Dental Health Journal of Aceh

COMPARISON OF HERBAL AND NON-HERBAL TOOTHPASTE TOWARDS REDUCTION OF PLAC INDEX IN ELEMENTARY SCHOOL CHILDREN, LAMPENERUT, ACEH BESAR REGENCY

Marzuki, Just Cut Aja Nuraskin

Student, Lecturer of the Department of Dental Health, Jl. Soekarno Hatta Integrated Campus of Poltekkes Aceh Indonesia
Email Contributors: zuki1590@gmail.com

Received: Filled Out by the Editor	**Accepted:** Filled Out by the Editor	**Published:** Filled Out by the Editor

Abstract

Many Indonesian people suffer from dental and oral diseases. Based on riskesdas data in 2018, the criteria for children aged 5-9 years (67.3%) experienced problems in dental health while those who received treatment were only 14.6%, and the criteria for children aged 3-4 years (41.1%) had problems on dental health while those who received treatment were only 4.3%. Based on preliminary data on Lampeune State Elementary School children, according to Aceh Besar District, 7 of the 10 students examined were bad criteria and 3 of them were good criteria. Therefore, it is necessary to control the plaque index, controlling the plaque index can be done mechanically or chemically, mechanically by brushing teeth and using herbal toothpaste. The problem in this study is the comparison of herbal toothpaste with non-herbal toothpaste on the decrease in plaque index in children at the Lampeune State Elementary School, Aceh Besar District. The type of research used is a quasi-experimental research / guast experiment, using random sampling method with a population of 625 students and the number of samples used is 100 students on the criteria of age 7-12 years. From the results of the study, the average value of the decrease in plaque index after brushing teeth using herbal toothpaste was 1.486 while after using non-herbal toothpaste the plaque index score was 2.668. In this case, it means that there is a significant comparison between herbal toothpaste and non-herbal toothpaste, as evidenced by a p-value of less than 0.05, which is 0.000.

Keywords: *Keywords are a minimum of 3 (three) and a maximum of 5 (five) words.*

A. Introduction

Dental and oral health is a part of body health that cannot be separated from each other because dental and oral health can affect the health of the body as a whole. The role of teeth is quite large in terms of preparing food substances before absorption of nutrients in the digestive

tract (Putra et al. 2017) . In addition to the general function of teeth as aesthetics, mastication and phonetics. (Nuraskin 2020) .

Dental and oral diseases suffered by many Indonesian people are diseases of the supporting tissues of the teeth and dental caries. The source of the cause of caries is due to neglect of dental and oral hygiene, resulting in plaque accumulation (Dewantara et al. 2015) . Plaque is a soft deposit that forms a biofilm layer and is firmly attached to the surface of the teeth and gingiva and other hard surfaces in the oral cavity (Putra et al. 2017) .

Plaque control is an effort to remove and prevent plaque buildup on the tooth surface . These efforts can be done mechanically or chemically. Mechanical removal is an effective method of controlling plaque and gingival inflammation. Mechanical removal may include brushing and flossing . In children, tooth brushing and the use of dental floss often do not give maximum results because of the child's lack of skills. And frequent brushing can make your teeth more sensitive. In addition to eroding tooth enamel, brushing teeth too often will also cause erosion of the gums which can also make the nerves of the teeth more sensitive. This can result in disruption of gingival health. Therefore , the use of toothpaste can be used as a means of supporting plaque control (Putra et al. 2017) .

Along with the advancement of science and technology, various toothpaste manufacturers make innovations to add other substances that are beneficial for dental health. The addition of other substances to toothpaste must be safe and effective, and its use has been approved by *the American Dental Association* (Putra et al. 2017) . One of the substances that are commonly added to toothpaste are herbal ingredients that are antibacterial. It also has anti-inflammatory properties, natural antiseptic, and is able to stimulate the immune response, and has analgesic properties (Nuraskin 2020) .

The addition of herbs to toothpaste is expected to inhibit plaque growth. This is related to the ability of several types of herbs that are able to inhibit microbial growth and are safe and have no side effects (Putra et al. 2017) .

Non-herbal toothpaste contains the active ingredient fluoride. If added non-herbal ingredients *triclosan* and *chlorhexidine* in toothpaste to prevent plaque and gingivitis, it has an effect, staining teeth and changing taste in the oral cavity. This has led to increased attention to the use of natural ingredients for toothpaste (Nuraskin 2020) .

The results showed a decrease in plaque index in the use of herbal toothpastes by an average of 47.3 while the use of non-herbal toothpastes by an average of 28.1. In this study, the decrease in plaque index in the use of herbal toothpaste was greater than the use of non-herbal toothpaste (Amaliah, 2021) .

The results of the study using the Repeated Meassure Annova test showed that herbal and non-herbal toothpastes both had the ability to inhibit plaque growth. However, after 2 weeks of measurement, there was a significant difference between herbal and non-herbal toothpastes. The decrease in plaque index was greater in users of herbal toothpaste after 2 weeks of use. Herbal toothpastes are more effective in inhibiting plaque formation than non-herbal toothpastes (Nur et al. 2018) .

Nationally, according to Riskesdas 2018 data, 57.6% of the Indonesian population had dental and oral problems during the last 12 months, but only 10.2% received treatment by dental medical personnel. Based on age group, the largest proportion with dental and oral problems was the age group 5-9 years (67.3%) with 14.6% having received treatment by dental medical personnel. While the lowest proportion with dental and oral problems is 3-4 years old (41.1%) with 4.3% having received treatment by dental medical personnel (Kemenkes RI 2019) .

The Ministry of Health stipulates the National Action Plan for Dental and Oral Health Services Towards a Caries Free Indonesia 2030 which is a WHO recommendation. The determination of 2030 is based on the target of newborns in 2018 who are expected to have no caries at the age of 12. The age of 12 years is the age in general, all permanent teeth have grown (Ministry of Health, Republic of Indonesia 2019) .

The target for caries-free Indonesia 2030 is the DMF-T index for children aged 12 years reaching 1. In 2018, the average DMF-T index for permanent teeth in Indonesia was 7.1 while for the 12-year-old group it was 1.9. This figure still does not meet the target of the RAN for Dental

and Oral Health Services in 2020, namely the DMF-T index of 4.1 at all ages and the DMF-T index of 1.26 in the 12-year age group (Kemenkes RI 2019) .

Based on preliminary data, this study was conducted on children from State Elementary School 1 Lampeune according to Aceh Besar District, it is known that the plaque index number in elementary school children is high, from 10 students examined 7 children in bad criteria and 3 children in good criteria in the calculation of *Personal Hygiene Performance (PHP).* and based on the results of interviews with the Lampeune State Elementary School, they have never received counseling on dental and oral health .

C. Result and Discussion

1. Univariate Analysis

General data of respondents in this study include age and gender, can be seen in the frequency distribution table as follows:

a. Respondent's age

The frequency distribution based on the age of the respondents can be seen in the table below.

No	Age	Frequency	Percentage (%)
1	7 years	14	14%
2	8 years	17	17%
3	9 years	16	16%
4	10 years	19	19%
5	11 years old	18	18%
6	12 years old	16	16%
	Amount	100	100%

No	Gender	Frequency	Percentage (%)
1	Man	41	40.6%
2	Woman	59	54.4%
	Amount	100	100%

Variable	mean	N	SD
Plaque Index before using non-herbal toothpaste	3,892	50	0.6262
Plaque Index after using non-herbal toothpaste	2,668	50	0.5192

Variable	mean	SD	Sig
Plaque Index before using non-herbal toothpaste	1.2240	0.661	0.000
Plaque Index after using non-herbal toothpaste			

Variable	mean	N	SD
Plaque Index before using herbal toothpaste	4.240	50	0.4440
Plaque Index after using herbal toothpaste	1.486	50	0.6637

Variable	mean	SD	Sig
Plaque Index before using herbal toothpaste	2.7540	0.5898	0.000
Plaque Index after using herbal toothpaste			

Variable	N	Sig	mean	Mean Difference	Sig2 Trailed
Plaque Index after using non-herbal toothpaste	50	0.402	2,668	1. 1820	0.000
Plaque Index after using herbal toothpaste	50	0.402	1.486	1.1820	0.000

D. Conclusion

Based on the results of research and discussion on the comparison of herbal toothpaste with non-herbal toothpaste on the reduction of plaque index in children at SD Negeri Lampeuneurut Kab. Aceh Besar,

the following conclusions can be drawn:

1. The average decrease in plaque index score after using herbal toothpaste was 1.486 while the decrease in plaque index score after using non-herbal toothpaste was 2.668. This means that the decrease in plaque index scores in herbal toothpastes is greater than the decrease in plaque index scores in non-herbal toothpastes.
2. There is a significant comparison between herbal toothpaste and a decrease in plaque index. This is evidenced by the p *value* of less than 0.05, which is 0.000.

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