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THE RELATIONSHIP BETWEEN THE PH SALIVA OF PREGNANT WOMEN WHO CHEWING BETEL AND THE INCIDENCE OF DENTAL CARIES

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ABSTRACT

Saliva has an important role in detecting several disease and even the method is very easy. People who chewing betel nut, the condition in their mouth will be different from people who do not chewing betel nut. Normal salivary pH is between 6.8-7.2. The aim of this research was to find a relationship between salivary pH in pregnant women who chewing betel nut with the incidence of caries. Methods : A cross sectional studi was conducted to examine the relationship and the study was conducted on 155 pregnant women who chewing betel nut, aged between 16-50 years in remote area and urbanarea Kupang District. The significance value (0.371 > 0.01) between pH and DMF-T (caries) means that there is ni relationship between salivary pH and caries rate. The avarege pH of pregnant women who chewing betel nut 10.13 in the 2nd trimester group and 10.12 in the 3rd trimester group. The avarege caries rate 4.2 for the 2nd trimester group and 4.3 for the 3rd trimester group. Although there is no significant relationship between Salivary pH and caries in pregnant women who chwing betel nut. However, pregnant women who chewing betel nut will cause various kind of damage, both damage to the supporting tissues of the teeth and other systemic damage such as diabetes, heart disease, nephrosis and others. Arecolin and arecaidin in areca nut are carcinogenic and damage the placenta to the mother and baby, resulting in adverse pregnancy outcome.

Keywords: caries; ph saliva pregnant women betel chwing; relationship

INTRODUCTION

Public health can not be released from the cultures. In fact all the community has its own concept of health as an important part of the culture. The term lifestyle is just a concept that is often used to mean the words "The way people live," to reflect of the whole social values, attitudes and activities. This emphasis on culture and behavior patterns as well as personal a lasting habit such as smoking, drinking alcohol and betel.chewing. Life-style evolving and can be learned through interaction together with parents, friends, neighbors, peer group, brother of passing everyday life or through schools and the media. Some facts are accumulating which indicates that there is a relationship between the culture with the life style/lifestyle of the individual person. Many diseases are now in emerging countries such as pre oral cancer, oral cancer, lung cancer, diabetes mellitus, obesity, drug addiction drugs, heart diseases associated with lifestyle changes. In some developing countries including Indonesia, traditional lifestyles are still fast or strong keep. The risk of illness and death associated with the existing cultural patterns still of concern, not to mention some of the diseases associated with clean and healthy Life Patterns, poor nutrition and so forth (Kemenkes, 2019).

The word Bethel quid reference from the mixture of areca nut, betel leaf could be part of the flower, as well as with lime and a mixture of other. Additional flavors blend more like cloves, pepper, nutmeg, peppermint sweeteners or tobacco into sirih pinang to improve physiological

effects (WHO, 2012). The betel and areca nut is the main or base material while others only additional materials. In each country vary combination. How to eat a betel nut betel nut, areca nut, mixing with lime and other substances then wrapped in a betel leaf, or eaten separately while added in the mouth (WHO, 2012). Betel nut has various meanings including used as a symbol of brotherhood. Likewise with various traditional events ranging from death ceremonies to traditional weddings, the use of betel nut for these events is never abandoned. Aspects of culture and community traditions are very influential on public health. The culture or tradition of the community that continues to be maintained will affect the behavior or behavior of the community. Popular culture has health strengthening, but it is a culture that weakens or becomes a burden on public health (Yodi M et al, 2017).

How the relationship between human health with betel nut apparently hasn't been much revealed by researchers, particularly in Indonesia because menginang is the custom of some communities culture Indonesia. However, in a country of developed countries whose country many immigrants arriving from Asia such as Viet Nam, Taiwan, the Philippines, Papua New Guinea and so on have already done a lot of research regarding the negative effects of consuming pinang betel primarily related to health. Results of research experts that betel nut betel nut has a lot of disadvantages, especially for health. However things related to betel use pinang advantage has also been much researched. Bethel quid reference from the mixture of areca nut (betel nut), part of the sirih Pinang called dau can call is the substance responsible for the influence of psikoaktifnya. The outer skin is yellowish orange colored betel nut if cooked and colored green if not yet ripe. The areca nut is usually chewing in raw state if the young will be lenient, but if the old one will be hard if bitten and if is old it feels bitter. Generally areca nut is chewed in many different combinations with betel leaf or fruit and betel leaves added with lime (lime powder). In general the word sirih pinang (betel nut) originally from a mixture of betel nut (areca nut) and betel leaf. While the word Bethel or fruit and lime. In India additional flavor blends such as cloves, nutmeg, peppermint or sweeteners into sirih pinang to improve physiological effects. (WHO, 2012). The material usually added sweeteners provided for children. In Timor the form of preparations in the form of packaging as in India does not exist. Children consume the same with betel nut betel preparations for adults.

The main content of pinang there are around 9 the known alkaloids, among others arecolin, arecaidine, guvacine and guvacoline. The other ingredients are carbohydrates, proteins, crude fibre (fibre rough), polyphenols (tannins and flavonols), and mineral substances (IARC Monograph vol. 85,. 2013). The use of betel nut betel nut is connected with the effect that will happen after chewing betel nut. The effects soon occur within a few minutes ahead after chewing betel nut betel nut because various materials directly absorbed by the blood vessels through the mucosa of the mouth. This effect is described by Rooban et al. (2005) with symptoms such as: dizziness and pounding debar, sensation and increased sweating, breathing and pulse, diarrhoea, relaxes and feeling happy. According Catherine (2017) that oral health is a critical component of general health. For the first time this is reported by an oral surgeon who stressed the importance of the relationship between oral health with general health a lot the deaths of millions of Americans each year. Most large data is the relationship between diseases in the oral cavity and Diabetes Mellitus. The fact that Type II diabetes incidence is increasing even in young children. Prevention and Center for Disease Control reported that diabetics increased by more than 3 million for nearly 2 years.

Diseases or conditions in the mouth is also associated with heart and lung disease, premature babies conceived on mothers, babies with low birth weight, oral and pancreatic cancer is also associated with Poor Oral Health. The scientists also support the fact that the bacteria in the

mouth in poor condition in the mouth associated with cases of respiratory infections and even stroke and osteoporosis. According to Offander 2014 that the inflammation that occurs from poor oral health can flow into the circulatory system. Bacteria from the result of inflammation of the membrane can reach the fetus, causing damage to the fetus. Furthermore it is said that there are enough data and evidence showing the relationship between the presence of periodontal disease and preterm pregnancy, and infant low birth weight, spontaneous birth prematurely, and so on.

Saliva is a fluid that is good in many ways and is a liquid compound that is required in a variety of physiological functions in the oral cavity. Saliva as a diagnostic tool can bring substantialaddition to the diagnostic armamentarium, providing important information about oral and general health (Roi, 2019). Diagnosis using saliva very great concern to investigation a disorder in the human body because saliva easily available and do not cause fear for the patient compared to the blood specimen and is non ivasive. Saliva analysis has advantages for example non invasive, cheaper compared to blood test (Hastaliklarinda, 2020). Saliva is a product of multiple salivary glands under the oral mucosa). Buffer action of saliva is essential to the defense mechanism. Buffer system has a tendency to overcome and adjust the pH in the mouth remains constant. Whenever the pH down because of the influence of food or other processes (ingestion), the pH will return to resting levels after a while because of the nature of salivary buffer. Hyposalivasi will cause damage to the defense of the mouth so that it will increase the incidence of caries (Value critical pH of saliva is the saliva pH between 5.2 to 5.7 and an average of 5.5 (Fisher, 2018).

Besides pregnant women, especially female hormone (estrogen and progesterone and gonadotropin) issued will pass through the placenta. Hormone This hormone is responsible for the physiological changes during pregnancy. Salivary Flow Rate (salivary flow) will be changed as well as the pH and composition of saliva. Survey of 186 people between the ages of 17 to 60 years old in the village Oelnaineno, about 94% of the rural population consume betel nut. Similarly among children betel nut are not a stranger to them. Unlike cigarettes, which is taboo for young children smoking cigarettes, when they were very young age such as age of elementary school children, the betel nut freely enjoyed by children.Oelnaineno village is one of the villages in Kupang regency Takari predominantly eat betel nut as much as 94%. Their average eating betel nut begins at very young age of 3 years. Distribution of food ever eaten betel nut on (Table 1).

Tablel 1.
Distribution longer betel nut on the people

Longer chewing betel	f	%
>10 years	142	76,34
6-10 years	16	8,60
1-5 years	28	15,06

Data taken at the research level analysis of dental caries incidence and severity of periodontal tissues in people consuming betel nut in the village Oelnaineno 2010. This study will analyze the relationship between pH saliva with the incidens of caries in pregnant women who consume betel nut: measure pH in pregnant women who consume betel, analyze the incidens of caries of pregnant women

METHOD

This type of research was observational-analytic research, with cross sectional study to answer questions to find the relationship between saliva pH of pregnant women who consume betel nut with caries incidence. The data collected at a specific time to describe the state and activity of the time. As for the look of the people who consume betel consists of women are aged 17-50 years. This study population was pregnant women who consume betel nut (the tribal people of Timor Kupang Regency NTT province were taken from four subdistricts two districts that represent remote areas and two districts that represent urban areas . Subdistrict that includes a remote area we have chosen is Amfoang South and the subdistrict Takari. While the urban areas of the subdistrict that we have chosen is the Nekamese and Central Kupang districts for an urban population area population and ethnic Timorese majority at most.. The unit of analysis is a tribal society Timor consume betel nut.Using formula of the sample Riduwan and Akdon number of sample 155. Sampling was conducted on the basis of confidence of 95% and error of estimate u less than 0,05. The statistical test used to test the hypothesis is normality test and Pearson correlation test using Correlatin with 0.01 and Spearman's rho test at the 0.05 significance. The data was processed with SPSS.. The course of the study: Mothers who consumed betel nut were asked to fill out an information form about their name, age, gestational age where the chosen were pregnancy in the 2nd and 3rd trimesters. In addition, they were also asked how long they had consumed betel nut and asked about their knowledge about betel nut for pregnancy. . In the same form, measurements of salivary pH and caries numbers were recorded using the DMF-T formula from Green and Vermillion.

RESULTS

Table 2.
Frequency distribution of respondent's age

Respondent's age	f	%
16 – 20 years	16	10.2
21 – 35 years	123	79.6
36 – 50 years	16	10.2

Most respondent are aged between 20-35 years is 79.6%,

Table 3.
The average age of respondents, DMF-T dan pH Saliva

Average age of respondent	Average DMF-T	Average pH
28.77	4.12	10.15

The average age of respondents was 28.77, the average DMF-T 4.2, the pH of saliva 10:13,

Table 3.
Correlation Test Results between pH and DMF-T (dental caries)

	pH	DMF-T
pH pearson correlation	1	.091
sig (2-tailed)		.371
N	155	155
DMF-T pearson correlation	.091	1
	.371	155
	155	

Correlation is significant at the 0.01 level (2 tailed).

Because of the significance value (0.371 > 0.01) for the relationship between pH and DMF-T, Ho is accepted, meaning that there is no significant relationship between pH and DMF-T (caries number). In pregnant women who consume betel nut.

DISCUSSION

Saliva is the liquid that comes out of the parotid gland, sub-mandibular. sub-lingual and minor salivary glands (Dunkin , 2020) One that is important to control dental caries and periodontal tissue destruction is Salivary Flow Rate. Salivary flow is controlled by many factors / salivary flow can be controlled by sensory stimulation, stress, body position, drugs, dehydration temperature, the type of food we eat, and smoke. Hyposalivasi cause damage to the defense system of the oral mucosa and increase the incidence of caries and mukositas. Saliva is a very important factor in the occurrence of prevent caries (Dunkin, 2020). Female hormones (estrogen, progesterone and huan gonadothropin) issued mainly by the placenta. This hormone is responsible mainly for physiological changes during pregnancy. Changes salivary especially for pregnant women, including its flow, its composition and the level of hormones. Pregnancy increases the incidence of gingival imflamasi known as gingivitis pregnansi with an increase in gingival bleeding tendencies without any connection with the specific plaque, periodontal pocket formation and caries may increase during pregnancy. This will change after childbirth, the causes of this incident remain unclear.(Geddes, 2020.

Pregnant women who consume betel nut will also change the pH of saliva and also Saliva Flow Rate. This change is due to the betel nut is also an ingredient that stimulates saliva due to the influence of betel, areca and lime. Evident from the research that pregnant women who consume betel, saliva pH became highly alkaline with an average of 10.13. This is in accordance with the research of Sahu et al (2018) which states that after consuming betel nut, the pH saliva changes to very high. Research from Kadher (2015) observed changes in saliva to hypersalivation in betel nut consumers but hyposalivation occurred in Oral Submucous Fibrosis, but with no significant change in salivary pH when compared to healthy subjects. In earlier research that pregnant women due to the influence of female hormones mouth becomes acidic so that its pH is acidic 6.36 was within normal limits (Naveen et al, 2013). The results of this study also revealed that there was no relationship / correlation between the pH while consuming betel nut with the incidence of caries (DMF-T) meaning that when consuming betel nut with changes in high pH (alkaline) has no correlation on the incidence of caries.. Conclussion by Pineda (2020), there is a significant correlation on salivary flow rate, saliva pH and buffer capacity in adults with caries incidence. While Karnik's research (2016) states the pH of saliva is lower in pregnant women than in non-pregnant women. The DMFT index (Caries index) shows a strong negative correlation with pH in pregnant women and non-pregnant women means that the pH of pregnant women is lower a significant inverse relationship was found between pH and prevalence of caries. Pregnant women with lower pH have lower caries index than non-pregnant women with higher pH and higher caries incidence. However, further studies are required. it is important to evaluate saliva parameters medically compromised women with high-risk pregnancies. The same study conducted by Lely (2017) that there is no relationship between saliva pH in preschool children and the incidence of caries

Mahtab's research, (2020) concluded that salivary pH, Saliva Flow rate and buffer capacity changed from the first trimester to the third trimester and in the third trimester, most salivary factors related to caries change and can increase the risk of developing caries in the future. Interventions and screening for caries prevention in pregnancy should start in the first or second trimesters. In this study, pH had no effect on the incidence of caries.. According to Rahmadatun (2018), pH and saliva buffer have no effect on the DMF-T index because the results of the study are not significant. This shows that dental caries is a multifactorial disease, which can be caused by various interrelated factors. In this study, the salivary pH of mothers who consumed betel

nut was 10.13 on average, but the caries rate was still quite high at 4.12, which was slightly lower than the average number of carious teeth per person in Indonesia, which was 5 active caries teeth per person (Riskesdas). , 2013) In a study conducted by Sahu,(2018) found that. The pH of pregnant women who consume betel nut is higher than those who do not consume betel nut. This difference occurs due to the influence of betel nut, betel nut and lime which will increase salivary pH. Salivary Flow Rate and salivary pH as well as buffering capacity are factors that play a role in maintaining the integrity of the oral cavity. The increase in these factors can decrease caries activity. (Shetty et al, 2013)

Although high pH has no effect on caries rates, pregnant women need to be careful in consuming betel nut because according to Kalius (2015) there is a relationship between consuming betel nut and pregnancy outcome, especially associated with anemia. Kader (2011) also reportedly associated with nutritional deficiencies including lower folat status among men and women. Many researchers have reported that there was a significant association between low birthweight and betel nut exposure in pregnancy. Further prospective studies are needed to confirm this association. The cessation program needs to be given special attention considering that betel nut is harmful and toxic to the human body (Athukorala, 2021).

CONCLUSSION

Although high pH has no effect on caries rates, pregnant women need to be careful in consuming betel nut because many researchers have reported that there was a significant association between low birthweight and betel nut exposure in pregnancy. Further prospective studies are needed to confirm this association. The government must pay special attention to the prevention of consuming betel nut so that the next generation can be saved considering that betel nut is harmful because the arecolin contained in it is carcinogenic.

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