

# Abnormality of Soft Tissue in the Oral Cavity of Youth with Normal Blood Pressure and Hypertension During Social Service Activities in Karang Pilang District

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## ABSTRACT

**Background:** The oral mucosa soft tissue can develop white, red lesions, vesiculobullous lesions, and ulcerated lesions as a result of systemic disease. The age of patients with systemic diseases affects the profile of oral soft tissue abnormalities. In developed countries, roughly 60% of young people with systemic diseases have at least one oral lesion. Hypertension is one of the systemic diseases that can cause clinical manifestation in oral soft tissue mucosa. **Objective:** To discover the profile of soft tissue abnormalities of the oral cavity in youth with a normal blood pressure and hypertension in the Karangpilang district. **Methods:** The type of this research is analytical observational. The method is that blood pressure is measured in each sample, then grouped into 2 (normal blood pressure group and hypertension group). Furthermore, each group was examined with an intra-oral examination that will be carried out to determine the condition of the soft tissue of the oral cavity in each sample. Processing and analyzing the research data using the Spearmen Correlation Test method. **Result:** There is a strong positive relationship between the systolic pressure and the number of soft tissue abnormalities in the oral cavity. **Conclusion:** The oral cavity's soft tissues are frequently obtained during examinations of patients with elevated blood pressure.

**Keywords:** Abnormalities, Hypertension, Oral cavity, Soft tissue.

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## INTRODUCTION

Soft tissue of the oral cavity consists of palate, tongue, gingiva, labial mucosa, buccal mucosa, and frenulum.<sup>1</sup> The healthy of the oral cavity soft tissue is part of a healthy body, come along play a role in determining somebody's health status. It can be seen from the presence or absence of abnormalities in oral soft tissue.<sup>2</sup> Disease or soft tissue abnormalities of the adult oral cavity become the most serious concern of experts, especially with the increasing number of deaths caused by a cancer of the oral cavity particularly in developed countries in Asia. Soft tissue abnormalities of the oral cavity progressively evolve and divided according to the cause such as hereditary, traumatic, stress, allergy, infection or an unknown cause (idiopathic), as well as manifestation from a systemic disease that has been affecting the by patient.<sup>3</sup> Changes in the normal color of the oral mucosa are a symptom of a lesion in a disease or abnormalities.<sup>4</sup> Clinical examination alone is not sufficient enough to determine the diagnosis of oral soft tissue lesions. Therefore, a proper anamnesis is required, and on some occasion a part of the diseased tissue (biopsy) is taken for histopathological anatomical examination, which allows us as dentists to establish the final diagnosis and provide an appropriate therapy.<sup>5</sup>

The age factor cannot be ignored. Along as a person gets older, will change in clinical and psychological aspects. Changes in the clinical aspects include providing various effects on oral tissues and the function of tissues.<sup>6</sup> According to WHO, the age range is divided into 5, including minors, youth, middle-aged, old-adult, and elderly. The prevalence of hypertension in Indonesia reached 31.7% in 2013, starting from the population aged 18 years and over. That prevalence increases with age. The population range of youth to elderly in Indonesia in 2020 is predicted to increase by 11% of the current total population. The increase is concomitant with the increasing prevalence of systemic disease that can manifest in the oral cavity. Systemic disease can affect all age ranges, especially in the range

of youth to elderly.<sup>7</sup> Systemic diseases that have the potential to cause clinical manifestations in the soft tissues of the oral mucosa are hypertension, diabetes mellitus, anemia, and others. Variety of lesions can be found in the soft tissue of the oral mucosa as a manifestation of systemic disease, including white red lesions, vesiculobullous lesions, and ulcerated lesions.<sup>4</sup> The Profile at the soft tissue abnormalities of oral cavity in patients with systemic disease has variety dependent factors, such as age factor and medical treatment they used.<sup>7</sup> In developed countries, approximately 60% of the youth population with systemic diseases has complaints of lesion in the oral cavity at least one case. This may be an oral manifestation due to the use of therapy related to their systemic disease.

Social service activities are held regularly four times a year in our community. There are 4 districts that we regularly visit in turn for the implementation of social services. Those are Karangpilang, Sukomanunggal, Wonokromo, and Tegalsari. Now it's the turn of the Karangpilang district that we visit to implement social services.

Therefore, on this occasion the researcher interested to conduct research on the profile of soft tissue abnormalities in the oral cavity in the youth age range (according to WHO) with a normal blood pressure and hypertension conditions in Karangpilang District.<sup>8</sup>

## MATERIALS AND METHODS

This type of research is Analytical Observation. The design of this research is Analytical Observation with Cross Sectional approach. The populations in this study were patients (community) who attended Social Service activity in Karangpilang district, Surabaya. The experimental unit of this research is the patient's (community) who attends Social Service activities in Karangpilang district with a youth age range of 18-65 years. Determine the

sample size using the formula of Simple Random Sampling.

$$n = N/N(d)^2 + 1$$

Information :

n = big total sample  
N = population  
d = precision value (0.05)

Based on the estimated target population of patient's (communities) who participate in Social Service activities (N), which is 50 patients, the sample size (n) is 44 patients with a youth age range of 18-65 years. The sample size was divided into 2 groups, 22 patients with normal blood pressure of 86-120 mmHg (systolic) and 56-80 mmHg (diastolic), and 22 patients with high blood pressure which is above 120 mmHg (systolic) and 80 mmHg (diastolic). The soft tissue abnormality profile of the oral cavity examined was the condition of the soft tissue in the patient's oral cavity found through intra-oral clinical examination, which could be lichenoid lesions, xerostomia, angioedema, and/or gingival enlargement.

## RESULTS AND DATA ANALYSIS

Based on the blood pressure examination and the condition of the soft tissue abnormalities of the oral cavity in each patient, the following results were attained:

**Table 1.** Patient examination results

Variable	N	%
Gender		
Male	11	23.40
Female	36	76.60
Blood Pressure		
Normal	26	55.32
Hypertension	21	44.68
Amount Of Intraoral (Soft Tissues) Cases Found In All Types Of Blood Pressure		
0 Case	10	21.28
1 Case	13	27.66
2 Cases	10	21.28

3 Cases	14	29.79
Amount Of Intraoral (Soft Tissues) Cases Found In Patients With Normal Blood Pressure		
0 Case	10	38.46
1 Case	13	50.00
2 Cases	3	11.54
3 Cases	0	0.00
Amount Of Intraoral (Soft Tissues) Cases Found In Patients With Hypertension		
0 Case	0	0.00
1 Case	0	0.00
2 Cases	7	33.33
3 Cases	14	66.67

Based on the examination of patient's systolic blood pressure at this social service, the number of the patients classified to the youth age range (18-65 years) was 47 patients, with a details of 26 patients having normal blood pressure, and 21 patients having a high systolic blood pressure (hypertension).

In this study, we only compared and processed data on the number of patients range 18-to 65 years old who had high systolic blood pressure and normal systolic blood pressure. We counted and compared the number of intraoral cases found on the oral mucosa (soft tissue abnormalities) of these patients (please see the dark blue column and light blue column).

The data obtained in the research does not require normality test because the scale of the data obtained is ordinal scale data. The data was tested for correlation using Spearman's test.

**Table 2.** Table of correlation between systolic pressure and soft tissue abnormalities case

Test	Blood Pressure			Oral Soft Tissue Cases		
	R	p	N	R	p	N
Spearman's rho	.768*	0.000	47	.768*	0.000	47

\*\*Correlation is significant at the 0.01 level (2-tailed).

Based on the table, obtained a significant correlation (sig = 0.0000, Sig < 0.05). Furthermore, based on the correlation value (R

= 0.768) found a strong correlation with a positive direction between systolic pressure with the value of oral soft tissue abnormalities, in other words the higher the patient's systolic pressure, the larger or higher the value of oral soft tissue abnormalities discover in the patients.

## DISCUSSION

Hypertension is a condition with an increased blood pressure above normal. Treatment of hypertension is proved to be very effective and widely available but some side effects inter alia in the oral cavity cannot be avoided.<sup>9</sup> Based on data analyzed in this research, the higher a person's blood pressure (both systolic and diastolic), the taller or greater the number of soft tissue abnormalities found in the oral cavity. One possible reason is that the use of anti-hypertensive drugs triggers the appearance of lesions on the patient's oral mucosa.

Based on anamnesis, all patients with high blood pressure in this study sample, are taking anti-hypertensive drugs. Hypertension treatment which is proven to be very effective and widely available has succeeded in controlling hypertension patients thereby reducing morbidity and mortality due to hypertension.<sup>8</sup> Consumption of anti-hypertensive drugs cannot be ignored by patients, but some side effects due to hypertension drugs cannot be avoided. Complaints about the soft tissues of the oral cavity are often obtained on examination of the patient's, namely in the form of conditions Xerostomia, Gingival enlargement, and Dysgeusia (taste disturbance).<sup>10</sup>

Kumar et al. examined complaints of antihypertensive drugs against the oral cavity and reported gingival bleeding with characteristic redness of the marginal gingiva (85.38%), hyposalivation (16.99%), lichenoid (4.5%), facial nerve paralysis (1.2%) , and gingival swelling (16.9%).<sup>6</sup> Other complaints that arise are a gritty taste in the mouth, difficulty speaking, chewing, or swallowing due to a lack

of saliva production, which can cause xerostomia.<sup>11</sup>

Anti-hypertensive drugs act on the autonomic nerves, namely through the parasympathetic nerves, which then have the same neurohumoral movement pattern as the sympathetic nerves which results in the emergence of salivary gland work interventions to drain saliva so that saliva is reduced.<sup>12</sup> Antihypertensive drugs indirectly affect the acid and base balance in saliva because they inhibit the entry of calcium ions into cells. The synergistic effect of using a combination of two or three types of anti-hypertensive drugs can increase the likelihood of xerostomia.<sup>13</sup> Prolonged xerostomia condition causes a taste disorder known as dysgeusia. Taste disorders that often occur are a decrease in the ability to taste (*hypogeusia*). Taste disorders that occur continuously easily lead to the growth of bacteria and fungi in the oral cavity.<sup>14</sup>

In addition to xerostomia, clinical manifestations that are commonly found in the soft tissues of the oral cavity due to the use of anti-hypertensive drugs are in the form of gingival enlargement (gingival enlargement).<sup>15</sup> These clinical manifestations are usually seen after 1 to 3 months of therapy. Gingival enlargement starts from the hyperplastic condition of the labial papillae of the anterior teeth and continues to the interdental papillae, which eventually extends to the surface of the tooth crown so that it can interfere with the masticatory process. Antihypertensive drugs that cause gingival enlargement work by triggering the process of collagen synthesis by gingival fibroblasts, reduction of collagen degradation due to the production of inactive collagenase enzymes and the addition of non-collagenous matrix, For example, glycosaminoglycans and proteoglycans in greater amounts than collagen matrix.<sup>16</sup>

## CONCLUSION

The oral cavity's soft tissues are frequently obtained during examinations of

patients with elevated blood pressure. This is due to patients' increased reliance on antihypertensive medications. Soft tissue disorders such as xerostomia, dysgeusia, and gingival enlargement are frequently seen in patients with high blood pressure. This is due to the intensity of the use of anti-hypertensive drugs by patients. Cases of soft tissue disorders that are often found in patients with high blood pressure are in the form of xerostomia, dysgeusia, and gingival enlargement.

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