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Incidence of Traumatic Stomatitis with Intensity of Fixed Orthodontic Patient Control in Students of the Faculty of Medicine, Wijaya Kusuma University Surabaya

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Abstract

Traumatic stomatitis is inflammation of the oral mucosa caused by the use of orthodontic appliances, it can be due to discomfort when using orthodontic appliances, allergies to orthodontic appliance materials, pinched or punctured oral mucosa. This study aims to find out how much the incidence of stomatitis is caused by trauma to fixed orthodontic appliances. The design of this research is a cross-sectional and analytic observation. With the population and sample of this study, 45 respondents were students of the Faculty of Medicine, Wijaya Kusuma University, Surabaya who performed fixed orthodontic treatment in the period May-June 2022. The data analysis used in this study was Fisher's exact test. The results showed that there was a significant relationship between the intensity of control and the incidence of traumatic stomatitis in fixed orthodontic users at the Faculty of Medicine, Wijaya Kusuma University, Surabaya. Fisher's test, obtained a p value of 0,03 ($p < 0.05$). This means that there is a relationship between the incidence of stomatitis and the intensity of control. The intensity of routine control can add information about how to maintain oral hygiene, as well as the use of oral hygiene aids that may help prevent traumatic stomatitis.

Keywords: traumatic stomatitis, orthodontics, intensity control

Original Research Article

Kejadian Stomatitis Traumatik dengan Intensitas Kontrol Pasien Ortodontik Tetap pada Mahasiswa Fakultas Kedokteran Universitas Wijaya Kusuma Surabaya

Abstrak

Stomatitis traumatik adalah peradangan pada mukosa mulut yang disebabkan oleh karena penggunaan alat ortodonti, bisa karena ketidaknyamanan saat menggunakan alat ortodonti, alergi pada bahan alat ortodonti, terjepit atau tertusuknya mukosa mulut. Hal ini untuk mengetahui seberapa besar tingkat kejadian stomatitis diakibatkan karena trauma piranti ortodontik cekat. Rancangan penelitian ini berupa Cross Sectional dan bersifat observasi

analitik. Dengan populasi dan sampel penelitian ini mahasiswa Fakultas Kedokteran Universitas Wijaya Kusuma Surabaya yang melakukan perawatan ortodonti cekat pada periode bulan Mei-Juni 2022. Analisis data yang digunakan dalam penelitian ini adalah uji Fisher. Didapatkan hasil bahwa terdapat hubungan yang signifikan pada intensitas kontrol terhadap kejadian stomatitis traumatik pada pengguna ortodonti cekat di Fakultas Kedokteran Universitas Wijaya Kusuma Surabaya. Dalam uji Fisher, diperoleh nilai p sebesar 0,03 ($p < 0,05$). Sehingga dapat disimpulkan bahwa H_0 ditolak dan H_a diterima. Artinya ada hubungan antara kejadian stomatitis dengan intensitas kontrol. Intensitas kontrol rutin dapat menambah informasi tentang cara menjaga kebersihan mulut, serta penggunaan alat bantu kebersihan mulut yang dapat membantu mencegah stomatitis traumatik.

Kata Kunci: stomatitis traumatis, ortodontik, intensitas kontrol

INTRODUCTION

In today's era, the need for orthodontic treatment is increasing, referring to a study by Wardono et al which stated that the current level of patient needs reached 80% from last year. This is due to public awareness of facial aesthetics (Wardojo et al., 2022). Some people do orthodontic treatment not only because they want to correct the position of the abnormal arrangement of teeth (malocclusion) but also to look attractive and increase one's confidence (Ratya Utari & Kurnia Putri, 2019).

Based on their use, orthodontic appliances consist of 2 types, namely removable orthodontic appliances and fixed orthodontic appliances. Maintenance and control must be considered by every user to reduce the risks and complications of using fixed orthodontic appliances. If the traumatic stomatitis is left unchecked it will be a trigger for infection, recurrent disease and malignancy (Amelia, 2018).

Traumatic stomatitis is inflammation of the oral mucosa caused by the use of orthodontic appliances, it can be due to discomfort when using orthodontic appliances, allergies to orthodontic appliance materials, pinched or punctured oral mucosa or due to mechanical trauma due to tooth contact that injures the oral mucosa, sharp food structures (Kunsputri & Suhartiningtyas, 2013).

From the description above, researchers are interested in conducting research on the relationship between the incidence of traumatic stomatitis and the intensity of control of fixed orthodontic patients (Violeta & Hartomo, 2020). The aim of this study is to find out how much the incidence of stomatitis is caused by trauma to fixed orthodontic appliances.

METHODS

The researcher has received a certificate of ethical eligibility issued by the ethical commission of the UWKS medical faculty with number No. 56/SLE/FKUWKS/2022. This type of research uses analytical observational methods, namely research that explains the existence of a relationship or correlation between variables

using hypothesis testing. Research with cross sectional approach. Aim of this research was to know the relationship between the incidence of traumatic stomatitis with the intensity of control. Respondents in this study were 45 medical faculty of Wijaya Kusuma University students who used fixed orthodontic patients. This study was conducted at Poliklinik UWKS, this research was conducted from May to June 2022.

Respondents who meet the criteria: respondents wearing fixed orthodontics. Respondents gave the explanation of the research to be carried out and asked about their willingness to become research subjects. After the respondent agreed, the respondent was asked to sign an informed consent or consent form. Respondents will be interviewed by questionnaire about the intensity of orthodontic control. Criteria of Control intensity including "Always" criteria which is checked every two and three weeks, "Often" criteria which is checked more than a month and less than 3 months, meanwhile "Seldom" criteria which is checked more than 3 months. Then a clinical examination will be carried out to see the clinical description of traumatic stomatitis in the oral cavity. Stomatitis grade in this research determined by differentiated according to the diameter of the lesion. Grade 1 is a hyperemic lesion, Grade 2 is an ulcerous lesion less than 1 cm in diameter, Grade 3 is ulceration lesion with diameter 1-2 cm and Grade 4 is ulceration lesion with diameter more than 2 cm.

The research data that has been collected is then processed by processing research data with the SPSS program, and presented in the form of a table. The data analysis method used is univariate analysis and bivariate analysis. The data that has been collected is processed using Fisher's Test ($p < 0,05$) in the SPSS program.

RESULTS

Analysis of the description of the frequency distribution of 40 respondents based on the characteristics of the respondents studied are as follows:

1. Univariate Analysis

a. Description of Respondent's Characteristics by Gender

Table 1. Distribution of respondents by gender

Gender	Amount (person)	Percentage(%)
Female	36	90 %
Male	4	10%
Total	40	100

b. Description of the characteristics of respondents based on the length of orthodontic treatment

Table 2. Distribution of respondents based on length of orthodontic treatment

Usage Time	Amount (person)	Percentage(%)
< 1 years old	3	7.5 %
1-2 years old	11	27.5%
>2 years old	26	65 %
Total	40	100

Source: Research, 2022

Based on Table 2 the description of respondents based on length of use, namely respondents with duration of use < 1 year as many as 3 respondents

(27.5%), 1-2 years of use as many as 11 respondents (27.5%), and duration of use > 2 years as many as 26 respondents (65%).

c. Description of respondent characteristics based on control intensity

Table 3. Distribution of respondents based on control intensity

Control Intensity	Amount (person)	Percentage (%)
Always	12	30 %
Often	15	37,5 %
Seldom	13	32,5 %
Total	40	100

Based on Table 3 the description of respondents based on the intensity of control, the majority of respondents often perform orthodontic control, namely 15 respondents (37.5%), followed by

respondents who rarely control as many as 13 respondents (32.5%) while respondents who routinely control only 12 respondents (30%).

d. Characteristics of respondents based on grade of traumatic stomatitis

Table 4. Distribution of respondents by grade of traumatic stomatitis

Grade of stomatitis	Amount (person)	Percentage (%)
Grade 1 (hyperemia)	0	0 %
Grade 2 (\varnothing <1cm)	14	35 %
Grade 3 (\varnothing 1-2 cm)	16	40 %
Grade 4 (\varnothing >2 cm)	10	25 %
Total	40	100

Based on Table 4, the highest percentage is respondents with stomatitis with diameter 1-2 cm, as many as 16 respondents (40%), and the

lowest respondents are respondents with grade 1, as many as 0 respondents (0%).

2. Bivariat Analysis

- a. Analysis of the relationship between the incidence of traumatic stomatitis and the intensity of control.

Table 5. The relationship between the incidence of traumatic stomatitis with the intensity of control

Intensity of Control	Grade of Stomatitits								Amount	p-value	
	1		2		3		4				
	n	%	n	%	n	%	n	%			
Always	0	0	11	79	1	6,3	0	0	12	30	0,03
Often	0	0	3	21	10	62,5	2	20	15	37,5	
Seldom	0	0	0	0	5	31,3	8	80	13	32,5	
Amount	0	0	14	35	16	40	10	25	40	100	

Based on Table 5. from the results of data analysis using the chi-square test, it was found that the results of the chi-square test could not be carried out because it did not meet the requirements (there were empty cells), therefore the test used was the alternative test of Fisher's test, obtained a p value of 0, 03 ($p < 0.05$). This means that there is a relationship between the incidence of stomatitis and the intensity of control.

DISCUSSION

Traumatic stomatitis is inflammation of the oral mucosa caused by the use of orthodontic appliances, it can be due to discomfort when using orthodontic appliances, allergies to orthodontic appliance materials, pinched or punctured oral mucosa (Diah et al., 2019) or due to mechanical trauma due to tooth contact that injures the mouth. oral mucosa, sharp-structured food (Santana et al., 2017). In this study, it was found that the majority of respondents had grade 3 traumatic stomatitis (lesion size 1-2 cm) (40%). These results are in line with a study conducted by Baricevic, where it was found that the most common lesions in patients with fixed orthodontics with metal used were erosions (7%), ulcerations (7%), contusions (7%), and desquamation (5%) due to trauma due to orthodontic appliances with a lesion size of 1-2 cm or grade 3(Santana et al., 2017).

The results of the study in (Table 1) show that the majority of respondents in the study were

women, as many as 36 people (90%), while only 4 men (10%). Orthodontic treatment is often done on the basis of aesthetics, in this case, the majority of women pay more attention to problems related to aesthetics, especially dental health problems because most women feel insecure if they have an untidy tooth arrangement. However, things related to aesthetics are not too much of a priority for men, so that the majority of users of fixed orthodontic appliances are women(Amadori et al., 2017).

The results of the study in (Table 3.) The majority of respondents in this study had frequent control intensity (3-5 months), as many as 15 respondents (37.5%). This may be due to the Covid-19 pandemic, during a pandemic, patients are rarely controlled, due to transmission through droplet infections. Research conducted by Violeta, which showed that during the Covid-19 pandemic patients with orthodontic treatment tended to delay their control visits due to anxiety about contracting the Covid-19 virus (Violeta & Hartomo, 2020).

Patients who are undergoing orthodontic treatment are required to make regular visits to the dentist or perform orthodontic control at intervals of about 4-6 weeks. Orthodontic control aims to evaluate tooth movement, examine orthodontic appliances that have been installed, evaluate orthodontic development, and resolve complaints that arise during orthodontic treatment. Orthodontic control in general can minimize the occurrence of trauma in patients using fixed orthodontics (kornialia, 2018).

The Relationship between stomatitis incidence and control intensity in this study found a relationship between the incidence of traumatic stomatitis and the intensity of control ($P < 0.05$). This is in line with the research conducted by Suhartiningtyas et. al. which stated that the incidence of traumatic stomatitis in fixed orthodontic users was more common in respondents with less control intensity, this was caused by wires that were too long or detached and not re-evaluated causing the wire to puncture the oral mucosa causing lesions (Suhartiningtyas et al., 2020). The intensity of routine control, allows the dentist to evaluate orthodontic appliances that do not fit in their proper place so as to avoid lesions due to trauma from orthodontic appliances. In addition, a study conducted by (Ratya Utari & Kurnia Putri, 2019) showed that oral hygiene plays an important role in the occurrence of traumatic stomatitis in fixed orthodontic users (Kunsputri & Suhartiningtyas, 2013). shows that the use of fixed orthodontic appliances increases the area of stagnation and makes it difficult to clean dental plaque on its own, so regular check-ups with the dentist are necessary. The accumulation of dental plaque can increase the risk of dental and oral problems during orthodontic treatment, especially the incidence of stomatitis. Orthodontists need to emphasize the importance of better oral hygiene during orthodontic treatment. The intensity of routine control can increase the motivation of fixed orthodontic users and increase information about how to maintain oral hygiene. Dentists provide information about maintaining proper oral and dental hygiene and the use of oral hygiene aids that may help prevent traumatic stomatitis (Fitri, 2020).

CONCLUSION

There is a significant relationship between the intensity of control and the incidence of traumatic stomatitis in fixed orthodontic users at the Faculty of Medicine, Wijaya Kusuma University, Surabaya. The intensity of routine control can add information about how to maintain oral hygiene, as well as the use of oral hygiene aids that may help prevent traumatic stomatitis.

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