



The Relationship Of The Anterior Dental Malocclusion With The Incidence Of Gingivitis In Students Of Medical Faculty in Surabaya

Nike Ade Therinda¹, Wahyuni Dyah Parmasari^{2*}

¹ Medical Faculty of Wijaya Kusuma University, Surabaya, Indonesia

² Department of Dental and Oral Medicine, Medical Faculty of Wijaya Kusuma University, Surabaya, Indonesia

*Corresponding author email: wd.parmasari@uwks.ac.id

Abstract

Introduction: Gingivitis is an inflammation of the gums, which is the initial stage of gum and periodontal tissue disease, characterized by red gingival tissue, bleeding easily, bad breath (halitosis), and the presence of debris on the teeth and cervical area. Misaligned tooth is said to be one of the predisposing factors for gingivitis. **Purpose:** To determine the relationship between the arrangement of the anterior mandibular teeth with the incidence of gingivitis in students of the Faculty of Medicine, Wijaya Kusuma University, Surabaya. **Methods:** This study used a purposive sampling method with a total population of 125 subjects. From this population, 56 people were taken who experienced anterior crowding with gingivitis. The degree of malocclusion, i.e. anterior crowding, was examined clinically and was associated with gingivitis. The data obtained were analyzed by Chi-square test. **Results:** There is a significant relationship between the anterior mandibular malocclusion and the incidence of gingivitis ($p < 0,05$). **Conclusion:** Anterior tooth arrangement affects the incidence of gingivitis among medical faculty students in Surabaya.

Keywords: composition anterior mandibular teeth; incident of student gingivitis

Introduction

Dentofacial malocclusion is an aberration in dentofacial growth that can interfere the mastication, swallowing, speech, and facial harmony. The prevalence of malocclusion in Indonesia is still very high, around 80% of the population, and is one of the major dental and oral health problems. One of the most common malocclusions is crowding of the anterior teeth that interfere with the function of mastication, speech, and aesthetics. It also causes dental and gum tissue disease. In severe conditions, crowding teeth can cause facial defects can cause psychological disorders for the patients.¹

Crowded teeth can be caused by a small jaw that does not accommodate enough teeth or the size of the teeth that are too large so that the teeth are not in a normal position or overlapping. Food impaction in the proximal area of the crowding teeth can not easily be cleaned, and the tooth position of the crowded teeth makes it difficult for saliva to clean the food debris. This may lead to gingivitis and periodontal problems.



This study was to evaluate the relationship between the arrangement of the anterior mandibular teeth with the incidence of gingivitis in students of the Faculty of Medicine, Wijaya Kusuma University, Surabaya.

Method

This study used a purposive sampling method involving 56 research subjects from a total population of 125 students. Clinical examination was done by a calibrated researcher to determine the parameter of crowding teeth if there is a disproportion of anterior teeth to tooth size, jaw size, and arch shape. The subjects included in this study were students with clustered teeth, overlapped, shifted, or rotated teeth in various directions.

Gingivitis examination was measured using Oral Hygiene Index-Simplified (OHI-S) on the anterior mandibular teeth, from the right to the left canine (3 2 1 | 1 2 3). Inflammation of the mucosa and gingival tissue was Scored as following: Inflammation of the mucosa and gingival tissue was scored as follows: $\leq 1,2$ = No gingivitis, $\geq 1,3$ = Gingivitis. The data obtained were analyzed with *the Chi-square test*.

Results

Figure 1. Teeth Anterior Dental Malocclusion

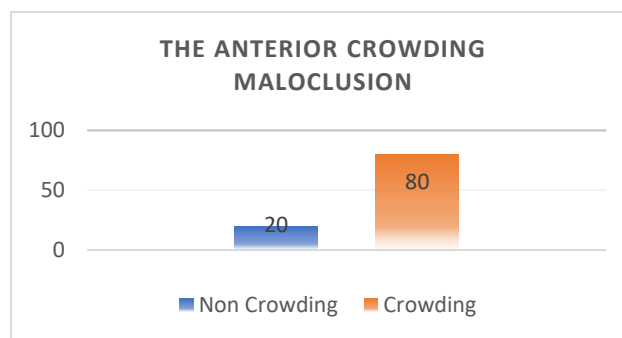
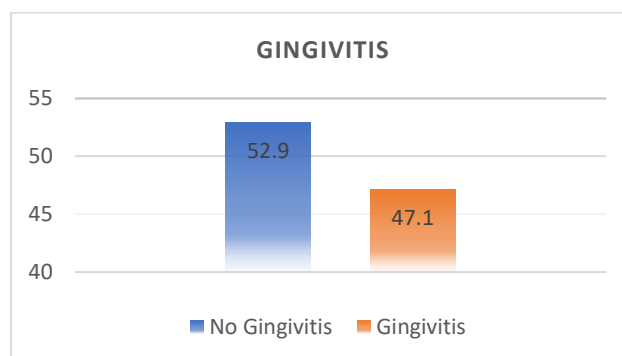


Figure 2. The Incidence of Gingivitis





Based on Figure 1, it can be seen that most of the respondents as many as 56 people (80%) experienced crowding of the tooth structure and only 14 people (20%) of the respondents did not experience the crowding of the teeth structure. Based on the graph in Figure 2 above, it can be seen that most of the respondents did not experience gingivitis (52,9%) and the rest experienced gingivitis (47,1%).

Table 1. Relationship of anterior mandibular teeth malocclusion with incidence of gingivitis in students of the Faculty Of Medicine, Wijaya Kusuma University, Surabaya

Arrangement of anterior mandibular teeth	Gingivitis Incidences		Total	Chi Square
	Non Gingivitis	Gingivitis		
<i>Non Crowding</i>	11	3	14	Sig. = 0,031
<i>Crowding</i>	26	30	56	
Total	37	33	70	

Source: Processed Questionnaire Results

Based on the results of the Chi Square test shown in Table 1, the p-value was 0.031 (< 0.05), it means that there is a significant relationship between the anterior mandibular malocclusion and the incidence of gingivitis in students of the Medical Faculty of Wijaya Kusuma University, Surabaya.

Discussion

A study conducted by Schroeder proved a direct relationship between bacterial plaque and gingival inflammation, which is the main factor causing gingivitis. However, gingivitis will not develop in individuals with good oral hygiene even though the teeth are irregular.⁴

Based on the Chi-Square test, the p-value was 0,031 (< 0,05), which means there is a significant relationship between the lower anterior teeth arrangement and the incidence of gingivitis. The abnormal teeth position makes efforts to maintain dental and oral hygiene more difficult. In the process of brushing teeth, it is possible that the proximal part of the teeth cannot



be cleaned properly, which in turn will cause the inflammation of the gingiva is called gingivitis.⁵

The arrangement of teeth is a condition where the teeth are crowded together in the oral cavity because the jaw is small so that it is not enough to accommodate the teeth, or the size of the teeth is too large so that the position of the teeth becomes crowded.⁶ This is called dental malocclusion, especially anterior crowding. A condition in which the arrangement of the teeth is one of the triggering factors for gingivitis.⁷ Food residue stuck in crowded teeth makes it difficult for saliva to clean the food residue. If brushing teeth is not done properly and correctly, the leftover food will result in excessive plaque buildup. If left for too long, it will cause gingivitis.⁸

Food debris that is not cleaned optimally can also be a place for bacterial growth. With increasing mineral content of saliva and plaque, it will harden into tartar (calculus). Calculus can appear on the cervical of the teeth and is clinically visible as a hard yellowish or brownish line that cannot be removed by brushing alone.⁹ Calculus can also occur in the interior of the periodontal pocket. Calculus is a good growth site for bacteria, and cause inflammation of the gingival and periodontal tissue.¹⁰

Conclusion

The results of this study indicates that there is a significant relationship between the mandibular anterior teeth malocclusion and the incidence of gingivitis among medical students in Surabaya.

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Conflict of interest

Researchers have no conflict of interest during conducting and completing this research.

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