

## RELATIONSHIP BETWEEN KNOWLEDGE LEVEL AND TONGUE BRUSHING HABIT ON COATED TONGUE PATIENTS

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### ABSTRACT

**Background.** The oral cavity is an inseparable part of the human body. The oral cavity is composed of a structure that is a unitary function known as mastication, such as the teeth, tongue, while mucosa known as the stomatognathic system. One part of the oral cavity, namely the tongue, is an organ that has a central function for taste and taste of various types of food flavours and other substances that will enter the body through the oral cavity. However, sometimes the tongue is coated with a thin white layer containing bacteria, desquamated epithelial cells, leukocytes, blood metabolites, and various other components. **Purpose:** of this study was to determine the relationship between the level of knowledge and the habit of brushing the tongue in coated tongue patients who come to the Dental and Oral Hospital of Universitas Airlangga, **Method.** This study was descriptive analytic with the type of study was cross sectional. **Results:** were 28 patients with a good level of knowledge, 11 patients with a moderate level of knowledge, and 2 patients with a bad level of knowledge, and the results were 12 patients with a good level of habits, and 29 patients with a bad habit level. **Conclusion.** Good level of knowledge about tongue hygiene does not make a good habit also in keeping the tongue clean.

**Keywords:** Coated Tongue, Knowledge, Habit.

## INTRODUCTION

The oral cavity is an inseparable part of the human body and the entry of food which will be useful as the main support for the overall health of the body. The oral cavity is composed of a structure that is a unitary function known as mastication, such as the teeth, tongue, while mucosa known as the stomatognathic system. Because of this function, oral health deserves attention(Nuraeny, Hidayat, Zakiawati, & Wahyuni, 2017). It is unfortunate that until recently, people have limited information about attitudes and knowledge in maintaining oral hygiene(Idham, Nurrahma, & Rasmidar, 2013)(Harahap, Amelia, Wahyuni, & Andayani, 2018; Idham et al., 2013; Simamora, Nurmaini, & Siregar, 2019).

One part of the oral cavity, namely the tongue, is an organ that has a central function for taste and taste of various types of food flavours and other substances that will enter the body through the oral cavity. The surface of the tongue is the largest on which consists of papillae and healthy pink as well as should always be clean of debris. However, sometimes the tongue is coated with a thin white layer containing bacteria, desquamated epithelial cells, leukocytes, blood metabolites, and various other components that are white or brown or black, containing various kinds of microorganisms including periodontopathic bacteria such as oral streptococci and habitats. The largest in the tongue is the candida species(Danser, Gómez, & Van der Weijden, 2003; Matsui et al., 2014). Microorganisms on the tongue contribute to the formation of dental plaque(Danser et al., 2003; Mappangara, Tetelepta, Adam, Oktawati, & Sulastrianah, 2018). When the body is in an unhealthy state accompanied by a decrease in food intake and chewing movements, the layer on the surface of the tongue will become thicker which is called tongue coating(Adam & Achmad, 2018; Hu, Han, Chen, & Ji, 2015).

If not cleaned regularly, tongue coating will affect the body and cause bad breath, namely malodor or halitosis(Van Tornout, Dadamio, Coucke, & Quirynen, 2013). Halitosis or malodor is a problem for some people. Bad breath does not always come from plaque or tartar stuck to the teeth. After brushing your teeth as if the entire oral cavity is clean, but actually just brushing your teeth without cleaning the tongue has the potential to cause bad breath because as previously discussed, the tongue is one of the places where bacteria and fungi accumulate as normal flora, so if not cleaned, bacteria and fungi that were normal flora have the potential to grow and develop into pathogens for the body(Melati, Indriyanti, & Setiawan, 2019; Sopianah, Sabilillah, & Oedijani, 2017).

Brushing the tongue is one way to reduce bad breath and maintain the balance of the normal flora in the oral cavity, however, it turns out that not everyone does tongue cleaning

for various reasons, including not knowing whether to brush the tongue, not knowing how it is doing, lazy brushing the tongue, or even know but forget, thus brushing your tongue seems to be an integral part of brushing your teeth(Setijanto, Bramantoro, Palupi, & Hanani, 2019).

One of the epidemiological data shows that bad breath is caused by the presence of coated tongue in the amount of 75.8%. Most of the patients were in this group(Mahdani, Radithia, Parmadiati, & Ernawati, 2019). Patients examined varied in educational level, their knowledge of information regarding coated tongue, and tongue brushing behaviour had not been measured(Simamora, 2019). The aim of this study was to determine the relationship between the level of knowledge and the habit of brushing the tongue in coated tongue patients who come to the Dental and Oral Hospital of Universitas Airlangga,



Figure 1. Coated Tongue Lesions in Patients Receiving Room at Dental and Oral Hospital Universitas Airlangga

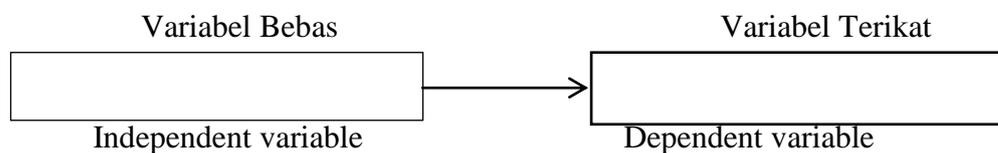
## METHOD

This study was descriptive analytic with the type of study was cross sectional. The purpose of this study was to know the relationship between the level of knowledge and the habit of brushing the tongue in patients with coated tongue who come to the Dental and Oral Hospital of Universitas Airlangga, Surabaya during the period March - May 2020.

The population in this study were all patients who came to the Functional Services Unit receiving room at the Dental and Oral Hospital of Universitas Airlangga, Surabaya, whose intra-oral examination found lesions of normal coated tongue variations. The number of samples was set at 100 respondents and the sampling method was conducted.

The inclusion criteria in this study were that all the characteristics of the study subjects represented the sample related to the research objectives, namely gender were male and female with an age over 18 years because they were considered adults and had the right to fill in informed consent and consent to be independent respondents, and should have a lesion of normal variation on coated tongue on examination verified by an Associate Resident of the Department of Oral Medicine

In this study, there were two variables, namely the level of patient knowledge as the independent variable and the habit of brushing the tongue is the dependent variable and described in the following relationship.



Data were collected by giving a questionnaire as a study instrument consisting of 15 questions which functioned as a tool to measure the level of knowledge and tongue brushing habits. The questionnaire in this study was given to patients who came to the reception room at Dental and Oral Hospital Universitas Airlangga.

Validity and reliability tests will be conducted after testing 100 respondents. The validity test used the Pearson's product moment correlation method, such as calculating the correlation between the score of the question items, where an instrument was said to be valid if the p value was  $<0.05$ . The reliability test was conducted by using the Croanbach alpha coefficient based on standardized items, where an instrument was said to have high reliability if the Croanbach alpha value was greater than the calculated R value (Taber, 2018).

After the data was collected, the data were analysed for normal data using Shapiro-Wilk, if the data was normally distributed, continue to analyse the data using the Pearson test, if the data was not normally distributed, then continue with Spearman's rho. Data was presented in tabular form, where the first table was the patient's knowledge level data, the second table was the tongue brushing habit data, and the third table was the relationship data.

## RESULT

After taking data on 41 patients who came to the Hospital Reception Room Faculty of Dental Medicine, Universitas Airlangga and had coated tongue lesions on the tongue. The

results were 28 patients with a good level of knowledge, 11 patients with a moderate level of knowledge, and 2 patients with a bad level of knowledge as presented in the table below.

Table 1. Frequency and Percentage of Knowledge Level

Knowledge Level	Frequency	Percentage
Good	28	68.3
Moderate	11	26.8
Bad	2	4.9
Total	41	100.0

To assess the level of the patient's habit of tongue brushing behaviour, from the results of the respondents, it was found that 12 patients had good habits, and 29 patients had bad habits. As shown in the table below.

Table 2. Frequency and Patients' Habit Level

Knowledge Level	Frequency	Percentage
Good	12	29.3
Bad	29	70.7
Total	41	100.0

After obtaining the frequency and percentage data from the level of knowledge and the level of habit, then the data analysis was conducted to see the correlation of these variables. Data analysis used Spearman Rho to test the significance of the research hypothesis.

Table 3. Correlation between Knowledge Level Variables and Habit Knowledge Variables

			Knowledge Level	Habit Level
Spearman's rho	Knowledge Level	Correlation Coefficient	1.000	.072
		Sig. (2-tailed)	.	.653
		N	41	41
	Habit Level	Correlation Coefficient	.072	1.000
		Sig. (2-tailed)	.653	.
		N	41	41

From the table above, it can be seen that there was no variable relationship between the level of knowledge of tongue hygiene and the level of the habit of brushing the tongue, the correlation coefficient was 0.072, which means that the level of closeness of the relationship was weak or not strong. The significance value obtained was  $0.653 > 0.005$ , which means that the results are not significant, the hypothesis is not accepted. It can be seen from the results of the analysis that there was an insignificant relationship between the variable level of knowledge of tongue hygiene and the level of tongue brushing habits.

## DISCUSSION

One of the conditions that can be found in almost everyone is the condition of coated tongue which is a clinical condition that occurs on the surface of the tongue which is covered by a pseudomembranous membrane that occurs due to accumulation of debris or food waste, keratin cells that are not desquamated, and can be found. The presence of microorganisms such as bacteria and fungi. The condition of coated tongue often causes patients to come to the dentist or health centre with the main complaint of bad breath. Previous research by Van Tornout et al.(2013) found that the main factors affecting this condition were poor oral hygiene, smoking, and the presence of dentures, periodontal status, and dietary habits.

According to the the analysis, it was found that the level of knowledge of the patients on the tongue cleaning behaviour was 28 patients with a good level of knowledge with a percentage of 68.3%, and 2 patients with a poor level of knowledge with a percentage of 4.9%. This is in accordance with the study conducted by Nuraeny et al., (2017) which discusses how the condition of coated tongue can occur in the oral cavity, as well as how to eliminate and prevent it, which has been conducted by pre-test and post-test in writing to evaluate the results of training and showed significantly good results. In this study, the results showed that the pre-test results showed that the community had a basic knowledge of maintaining dental and oral health, this could be due to easy access to information such as through television advertisements for dental and oral health products. This information is easy to access because most of the people live in urban areas.

Based on the analysis of the habit level of tongue brushing, it was found that 12 patients had good habits in maintaining tongue cleanliness with a percentage of 29.3% and 29 patients had bad habits in maintaining tongue hygiene with a percentage of 70.7%. These results did not have an insignificant value (significance value  $0.653 > 0.005$ ) between the two variables, namely the level of knowledge about tongue hygiene and tongue cleaning habits. This is mentioned in the study conducted by Rangunathan et al.(2019) which stated that various factors can increase the incidence of coated tongue, this is possible due to a soft diet and this is thought to be due to the limited time that people who live in urban areas have and instant lifestyle which then causes the sample to have the habit of swallowing fast food such as bread and porridge. Besides that, less water intake and dietary fibre can also cause coated tongue.

## CONCLUSION

According to the discussion about the level of knowledge and the habit of brushing the tongue in coated tongue patients in the reception room of the Dental Hospital of Universitas

Airlangga, it is concluded that there is no significant relationship between the level of knowledge and the habit of brushing the tongue in patients with coated tongue. A good level of knowledge about tongue cleanliness does not make it a good habit to keep the tongue clean either. It is necessary to provide information about the benefits and ways of cleaning the oral cavity, especially on tongue hygiene hence the knowledge formed will be in harmony with the results of behaviour from habits.

## REFERENCES

1. Adam, M., & Achmad, H. (2018). The relationship of mineral fluor exposure in water with the presence of gingivitis (study case in subdistrict of Tempe, Sengkang City, Wajo District). *Journal of International Dental and Medical Research*, 11(2), 470–476.
2. Danser, M. M., Gómez, S. M., & Van der Weijden, G. A. (2003). Tongue coating and tongue brushing: a literature review. *International Journal of Dental Hygiene*. Int J Dent Hyg. <https://doi.org/10.1034/j.1601-5037.2003.00034.x>
3. Harahap, J., Amelia, R., Wahyuni, A. S., & Andayani, L. S. (2018). Community empowerment program for increasing knowledge and awareness of tuberculosis patients, cadres and community in Medan city. *IOP Conference Series: Earth and Environmental Science*, 125(1). <https://doi.org/10.1088/1755-1315/125/1/012102>
4. Hu, J., Han, S., Chen, Y., & Ji, Z. (2015). Variations of Tongue Coating Microbiota in Patients with Gastric Cancer. *Biomed Res Int.*, 2015.
5. Idham, Nurrahma, R., & Rasmidar, S. (2013). Penggunaan tongue scraper dan kebersihan gigi dan mulut setelah penyuluhan Penggunaan tongue scraper dan kebersihan gigi dan mulut setelah penyuluhan pada anak Panti Asuhan Ashabul Kahfi Makassar Using tounge scraper and oral-dental hygiene after counseli. *Dentofasial*, 12(1), 19–23.
6. Mahdani, F., Radithia, D., Parmadiati, A., & Ernawati, D. (2019). Prevalence of oral mucosal lesions in geriatric patients in Universitas Airlangga Dental Hospital. *Acta Med Philipp.*, 53(5), 407–11.
7. Mappangara, S., Tetelepta, F. E. N., Adam, M., Oktawati, S., & Sulastrianah, S. (2018). Eriodontal emergency treatment with chronic periodontal abscess and secondary occlusion trauma. In *Case Reports in Dentistry* (pp. 307–314). Department of Periodontics, Faculty of Dentistry, Universitas Hasanuddin, Makassar, Indonesia: Nova Science Publishers, Inc. Retrieved from <https://www.scopus.com/inward/record.uri?eid=2-s2.0->

85058369775&partnerID=40&md5=894cffa06dd40756ce45978830a9c679

8. Matsui, M., Chosa, N., Shimoyama, Y., Minami, K., Kimura, S., & Kishi, M. (2014). Effects of tongue cleaning on bacterial flora in tongue coating and dental plaque: A crossover study. *BMC Oral Health*, *14*(1), 4. <https://doi.org/10.1186/1472-6831-14-4>
9. Melati, F., Indriyanti, R., & Setiawan, A. S. (2019). Effectiveness of Applied Behavior Analysis (ABA) with regard to tooth brushing in autistic children. *Dental Journal (Majalah Kedokteran Gigi)*, *52*(3), 117–121. <https://doi.org/10.20473/j.djmk.v52.i3.p117-121>
10. Nuraeny, N., Hidayat, W., Zakiawati, D., & Wahyuni, I. S. (2017). Edukasi dan Evaluasi terhadap Kondisi Coated Tongue Bagi Kader Kesehatan Puskesmas Ujung Berung Indah. *Jurnal Pengabdian Kepada Masyarakat*, *1*(1), 24–27.
11. Ragunathan, M., Herawati, E., & Epsilawati, L. (2019). Gambaran Klinis dan Faktor Predisposisi dari Coated Tongue pada Mahasiswa Gigi Klinik Fakultas Kedokteran Gigi Universitas Padjadjaran. *Jurnal Radiologi Dentomaksilofasial Indonesia*, *3*(3), 17–20. <https://doi.org/10.32793/jrldi.v3i3.441>
12. Setijanto, R. D., Bramantoro, T., Palupi, R., & Hanani, A. (2019). The role of attitude, subjective norm, and perceived behavioral control (PBC) of mothers on teaching toothbrushing to preschool children - Based on the Theory of Planned Behavior: A cross-sectional study. *Family Medicine and Primary Care Review*, *21*(1), 53–57. <https://doi.org/10.5114/fmPCR.2019.82974>
13. Simamora, R. H. (2019). Socialization of information technology utilization and knowledge of information system effectiveness at Hospital Nurses in Medan, North Sumatra. *International Journal of Advanced Computer Science and Applications*, *10*(9), 117–121.
14. Simamora, R. H., Nurmaini, & Siregar, C. T. (2019). Knowledge of Nurses about Prevention of Patient Fall Risk in Inpatient Room of Private Hospital in Medan. *Indian Journal of Public Health Research & Development*, *10*(10), 759–763. <https://doi.org/10.5958/0976-5506.2019.02907.3>
15. Sopianah, Y., Sabilillah, M. F., & Oedijani, O. (2017). The effects of audio-video instruction in brushing teeth on the knowledge and attitude of young slow learners in Cirebon regency. *Dental Journal (Majalah Kedokteran Gigi)*, *50*(2), 66–70. <https://doi.org/10.20473/j.djmk.v50.i2.p66-70>
16. Taber, K. S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, *48*(6),

1273–1296. <https://doi.org/10.1007/s11165-016-9602-2>

17. Van Tornout, M., Dadamio, J., Coucke, W., & Quirynen, M. (2013). Tongue coating: Related factors. *J Clin Periodontol*, *40*(2), 180–5.