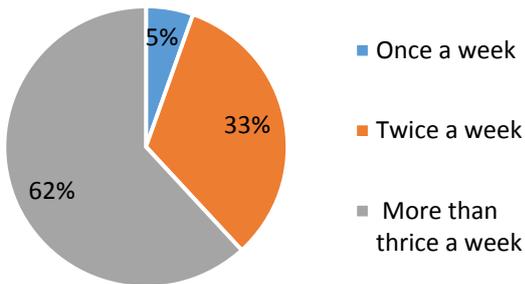
6) Do you have the habit of drinking soft drinks?



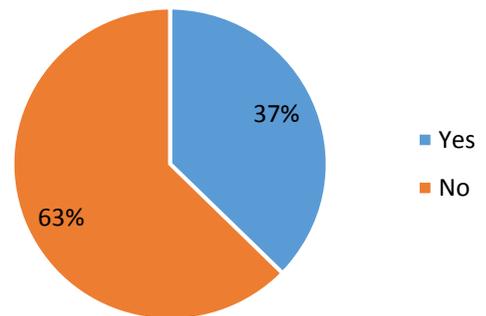
9) Do u have the habit of clenching your teeth while talking?



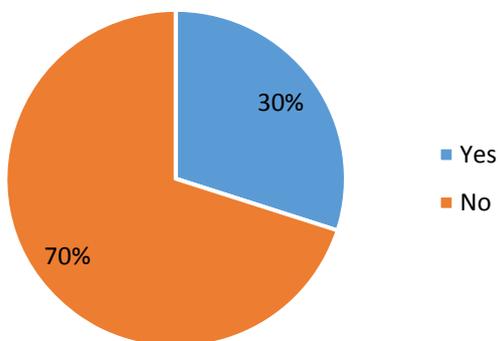
7) If yes rate of consumption per week ? (Only for those 241 people who said yes)



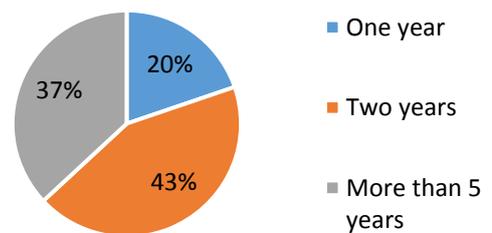
10) Do you use any dental appliances such as retainers or braces?



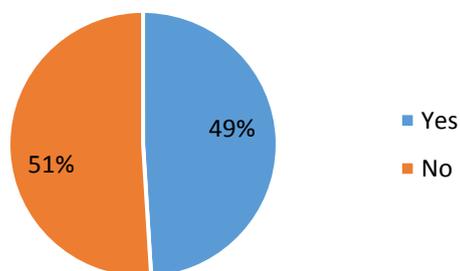
8) Do you have frequent pains in the teeth?



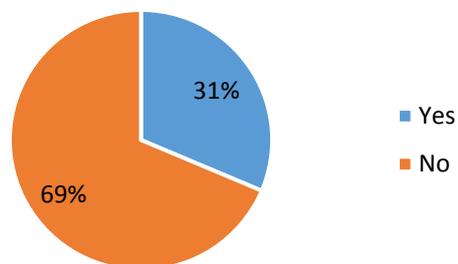
11) If yes, for how many years you have been using this ? (Only for those 157 people who said yes)



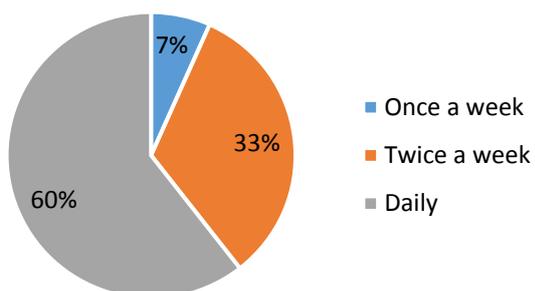
12) Do you eat a lot of sugary foods?



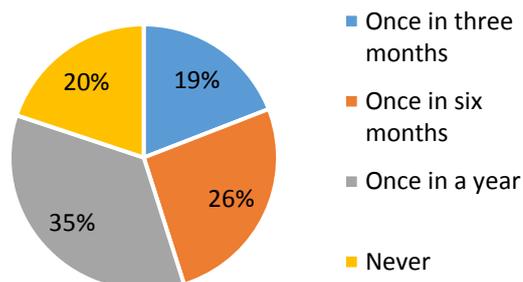
15) Do you have the habit of grinding your teeth while sleeping?



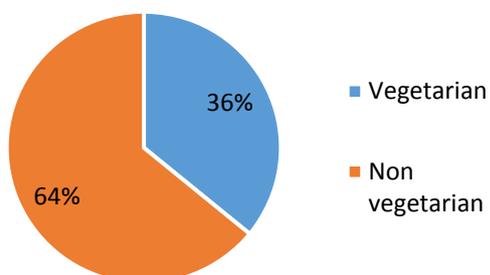
13) If yes, how often do you eat sugary foods?(Only for those 180 who said yes)



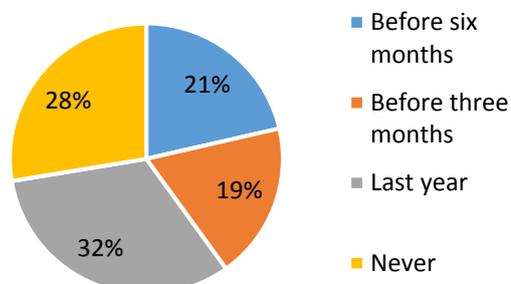
16) How often do you visit your dentist?

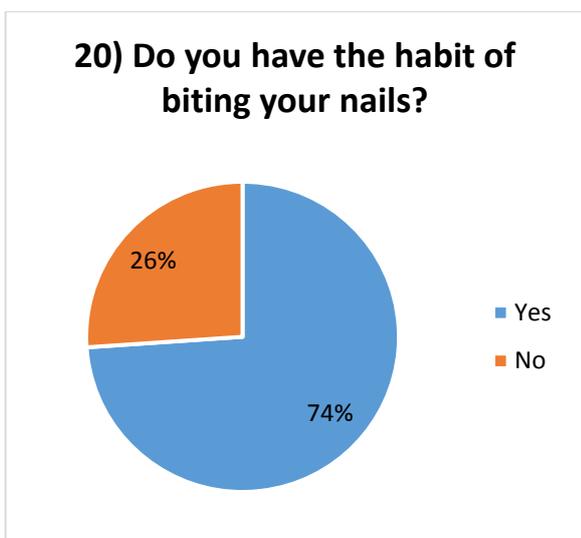
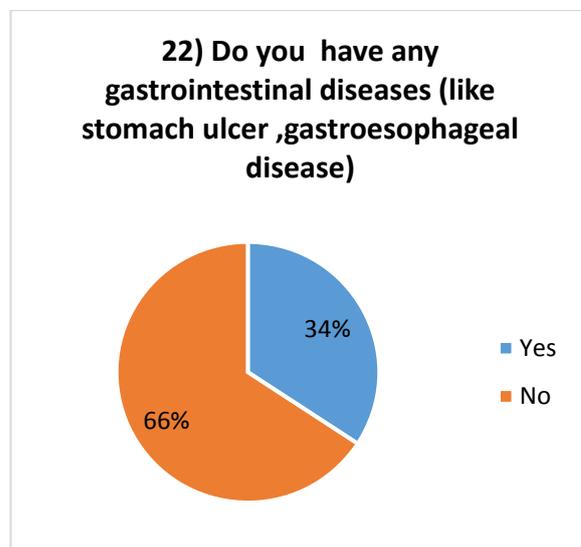
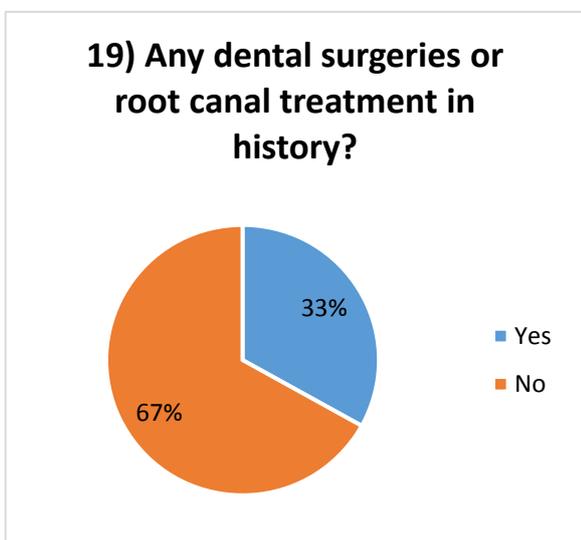
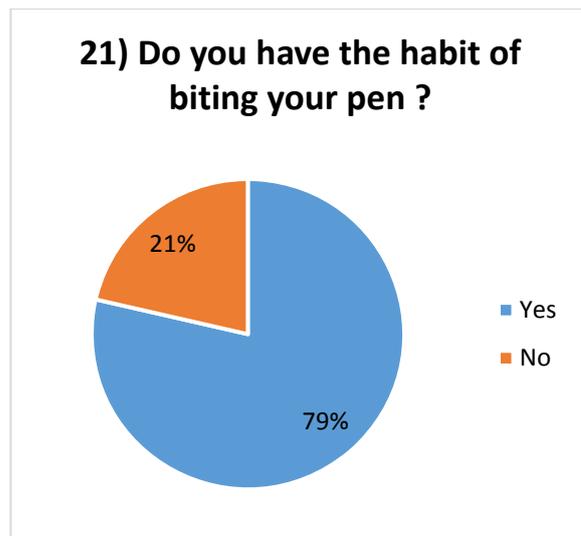
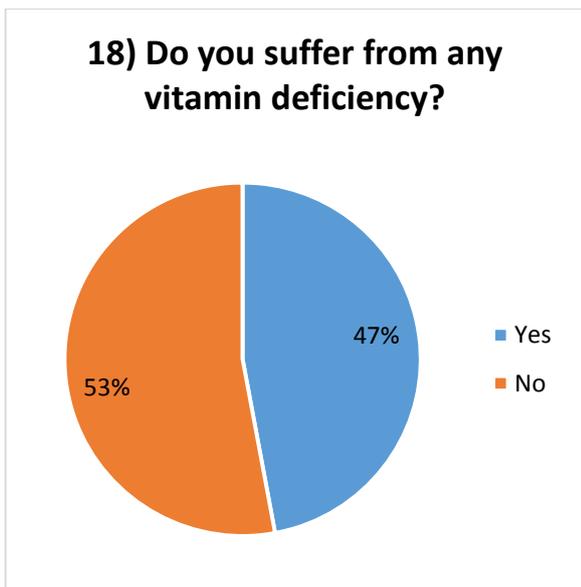


14) You are a ,



17) When was your last visit to your dentist?





Totally about 257 children participated in this survey. The differences in gender, socioeconomic status and their diet were found to be statistically significant between the groups. 12- to 16-year-old children is appropriate because, at this age, the exposure of teeth to various diseases is relatively higher.

Erosion was found to be significantly associated with type of school, socioeconomic status, frequency of brushing, types of toothpaste and tooth brush, Average frequency of consumption of lemon and cola drinks, frequency of consumption of sweets, type of soft drinks preferred and method of consumption. Since erosion is a multifactorial disease, various factors play a vital role in the development of dental erosion. The children who consumed carbonated drinks had a significantly higher tendency to develop dental erosion than children who preferred non-carbonated drinks or who never consumed carbonated drinks. frequency of sweets consumption, method of consumption of preferred drinks, method of brushing and types of tooth brush used were also found to be some of the major factors causing dental erosion.

DISCUSSION:

The objectives of the study is to get a clear idea about the prevalence and severity of dental erosion among 12- to 16-year-old school children, and to find the various factors which serves as potential threat, causing dental erosion and tooth wear, through a self-administered questionnaire. (12). Diet is one of the important factors in development of erosion lesions. However, low prevalence of dental erosion in the present study indicates that the children had less exposure to fizzy and erosive drinks. Erosion seemed to increase with the increase in brushing frequency. It was found to be significantly higher in school children who brushed twice or more daily. Milosevic (13) also found a positive association between frequency of tooth brushing and development of dental erosion. Some kinds of toothpastes can accelerate tooth wear due to the removal of superficial enamel layer. Ponduri et al. (14) reported non-fluoride toothpaste could increase dentine loss compared with drinks alone. On the contrary; fluoride and re-mineralizing toothpastes (containing NaF, calcium, phosphate, and fluoride ions) are effective in inhibiting enamel erosion. The fluoride concentration around 1,100 ppm in dentifrices helps to reduce dentin wear caused by erosion, but the protection for dentin does not increase with increasing fluoride concentration (15). Re-mineralizing toothpaste is more effective in decalcified enamel (16). It could improve tooth-surface smoothness and gloss with regular use. Even the texture of tooth brush plays an important role in toothwear. Erosion has been found to be significantly associated with frequency of lemon and cola consumption. Johansson et al. (17) did a comparison study and found a positive association between erosion and soft-drink consumption. The present study showed that children who regularly consumed soft drinks had a higher tendency to develop dental erosion than children who did not. Because of the acidity and high sugar content of cola drinks, their corrosive potential is probably related to both the volume and the frequency of intake (17). Erosion was found to be significantly associated with the frequency of sweet consumption. Studies have shown that the consumption of sweet food and fermentable carbohydrates lower the pH, thereby facilitating the dissolution of enamel (18). Erosion was found to be significantly associated with carbonated drinks consumption. The school children who consumed carbonated drinks had higher tendency to develop dental erosion when compared to children who preferred non-carbonated drinks. Moazzez et al. (19) did a comparison study and found a positive association between reported consumption of carbonated drinks and dental erosion which was similar to the findings of Al-Dlaigan et al. (20). Carbonated drinks have lower pH than fruit juices (21). The buffering capacities are in the following order: fruit juices, fruit-based carbonated drinks, non-fruit-based carbonated drinks (22). Besides causing erosion on tooth surfaces, carbonated drinks could reduce surface hardness of enamel, dentin, microfilled composite, and resin-modified glass ionomer cements (23). The strongest predictors for development of dental erosion were cola

consumption, and consumption of carbonated drinks and sweets.

CONCLUSION:

Erosive tooth wear is one of the major threats to children and adults in all regions of the world. The occurrence of tooth wear was low in school children, but various risk factors such as average frequency of sweet consumption and consumption of carbonated drinks in large volume over a prolonged period may cause severe loss of hard tissues of oral cavity that would adversely affect aesthetics and oral function. Appropriate steps should be taken for early intervention, as it is important for effective prevention of erosive tooth wear.

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