

RELATION BETWEEN TOBACCO-CHEWING HABIT AND CARIES INDEX IN ELDERLY WOMEN

Observation on Desa Juking Pajang Kecamatan Murung Kabupaten Murung Raya
Provinsi Kalimantan Tengah

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ABSTRACT

Background: Tobacco-chewing is one of the oldest ways to consume tobacco leaves. Tobacco is a herbal plant (*Solanaceae*) containing nicotine that can cause dental caries. **Purpose:** The purpose of this study was to identify the relation between caries index in tobacco-chewing and non-tobacco-chewing elderly women in Desa Juking Pajang, Kecamatan Murung, Kabupaten Murung Raya, Provinsi Kalimantan Tengah. **Methods:** This was an analytical study using cross sectional approach. The samples were 60 elderly women, which consisted of 30 tobacco-chewing samples and 30 non-tobacco-chewing samples. **Results:** Data were analyzed using Mann-Whitney test, and the results showed p as 0,000 ($p < 0,05$), which meant there was a significant relation. The results also revealed that the caries indexes of tobacco-chewing and non-tobacco-chewing elderly women were 16,2 (very high), and 2,43 (low) respectively. **Conclusion:** There was a significant relation between tobacco-chewing habit and caries index in elderly women in Desa Juking Pajang, Kecamatan Murung, Kabupaten Murung Raya, Provinsi Kalimantan Tengah.

Keywords : dental caries index, tobacco-chewing, elderly women

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INTRODUCTION

The habit of chewing particular leaves whether in social or religious context has been performed for centuries by traditional communities all over the world. The community in Andes Mountains, Latin America, is fond of chewing coca leaves, in Yaman, they like to chew khat leaves, and in Southeast Asia, the traditional community has the habit of chewing tobacco leaves.¹

Tobacco is a seasonal plant, cultivated in plantation and is very well-known among Indonesians. This plant is spread throughout the archipelago, and commonly used as a staple ingredient in cigarette-making. Tobacco contains nicotine, tobacco-specific *N*-nitrosamines, *N*-Nitrosamino acids, volatile *N*-nitrosamines and other substances dangerous to health, especially oral and dental health.^{1,2}

According to 2014th *Global Youth Tobacco Survey* and 2013rd *RISKESDAS*, the prevalence of Indonesians with tobacco-chewing habit was 12,3%: 3,7% was adult males, 4,5% was adult females; 3,0% was males under 15 years old, and 1,1% was females under 15 years old. Prashant B et al in 2013 remarked that community with tobacco-chewing habit had high DMF-T (Decayed, Missing, Filled Teeth) index.^{3,4,5}

In Indonesia, DMF-T index reached 4,6%, with 460 decayed teeth per 100 people. In 2015, this index increased to 4,85% or 485 decayed teeth per 100 people.⁷

The lack of dental health maintenance, measured using DMF-T index, is commonly affiliated with a person's habit, such as tobacco-chewing. This habit is commonly found in Dayak community, especially in Desa Juking Pajang. Desa Juking Pajang is one of the rural areas in Provinsi Kalimantan Tengah which still upholds tobacco-chewing tradition. This tradition is preserved from generation to generation. Tobacco-chewing habit is performed a few times a day just like common food consumption. This is why author is interested in researching about the habit.⁷

DMF-T index is an index used to assess a person's permanent dentition status, whether they have decayed, missing, or filled tooth. This index describes the extent of caries cumulative spread in a population. Caries is an infectious disease marked by progressive demineralization on hard tissue of tooth's crown and root.^{6,19}

MATERIALS AND METHODS

This was a quantitative analytical study using cross sectional approach, which is a study to assess correlation dynamics between risk factors and effects.⁸ The study was carried out in Desa Juking Pajang, Kecamatan Murung, Kabupaten Murung Raya, Kalimantan Tengah during July to August 2016. The population was all elderly women (50-75 years old) in Desa Juking Pajang Kecamatan Murung Kabupaten Murung Raya. Samples were chosen through purposive sampling with inclusion and exclusion criterias.⁸

The inclusion criteria were elderly women aged 50-75 years old, with tobacco-chewing habit and no tobacco-chewing habit, those with tobacco-chewing habit have been performing the habit for less than 50 years, and willing to become respondents by signing informed consent. The exclusion criteria were those not experiencing consciousness function problems, and not having systemic diseases history after anamneses were carried out. Total samples were chosen based on Arikunto's statement (1998) in Hamsar (2006): study with population less than 100 people should choose all population as samples, but if the population was more than 100 people then samples taken could be 10-15% or 20-25% of population. Samples were taken from all population of 60 respondents, consisted of 30 elderly women with tobacco-chewing habit, and 30 with no tobacco-chewing habit.

Instruments used were questionnaires and DMF-T index assessment sheets. Tools used were diagnostic tools, neerbiekken, mask, flashlight, handscoon, alcohol, cotton, and writing tools. Protocols followed were screening to choose samples according to inclusion and exclusion criteria, informed consent, questionnaire filling, and DMF-T examination. Data obtained were then put through analysis.

RESULTS

Respondent Characteristics

The results show that the most common age was 70 years old in both groups, consisted of 12 people in tobacco-chewing group (40%) and 13 people in non-tobacco-chewing group (43,3%).

Caries Index in Tobacco-Chewing Group

The status of caries in elderly women who had tobacco-chewing habit could be seen in figure 1.

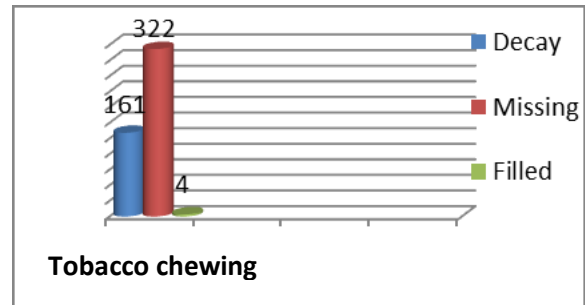


Figure 1 Bar chart of caries status in elderly women with tobacco-chewing habit

Figure 1 showed that there were 161 decayed, untreated teeth, 322 missing teeth, and 4 filled teeth in 30 elderly women.

Caries Index in Non-Tobacco-Chewing Group

The status of caries in elderly women who had no tobacco-chewing habit could be seen in figure 2.

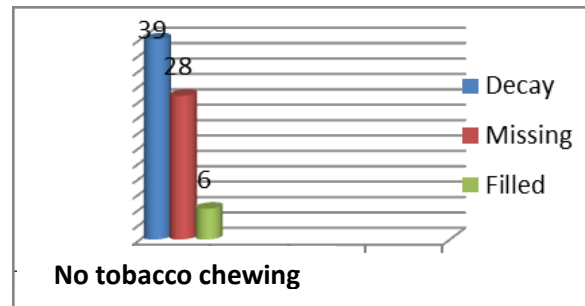


Figure 2 Bar chart of caries status in elderly women with no tobacco-chewing habit

Figure 2 showed that there were 39 decayed, untreated teeth, 28 missing teeth, and 6 filled teeth in 30 elderly women with no tobacco-chewing habit.

Relation between Caries Index and Tobacco-chewing Habit in Elderly Women

The results were shown in figure 3.

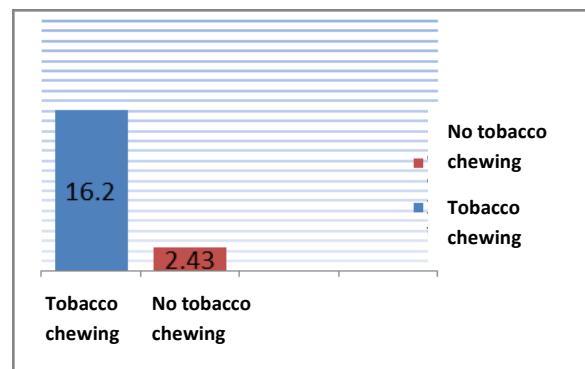


Figure 3 Bar chart of relation between caries index and tobacco-chewing habit in elderly women

The figure showed that caries index in elderly women with tobacco-chewing habit was 16,2 or very high, meanwhile the index in elderly women with no tobacco-chewing habit was 2,43 or low. Those with no tobacco-chewing habit had relatively low tooth decay compared to the elderly women with tobacco-chewing habit.

Normality test revealed 0,001 value ($p < 0,05$) which meant the data weren't normally distributed, thus the next analytic test used would be non-parametric *Mann-whitney* test with confidence level of 95%. The result showed p as 0,001 ($p < 0,05$), stating that there was a significant difference between tobacco-chewing and non-tobacco-chewing groups. This also stated that there was a relation between tobacco-chewing habit and caries index in elderly women in Desa Juking Pajang Kecamatan Murung Kabupaten Murung raya Provinsi Kalimantan Tengah.

DISCUSSION

Caries Index of Tobacco-chewing Elderly Women

Caries index in elderly women who chewed tobacco was 16,2 or very high according WHO. The high index was caused by salivary pH drop, the decrease of buffer capacity, the decrease of salivary flow, thus increasing the count of *Streptococcus*, the bacteria that can cause decay.⁹

People with tobacco-chewing habit had four to six fold risks of experiencing oral and dental health problems compared to those with no tobacco-chewing habit.⁵ This was because tobacco contains nicotine, and monoxide carbon, which can cause oral mucous dehydration, increase in intraoral temperature, and decrease of salivary pH, which in turn boost the *Streptococcal* population growth.¹⁰ Tarigan (1995) stated that oral cavity became more acidic and salivary pH reached critical value which could cause caries. Caries is one of the side effects of tobacco-chewing habit.

Caries Index of Non-tobacco-chewing Elderly Women

Caries index in elderly women with no tobacco-chewing habit was 2,43 or low according to WHO. The caries in this group was commonly caused by xerostomia, food and beverages, genders, ethnic groups, sociocultural habits, awareness, attitude and behaviors of people on dental health. The other factor that caused caries was environmental, such as consumption water pH, salivary pH, the decrease of salivary flow because it plays an important role in balancing the acidic environment of oral cavity, whereas when it happens to decrease, the function of self-cleansing will also be not as effective.

Analysis of Relation between Caries Index of Tobacco-chewing and Non-tobacco-chewing Elderly Women

Nicotine level in tobacco consumed through chewing was higher than smoking tobacco, in which through chewing, the level reached as high as 4,6 mg, meanwhile through smoking, it was only 1,8 mg. The elderly women who had tobacco-chewing habit reasoned that after doing the habit, it triggered a happy, calm, and relaxed feeling in them. Thus, they kept continuing the habit without knowing the nicotine level and the dangers contained within the tobacco.

The relation between tobacco-chewing habit and caries incidence correlated to salivary pH decrease. The decrease of salivary pH caused oral cavity to become an acidic environment, and increased the enamel demineralization in a progressive and continuous process. Demineralisation started on tooth surface and then infiltrated into the deeper layer, alongside the destruction of tooth's organic materials. This would ease bacterial invasion, pulp tissues destruction, and spread of infection into periapical tissues, and cause pain. This study was in accordance to Holly (2010) who stated that tobacco-chewing can induce disadvantaging oral dan dental diseases, especially caries.^{6,11} In conclusion, there was a relation between tobacco-chewing habit and caries index in elderly women in Desa Juking Pajang Kecamatan Murung kabupaten Murung Raya Provinsi Kalimantan Tengah.

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