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**RELATIONSHIP OF SMOKING HABITS AND COFFEE CONSUMPTION
 WITH TEETH DISCOLORATION IN ALALAK BANJARMASIN**

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ABSTRACT

Background: Teeth discoloration is a problem in dental practice, among others, the occurrence of teeth discoloration in coffee consumers as much as 77.13%, smokers who experience discoloration 76.7%. Based on data from Riskesdas South Kalimantan in 2018, the prevalence of daily smokers in Banjarmasin City is 18.02%. The highest smoking prevalence is in the population aged 30-34 years, which is 30.01%. Teeth discoloration is affected by extrinsic stains through the deposition of chromogenic materials on the teeth surface such as tobacco, tea and coffee. Teeth discoloration can cause discomfort when speaking, smiling and lack of confidence. **Purpose:** To analyze the relationship between smoking habits and coffee consumption with teeth discoloration in people aged 30-34 years in Alalak Tengah Village. **Method:** This research is an analytic observational with a cross sectional approach. The sampling technique used is probability sampling technique with a sample size of 87 people. **Result:** there was a significant relationship between the number of cigarettes and teeth discoloration 0.018 ($p < 0.05$), the relationship between smoking duration and teeth discoloration was 0.006 ($p < 0.05$), a significant relationship between the type of cigarette and teeth discoloration was 0.002 ($p < 0.05$) and vice versa. There is no significant relationship between coffee consumption and duration of drinking coffee with teeth discoloration. **Conclusion:** Based on the research, there is a relationship between smoking habit and teeth discoloration.

Keywords: Cigarettes, Coffee, Teeth Discoloration.

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INTRODUCTION

Dental hygiene is an aspect that needs attention because of dental and oral problems. This can occur due to a lack of attention to dental and oral hygiene. One example of poor dental hygiene is the condition of teeth discoloration. Discoloration can be classified into extrinsic, which can be found on the outer surface of the teeth and usually of local origin, for example, tobacco stains, which cause the tooth color to turn yellow-brown. Staining due to food and drink causes the teeth to become dark, staining due to silver nitrate.¹ Intrinsic discoloration is a change in tooth color caused by stains contained in the enamel and dentin. The cause is the accumulation or incorporation

of materials in the tooth structure, such as tetracycline stains.²

Teeth discoloration has been the object of research for many years. Teeth discoloration is caused by extrinsic stains through the deposition of chromogenic materials on a teeth surface, such as tobacco, tea and coffee.³ In teeth, smoking causes discoloration of the enamel surface, especially on the cervical teeth. This black-brown discoloration is caused by tobacco sap, which is the result of a tobacco burning residue. This causes aesthetic problems and is a predisposing factor for plaque.⁴ Dental plaque is a soft deposit formed from a biofilm layer and attached to surfaces in the oral cavity such as teeth and gingiva.⁵ Based on data from Riskesdas (2018), the prevalence of daily

smokers in Banjarmasin City is 18.02%. The highest prevalence of smoking is in the population aged 30-34 years 30.01%.⁶ In addition, data Riskesdas (2013) also shows the highest proportion of smokers in South Kalimantan is at the age of 30-34 years 33.4%.⁷

In addition to smoking, drinking coffee can also be one of the causes of teeth discoloration. Coffee is a drink that contains substances such as caffeine, fat, and tannins that can cause teeth to become damaged, changing teeth color from brown to black, making the teeth surface rough.⁸ Based on International Coffee Annual Review, coffee consumption in Indonesia in 2016/2017 was 3.32 million bags and increased in 2017/2018 by 3.4 million bags.⁹ Based on the results of research from Munadirah, the indicator of the occurrence of tooth discoloration in coffee consumers was the highest, namely bad at 77.13% and moderate at 22.85%. It is known that the more we consume coffee, the greater the discoloration of our teeth.¹⁰ Based on the results of the 2018 Healthy Family data collection at the Alalak Tengah Health Center, Banjarmasin City, Alalak Village is one of the villages that has a large number of smoking families in Banjarmasin City, which is 63.75%.¹¹ Based on the description above, the writer is interested in conducting research on the relationship between smoking habits and coffee consumption with tooth discoloration in Alalak Tengah Village.

MATERIALS AND METHODS

This research has been received by the Ethics Commission of the Faculty of Dentistry, Universitas Lambung Mangkurat with number 060/KEPKG-FKGULM/EC/V/2022. This research is analytic observational research with a cross-sectional approach. The population in this study is the people of Alalak Tengah Village 725 people. The sample of this research is the people in Alalak Tengah Village as many as 87 people. The sampling technique was carried out by probability sampling with the type of stratified random sampling. The inclusion criteria for this study were community respondents aged 30-34 years in Alalak Tengah Village and willing to be a research respondent.

The materials used in this study were questionnaires, informed consent sheets, dental discoloration sheets. The tools used in this study were writing instruments, head flashlights, disposable diagnostic sets, nierbekken and level 3 of personal protective equipment (hazmat, N95 mask, handscoon,

reusable goggles, protective gear. head, shoe cover).

The research data were analyzed using univariate and bivariate analysis. Bivariate analysis using *chi-square* test. Data collection was obtained through examination of the oral cavity and filling out questionnaires on smoking behavior and coffee consumption. The validity and reliability of the questionnaire were tested using the Pearson Product Moment and Cronbach Alpha test methods.

RESULT

Table 1. Characteristics of respondents by gender

Gender	Frequenc y	Percentage (%)
Male	63	72%
Female	24	28%
Total	87	100%

Table 1 shows that the respondents in this study were male as many as 63 respondents (72%) and female respondents were 24 respondents (28%).

Table 2. Description of teeth discoloration in Alalak Tengah Village

Teeth Discoloration	Frequency	Percentage (%)
Low	15	17%
Moderate	25	29%
High	47	54%
Total	34	100%

Table 2 shows that most of the respondents in this study who experienced tooth discoloration were in the high category, namely 47 respondents (54%) compared to the mild and moderate categories.

Table 3. Relationship between smoking habits and teeth discoloration from the aspect of the number of cigarettes consumed.

Smoker Category	Teeth Discoloration			P value
	Low	Moderate	High	
Not smoking	6 (50%)	4 (30%)	2 (20%)	0.018
Low (<10 stick/day)	8 (22%)	6 (17%)	22 (61%)	
Moderate (10-20 stick/day)	4 (13%)	6 (20%)	20 (67%)	
High (>20 stick/day)	2 (22%)	1 (11%)	6 (67%)	

Table 3 shows that respondents who smoked >20 cigarettes/day experienced tooth discoloration with a severe category of 67%. The results of bivariate analysis using Kruskal-Wallis obtained p value = 0.018 which means that there is a significant relationship between the number of cigarettes consumed and tooth discoloration.

Table 4. Relationship between smoking habits and teeth discoloration from the aspect of smoking duration

Frequency of Coffee Consumption	Teeth Discoloration			p value
	Low	Moderate	High	
Not drinking coffee	3 (30%)	1 (10%)	6 (60%)	0.139
Low (200mg/day)	13 (43%)	3 (10%)	14 (47%)	
Moderate (200-400mg/day)	2 (9%)	7 (30%)	14 (61%)	
High (>400mg/day)	2 (9%)	6 (25%)	16 (66%)	

Table 4 shows that respondents who smoked for > 12 months experienced the highest tooth discoloration in the severe category as much as 69%, while smokers <12 months experienced severe discoloration in the category of 59%. The results of bivariate analysis using the Kruskal-Wallis test obtained p value = 0.006. Because the p value is less than 0.05, it means that there is a significant relationship between smoking duration and tooth discoloration.

Table 5. Relationship between smoking habits and teeth discoloration from the aspect of the type of cigarette consumed

Cigarette Type	Teeth Discoloration			p value
	Low	Moderate	High	
Not smoking	6 (50%)	4 (30%)	2 (20%)	0.002
Filter	9 (32%)	4 (14%)	15 (54%)	
Non-filter	5 (11%)	9 (19%)	33 (70%)	

Table 5 shows that respondents who smoked non-filtered cigarettes experienced the highest tooth discoloration in the heavy

category, namely 70%, while respondents who smoked filtered cigarettes experienced severe discoloration in the category of 54%. The results of bivariate analysis using the Kruskal-Wallis test obtained p value = 0.002. Because the p value is less than 0.05, it means that there is a significant relationship between the type of cigarette and the discoloration of the teeth.

Table 6. Relationship between coffee consumption habits and teeth discoloration from the aspect of coffee consumption frequency

Smoking time	Teeth Discoloration			p value
	Low	Moderate	High	
Not smoking	6 (50%)	4 (30%)	2 (20%)	0.006
<12 months	6 (21%)	7 (24%)	17 (59%)	
≥12 months	4 (18%)	6 (13%)	20 (69%)	

Table 6, shows that respondents who consumed coffee as much as >400 mg/day experienced tooth discoloration in the severe category as much as 66% while those who consumed coffee as much as 200 mg/day experienced tooth discoloration in the severe category as much as 47%. The results of bivariate analysis using the Kruskal-Wallis test obtained p value = 0.139. Because the p value is more than 0.05, it means that there is no significant relationship between the frequency of drinking coffee and tooth discoloration.

Table 7. Relationship between coffee consumption habits and teeth discoloration from the aspect of long coffee consumption

Coffee Consumption Habit	Teeth Discoloration			p value
	Low	Moderate	High	
Not drinking coffee	3 (30%)	1 (10%)	6 (60%)	0.821
1-5 years	7 (22%)	8 (26%)	16 (52%)	
>5 years	10 (22%)	8 (17%)	28 (61%)	

Table 7 shows that respondents who drank coffee for more than 5 years experienced severe tooth discoloration as much as 61% while respondents who drank coffee for 1-5 years experienced tooth discoloration with severe category as much as 52%. The results of

bivariate analysis using Fisher's statistical test and obtained p value = 0.821. Because the p value is more than 0.05, it means that there is no significant relationship between the duration of drinking coffee and tooth discoloration.

DISCUSSION

Smoking Habits

In this study, most of the respondents were smokers in the light category (<10 cigarettes per day), namely 37 respondents (43%). Medium category smokers (10-20 cigarettes per day) were 28 respondents (32%) and heavy category smokers (>20 cigarettes per day) were 10 respondents (11%). This is in accordance with research by Munir (2019), where most of the respondents are smokers in the light category (<10 cigarettes per day), namely (64%), smokers in the moderate category (10-20 cigarettes per day) (26%) and smokers in the heavy category (> 20 cigarettes per day) that is (10%).¹² Smokers who have started smoking will feel bad if they do not smoke for a day. Smoking behavior over time is increasing in accordance with developments due to the nicotine content which causes addiction and increases the frequency of cigarette consumption per day.¹³

In this study, the majority of respondents smoked for more than one year as many as 45 respondents (52%) and respondents who smoked less than one year as many as 30 respondents (34%). This is in accordance with research by Umari (2020) where most of the respondents were smokers who smoked for more than one year as many as (53.8%).¹⁴ Based on South Kalimantan Basic Health Research (Riskesdas) data in 2018, the proportion of the first smoking age in Banjarmasin City was at the age of 20-24 years, namely 30.17% and the highest proportion was at the age of 15-19 years as much as 45.04%. Smoking behavior has been considered to be a pleasant behavior and can eliminate a person's anxiety into an obsessive activity.^{6,15}

In this study, the majority of respondents consumed non-filtered cigarettes, namely 47 respondents (54%) and 28 respondents (32%). This is in accordance with a study by Erman (2021), where most of the respondents smoked non-filtered cigarettes, namely (36.2%).¹⁶ The content of tar and nicotine in non-filtered cigarettes is greater than that of filtered cigarettes. Nicotine is a substance that causes a person to become addicted. In addition, non-filtered cigarettes

contain cloves which causes these cigarettes to have a stronger aroma and taste.¹⁷

Coffee Drinking Habits

In this study, most of the respondents consumed coffee in the light category (200mg) or equivalent to 1-2 cups per day, namely 30 respondents (40%), moderate coffee consumption frequency (3-4 cups per day) as many as 23 respondents (28%). and the heavy category (5 glasses per day) as many as 24 respondents (27%). The pattern of coffee consumption in respondents is usually to reduce drowsiness at work, satisfy prestige when hanging out with friends and fill spare time to refresh the body.¹⁸

In this study, most of the respondents had been drinking coffee for >5 years, as many as 46 respondents (53%) and respondents who smoked for less than 5 years, namely 31 respondents (36%). Many things motivate someone to start trying to drink coffee, apart from meeting their needs, coffee is also believed to help someone to relieve stress, accompany students when doing group assignments and to relieve sleepiness. As a result, coffee has become a habit for daily consumption since adolescence. For those of us who are addicted to drinking coffee, it is highly recommended to consume caffeine not exceeding the allowed limit. Based on food drug administration written in the journal *Aprillia*, the dose of caffeine that is allowed to consumed is 100-200 mg/day or equivalent 2-3 of instant coffee sachets per day. The impact of consuming excessive amounts of coffee and for a long time can interfere with clinical symptoms such as irritability, feeling nervous, increased breathing and insomnia.¹⁹

Teeth Discoloration

In this study, most of the respondents experienced discoloration in the severe category, namely 47 respondents (54%), moderate category (25%) and mild category (17%). The problem of high tooth discoloration experienced can be caused by several factors, both intrinsic and extrinsic. Intrinsic discoloration can be caused by the use of certain drugs before or after birth, trauma or impact on the teeth, and genetics. Extrinsic discoloration is caused by external factors such as coffee consumption, carbonated drinks, smoking and mouthwash containing chlorhexidine. Tooth discoloration can occur in both permanent and primary teeth.²⁰

Relationship of Smoking Habits and Teeth Discoloration from the Aspect of Number Cigarettes Consumed Each Day

Based on the results of the study, most of the teeth discoloration in the severe category were in the category of moderate and heavy smokers, namely 67%. The results of the study using the Kruskal-Wallis test obtained a significance value of 0.018 ($p < 0.05$), so there was a significant relationship between the number of cigarettes consumed per day and tooth discoloration. This is not in accordance with Nur's research (2014) where there is no significant relationship between smoking habits and tooth discoloration. The existence of this relationship could be due to the tar content in cigarette smoke which affects tooth discoloration. The more cigarettes you consume, the more smoke you exhale which then sticks to a person's teeth. Stains on teeth caused by smoking can be cleaned only by scaling or bleaching.^{3,21}

Relationship of Smoking Habits and Teeth Discoloration from the Aspect of Smoking Duration

Based on the results of the study, it was shown that the majority of severe tooth discoloration was present in smokers who had smoked for more than 12 months, namely 69%. The results of the study using the Kruskal-Wallis test obtained a significance value of 0.006 ($p < 0.05$), so there was a significant relationship between smoking duration and tooth discoloration. This is in line with Aurellie's research (2019) which states that there is a significant relationship between smoking duration and tooth discoloration. The existence of this relationship is because cigarette consumption for a long time can cause damage to the layer of tooth tissue, bacteria multiply and cause tartar that looks yellow to brown in color.²²

Relationship of Smoking Habits with Teeth Discoloration from Aspects of Cigarette Types

Based on the results of the study, the majority of tooth discoloration in the severe category was in smokers who smoked non-filtered cigarettes, which was as much as 70%. The results of the study using the Kruskal-Wallis test obtained a significance value of 0.002 ($p < 0.05$), so there was a significant relationship between the type of cigarette smoked and tooth discoloration. This is not in line with Khalisa's research (2016). The existence of a relationship between the types of

cigarettes consumed by respondents could be due to non-filter cigarettes not being equipped with a cork where this cork serves to reduce the smoke that comes out of cigarettes as found in filter cigarettes. Discoloration of the teeth is caused by the tar content of cigarette smoke exhaled from the oral cavity.^{3,23}

Relationship of Coffee Drinking Habits and Teeth Discoloration from the Aspect of Coffee Consumption Frequency

Based on the results of the study, most of the teeth discoloration in the severe category were respondents who drank coffee in the heavy category, as many as 66%. The results of the study using the Kruskal-Wallis test obtained a significance value of 0.139 ($p > 0.05$), so there was no significant relationship between the frequency of coffee consumption and tooth discoloration. This is not in line with Nyoman Kasihani's research (2020) which shows the results that the amount of coffee consumed by the community affects the likelihood of tooth discoloration.²⁴ This absence of a relationship can occur because respondents who do not drink coffee have an average smoking habit of 10- 20 sticks / day so this can cause differences in the results that occur.

Relationship of Coffee Drinking Habits and Teeth Discoloration from the Aspect of Long Coffee Consumption

Based on the results of this study, it showed that most of the teeth discoloration in the severe category were in respondents who consumed coffee for more than 5 years, namely as much as 61%. The results of the study using the Kruskal-Wallis test obtained a significance value of 0.821 ($p > 0.05$), so there was no significant relationship between the duration of coffee consumption and the occurrence of tooth discoloration. This is in line with the research of Khasanah (2021) which says that there is no relationship between the duration of coffee consumption and tooth discoloration. The absence of this relationship can result in tooth discoloration. The absence of this relationship could occur due to differences in the type of coffee consumed by the respondents, the method of processing coffee and the respondent had done scaling.²⁵

In conclusion, in smokers, tooth discoloration results with the highest percentage in the heavy category. Meanwhile, the habit of drinking coffee has no relationship with tooth discoloration. The absence of this relationship is caused by the difference in the

type of coffee consumed by the respondents, the method of processing coffee and their respondents who do not drink coffee have a smoking habit that causes differences in results that occur. The researcher suggests that future researchers who take research on tooth discoloration can conduct further research and relate it to other variables such as the relationship between the type of coffee consumed and tooth discoloration.

REFERENCES

1. Boy H. Khairullah. Hubungan Karies Gigi dengan Kualitas Hidup Remaja SMA di Kota Jambi. *Jurnal Kesehatan Gigi*, 2019; 6(1): 10-13.
2. Arsyad, Husain J. Andry W. Tingkat Pengetahuan Perokok Terhadap Perubahan Warna Gigi. *Jurnal Ilmiah Kesehatan Iqra*, 2018 Desember; 6(2): 119-124.
3. Khalisa, E. Adhani R. Arifin S. Hubungan Kebiasaan Merokok dengan Pembentukan Stain (Noda) Pada Pasien di Poli Gigi RSUD Ratu Zalecha Martapura, Banjarmasin. *Dentino Jurnal Kedokteran Gigi*, 2016 Maret; 1(1): 27-31.
4. Sumerti NN. Merokok dan Efeknya Terhadap Kesehatan Gigi dan Rongga Mulut. *Jurnal Kesehatan Gigi*, 2016; 4(2): 49-58.
5. Maida DC, Widodo, Adhani R. Hubungan Tingkat Pengetahuan Menyikat Gigi dengan Indeks Gingiva Siswa Madrasah Tsanawiyah Tinjauan terhadap Siswa MTS di Kabupaten Barito Kuala. *Dentino Jurnal Kedokteran Gigi*, 2017 April; 1(1) : 6-10.
6. Kementerian Kesehatan Republik Indonesia. Hasil Utama RISKESDAS 2018. Jakarta: Badan Penelitian dan Pengembangan Kesehatan; 2018. hal: 233-234.
7. Kementerian Kesehatan Republik Indonesia. Hasil Utama RISKESDAS 2013. Jakarta: Badan Penelitian dan Pengembangan Kesehatan; 2013. hal: 134.
8. Zarwinda I, Sartika D. Pengaruh Suhu dan Waktu Ekstraksi terhadap Kafein dalam Kopi. *Jurnal Lantanida*, 2018; 6(2): 180-191.
9. International Coffee Organization (ICO). 2015. *ICO Annual Review 2019-2020*. International Coffee Organization. London. p. 6-14.
10. Munadirah, Abdullah N. Pengaruh Kebiasaan Mengonsumsi Kopi yang dapat Menimbulkan stain di Puskesmas Larompong Kec. Larompong Kab. Luwu. *Media Kesehatan Gigi*. 2020; 19 (1): 28-32.
11. Program Indonesia Sehat dengan Pendekatan Keluarga. PIS-PK 2018. Puskesmas Alalak Tengah; 2018: 68-70.
12. Munir M. Gambaran Perilaku Merokok pada Remaja Laki-Laki. *Jurnal Kesehatan*. 2019; 12(2); 112-119.
13. Hadi MC. Karakteristik Perokok di Indonesia (Kajian terhadap hasil RISKESDAS 2007-2010). *Jurnal Skala Husada*. 2013; 10(1); 1-6.
14. Umari Z, Sani P, Triwahyuni T, Kriswastiny R. Hubungan Pengetahuan dengan Perilaku Merokok Pada Siswa SMK Negeri Tanjungsari Lampung Selatan. *Jurnal Ilmiah Kesehatan Sandi Husada*. 2020; 9(2); 853-859.
15. Warsoedoedi DS, Yuliana. Hubungan antara Jumlah, Jenis dan Durasi Merokok dengan Lingkar Pinggang Pria Perokok Aktif (Studi di Desa Ujung semi Cirebon). *Jurnal Universitas Gunung Jati*, 2014; 6(2); 1-4.
16. Erman I, Damanik HDL, Sya'diah. Hubungan Merokok dengan Kejadian Hipertensi di Puskesmas Kampus Palembang. *Jurnal Keperawatan Merdeka*. 2021; 1(1); 54-61.
17. Prasetya AW, Rochadi K, Lumongga N. Pengaruh Media Sosial dalam Peningkatan Pengetahuan dan Sikap Siswa Perokok terhadap Pencegahan Stain Gigi di SMA Negeri 1 Sei Lapan Kabupaten Langkat Tahun 2019. *Jurnal Kesmas Jambi*. 2019; 3(1): 31-40.
18. Yugantara P, Susilo RKD, Sulismadi. Gaya Hidup Ngopi Sebagai Perilaku Konsumsi. *Jurnal Agama Sosial dan Budaya*. 2021;4(1); 126-137.
19. Aprilia FR, Ayuliansari Y, Putri T, Azis MY, Camelina WD, Putra MR. Analisis Kandungan Kafein dalam Kopi Tradisional Gayo dan Kopi Lombok Menggunakan HPLC dan Spektrofotometri UV/VIS. *Journal Biotika*. 2018; 16(2): 37-41.
20. Ghalib N, Ayundyka U. Prevalensi Diskolorasi gigi pada anak prasekolah di kota Makassar. *Makassar Dental Journal*. 2017; 6(2) 66-72.
21. Andriyani NKM, Wibisono G. Hubungan Antara Paparan Asap dengan Kejadian Diskolorasi Gigi (Studi Pada Pekerja Pengasapan Ikan di Desa Bandarharjo, Kota Semarang, Jawa Tengah). *Jurnal Media Medika Muda*, 2015; 4(1); 1-10.
22. Aurellia V. 2019. Gambaran terbentuknya stain (noda) gigi pada masyarakat perokok RT.43 Sukabangun 1 Palembang [Karya Tulis Ilmiah]. Palembang: Politeknik Kesehatan Palembang; 23-25.
23. Oktanauli P, Heriaw NQ, Distribusi Frekuensi Perubahan Warna Email Gigi pada Perokok. *Cakradonya Dent J*. 2017; 9(2); 116-120.
24. Kasihani NN, Budiarti R, Pudentiana RRRE, Erwin, Mujahidah AF. Aktivitas Risiko dan Status Stain Ekstrinsik Gigi Pada Masyarakat RT.004 RW.001 Kampung Bali Tanah Abang. *Journal of Dental Hygiene and Therapy*. 2020; 1(1); 16-20.
25. Khasanah N, Syahniati T, Mujiyati. Hubungan Kebiasaan Mengonsumsi Kopi terhadap Terjadinya Stain. *Jurnal Kesehatan Gigi dan Mulut (JKGM)*. 2021;3(1); 39-43.