

BETEL NUT CHEWING PRACTICE AND ORAL HEALTH IMPACT IN KARO BATAK WOMEN OF SUMATERA UTARA PROVINCE

Sondang Pintauli*, Nurdiana**, Marline Nainggolan**

*Department of Dental Public Health, Faculty of Dentistry, Universitas Sumatera Utara, Medan

**Department of Oral Medicine, Faculty of Dentistry, Universitas Sumatera Utara, Medan

***Department of Biology, Faculty of Pharmacy, Universitas Sumatera Utara, Medan

Correspondence: sondangp@yahoo.com

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ABSTRACT

Background: Betel nut chewing is an important cultural tradition that has been practiced from generation to generation of Indonesian people, one of them is Karo Batak tribe. Most chewers believe that chewing activity provides benefits that could give pleasure, eliminate bad breath, and strengthen the teeth. However, many researchers have revealed some serious health risks caused by betel nut chewing. This study aimed to describe the characteristics of betel quid chewing practice and to clinically detect oral health changes of the chewers.

Method: This cross-sectional study involved 20 women chewers, aged between 30-65 years old in Tiga Panah sub-district, Karo district of Sumatera Utara Province. The interview was used for data collection concerning betel nut chewing behaviour and oral examination to clinically detect the oral changes of the mucous. Data analysis was done quantitatively and qualitatively.

Result: The results showed that the chewing habit of 60.00% of respondents was initiated at the age of >25 years old. Most of them (75.00%) chew for 5-10 years with the frequency >10 times/day (55.55%). Most of the mucosal condition of chewers change from a brownish-red to brownish-black staining, with a wrinkled appearance, striated mucous, papules, and slightly pigmentation of the tongue.

Conclusion: Although no precancerous lesions were detected, it is concluded that the chewers were not aware of oral health that could damage their oral cavity. Therefore, it is needed to develop healthy behaviour strategies for the chewers without any impact on their oral health.

INTRODUCTION

Betel nut chewing has been common in South and Southeast Asia, Asia Pacific Region including Indonesia for a long time. It has been practiced from generation to generation of Indonesian people, one of them is the Karo Batak tribe of Sumatera Utara Province. There are two parts to this issue, one is culture and the other is personal behaviour. Betel-quid chewing is a socially accepted habit that is integrated into both ceremonial situations (cultural aspect) and routine practice of daily life (behavioural aspect).^{1,2}

Most chewers believe that chewing activity provides benefits that could give pleasure, eliminating bad breath, strengthening the teeth, and supporting a healthy body. Little et al., (2014) divide the reasons of chewing into three constructs. The first is the reinforcement construct, such as people like the taste or something in their mouth all the time. The second is a socio/cultural construct such as all of my friend chew, my family member chew, rude not to chew or people will not respect if I don't chew. The third is stimulation construct such as

relaxes, gives energy, helps to make decisions, and makes someone feel better.³

Chewing betel methods varies from every region or country. Betel nut contains areca nut, slaked lime and catechu, wrapped in betel leaf. In Karo tribe, chewing betel nut is a habit of chewing a mixture of ingredients which generally consists of betel leaf, lime, and a few small pieces of areca nut on a surface of betel leaf then folded together and to be chewed within few minutes. Sometimes, they add gambier, or tobacco which greatly increases the risk of developing oral cancers.² Areca nut, the primary ingredient in betel quid, forms nitrosamines in the saliva of chewers which induces oral disorders with a high tendency to progress to oral precancerous lesions. It is showed that the habitual use of betel nut chewing can lead to serious adverse health effects.^{1,2,4} Many researchers have revealed some serious health risks caused by betel nut chewing including an oral lesions.⁵⁻⁷

Betel nut itself has been classified as a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Cancer Research (IARC). It is clear that the use of betel nut alone is a threat to health, while its combination with tobacco greatly increases an individual's risk of premature illness and death. In countries in the Western Pacific Region where this is observed, betel nut and tobacco chewing have become a significant public health problem that should be concerned.⁵ Dentists are the first clinicians who should be aware of these conditions and recognize them in their patients, the presence of abnormalities that have the potential for oral cancer.⁸

The purpose of this study was to describe the betel quid chewing practice among betel nut chewers of Karo Batak women in Karo regency of Sumatera Utara Province and to clinically detect associated oral mucosal lesions in chewers. Karo regency is a central North Sumatera, covers an

area of 2,127.25 square kilometers with 60% of the area of which is still covered by forest and agroforestry. The cool-to-mild temperature, beautiful agricultural landscape, and highland area support the organic farmings under management by Karonese.

MATERIALS AND METHODS

This cross-sectional study involved 20 Karonese women aged between 30-65 years old and conducted in Tiga Panah sub-district, Karo district of Sumatera Utara province. The inclusion criteria were the age of a minimum of 30 years old, and for at least five years of chewing betel nut. All participants were approached to take part in the study and signed informed consent before participating in the study. Ethical approval was obtained from the Research Ethics Committee of Medicine Faculty, University of Sumatera Utara. The interview was used for data collection included socio-demographic characteristics and betel nut chewing behaviour.

By using a structured questionnaire, the interviewers collected from the respondents the following data: (1) socio-demographic characteristics (2) characteristics of betel quid chewing practice included a. age at which the respondent started betel quid chewing b. duration of the chewing c. frequency of chewing, and d. the main reason for chewing. All participants were divided into two groups: 10 chewers using areca nut and the other 10 chewers without using areca nut. Then, an oral examination on every respondent was made to observe the oral lesion. Data analysis was done quantitatively and qualitatively. Because of the pandemic Covid-19 situation, all data was collected following Covid-19 testing.

RESULTS

Characteristic of chewers

The results showed that of the 20 people who are willing to be respondents, ten people (50%) were using areca nut, and the other ten people (50%) were not. Based on age, more aged ≤ 45 years in the group without using areca nut (77.78%), while in the group using areca nut more

aged >45 years (72.72%). Based on education, in the group using areca nut mostly from elementary school (66.66%), and junior/high school level in group without using areca nut (60.00%). The graduate degree is only in the using area nut group. The percentage of respondents who worked as farmers was more in group without using areca nut (56.25%) (Table 1).

Table 1. Respondent characteristics of Karonese women (n=20)

Respondent Characteristic	Chewer Groups		Total
	Using Areca (n=10)	Without Using Areca (n=10)	
	n (%)	n (%)	
Age (old)			
≤ 45	2 (22.22)	7 (77.78)	9
>45	8 (72.72)	3 (27.28)	11
Education			
Elementary school	2 (66.66)	1 (33.34)	3
Junior/High school	6 (40.00)	9 (60.00)	15
Graduate Degree	2 (100.00)	-	2
Occupation			
Farmer	7 (43.75)	9 (56.25)	16
None/House wife	3 (75.00)	1 (25.00)	4

Table 2 shows characteristics of betel quid chewing practice among the respondents who currently chewed betel quid. Among 20 chewers, half of the chewers using areca nut (66.67%) started chewing betel quid after 25 years old, the majority (53.33%) chewed betel quid for 5-10 years and 63.33% chewed >10 times per day. Instead,

chewer without using areca nut showed that the people started chewing at 25 years (75.00%), with a length of chewing for 5-10 years (46.67%) and chewed 5-10 times per day (66.67%). The main reason for chewing is stress-relieving (60.00%) in the areca nut group and peer pressure in the group without using areca nut (100%).

Table 2. Characteristics of chewing practices of Karonese women

Chewing Characteristic	Chewer Groups		Total
	Using Areca	Without Using Areca	
	(n=10) n (%)	(n=10) n (%)	
Initiated age (years)			
25	2 (25.00)	6 (75.00)	8
>25	8 (66.66)	4 (33.34)	12
Length of chewing (years)			
5-10	8 (53.33)	7 (46.67)	15
>10	2 (40.00)	3 (60.00)	5
Frequency of chewing (times/day)			
5-10	3 (33.34)	6 (66.67)	9
>10	7 (63.33)	4 (36.37)	11
Main reason for chewing			
Peer pressure	-	4 (100.00)	4
Stress relieving	6 (60.00)	4 (40.00)	10
Others (tradition, parents influence)	4 (66.66)	2 (33.37)	6

Oral examination

No respondents had a history of oral cancer. However, some changes in the oral cavity were observed in the chewing group using or

without using areca nut, such as red to black tooth staining, mucosal pigmentation, striated mucosa, and papules were observed (Figure 1A&B).

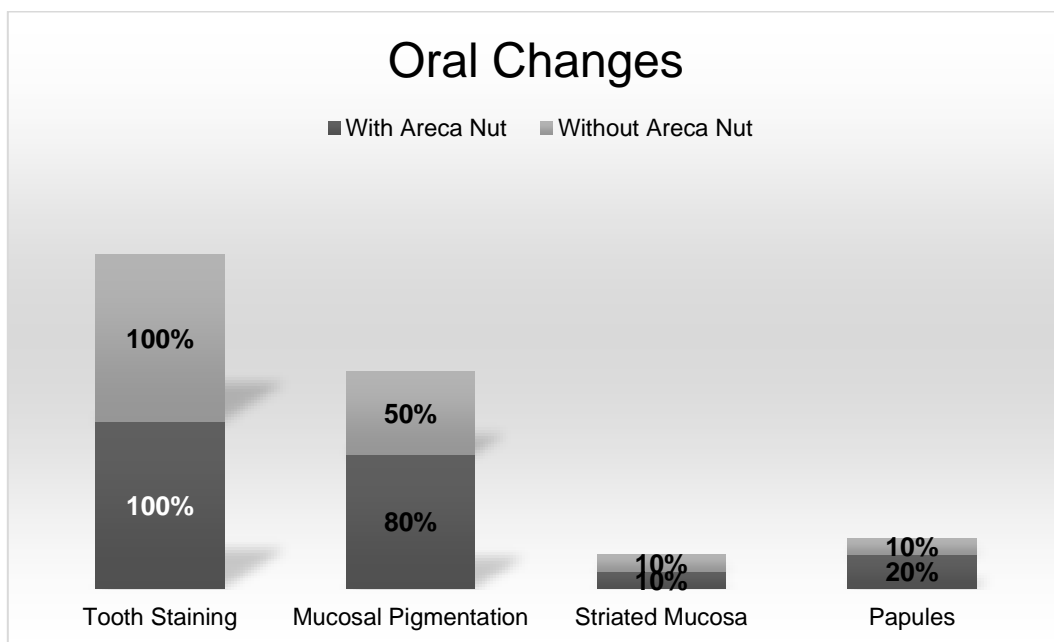


Figure 1A. Frequency distribution of oral changes in chewers

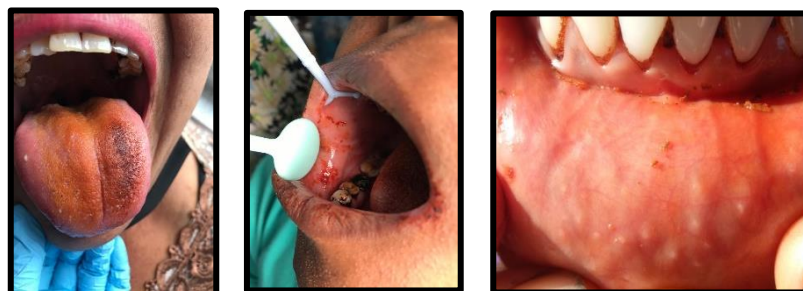


Figure 1B. Oral changes in betel chewers (left to right): brownish-red staining/pigmentation at dorsum, striated mucous, and papules (doc)

Various oral hygiene was practiced routinely by the chewers. The data showed that half of them (55.38%) rinsing with water, 35.02% brushing their teeth while others brushing with

tobacco (2.39%) and others (2.99%) such as brushing with coconut, etc. However, there was still 4.19% of chewers do nothing to maintaining their oral hygiene after chewing (Table 3).

Table 3. Oral hygiene practice of the chewers (n=20)

Oral hygiene practices	n	%
Rinsing with water	5	25
Brushing the teeth	3	15
Others	1	5
None	11	55

DISCUSSION

In this study, mostly chewing habits started at the age >25 years (60.00%) with a length of chewing 5-10 years (75%) and the frequency >10 times/day (55.55%). Stress-relieving factor is the main reason of Karonese women for chewing (50.00%). It is also consistent with a study conducted by Little et al., (2014), that there were 351 adults chew betel quid in Guam because it causes a calming effect for consumers. The chewers believe that the areca nut has mild euphoric effects.³

A variety of oral mucosal lesions and conditions associated with betel quid chewing were reported in many kinds of literature. In this study, change of color in the oral cavity to red (extrinsic red

tooth staining and pigmentation were mostly found in the respondents). This is probably because the respondents have a habit of chewing betel nut for long period and carried out daily/continuously (more than 10 times/day), causing irritation of the oral mucosa which leads to mucosal changes to the oral mucosa of betel quid chewer (Table 2). A lesion of the oral mucosa was also detected corresponding to the regular site of placement of quid especially in the chewer with areca nut (Figure 1A&B). Although the exact mechanisms underlying the development of this condition are not fully understood, it is thought that the chemical and traumatic effects of the betel quid on the oral mucosa may be significant factors.⁹

Hence, the risk of oral cancer as a result of a long term habits of betel chewing on individuals

aged 40 years was high. This is because the longer the chewing habit, the higher the risk of cancer of the oral cavity because the chewing composition has a material containing carcinogenic substances (nitric oxide, NO₂) that cause chronic irritation of the oral cavity. The use of betel quid alone is a threat to health, while its combination with areca nut greatly increases an individual's risk of illness.^{7,8} In countries where this is observed, betel chewing with or without areca nut has become a significant public health problem.^{1,3}

In this study, there were no cancerous lesions. This may be due to the lifestyle of the communities, which often consume green vegetables. The Karo district is known as an agricultural center for vegetables and fruits. In addition, betel leaves contain beta-carotene, which is proven able to neutralize free radicals released by the areca nut, therefore, the possibility of experiencing malignancy becomes less. In addition, 25.00% of chewers rinsing their mouth with water or brushing their teeth (15.00%) after chewing. It is uncertain that the chewers will be free of oral changes in the mouth, however, oral hygiene was significantly associated with oral health, therefore, those who cleaned their teeth frequently had fewer oral problems.

CONCLUSION

The present study indicated that betel nut chewing using areca nut or not has a potential role in changing oral mucous and developing oral lesions, therefore, dental practitioners should be aware of this condition. This study will be contributed to the database useful for designing the preventive strategy education for the betel chewers especially for Karonese women in Sumatera Utara province. We need to find ways to change behaviour in small ways, therefore, the cultural

practice of chewing can continue safely. This will achieve a balanced result where the tradition lives on and the health of the individual is protected.

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Conflict of Interest

There is no conflict of interest

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