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Bad Habits of Betel Chewing on Periodontal Status: A Cross-Sectional Study

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ABSTRACT

Background: public trust in one of the villages in Bima Regency, East Nusa Tenggara Province regarding betel nut as a disease prevention is very high, it has even become ingrained among its users. The effects of betel chewing habits can have a negative impact on dental and oral health including the emergence of stains, causing gingivitis, periodontal disease, and causing lesions on the oral mucosa. ³

Material and Methods: The research design used an analytical survey method with a Cross-Sectional design. The population in this study were women who had the habit of chewing betel nut in Tawali Village, Wera District, Bima Regency, West Nusa Tenggara. A total of 77 respondents with a total sampling technique. The instrument of chewing habits was interviewed while the periodontal status was measured by the CPITN index. Data analysis used chi-square ⁵

Results: The frequency of betel chewing with periodontal status ($p = 0.001$), duration of betel chewing with periodontal status ($p = 0.001$) and completeness of materials betel chewing with periodontal status ($p = 0.001$). ²

Conclusion: There is a relationship between the habit of chewing betel with periodontal status.

Keywords: Bad Habits, Chewing Betel, Periodontal Status.

Introduction

Oral health problems have an impact on a person's performance. The problem of the high number of dental and oral diseases at this time is strongly influenced by several factors of community behavior which are made into a culture or habit, one of which is habit betel nut or chewing betel. ^{1,2} In Indonesia, the habit of chewing betel is a very common habit carried out by various tribes of which there are quite a lot in rural areas. This habit has been passed down from generation to generation in the majority of the population in rural areas which was originally closely related to local customs. These customs and habits are carried out during regional ceremonies or events that are religious rituals. ^{3,4}



The habit of betel nut is an activity that has been hereditary in nature related to ceremonies and cultural and social activities. The quantity, frequency, and age at the start of betel nut are changed by local traditions. The frequency of betel nut is related to several factors, such as occupation and socioeconomic considerations. According to ancient history, betel nut behavior was carried out by all walks of life, age groups, including children and even women.⁵⁻⁷

This betel is an ingredient that contains the largest psychoactive after caffeine, nicotine, and alcohol. Areca nut can also be used in this betel nut habit. The proportion of the population chewing tobacco by sex from the Global Adults Tobacco Survey data shows that chewing tobacco in men is 1.5% and women are 2.7%, while the Basic Health Research data shows that the proportion of men is 3.9% and 4, 8% in women. The proportion of chewing tobacco in the province of West Nusa Tenggara is 3.1%, for the prevalence of chewing betel.⁸⁻¹¹

The habit of chewing betel has a bad effect on the teeth, gingiva, and oral mucosa. The belief about betel can prevent oral diseases such as treating sore teeth and bad breath may have been ingrained among its users. The effect of chewing betel on teeth¹⁶ as both positive and negative sides. The positive side is that it inhibits the caries formation process and the negative effect of chewing betel on the teeth and gingiva can cause stains. In addition, it can cause periodontal disease and the oral mucosa can cause lesions on the oral mucosa, poor oral hygiene, and can cause atrophy of the tongue mucosa.¹²⁻¹⁴

The habit of chewing betel nut can damage periodontal tissue, this is because betel is a material that can trigger hypersalivation. This increase in calcium deposits is a factor that can trigger hypersalivation. This increase in calcium deposits can then trigger damage to the gingiva and periodontal membrane due to the habit of chewing. Furthermore, the effect of arecoli (the main alkaloid found in betel nut) is able to inhibit cell attachment, cell spread, and cell migration and reduce cell growth and collagen synthesis. The results of these findings indicate that people who have the habit of chewing have experienced severe periodontitis.^{15,16}

6 **Materials and Methods**

This study uses an analytic survey research type, with a cross-sectional design.¹¹ The place of research was conducted in Tawali Village, Wera District, Bima Regency, West Nusa Tenggara. The population in this study were women aged 35-45 years who had the habit of betel nut, with a total sample of 77 respondents. Sampling using a total sampling technique that is all the population is used as a sample. The method of data collection in this study was to directly examine the status of the¹³ periodontal tissue. To measure the status of the respondent's periodontal tissue, the CPITN index was used. Data analysis¹ was conducted to determine the relationship between betel and periodontal status and analyzed using the chi-square test.

Result

The results showed that the largest number of respondents was in the age group 40-45 years, as many as 42 respondents (54.5%). (Table-1)

Age	Frequency	Percentage
35-39 years	35	45.5
40-45 years	42	54.5
Total	77	100

7 **Table 1: Frequency distribution of respondents by age**



Respondents who have the habit of betel 2 times a day as many as 50 respondents (64.9%), respondents who have a long habit of betel 2 years as many as 50 respondents (64.9%), while respondents who complete the ingredients in betel nut are 54 respondents (70.1%). The most periodontal status was in the shallow pocket category as many as 31 respondents (40.3%). (Table-2)

Variable		Frequency	Percentage
Frequency of betel	<2 times a day	27	35.1
	≥2 times a day	50	64.9
Duration of betel	<2 years	27	35.1
	≥2 years	50	64.9
Completeness of materials	Incomplete	23	29.9
	Complete	54	70.1
Periodontal status	Healthy	15	19.4
	Bleeding	11	14.3
	Calculus	20	26.0
	Shallow Pocket	31	40.3
	Inner Pocket	0	0.0

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Table 2: Frequency distribution of respondents based on the habit of chewing betel and periodontal status.

2
The results of the chi-square analysis of the frequency of betel chewing on periodontal status shows that the p-value is 0.001 ($p < 0.05$), which means that there is a significant relationship between the frequency of betel chewing and periodontal status. (Table-3)

Frequency of betel	Periodontal status								Total	p-value	
	Healthy		Bleeding		Calculus		Shallow Pocket				
	n	%	n	%	n	%	n	%			
< 2 times a day	11	14.3	6	7.8	5	6.5	5	6.5	27	35.1	0.001
≥ 2 times a day	4	5.2	5	6.5	15	19.5	26	33.8	50	64.9	
Total	15	19.5	11	14.3	20	26.0	31	40.3	77	100	

2
Table 3: The results of the chi-square analysis of the frequency of betel chewing on periodontal.

2
The results of the chi-square analysis of the duration of betel of on periodontal status show that the p-value is 0.001 ($p < 0.05$), which means that there is a significant relationship between the duration of betel chewing and periodontal status. (Table-4)



Duration of betel	Periodontal status								Total		p-value
	Healthy		Bleeding		Calculus		Shallow Pocket				
	n	%	n	%	n	%	n	%	n	%	
< 2 years	11	14.3	6	7.8	5	6.5	5	6.5	27	35.1	0.001
≥ 2 years	4	5.2	5	6.5	15	19.5	25	33.8	50	64.9	
Total	15	19.5	11	14.3	20	26.0	31	40.3	77	100	

Table 4: The results of the chi-square analysis of the duration of betel chewing on periodontal.

The results of the chi-square analysis of completeness of material of betel of on periodontal status show that the p-value is 0.001 ($p < 0.05$), which means that there is a significant relationship between the completeness of material of betel chewing and periodontal status. (Table-5)

Completeness of materials	Periodontal status								Total		p-value
	Healthy		Bleeding		Calculus		Shallow Pocket				
	n	%	n	%	n	%	n	%	n	%	
Incomplete	8	10.4	5	6.4	6	7.8	4	5.2			0.001
Complete	7	9.1	6	7.8	14	18.2	27	35.1			
Total	15	19.5	11	14.3	20	26.0	31	40.3	77	100	

Table 5: The results of the chi-square analysis of completeness of material betel chewing on periodontal.

Discussion: The results of the chi-square test showed that the frequency of betel chewing with periodontal status ($p = 0.001$), duration of betel chewing with periodontal status ($p = 0.001$), and completeness of materials betel chewing with periodontal status ($p = 0.001$), meaning that there was a relationship there is a significant relationship between betel chewing habits and periodontal status. The content of addictive substances in the mixture of betel nut so that the more often you do the habit of chewing, the higher the risk of periodontal disease.¹⁵ In addition, factors that have a significant relationship with the presence of oral mucosal lesions such as the longer and more often a person does the habit of chewing, the higher the risk of developing oral mucosal lesions. The old habit of betel nut has some very detrimental adverse effects because the use of lime in the betel concoction causes a wet atmosphere in the mouth so that it can build up calculus, silicates contained in tobacco leaves and chewing for a long time will gradually erode the elements of the teeth to the gingiva. The negative effect of betel nut can cause periodontal disease, namely chronic inflammatory disease of the oral cavity if left untreated it can cause lesions on the oral mucosa.^{13,14}

The habit of chewing betel nut with a complete mixture of ingredients can cause periodontal disease. The cause of the periodontal disease is the habit of chewing betel, this is caused by calculus and tartar due to stagnation of saliva from chewing betel nut due to the presence of Ca(OH)₂ lime.¹⁴ The combination of lime with areca nut results in a primary response to reactive oxygen formation and may result in oxidative damage



14 to DNA in the buccal mucosa of betel nut. The effect of betel nut can lead to periodontal or gum disease in the presence of oral. 19

15 Mucosal lesions and can even lead to oral cancer. Cancer of the cheek mucosa is associated with the habit of chewing a mixture of betel nut, betel leaf, lime, and tobacco.¹⁷ The lime used in consuming betel nut contains benefits for periodontal health because it contains chitin substances which are beneficial for periodontal health. Chitin products used in betel nut can damage the periodontium mechanically, namely in the form of powder or in the form of lime. The use of chewing tobacco causes gingival recession and periodontal attachment loss. Plaque and tartar coupled with the habit of chewing betel, if not removed will cause loss of tooth attachment to bone. Chewing betel was significantly associated with gingival bleeding and a significant tendency to increase alveolar bone loss. Betel nut habits can cause gingivitis and gingival recession and loss of periodontal tissue attachment. Daily betel nut habits, annual betel nut habits, and the completeness of betel can cause periodontal disease. The more often and longer the habit of chewing betel will cause periodontal disease.^{14,18}

16 Conclusion

Based on the results of the study, it can be concluded that there is a significant relationship between the habit of chewing betel with periodontal status.

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