Original Article

Prevalence of malocclusion and its relationship with Dental caries in students of age 18-25 years

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Abstract

Aim: the aim of the study is to determine prevalence of malocclusion and its co-relation with incidence of dental caries in 18-25-year students.

Method: The study consisted of 144 students of the age group of 18- 25 years. The prevalence of malocclusion was determined by Angle's classification. To know about dental caries (DMFT) decayed, missing, filled teeth index was used in this study.

Result: Total number of 144 students included in this research study, 7.63% students had normal occlusion and the most of (92.37%) showed some type of malocclusion. DMFT scores that 6.26% students had negative sign of caries, decayed, missing, filled teeth.

Conclusion: The current study doesn't yield significant co-relation between malocclusion and dental caries, but a weak positive correlation was found between class 3 malocclusion and dental caries.

Keywords: malocclusion, caries.

INTRODUCTION

In spite of the achievements and advancements in the field of oral health care worldwide, oral health remains one of the major health problems. The impact of the oral health is not limited to only pain and suffering but goes to extend till impairment of the function and affection on the quality of life of people. Malocclusion is one of the most prevalent oral health issue next to periodontal diseases and dental caries and usually ranked third among public health dental diseases priorities.1 Malocclusion (abnormal tooth alignment) not only contributes to oral health but also negatively affects an overall well-being and personality of individual's life2,3

Even though malocclusion is not considered as a disease instead has been identified as a morphological variation and it is not a life-threatening condition, a high demand for treatment can be notice.4

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Malocclusion is a state in which there is a deviation from the normal relation of the teeth with the teeth present in the same arch or/and to teeth in the opposite arch. Malocclusion can be caused due to genetic or environmental, and/or combination of both factors along with local factors (negative oral habits, dental abnormalities, developmental causes, physical agents, shape and size of the teeth and location of their growth 5.

Untreated malocclusion can cause dental caries, poor oral hygiene, poor gingival health, trauma from occlusion, temporomandibular joint dysfunction, abnormal facial growth, pulpal and periapical lesions, speech difficulties. Various studies have proved that there is a positive relation between the dental caries and malocclusion. Due to malocclusion its hard for patient to maintain oral hygiene which leads to increase of plaque accumulation on the surface of teeth and is more susceptible to caries development. Malocclusion provides additional retentional areas for food and plaque. It can cause limited access for tooth brush and natural cleansing effect of the teeth by the tongue and saliva is also limited–making oral hygiene difficult which leads to dental caries.

Caries is one of the most infectious multifactorial disease which interferes with normal nutrition intake and all other daily activities. It is a result of acid production by bacterial fermentation of food debris and results in localized dissolution and destruction of calcified tissues of teeth. That leads to cavity formation.

However, in the literature, there are few number of studies that analyze the relationship between malocclusion and dental diseases such as dental caries and periodontal diseases.so our study is an attempt to know the occurrence of dental caries with respect to malocclusion.

MATERIALS AND METHODS:

The present study was conducted to know the prevalence of dental caries in relation to malocclusion among students of Karnavati university of Gandhinagar district, Gujarat, India.

A total of 250 students were surveyed. students with medical problems such as xerostomia, epilepsy, having mixed dentition and those undergoing orthodontic procedure were excluded. Students with past/present history of orthodontic treatment were also excluded from the study.

All the willing students with permanent dentition were included, so the final sample had 144 students including 72 boys and 72 girls.

Students were clinically examined with informed consent and were acknowledged about the method of conveyance of the study and were made sure about the confidentiality of their information. Intraoral and extraoral examination were carried out on patients, using mouth mirror, straight probe and curved explorer. Status of malocclusion and dental caries were recorded in oral medicine and radiology department, then performa was prepared for this purpose. Furthermore, The study proforma consisted of three parts, the first part pertaining to the questions that included demographic information such as age and sex. The second part recorded information regarding dental caries status using the WHO Oral Health Assessment Form (1997).7 The third part used to know the prevalence of malocclusion using parameters as past dental history, history of oral habit, history of trauma, lips, profile, crowding , deep bite, open bite spacing , cross bite , rotation, tooth out of arch, occlusion and DMFT . Malocclusion was determined by angle's classification and the occurrence of caries was assessed with the help of the decayed, missing, filled teeth (DMFT) score in according to the criteria by the world health organization (1997). The teeth with filling or caries or/and with recurrent signs of caries were counted as decayed. Only the restored teeth with no caries were included as filled teeth while the teeth lost due to caries were counted as missing.

Before data collection the 4 examiners were trained and calibrated to ensure inter-examiner variability.

Data was tabulated and master chart was created in Microsoft Excel (2007) for the purpose of data analysis. The Statistical software namely SPSS version 16.0 (SPSS Inc., USA) was used for the analysis of the data. quantitative values were subjected to statistical analysis. The P value of 0.05 or less was considered as statistically significant.

RESULT:

A total of 144 students of Karnavati university from the fixed age group of 18-25 years without past or present history of orthodontic treatment were included for the study. All participants filled out the study form. There were 72 (50%) male and 72 (50%) female study participants. Out of 144 students 56.94% (58.33% male and 63.88% female) had crowding . Our research says that 43.05% students (36.11% males and 50% females) had deep bite . According to our research female had more prevalence of crowding and deep bite . 2.08% (.069% in anterior open bite and 1.38% posterior open bite)of total students had open bite . Out of 144 students 29.84% had spacing in which the prevalence of midline diastema (9.72%) was found maximum .

Class 1 malocculsion had the highest percentage of sample 83.33% (86.11% male and 80.55% female) , while class 2 division 2 had the lowest incident and was present in only 1.38% of the entire sample (1.38% male and 1.38% female) . class 2 division 1 was 4.86% (5.55% male and 4.16% female), class 3 malooclusion was 3.37% (4.16% male and 2.77% female) and class 2 sub-1 was 6.94% (2.77% male and 11.11% female) .

DMFT score 0 had the highest percentage of sample 62.50% while DMFT score 3 had the lowest incidence and was present only 3.47% of entire sample .

Out of 144 students 37.50% had dental caries in relation with malocclusion , where the highest percentage of

47.22% in females and 27.77% in males .

TABLE 1: MALOCCLUSION PROFILE OF STUDY PARTICIPANTS

ANGLE'S CLASSIFICATION OF MALOCCLUSION			
	MALE (out of 72)	FEMALE (out of 72)	TOTAL (out of 144)
CLASS 1	62	58	120
CLASS 2 DIV.1	4	3	7
CLASS 2 DIV.2	2	1	3
CLASS 3	3	2	5
CLASS 2 SUB 1	1	8	9

TABLE 2:. DMFT PROFILE OF STUDY PARTICIPANTS

DMFT SCORE	MALE (out of 72)	FEMALE (out of 72)	TOTAL (out of 144)
0	51	36	87
1	7	10	17
2	11	13	24
3	0	5	5
4	1	7	8
5	2	0	2
6	0	1	1

TABLE 3: MALOCCLUSION AND DMFT SCORE.

Total number of patients (out of 144)							
DMFT SCORE	**0**	**1**	**2**	**3**	**4**	**5**	**6**
CROWDING							
DEEP BITE	38	6	9	4	4	0	1
OPEN BITE	1	1	1	0	0	0	0
SPACING							
Generalized	5 + 1	0	0	0	0	0	0
Midline diastema	5 + 6	0	3 + 1	0	0	0	0
High frenal attachment	3 + 1 + 6	0	0 + 1	0	0	1	0
OTHER	7	2	1	0	0	0	0
CROSSBITE							
Anterior	2	2 + 1	0	0	0	1	0
Posterior unilateral	3	0	0	1	0	0	0
Posterior bilateral	1	0 + 1	0	0	0	0	0
ROTATION	10	1	1	0	2	0	0
TOOTH OUT OF ARCH	5	2	4	0	0	0	1

ass I malocclusion had the highest percentage of sample 70.4%, with 73.2% in age group 7-9 higher than age group 10-12 (67.8%) (P<0.05). Class II malocclusion was 9.5%, while Class III had the lowest incidence and was present in only 1.1% of the entire sample.

Class I

malocclusion had the highest percentage of sample 70.4%, with 73.2% in age group 7-9 higher than age group 10-12 (67.8%) (P<0.05).

Class II malocclusion was 9.5%, while Class III had the

lowest incidence and was present in only 1.1% of the entire sample.

Class I

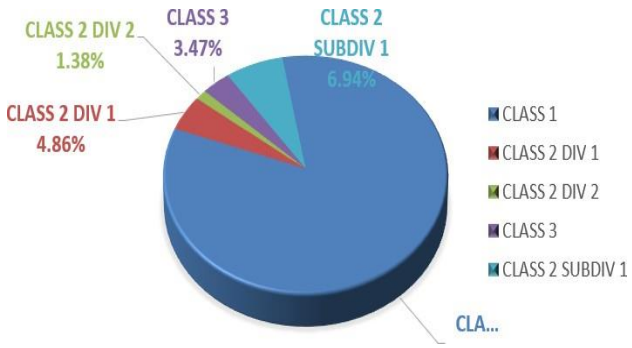
malocclusion had the highest percentage of sample 70.4%, with 73.2% in age group 7-9 higher than age group 10-12 (67.8%) (P<0.05).

Class II malocclusion was 9.5%, while Class III had the lowest incidence and was present in only 1.1% of the entire sample.

TABLE 4: ANGLE'S CLASS VS DMFT SCORE.

ANGLE'S CLASSIFICATION	DMFT SCORE						
	0	1	2	3	4	5	6
Class 1	**78**	**12**	**20**	**5**	**3**	**1**	**1**
Class 2 div 1	**4**	**1**	**0**	**0**	**2**	**0**	**0**
Class 2 div 2	**0**	**1**	**1**	**0**	**1**	**0**	**0**
Class 3	**1**	**0**	**2**	**0**	**1**	**1**	**0**
Class 2 subdivision 1	**4**	**3**	**1**	**0**	**1**	**0**	**0**

ANGLE'S CLASSIFICATION	DMFT SCORE						
	0	1	2	3	4	5	6
Class 1	**65**	**10**	**16.67**	**4.17**	**2.5**	**0.83**	**0.83**
Class 2 div 1	**57.14**	**14.29**	**0**	**0**	**28.57**	**0**	**0**
Class 2 div 2	**0**	**33.33**	**33.33**	**0**	**33.33**	**0**	**0**
Class 3	**20**	**0**	**40**	**0**	**20**	**20**	**0**
Class 2 subdivision 1	**44.44**	**33.33**	**11.11**	**0**	**11.11**	**0**	**0**



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