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THE RELATIONSHIP BETWEEN SMOKING AND DENTAL AND MOUTH PROBLEMS IN MALE STUDENTS IN KOTAMOBAGU CITY STATE UNIVERSITY OF GORONTALO

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Abstract

Dental and oral health is an integral part of overall health, as oral conditions can influence general well-being. Smoking is a significant factor affecting oral health. This study aimed to examine the relationship between smoking duration, frequency, and cigarette type with dental and oral problems among male students in Kotamobagu City at Gorontalo State University. An observational analytic study with a cross-sectional design was conducted using total sampling. The sample consisted of 70 male students. Data were analyzed using the chi-square test. The results showed significant associations between smoking duration (p=0.004), smoking frequency (p=0.011), and cigarette type (p=0.020) with dental and oral problems. The study concludes that smoking habits—including duration, frequency, and type of cigarette—are significantly related to oral health issues. It is recommended that the public reduce smoking and increase awareness of the importance of maintaining dental and oral health.

INTRODUCTION

Dental and oral health is part from health body that is not can separated One with others, because health teeth and mouth can influence health mouth. Role cavity very big mouth for health and well-being human beings. In a way general, a person it is said Healthy No only his healthy body but also healthy cavity mouth and teeth. Therefore that, health teeth and mouth play a very important role in support health somebody (Al-Marzooq & Christidis, 2025). Dental health is an integral part of general health. Teeth are one of the organs that play a role important in the chewing process food, so that maintenance health teeth are very important done. *Stain* on teeth in content nicotine and tar in cigarettes can make color tooth become yellow and leave stain blackish brown sticking with strong (Karanjkar et al., 2023) .

Smoke is habits that have Power damage Enough big to health. According to World Health Organization (WHO), the environment of cigarette smoke is reason various disease, in smokers active and passive. Smoking No only cause effect systemic, but also but also can cause emergence condition pathological in the cavity mouth, teeth and tissues cavity mulu, is parts that can experience damage consequence smoking. Periodontal disease, caries, tooth loss teeth, gingival recession, lesions precancer, cancer mouth, and failure implant, is cases that can arise consequence habit smoke (Report, 2025) .

Indonesia now face challenge Serious due to height prevalence smokers. Latest data from *The Global Adult Tobacco Survey* (GATS) 2021 confirmed by Word of Statistics revealed that presentation amount smokers man from all over inhabitant man Indonesia is the highest in the world. Even in decade lastly, the number smokers adults in Indonesia is increasing as many as 8.8 million people, reaching figure of 69.1 million in 2021 (Tahta & Indawati, 2025) ADDIN CSL_CITATION {"citationItems":[{"id":"ITEM-1","itemData":{"DOI":"10.31004/jkt.v6i2.45317","ISSN":"2774-5848","abstract":"Pada tahun 2021, tercatat terdapat 69,1 juta perokok di Indonesia, meningkat dari 60,3 juta pada tahun 2011. Dalam kurun waktu 10 tahun, terjadi peningkatan sebesar 8,8 juta perokok. Kondisi ini menunjukkan perlunya intervensi yang lebih efektif, salah satunya melalui kampanye berhenti merokok berbasis media. Penelitian ini bertujuan untuk melihat pengaruh berbagai jenis paparan media terhadap upaya berhenti merokok pada perokok dewasa. Media yang dianalisis mencakup koran, televisi, radio, baliho, internet, dan peringatan pada bungkus rokok. Penelitian menggunakan rancangan non-reaktif berbasis data sekunder dari survei GATS. Analisis data dilakukan dengan regresi logistik biner untuk mengukur pengaruh paparan media terhadap kemungkinan berhenti merokok dalam 12 bulan terakhir. Hasil analisis dilaporkan dalam bentuk odds ratio (OR), nilai p, dan interval kepercayaan 95% (CI), dengan tingkat signifikansi statistik ditetapkan pada α = 0,05. Analisis dilakukan menggunakan perangkat lunak R Studio. Hasil menunjukkan bahwa paparan melalui internet dan peringatan pada bungkus rokok berpengaruh signifikan terhadap perilaku berhenti merokok. Responden yang terpapar informasi dari internet memiliki peluang 2,03 kali lebih besar untuk berhenti merokok (OR = 2,03; 95% CI = 1,52–2,73; p < 0,001), sementara mereka yang memperhatikan peringatan pada bungkus rokok memiliki peluang 1,64 kali lebih besar (OR = 1,64; 95% CI = 1,26–2,15; p < 0,001).","author":[{"dropping-particle":"","family":"Tahta","given":"Oryza","non-dropping-particle":"","parse-names":false,"suffix":""},{"dropping-particle":"","family":"Indawati","given":"Rachmah","non-dropping-particle":"","parse-names":false,"suffix":""}],"container-title":"Jurnal Kesehatan Tambusai","id":"ITEM-1","issue":"2","issued":{"date-parts":[["2025","6","6"]]},"page":"4609-4614","title":"ANALISIS PENGARUH PAPARAN MEDIA TERHADAP KEJADIAN BERHENTI MEROKOK PADA PEROKOK DEWASA : STUDI BERDASARKAN DATA GATS INDONESIA 2021","type":"article-journal","volume":"6"},"uris":["http://www.mendeley.com/documents/?uuid=77eb1d3e-c05e-4639-83bf-ad0e06eff16e"]}],"mendeley":{"formattedCitation":"(Tahta & Indawati, 2025)","plainTextFormattedCitation":"(Tahta & Indawati, 2025)","previouslyFormattedCitation":"(Tahta & Indawati, 2025)"},"properties":{"noteIndex":0},"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}.

The underlying factors behind habit smoking is one of them that is lack of

knowledge about impact smoke to health teeth and mouth. The resulting impact cigarette to health teeth and mouth like disease cavity mouth, gingivitis, changes color of teeth, and odor mouth (Fritz et al., 2020) .

Based on results observations that have been I do to friends student smoking man who comes from from city Kotamobagu, obtained that smoking man more tend Lots experience problem teeth and mouth compared with those who don't smoking, such as yellow and smelly teeth mouth that is not delicious. And based on what has been I observation in a way direct most smoking man per day more than 3 sticks cigarettes and in term a long time ago. And more Lots man smoke compared to with those who don't smoke in the environment student man Kotamobagu.

Based on results interview with 10 students man Kotamobagu which is a smoker and almost all respondents (8 out of 10) said that they experience change color tooth since smoking. Tooth color become rather yellowish. Some also mention smell stinging mouth. Some of they (6 people) have experience like gum bloody moment brushing teeth, frequent mouth ulcers relapse, until accumulation coral teeth. After interview the I do study with title connection smoke with problem tooth mouth on students Kotamobagu City man at UNG. I chose student from Kotamobagu Because I often hear direct complaint from they about problem teeth and mouth and me including in association Kotamobagu, so that make things easier data collection direct and efficient.

METHOD STUDY

Location and Time of Research

Study This conducted in Gorontalo City and carried out not enough more than 1 month, July- August 2025

Types and Design of Research

Type of research used in study This is observational analytic with approach in a way quantitative. Research design in study This use design *Cross Sectional,* namely design research that studies correlation between exposure or factor risk (Independent) with consequence or effect (Dependent), with data collection is done together in a way simultaneously in One time between factor risk with the effect (*point time approach*) (Irwan, 2022) .

Population and Sample

Population study is all over student man from Kotamobagu City which is currently go through education at Gorontalo State University and joined in association Kotamobagu, with total of 70 people. Sampling technique sample use total sampling method, so that all over population made into as sample research. With Thus, the number sample in study This as many as 70 respondents

Variables Study

Study This consists of on variables independent and variable dependent variable independent covering type cigarettes, number cigarettes consumed per day, as well as the duration or frequency smoking. Variable dependent is problem health teeth and mouth that affect quality life based on Oral Health Related Quality of Life (OHRQoL), which is measured use OHIP-14 instrument

Definition Operations and Measurement Variables

Types of cigarettes defined as type product cigarettes consumed respondents, who are categorized become cigarette white, kretek cigarettes, and vape/ cigarettes electrical. Variable This measured use questionnaire with ordinal scale. Number cigarette measured

based on many stem cigarettes consumed per day, which are categorized become smokers light (1–5 cigarettes / day), smoker moderate (6–10 cigarettes / day), and smokers heavy (>10 cigarettes / day). Measurement done use questionnaire with ordinal scale. Duration of smoking measured based on duration habit smoke respondents, who are categorized to <1 year, 1–3 years, and >3 years. Variable This measured use questionnaire with ordinal scale.

Health problems teeth and mouth measured use Oral Health Impact Profile-14 (OHIP-14) questionnaire. Instrument This consists of of 14 questions with Likert scale 0–4 (0 = no ever, 1 = very rarely, 2 = sometimes, 3 = often, 4 = very often). The total score is obtained with method additives, namely add up all over score of 14 questions with range score 0–56. A score of 0 indicates No there is impact to quality live, while score 56 shows impact maximum. Next score categorized become quality life height (0–28) and quality life low (29–56). Variable This nominal scale.

Data Collection Techniques and Instruments

Data used in study This is the primary data obtained through questionnaire and observation directly. Data regarding type cigarettes, number cigarettes, and duration of smoking obtained through filling questionnaire by respondents.

Condition data health teeth and mouth collected through observation direct with do inspection physique cavity mouth respondents, documenting condition teeth and mouth, as well as take notes findings in sheet observation.

Measurement OHRQoL done with add up score all OHIP-14 items. If there is three or more questions that are not answered, then the respondent data No included in analysis.

Data Analysis and Testing Techniques Hypothesis

Data analysis was performed in two stages, namely analysis univariate and analysis bivariate analysis univariate used For describe distribution frequency and percentage of each variable research, good variables independent and variables dependent (Suraci et al., 2021) . Analysis bivariate done For test connection between variables independent and variable dependent using the Chi-Square test with level significance of 5% ($\alpha = 0.05$). The relationship intervariable stated meaningful in a way statistics if p value < 0.05, and no meaningful if p -value ≥ 0.05 (Astuti et al., 2024) . Testing hypothesis done For know connection between the duration of smoking, the number of cigarettes, and types cigarette with problem health teeth and mouth in students Kotamobagu City man at Gorontalo State University.

RESULTS AND DISCUSSION

Research Result

Overview of Research Location

Study This implemented on students man from Kotamobagu City which is currently go through education at Gorontalo State University. Gorontalo State University is college highlands in Gorontalo Province with background behind heterogeneous students, including student from the Bolaang region Mongondow Raya. Characteristics student as group age mature beginning with mobility social height and tendency behavior smoke make population This relevant For study impact habit smoke to health teeth and mouth.

Kotamobagu City as area origin respondents own characteristics social diversified economy with prevalence behavior enough smoking high in the group age productive.

Condition This become background contextual in understand findings study.

Characteristics Respondents

Distribution age show that respondents are in the 18–25 year range, with proportion the largest at the age of 22 years (27.1%), followed by ages 20 and 21 (22.9% each). This show that majority respondents is in phase mature early, frequent periods associated with exploration style life, including habit smoking.

Analysis Univariate

Distribution of smoking duration show that more from half respondents (55.7%) have smoke more from three year. Meanwhile that, 30.0% smoke for 1–3 years and 14.3% less from One year. Findings This indicates that part big respondents has exposed cigarette in term time long enough so that potential cause impact chronic in oral tissues.

Based on amount cigarettes per day, half respondents (50.0%) included category smokers heavy (>10 cigarettes / day), 34.3% smokers moderate (6–10 cigarettes / day), and 15.7% smokers light (1–5 cigarettes / day). This data show height intensity exposure nicotine and substances toxic others in part big respondents.

The most common type of cigarette consumed is cigarette white (52.9%), followed by cigarette electronic cigarettes /vape (28.6%) and kretek cigarettes (18.6%). Distribution This show domination consumption cigarette conventional compared to product alternative.

Based on Oral Health Related Quality of Life (OHRQoL) measurement using OHIP-14, as many as 24.3% of respondents is in the category OHRQoL low, while 75.7% are in the category OHRQoL high. Although majority respondents Still own quality good life related health mouth, proportions a quarter respondents with OHRQoL low show existence impact real clinical and psychosocial.

Analysis Bivariate and Testing Hypothesis

Testing hypothesis done using the Chi-Square test with level significance 5% ($\alpha = 0.05$).

Analysis results show that long smoking own connection significant with OHRQoL ($p = 0.004$). Proportion OHRQoL low highest found in the smoking group more from three years (38.5%). Findings This show that the longer the exposure to cigarettes, increasingly big possibility happen disturbance health teeth and mouth that impact quality life.

Amount cigarettes per day also shows connection significant with OHRQoL ($p = 0.011$). Although pattern connection No completely linear, group smokers heavy (>10 cigarettes / day) indicates proportion OHRQoL low by 31.4%. Interestingly, in the group smokers mild (1–5 cigarettes / day), OHRQoL low reached 45.5%, which indicates that perception impact health can appear even on consumption low.

Types of cigarettes relate significant with OHRQoL ($p = 0.020$). Proportion OHRQoL low highest found on users cigarette white (37.8%), compared kretek cigarettes (7.7%) and cigarettes electricity (10.0%). This is show existence difference impact or perception impact based on type products used.

In a way whole, entire hypothesis study accepted, namely there is connection significant between the duration of smoking, the number of cigarettes, and types cigarette with problem health teeth and mouth in students man.

Discussion

Long-term Smoking Relationship with OHRQoL

Research result show existence trend that the longer the duration smoking, the more big proportion students who experience decline *Oral Health Related Quality of Life* (OHRQoL). Findings This in line with hypothesis research that states existence connection between exposure term long cigarettes and quality life related health mouth. In biological, exposure nicotine and substances toxic other in term long can cause vasoconstriction in the gingival tissue, reducing supply oxygen, as well as bother response immune local. Condition the contribute to improvement the risk of chronic gingivitis and periodontitis which ultimately influence function chewing, talking, and comfort social individual. With thus, the decline OHRQoL in the group with duration smoke longer can understood as consequence cumulative from damage progressive periodontal tissue.

Group with a smoking duration of 1-3 years in study This No show proportion OHRQoL low. This fact can interpreted as Not yet emergence manifestation clinically significant or existence mechanism adaptation perception to symptom light. In perspective theory exposure cumulative (*cumulative exposure theory*), effect biological cigarette nature progressive and in need time For reach degrees impactful damage real to function and perception quality life. Improvement proportion OHRQoL low in the group with duration >3 years support draft the.

Findings This consistent with study Parmasari et al., (2023) who found connection meaningful between old habits smoke with oral hygiene status and periodontal disease in men adults. Although variables dependents used different (periodontal status vs. OHRQoL), both show that duration smoke is determinant important to disturbance health cavity mouth. Difference context location and characteristics sample show that connection This nature relatively consistent cross population, so that strengthen validity external findings.

Connection Amount Cigarette with OHRQoL

Analysis show existence connection significant between amount cigarettes consumed per day and OHRQoL. These results support hypothesis existence mechanism dose-response, where the more tall exposure substance toxic, increasingly big risk disturbance health mouth. In a way pathophysiological, consumption cigarette in amount big increase accumulation plaque, change composition oral microbiota, as well as speed up damage periodontal tissue. Impact the implications for disorders oral function and perception quality life.

However, the findings interesting in study This is proportion OHRQoL low highest found in smokers light. In terms of theoretical, phenomena This can explained through approach biopsychosocial. Smokers light Possible more sensitive to change aesthetics like smell mouth and discoloration teeth, so that impact subjective to quality life more felt although damage biological Not yet weight (Pratama et al., 2025) . On the contrary, in smokers moderate, dominant OHRQoL tall can associated with effect vasoconstriction nicotine suppressant sign inflammation so that symptom clinical not enough felt. In smokers weight, damage more structural real and progressive cause decline significant OHRQoL.

This result in line with study literature (Farrasti et al., 2022) which states that the more Lots amount cigarettes consumed and the longer the duration smoking, the more big possibility occurrence disorders of the oral tissues, including smoker's melanosis. Although variables external different, both study You're welcome confirm importance

factor intensity consumption cigarette as determinant disturbance health cavity mouth.

Relationship between Cigarette Types with OHRQoL

Study this also shows existence connection significant between type cigarettes and OHRQoL. Users cigarette white own proportion OHRQoL low highest. In terms of theoretical, thing This can associated with characteristics combustion and content chemical that triggers irritation mucosa as well as change color more teeth fast visible. Changes aesthetics the can impact on aspects psychosocial like a sense of trust self and comfort in interaction social.

On the user kretek cigarettes, proportion OHRQoL low more small. Possibility there is influence eugenol content of cloves that have effect anesthetic light so that perception painful or discomfort reduced. However Thus, the effect This No remove potential damage biological term long.

Majority users cigarette electric own OHRQoL high. This is can influenced by perception that cigarette electric more safe as well as No cause discoloration tooth as fast as possible cigarette conventional. However, in biological, aerosol exposure and the effects of xerostomia (mouth dry) remains potential cause disturbance health mouth in term long. With Thus, the difference OHRQoL between type cigarette reflect interaction between factor biological and perceptual subjective respondents.

Findings This own similarities with study Wulandari Asiking et al., (2016) and Andriana et al., (2023) who showed existence connection significant between behavior smoking and conditions health teeth and mouth. Although study previously No in a way specific compare type cigarette to OHRQoL, outcomes the support assumptions that variation behavior smoke contribute to differences in oral health status.

CONCLUSION

Based on results study about connection smoke with problem health teeth and mouth in students Kotamobagu City man at Gorontalo State University, can concluded that there is significant relationship between smoking duration with problem health teeth and mouth are measured through Oral Health Related Quality of Life (OHRQoL) with p value = 0.004. The longer the duration smoking, the more big proportion respondents who experienced decline quality life related health mouth. In addition, the number of cigarettes consumed per day also shows significant relationship with problem health teeth and mouth (p = 0.011), which indicates that intensity exposure cigarette contribute to disturbance oral health. Type of cigarette consumed participate own significant relationship (p = 0.020), which indicates that difference product tobacco can influence condition and perception health teeth and mouth. In general overall, habits smoking, good reviewed from duration, amount consumption, as well as type cigarettes, related significant with problem health teeth and mouth in students men. Research results This own implications practical for effort promotive and preventive in the environment college high. Students recommended For stop habit smoke as early as Possible Because even consumption light and relatively short duration short has show impact to quality life related health mouth. Education health need emphasize that all over type cigarettes, including kretek cigarettes and cigarettes electric, fixed own risk to oral health even though symptom No always felt in a way directly. Institution education can also consider counseling program integration stop smoking and examination health routine dental as part from service health students. For students who have not capable stop smoking, increase cleanliness mouth through brushing tooth with correct technique, usage thread

teeth, and regular check-ups every six month become minimum steps to pressing risk periodontal damage.

Study This own a number of limitations, including cross-sectional designs that do not allows researchers For conclude connection causality in a way directly, and use instrument OHRQoL which is subjective so that potential creates a perception bias. In addition, research This Not yet combining subjective data with inspection clinical objective like measurement depth pocket periodontal index plaque, and loss adhesion clinical. Variable other confounders such as pattern sugar consumption, level knowledge health teeth, habits brushing teeth, and factors social the economy is also not yet analyzed in a way deep.

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