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Chewing yam fruit (*Pachyrhizus erosus*) as an effort to reduce index debris in elementary school children

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Abstract

Oral health is an integral component of general health. The prevalence of dental caries in Indonesia is around 90% of the 238 million Indonesian population and the number of children aged 15 years and under who suffer from dental caries reaches 76.5%. Eating fibrous foods such as fruits can help clean teeth, one of which is yam fruit. The purpose of this study was to determine the debris index score before and after eating yam in elementary school children. This research method is quasi experimental. This research was conducted with a population of 61 students obtained by using a total sampling technique. The instrument used in this study was a debris index examination sheet. Results: before eating yam fruit, 3 students (4.9%) had good index debris criteria, 28 students (45.9%) moderate index debris criteria, 30 students (49, 9%) had bad index debris criteria (49, 2%) and after chewing yam fruit, 47 students (77%) had good debris index criteria, 14 students (23%) had moderate debris index criteria and there were no students with bad index debris criteria. The results of the paired sample test analysis obtained a p-value of 0.001. Conclusion: Chewing yam fruit can reduce index debris in elementary school children.

Keywords: Chewing yam fruit, index debris, children

INTRODUCTION

Oral health is an integral component of general health. It is also becoming clear that the causes and risk factors for oral disease are often the same as those involved in common diseases. The health, well-being, education and development of children, families and society as a whole can be affected by oral health. Although there have been considerable improvements in children's oral health in recent decades, rates of dental caries (tooth decay) are still one of the most common oral health problems in children worldwide. A sizeable population of children in developing countries is affected by tooth decay and most of the time their appropriate care is given last priority due to limited access to health services.[1,2] The lack of availability and affordability of health services not only results in disease disorders but also increases the cost of treatment and care. Until now, not a single country has stated that it has caries-free children.[3]

Indonesian children under 12 years as much as 89% suffer from dental and oral diseases. This condition will affect their health status, growth process and even their future. In Jakarta, 90% of children suffer from cavities and 80% suffer from gum disease. This figure is estimated to be more severe in regions and children from the middle to lower economic class.[4,5]

The prevalence of dental caries in Indonesia is around 90% of the 238 million Indonesian population and the number of children aged 15 years and under who suffer from dental caries reaches 76.5%. From the results of Siagian's research it was found that 95% of elementary school children had poor dental and oral health, so they suffered from dental caries.[6]

Many efforts have been made to maintain healthy teeth and mouth including mechanical, chemical, and modification between mechanical and chemical methods. One of them is by brushing your teeth, flossing (using dental floss), cleaning your tongue. Chemically, namely avoiding foods that contain sucrose, but eating more fibrous and watery foods.[7] Eating fibrous foods such as fruits can help clean teeth, for example papaya, pineapple, watermelon, apples, yam, red guava are examples of fruits that are easy to find and can be consumed immediately fresh.[8]

Yam fruit (Pachyrhizus erosus) is a fruit that has a water content of 85.10% and 5.49% fiber by weight of the yam. The liquid contained in jicama such as isoflavones is used as an antioxidant and can reduce levels of bad cholesterol (LDL). The fiber in jicama has ingredients such as calcium phosphorus and vitamin C. Yam requires chewing hard enough so that it can increase salivary secretion and can clean teeth from food debris naturally. Chewing is a movement that will stimulate the release of saliva which contains anti-bacterial, glycoprotein compounds, calcium and fluoride in it. Saliva produced from chewing movements can remove debris or food debris and neutralize acidic substances from food residues found in the pits and fissures of the tooth surface, but the tooth surface cannot be cleaned optimally only with saliva.[9] In a study Aritonang on the Description of Debris Index Before and After Eating Pears and Jicama in Grade III

Students at SD Anastasia Namo Bintang Pancur Batu Foundation, it was found that eating yam fruit was more effective than pears, which was shown through the results of the study, namely a decrease in debris index after eating pears was 0, while after eating jicama was 0.7.[10]

METHOD AND MATERIAL

The research design used was a quasi-experimental study with a one group pretest-posttest design. The research sample that will be used in this research is Class V students at SDN 04 Pagi Tanjung Barat, South Jakarta, totaling 61 people. Data collection was carried out on March 30-31 2022. The instrument for collecting debris data used index debris while the yam fruit given for consumption was 100 grams for each respondent. Analysis of the data used in this study using SPSS with paired sample t test.

RESULT

The results of the study were conducted on fifth grade students at SDN 04 Pagi Tanjung Barat, South Jakarta in 2022. Data collection was carried out before and after chewing yam fruit by direct examination into the oral cavity of the students who were the samples. From the research conducted, the sample frequency distribution data is obtained as follows:

Table 1: Frequency distribution of index debris criteria before chewing yam fruit

Index Debris Criteria	Frequency	Percentage
Good	3	4.9
moderate	28	45.9
Bad	30	49.2
Total	61	100

Table 1 shows that index debris before chewing yam fruit obtained good index debris criteria of 3 people (4.9%), moderate index debris of 28 people (45.9%) and bad index debris of 30 people (49.2%)

Table 2: Frequency distribution of index debris criteria after chewing yam fruit

Index Debris Criteria	Frequency	Percentage
Good	47	77.0
moderate	14	23.0
Bad	0	0.0
Total	61	100

Table 2 shows that 47 students (77%) had good debris index after chewing yam fruit, 14 students (23%) had moderate index debris and there were no students with bad index debris.

Table 3: Different test of debris index before and after chewing yam fruit

Debris index	Mean	Difference	p-value
Pre-test	1.74	1.36	0.001
Pos-test	0.38		

Table 3 shows that the results of the paired sample test analysis obtained a p-value of 0.001, meaning that chewing yam fruit can reduce index debris in elementary school children.

DISCUSSION

Yam fruit (Pachyrhizus erosus) is rich in various nutrients such as vitamin C and contains antibacterial compounds such as flavonoids, tannins, quinones, saponins, alkaloids and triterpenoids so that it is effective as a plaque cleanser in the oral cavity.[1112] The water in yam can help the mouth secrete fluids naturally so that it can help the process of cleaning the mouth and teeth from dirt. With the water contained in this Jicama will help provoke saliva in the mouth to appear and can work to keep teeth clean.[13]

Hasil penelitian before chewing yam, 3 students (4.9%) had good index debris criteria, 28 students (45.9%) moderate index debris criteria, 30 students (49.2%) bad index debris criteria and after chewing yam found 47 students (77%) with good debris index criteria, 14 students (23%) with moderate index debris criteria and there were no students with bad index debris criteria, resulting in an increase in index debris criteria. The results of the paired sample test analysis obtained a p-value of 0.001, meaning that chewing yam fruit can reduce index debris in elementary school children. This is in line with research conducted by Siahaan, there is a difference in the decrease in index debris before and after consuming yam fruit for good criteria of 0.15, for medium criteria of 0.77 and for bad criteria of 0.35. With a difference in debris index of all criteria is 1.27. Then the research conducted by Aritonang, 2019, there was a significant difference between the debris index before and after eating pears and jicama, that is, the initial dental debris index was in the bad category and after eating pears and jicama, the final debris index was in the moderate category.[14]

Reinforced by research conducted by Fitriyani, shows that the index debris score before chewing apples is 1.4 and after chewing apples is 0.9 so the difference is 0.5, while the index debris score before chewing yam fruit is 1 .6 and after chewing yam fruit is 0.8 so the difference is 0.8. So the difference in debris index of chewing yam fruit is higher than chewing apples. This means that this research is in line with the 3 previous studies. Because yam (Pachyrhizus erosus) is a fruit that has a water content of 85.10% and 5.49% of the fiber by weight of yam. Yam requires chewing hard enough so as to increase salivary secretion and can clean teeth from food debris naturally. Chewing is a movement that will stimulate the release of saliva with its content and fluoride in it. Saliva produced from chewing movements can remove debris or food remnants and neutralize acidic substances from food residue found in the pits and fissures of the tooth surface, but the tooth surface cannot be cleaned optimally only with anti-bacterial saliva, glycoprotein compounds, calcium.[15,9]

CONCLUSION

Based on the results of the research that has been done, it can be concluded that there is the chewing yam fruit can reduce index debris in elementary school children.

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CONFLICT OF INTEREST

The authors declare that they have no conflict interests.

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