

The Effectiveness of Power Obstruent the Formation of Plaque in Mastication a Variety of Chewing Gum in Jambi

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ABSTRACT

Chewing gum is a type of candy that can be chewed, have a sense, and shapes vary. Chewing gum has been there began in ancient Greece and continues to expand today. Chewing gum, there are several types of commercially available materials, such as materials sucrose, xylitol. Probiotics, Butylated Hydroxytolene (BHT), Calcium Casein Peptone Calcium phosphate, and many others. In Indonesia, the sweet gum highest consumed by children. Especially the kind sucrose sugar has long been known and have been widely used in daily life both in our country, it is because some of the advantages of sucrose, among others, the sweet taste, texture and shape. As one way to prevent caries is chewing gum which is a mechanical stimulation, this causes the secretion aroused saliva. Ability gum in reducing the incidence of dental caries comes from chewing movements and non-cariogenic sugar substitutes and low in calories. Yag is used as a sweetener (maltitol, mannitol, xylitol, and sarbitol). In some studies (including studies at the School of Dentistry of the University of Michigan and Indiana.) Blends of xylitol and sorbitol in chewing gum has been shown to be more effective than sorbitol alone, but less effective than the pure xylitol products.

This type of research is a quasi-experimental research design model studies with Pre and Post Test Control Group Design. The study population is the students of Department of Dental Nursing. A sample of 10 people for the treatment group and 10 to the control group. Measuring instrument research is to calculate plaque score with PHP-M. This study aims to determine which of chewing gum is effective in inhibiting the growth of dental plaque. The hypothesis in this study was the difference in the ability of various gum in inhibiting the formation of dental plaque. The benefits of this research was to determine the candy is most effective in inhibiting plaque formation. The analyzes were performed using the Mann Whitney test and Kruskal.

Statistical analysis showed no difference in plaque formation inhibition before and after chewing gum variety ($p < 0.05$), the difference in plaque score greatest (2,28) contained in chewing gum containing maltitol and xylitol. There is no difference in inhibition of plaque formation in the treatment group and the control group. The result of the difference between the average plaque score between gum containing maltitol, and xylitol sarbitol and with chewing gum containing maltitol, mannitol sarbitol and, by gum containing maltitol, and xylitol was not significant ($p > 0.05$).

Keywords: Plaque, Chewing Gum, xylitol and sarbitol

INTRODUCTION

Gum is the type candy can be chewed, having a taste, and forms that various. Gum there have been started the ancient Greece and continued to grow until now. Candy is one of a snack very attaching with our daily life, especially of children. Not only kids, for adults and candy constitute the food of exciting, combined with the form of, color, and think diverse. Candy is high-calorie foods that is generally uranium-based sugar, water, and syrup fructose. Sugar most of candy quite high that is can cause hollow teeth. Gum is one type of candy favored and consumed the community. But have many studies, gum have many benefits. In

tipspromosi. com called after the study of coventry university that gum increase vigilance. Gum will make ourselves remain vigilant when chewed when sleepy.

Gum containing by some composition as sweetening, gum base, taste, and agent aromatic. Before, a sweet taste gum derived from sucrose that can be metabolized fermentation so as to cause dental caries. The ability gum in reducing insidens dental caries derived from movement chewing and sugar a substitute for non cariogenic and having the womb calories low used as sweetening (maltitol, mannitol, silitol, and sarbitol). In some the study of (including the study at school teeth from the university of

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michigan and indiana). Blends of silitol and sorbitol in chewing rubber has been proven to be more effective than sorbitol just, but less important than to the product pure silitol.

To investigate the function of gum to catastrophic health care, team of researchers from the university of groningen, the netherlands has to make an effort to observe whether gum can prevent you from receiving bacteria of the cavity of the mouth .Five co eds biomedical techniques were recruited to chew two a kind of chewing gum a standard as long as 30 seconds until 10 minutes from time when their .After that, gum analyzed by the.Unveiled over the weekend its finding stimulates the advance of, there are about 100 million a bacterium that detected on any part of chewing gum that has been slightly chewed.By the decrease in bacteria colonies in the mouths of it is expected that ph the mouth will go up so that it will prevent the occurrence of demineralisasi the teeth .Was said by roslan (2002) that there are a number of ways in may be conducted for the international association of athletics federations Population bacteria on in the mouth namely by brush my teeth regularly, berkumur-kumur with use antiseptics, clean an interdental with dental floss, avoid consumption of foods can containing sucrose, clean the tongue and chewing gum.

As for one way to prevent caries namely chewing gum that is stimuli mechanical, this means terangsangnya secretion saliva.Gum is bolus that can cause a stimulus mechanical and can stimulate increased secretion of saliva, while sensation of taste a spicy taste of gum is a stimulus chemical can also increase the secretion saliva.One of the functions of saliva that is as self cleansing which means pure germ in the cavity of the mouth.Hopefully with a mechanical stimuli namely chewing gum can help in reducing the caries on the teeth because of saliva who assists in reduce the amount of bacteria in the cavity of the mouth that is a major cause the caries.The results of research suggests that long chewing gum containing silitol to ph whack on the surface of the tooth and volume saliva is for 10 minutes (Nurhandayatun, N, et al, 2015). In the market

many Various a kind of chewing gum mostly consumed by the community in Jambi. Differences of composition in chewing gum was widely developed to increase its function.This needs to be done research to know is there a difference the effectiveness of power obstruent to whack on many kinds of gum available in Jambi

MATERIAL AND METHOD

This research study is a quasi experiment. The design of this study using pre and post-test design with control group. The purpose of this research is to know the difference between an obstruent whack the effectiveness of mastication gum containing maltitol, sarbitol and silitol with gum containing maltitol, sarbitol and mannitol and with gum containing maltitol, and silitol. The research is nursing student teeth Jambi. The sample purposively sampling technique is based on sample taken, of the nature of or characteristic of a particular. For the experiment and the control group amount 10 people. The subject of study selected sample: on permanent teeth had grown complete, dmf-t > 2, index 0 calculus, no teeth crowding, and not use the orthodontie and artificial tooth.

There are 3 kinds of chewing gum with different ingredients and can be purchased in Jambi City which is used in this study. In the implementation of the research, the three types of chewing gum were closed with a trademark with black duct tape for double blind test. Researchers and respondents did not know the gum that was being used, then known as gum A, gum B, and gum C. As a control, research subjects did not chew gum. The inhibitory power of plaque formation on gum A, B, and C is seen from the score of plaque formed before chewing gum and after chewing gum. To see the plaque score, a PHP-M measuring instrument is used.

RESULT AND DISCUSSION

Result

The average results of plaque scores with the PHP-M index before and after chewing gum obtained the following results:

Table1. Overview of Plaque Score with the PHP-M Index on Examination before and after chewing gum

	Average Plaque Score (PRE)	Average Plaque Score (POST)	Average Deffrence Pre and Post
Chewing gum A	6,73	5,33	1,40
Chewing gum B	6	4,53	1,47
Chewing gum C	6,05	3,77	2,28

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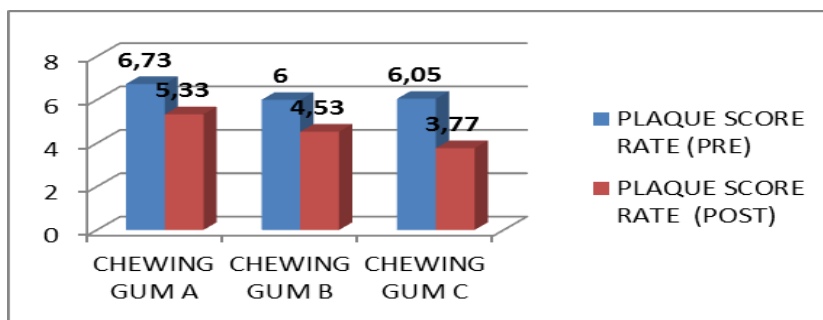


Figure1. The average score whack to examination before and after chew gum

Table 1 can be seen picture descriptive the measurement result a score whack with uses index php-m on 10 respondents before and after chewing gum. Chewing gum that used is gum containing maltitol, sorbitol and silitol. In chewing gum a obtained whack the average score per teeth before and after chewing gum a of 6,73 and 5.33 in the plaque score 1.4. Gum b, a score whack before chewing gum was 6 and

after chewing gum is 4,533, so that the difference plaque scores were 1,47. To gum c, a plaque score before chewing gum is 6,05 and after chewing gum is 3,377, so that the difference plaque score were 2.28. The difference that in be in the three kind of gum a, b and c, in chewing gum c have the difference a plaque score the most bigger among 3 kind of gum (Fig.1).

Table2. The results of the test and been approved wilcoxon signed the rank test drives in the score whack in before and after chew bubble gum as well as groups of control

Group of Chewing gum		N	Score plaque
			Wilcoxon Signed Rank Test(Sig.)
Chewing gum A	Pre	10	0.007*
	Post	10	
Chewing gum B	Pre	10	0.022*
	Post	10	
Chewing gum C	Pre	10	0.021*
	Post	10	
Control	Pre	10	0.221
	Post	10	

* : signiificant

In table 2. Show results in test more different than some samples that deals (pre and post) by using wilcoxon signed ranks test, obtained the result that plaque score between pre and post

chewing gum a, b and c it has value meaningful ($p > 0,05$). In the control group there is no difference ($p > 0,05$).

Table3. The results of the test whack mann-whitney difference between scores in the gum to the control group

Groups of chewing gum	Plaque score
	Mann-Whitney Test (Sig.)
Chewing gum A << Kontrol	0.272
Ghewing gum B << Kontrol	0.427
Chewing guC C << Kontrol	0.096

In table 3. Found that income from statistical tests (Mann-whitney test not there are differences

between the average a score whack group gum (gum a, b and c) to the control group ($p > 0,05$).

Table4. The results of the test and been approved it is different korskall walliz testa between score whack in chewing gum a, b and c

Category. ABC	N	Mean Rank		Difference palque score ABC	
Difference plaque score ABC	Chewing gum A	10	14,20	Chi-Square	1,075
	Chewing gum B	10	14,45	Df	2
	Chewing gum C	10	17,85	Asymp. Sig.	,584
	Total	30			

Table 4. Shows that the difference between the plaque score a, b and c meaningless ($p > 0,05$)

Discussion

Research on index whack in the total sample done before and after treatment. Sample who enters into the treatment group consume gum a containing maltitol, sarbitol and silitol, gum b containing maltitol sarbitol, and mannitol, and gum c containing maltitol and silitol. For ten minutes in accordance the term, by not doing the act of cleanliness the mouth.

1. The formation of an obstruent whack to examination before and after chew gum containing maltitol, and silitol sarbitol, gum containing sarbitol maltitol, and mannitol and with gum containing maltitol, and silitol

In table 2 with test statistics wilcoxon signed rank test, indicating the result that whack the average score before and after chewing gum a, b and c, there is a difference meaningful, except in the control group. This condition with analysis descriptive seen in table 1 and figure 1 whose exposes in mastication gum containing maltitol, and silitol have the difference the difference a score whack larger compared in mastication gum containing maltitol, sarbitol and silitol and gum containing maltitol sarbitol, and mannitol. This indicates that gum containing silitol can reduce the formation of plaque on the teeth compared with gum that does not contain silitol. The use of silitol will trigger production saliva containing many minerals important for email teeth. A research in the United States that silitol able to press the amount of bacteria cause tooth decay, hinder

2. The formation of an obstruent plaque to examination after chew gum containing maltitol, and silitol sarbitol, gum containing sarbitol maltitol, and mannitol and gum containing maltitol, and silitol to the control group.

Based on this study which was conducted the results showed of the unknown it will there were significant differences in the difference between whack index provided the global financing before and after treatment between control and treatment groups. In order to prevent and control the creation of the formation of dental whack covering: pursuing the food, the act of is chemically against bacteria and against our judges the a polysaccharide extra cell phone over a pair, as well as of the mechanical action in the form of for the raids took place the cavity of the mouth and teeth of all the rest of the food, bacteria and the source is at its metabolic

(Forrest, 1995). The growth of plaque occurs within 1 that hour in the appointed the first time formed in the region of interproximal of the civil servants some teeth (Fedi, 2004). Research conducted show differences in plaque index varying on each the sample. This is thought to be can be caused by a factor of pattern food/diet and compliance the sample that can be controlled. Research is still lacks, among others not can reveal effect maltitol, sarbitol, mannitol and silitol own (without effect gum) on the decline in plaque index, for of controls to research this is not given any treatment. This study did not compare effect gum containing maltitol, sarbitol, mannitol, silitol to chewing gum unsweetened, for hardly see gum unsweetened in the market. Chewing gum that is in the market commonly contains sucrose, while sucrose are sugar that can be dimetabolisme by bacteria plaque so as to induce growth plaque on the surface of the tooth.

The measurement result a score whack after chew bubble gum a which has and maltitol, sarbitol, and silitol, gum b which has and maltitol, sarbitol, and mannitol, the bubble gum was c has and maltitol and silitol and without chewing gum, where it has been documented iniquity and guilt are still the formation of whack (table 1). This data in accordance with statements from manson sisters and eley (1993), seconds after the teeth is to be formed deposit and one wafer out of the saliva protein that is composed chiefly of a glycoprotein on the surface of the tooth. A layer of is referred to as gust pelikel, attached to closely together on the surface of the tooth internal lighting and can only have caught for you and positive friction you have. At first this layer bacteria free long shelf life and because of the cavity of the mouth human being is a ecosystem stability in which various kinds of bacteria make a living in a balance one against another and well proportioned also against the tissues, so in time a couple of minutes after terdepositnya pelikel on the surface of the tooth, pelikel will terpopulasi with bacteria and detailed.

This was supported in houwink et.al (1984), that after with great trouble to yourselves teeth freed from whack in the immediate future pelikel newly formed again, and in the space of half an hour bacteria berkolonisasi on top of her. For that reason it is at all free from whack to maximum efficiency are but in time are really short.

3. Comparison the effectiveness of power obstruent the formation of plaque between mastication gum containing maltitol, sarbitol and silitol with gum containing maltitol, and silitol and with gum containing maltitol, sarbitol and mannitol

The results of analytic in table 4 shows that the average of plaque score between gum a, b and c no meaning ($p < 0.05$). Movement produced when mastication and friction with food on the teeth produce cleansing plaque mechanically, but effective in the area two-thirds coronal teeth, so that plaque usually are still left behind in the a third servikal teeth. Deposit whack also formed in slits, the pit and fissure the crown of a tooth, the edge of fillings uneven and on the teeth that crowding. Location and the formation of plaque is very different between individuals, depends several factors of cleanliness the mouth, diet/food intake, the flow of/flow saliva and composition saliva (Newman, 1996).

According to Carlsson (in klaus, 1989) Factors that affects the process by which the dental whack is as follows:

- a. The physical environment of covering the anatomy and a gear position, the anatomy of the surrounding tissue, the structure of the surface of the tooth, where is whack to be distinctly seen after the event was done the staining with using disclosing solution. On an area of you think that is hidden because convexity the surface of the tooth, the teeth of which the of the guilt or trespass covering a number of dispersed, the surface of the tooth the contours of the edge of the gum that is bad, the surface was a cripple in and the regions cemento enamel junction who is rude, to pick up as reflected the number of plaque that is formed more eligible to receive higher.
- b. Friction you have or friction by food which are chewed on the surface of the teeth of which the various sources mostly from unprotected and maintenance of the cleanliness and hygiene of the mouth can prevent or reduces the concentration of plaque in the surface of the tooth.
- c. The influence of diet on the establishment of plaque there are two aspects: the impact physically and its effect as a source of food for bacteria on in plaque. Hard the software food affect the formation of plaque, plaque to be formed if we more menkonsumsi soft food. Especially food containing carbohydrates kind of sucrose because will

produce dextran and levan with a crucial role in the formation of matrix whack.

Cause of trouble medical check and the mouth was in most cases to an adequate number of qualified plaque. Plaque the teeth is a thin layer will be completely encircled by the deposit of the saliva, bacteria and the source is a side product of the metabolism of bacteria that is attached to the surface of the tooth and are colorless. Plaque the teeth is the etiology of predominant the occurrence of a disease gingivitis and diseases of periodontal and menjai one of the causes of the occurrence of caries (Mhaske, 2012).

CONCLUSION AND SUGGESTION

Conclusion

1. There is a difference in an obstruent power has risen and other the formation of plaque to the examination of before and after chewing gum that is to containing maltitol, sarbitol and silitol, the chewing gum was containing maltitol sarbitol, and mannitol and with chewing gum containing maltitol, and silitol.
2. There is no difference power obstruent the formation of plaque to the examination of after chewing gum containing maltitol, sarbitol, and silitol than the control group.
3. There is no discernible difference an obstruent power has risen and other the formation of plaque to the examination of after chewing gum containing maltitol, and sarbitol and mannitol if compared with the situation the control group.
4. There is no discernible difference an obstruent power has risen and other the formation of plaque to the examination of after chewing gum containing maltitol, and silitol if compared with the situation the control group.
5. There is no difference in the effectiveness of an obstruent the formation of plaque to the examination of a gum after chewing gum containing maltitol, and silitol sarbitol, gum containing maltitol, sarbitol and mannitol and with gum containing maltitol, and silitol

Suggestion

1. The public should in chewing gum see what there are in gum.
2. The public should in chewing gum see content contained in chewing gum.
3. Get used to chew gum to inhibits the formation of plaque after brushing your teeth.

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4. Need more research on the effectiveness of power obstruent the formation of whack in mastication gum and she the active material on the establishment of plaque other.

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Citation: Rusmiati & Retno Dwi Sari, "The Effectiveness of Power Obstruent the Formation of Plaque in Mastication a Variety of Chewing Gum in Jambi". *International Journal of Research Studies in Medical and Health Sciences*. 2018; 3(11):44-49.

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