

Conference Paper

The Effects of Oral Prophylaxis on Sensitive Teeth, Teeth Staining, and Bad Breath

M. M. Damayanti^{*1}, Y. Yuniarti², M. Caecielia³ and S. N. Irasanti⁴

¹Department of Pathology Anatomy, Faculty of Medicine, Universitas Islam Bandung, Bandung, Indonesia

²Department of Anatomy, Faculty of Medicine, Universitas Islam Bandung, Bandung, Indonesia

³Department of Medical Education, Bioethics, and Humanity, Faculty of Medicine, Universitas Islam Bandung, Bandung, Indonesia

³Department of Public Health, Faculty of Medicine, Universitas Islam Bandung, Bandung, Indonesia

ORCID ID

M. M. Damayanti : <https://orcid.org/0000-0001-8973-5772>

Y. Yuniarti : <https://orcid.org/0000-0002-6689-2916>

M. Caecielia : <https://orcid.org/0000-0002-6932-9862>

S. N. Irasanti : <https://orcid.org/0000-0001-8319-3327>

Abstract.

Oral prophylaxis is a preventive measure against the occurrence of dental problems that affect oral tissues with varying degrees of severity. Many factors contribute to the symptoms of oral diseases. Symptoms that are often felt are tooth staining, bad breath, and sensitive teeth. This study aims to analyze the relationship between oral prophylactic behavior and the presence of oral disease symptoms. It is a cross-sectional, analytic observation study that was carried out at the Manarul Huda Islamic Boarding School Bandung on 35 students. Data analysis was performed using SPSS 23.0 software and association analysis was performed using the chi-square test. The results showed that more than half of the students had good oral prophylaxis (54.3%), and the most common mouth complaint was bad breath (57.1%). There was a significant relationship between poor oral prophylaxis and complaints of bad breath (81.3%) with a p-value = 0.021. The study emphasizes the importance of oral prophylactic behavior. Prevention, treatment, and management of oral complaints through oral prophylaxis are beneficial for achieving successful oral health for children, adolescents, and adults.

Keywords: oral prophylaxis, sensitive teeth, teeth staining, bad breath

Corresponding Author: M. M. Damayanti; email: meta.fkunisba@gmail.com

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1. INTRODUCTION

Oral health is extremely vital for overall health and well-being. Healthy and pain-free mouths support proper nutrients and can live life better. The mouth acts as a doorway to the rest of the body, signaling general health problems. The condition of one's dental health has an impact on one's overall health and disease [1,2]. Oral prophylaxis is a key point in oral health, and brushing teeth according to the rule and oral hygiene instructions is very important for oral health [3,4]. Tooth and mouth disease is one of the

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most widespread illnesses in Indonesia and even globally [5,6]. The most common and globally influencing oral diseases are dental caries, periodontal disease, oral cancers, and lesions of the oral cavity [7]. This disease is usually characterized by toothache, bleeding gums, swollen gums, sore teeth, bad breath, pigmented lesions, and other lesions in the oral cavity [8,9].

Tooth staining can be caused by a variety of circumstances, and it can vary in appearance, location, and severity. Intrinsic and extrinsic factors are the main causes of tooth discoloration [10]. Treatment options vary depending on the underlying cause of the lesion and the depth of the lesion. Men's most essential interactive communication ability is thought to be smiling. A considerable percentage of persons seeking dental care are concerned about their dentition's look, and the color of their teeth is of particular cosmetic relevance. Tooth discoloration is an unsightly condition. It is caused by chemicals that discolor the enamel or cause damage to the enamel. The outermost layer of the tooth is generally involved, which can be avoided with basic oral prophylaxis [10,11].

The word "bad breath" refers to any unpleasant breath. Halitosis can be a sign of a variety of disorders. In general, intraoral issues such as poor dental hygiene, periodontitis, or tongue coating are thought to be the leading cause of halitosis. The majority of the gases that cause bad breath or halitosis are volatile sulfur compounds (VSCs). Hydrogen sulfide, methyl mercaptan, and dimethyl sulfide are the gases in question. Not only do VSCs play a part in halitosis development, but so do volatile aromatic chemicals like indole and skatole, organic acids like acetic acid and propionic acid, and amines like cadaverine and putrescin. Many local factors influence VSC formation and emergence in the oral cavity. Saliva decreased Oxygen (O₂), some of the causes also include microbial activity in the oral cavity, bacterial proliferation, and metabolism [12].

Sensitive teeth or dentin hypersensitivity conditions are a common patient complaint that can be accompanied by several other issues, such as erosion and abrasion. The structural and physiological makeup of teeth is directly tied to the hydrodynamic mechanism that causes dentin hypersensitivity. Dentine permeability can be increased by altering the integrity of the enamel and dentine as a result of trauma, decay, or tooth wear. Dentinal fluid flow in reaction to temperature, chemical, and mechanical signals stimulates the pulpal fibers, causing sensitivity symptoms [13].

This study aimed to analyze the relationship between oral prophylactic behavior and the presence of oral symptoms, such as tooth staining, bad breath, and sensitive tooth.

2. METHODS

2.1. Study Design

This study is a cross-sectional analytic observational study conducted at the Manarul Huda Islamic Boarding School on 35 students based on consecutive sampling. Data collection is done by filling out a questionnaire of health protocols due to Covid-19 preventions that have been validated and a reliability test. Respondents have explained the purpose and benefits of the study and then asked to sign an informed consent. Furthermore, filling out a questionnaire regarding tooth brushing behavior includes frequency, time, type of toothbrush, type of toothpaste, and tooth brushing technique. In the questionnaire, each point was assigned a score of 1 for a correct response and a score of 0 for an incorrect response. Good category if it has a value of 50% and less than 50%.

2.2. Data Collection

Oral symptoms including tooth staining, bad breath, and sensitive teeth were obtained based on the data entry form. Tooth staining is known by asking whether there are stains on the teeth from light brown to dark brown that does not disappear after brushing teeth. Bad breath is known from the question of whether you experience bad breath even after brushing your teeth. Sensitive teeth were identified by asking them if they had toothaches when eating and drinking hot and cold drinks.

2.3. Data Analysis

SPSS version 23.0 has been used for statistical analysis. The Chi-square independence test was used to determine the relationship between categorical variables. The significance level was chosen at $p < 0.05$. To conclude the study population, the confidence interval (CI) at 95% of the odds ratio (OR) and the p-value of the association were obtained.

2.4. Ethical Clearance

The Faculty of Medicine's Health Research Ethics Committee Universitas Islam Bandung granted permission to perform the research (08/KEPK-Unisba/XII/2020) and all respondents provided informed consent.

3. RESULTS

The study respondent included 9 boys (25.7%) and 26 (42.3%) girls, the mean age of the respondent was 14 (range 9-16 years old), and the level of education the most at 7-9 level.

3.1. Oral Prophylaxis Behavior among Students

TABLE 1: Overview of oral prophylaxis behavior among students.

Variable	n	%
Behaviour (%)		
Average (SD)	: 50.97 (14.95)	
Median	: 52.00	
Min	: 24.00	
Max	: 84.00	
Not Good	16	45.7
Good	19	54.3

Based on Table 1, the students' oral prophylaxis habit has a mean of 50.97%. Most students have good oral habits, as many as 19 people (54.3%).

3.2. Oral Symptomatic among Students

TABLE 2: Oral symptomatic among students.

Tooth and Oral Complaint	Yes		No	
	n	%	n	%
Tooth Staining	19	54.3	16	45.7
Bad Breath	20	57.1	15	42.9
Sensitive Tooth	16	45.7	19	54.3

Based on Table 2, most of the students had bad breath, as many as 20 people (57.1%), and there was staining on the teeth as many as 19 people (54.3%).

3.3. Association of Oral Prophylaxis Behavior with Tooth Staining among Students

Based on Table 3, it can be seen that students who experienced tooth staining and had poor oral prophylaxis habits were as many as 7 people (43.8%). Table 3 also shows that the results of the Chi-Square Test analysis at the 95% confidence level show that

TABLE 3: Association of oral prophylaxis behavior with tooth staining among student.

Variable	Tooth Staining						P-value*)
	Yes		No		Total		
	n	%	n	%	n	%	
Behavior							0.419
Not Good	7	43.8	9	56.3	16	100.0	
Good	12	63.2	7	36.8	19	100.0	
*) Chi-Square Test							

statistically, there is no significant relationship between oral prophylaxis and sensitive teeth in students with p-value = 0.419 (p value > 0.05).

3.4. Association of Oral Prophylaxis Behavior with Bad Breath among Students

TABLE 4: Association of Oral Prophylaxis Behavior with Bad Breath among Student.

Variable	Bad Breath						P-value*)
	Yes		No		Total		
	n	%	n	%	n	%	
Behavior							0.021
Not Good	13	81.3	3	18.8	16	100.0	
Good	7	36.8	12	63.2	19	100.0	
*) Chi-Square Test							

Based on Table 4, it can be seen that students who have bad oral habits are more likely to have bad breath, as many as 13 people (81.3%). Table 4 also shows that the results of the Chi-Square Test analysis at the 95% confidence level show that statistically, there is a significant relationship between oral prophylaxis behavior and bad breath in students with p-value = 0.021 (p-value < 0.05).

3.5. Association of Oral Prophylaxis Behavior with Sensitive Tooth among Students

Based on Table 5, it can be seen that students who experience toothache and poor oral prophylaxis habits are as many as 7 people (43.8%). Table 5 also shows that the results of the Chi-Square Test analysis at the 95% confidence level show that statistically, there is no significant relationship between oral prophylaxis behavior and tooth pain in Bandung students with a value of p = 1.000 (p value > 0.05).

TABLE 5: Association of oral prophylaxis behavior with sensitive tooth among student.

Variable	Sensitive Tooth						P-value*)
	Yes		No		Total		
	n	%	n	%	n	%	
Behavior							1.000
Not Good	7	43.8	9	56.3	16	100.0	
Good	9	47.4	10	52.6	19	100.0	
*) Chi-Square Test							

4. DISCUSSION

The oral prophylaxis behavior plays a role in the cleanliness and health of teeth and mouth. In this study, more than half of the students had good prophylactic habits. Good prophylaxis can be seen from how the habit of cleaning the teeth and mouth. How many times did they brush their teeth, when was the best time to brush their teeth, how did they use toothbrushes, did toothpaste contain fluoride, and how good brushing techniques were used [14]. The result is that more than half of the students had good oral prophylaxis as 54.3% (Tabel 1), but there are still many of them who do not carry out good prophylaxis, for example using toothpaste when brushing their teeth. Research conducted by F. Meyer, et al. States that children should brush their teeth with toothpaste that contains gentle ingredients, such as mild surfactants and ingredients that exhibit anti-adhesive properties against oral microorganisms to prevent future oral disease [15].

In this study based on table 4, the bad habit of oral prophylaxis had a significant relationship with complaints of bad breath ($p < 0.05$), while the study conducted by Jolanta Gładczuk, et al. stated that dental prophylaxis was conditioned by socio-demographic factors and not related to health behaviors. The higher probability of regular check-up visits to the dentist occurs in the female sex, and people with upper economic class. The promotion of dental examinations should be aimed primarily at students with low socioeconomic status [16].

The oral prophylaxis did not show a significant association in this study when it came to complaints of tooth staining (Table 3) dan sensitive tooth (Table 5). Tooth staining can have negative psychosocial consequences for patients, as well as pose aesthetical issues for dental professionals. Stains that are essential towards the body can be caused by a variety of conditions, including external and internal influences. The most significant external effects

come from colored foods, chemical reactions caused by foreign things that enter the mouth, and undesirable behaviors caused by smoking. In some cases, internally

acquired discoloration is caused by structural deficiencies that allow the passage of chromogenic bacteria through the tooth surface, resulting in staining [17]. Dentinal tubules being exposed as a result of erosion is often likely the most significant predictor of dentin hypersensitivity [18]. Dental caries and periodontal disease are currently major public health concerns in the majority of countries around the world. In terms of epidemiologic indicators of oral disease, there have been significant differences between industrialized and developing countries. Even though tooth brushing is the most popular oral hygiene technique in the world, elderly adults appear to clean their teeth less frequently than the general population. This conclusion has been confirmed by numerous investigations conducted in poor nations. Good oral prophylaxis such as brushing teeth according to several studies showing good results for good oral and dental health. Several research on the frequency of oral hygiene activities has been undertaken. The most frequently reported frequency for oral hygiene habits is useful in the prevention of oral disease [19,20].

A characteristic of the dentistry profession achieving excellent oral health through preventative measures. A fundamental objective of a preventive-oriented dentistry practice is to encourage patients to exercise optimal oral self-care behavior. Patients are given a goal or objective when they are asked to follow an oral self-care practice (for example, brush twice a day), and they must control or regulate their mouth behavior to reach that goal. Periodontal health demands an informed public and patient. If patients are uninformed of the distinctions between periodontal health and disease, treatments will fail or may never begin, the significance of these distinctions, and the role they might play in prevention and control. Patients' and dental professionals' awareness of the need of doing the proper activities is viewed as the key to enhancing periodontal health. Current oral hygiene techniques, when applied correctly and in conjunction with regular professional treatment, are capable of essentially avoiding caries and periodontal disease and maintaining dental health [4,21].

The limitation of this study is that dental and oral complaints based on the respondent's statement in the questionnaire, are not equipped with a direct examination by the researcher. This is due to safety issues for oral examinations during the Covid-19 pandemic. Further research can be carried out more comprehensively after the pandemic period.

5. CONCLUSION

Brushing teeth with the right technique, timing, and frequency may not be good enough. Knowledge about dental health is of necessity to prevent oral disease. When it comes to oral prophylaxis, the studied population exhibits a lack of interest, which results in oral health concerns.

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