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The Relationship between Cariogenic Food Consumption and the Incidence of Dental Caries in Grade 5 Children of Public Elementary School 10 in Kampung Baru

Eko Prastyo[1], Siska Putri Belangi[2], Yona Sahalessy[3], Osie Listina[4], Dian Meiliani Yulis[5], Utari[6]

[1] Dental Professional Education Study Program, Institut Ilmu Kesehatan Bhakti Wiyata Kediri, Indonesia
[2,6] Public Health Study Program, Universitas Nurul Hasanah Kutacane, Indonesia
[3] Nursing Study Program, Poltekkes Kemenkes Maluku, Indonesia
[4] Pharmacy Study Program, Universitas Bhamada Slawi, Indonesia
[5] Public Health Study Program, Megarezky University, Indonesia

ABSTRACT

Cariogenic foods are foods that contain lots of carbohydrates, are sticky and break down easily in the mouth. Dental caries is damage to hard tooth tissue caused by acids contained in carbohydrates through microorganisms contained in saliva. The aim of this study was to determine the relationship between consumption of cariogenic foods and the incidence of dental caries in grade 5 children at SD Negeri 10 Kampung Baru r. The type of research used is analytical descriptive research using a cross sectional design. The population in this study was 95 people and the sampling technique used Consecutive Sampling technique, the total sample was 77 respondents. Data was collected using a questionnaire, the collected data was then processed and analyzed using Microsoft Excel and the SPSS program. Data analysis includes univariate analysis by looking for frequency distributions, bivariate analysis with the Chi-Square test (α=0.05) to determine the relationship between variables. The research results show that based on the results of the Chi-Square test, the value obtained is p=0.003. The conclusion of this research is that there is a relationship between the consumption of cariogenic foods and the incidence of dental caries in grade 5 children at SD Negeri 10 Kampung Baru.

Keywords : Relationship, Consumption, Cariogenic Food, Incidence of Dental Caries, In Grade 5 Children, SDN 10 Kampung Baru

*Correspondent : Eko Prastyo
*E-mail : eko.prastyo@iik.ac.id

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1. Introduction

Dental problems in Indonesia are still an interesting problem because the prevalence of caries and periodontal disease reaches 80% of the population. Likewise, efforts to overcome it have not yet seen real results. The high prevalence of dental caries is caused by population distribution factors, environmental factors, behavioral factors, and different dental health service factors in Indonesian society (Achmad, 2015). Children aged 6-12 years are a critical age group and have special characteristics, namely the transition/change from milk teeth to permanent teeth (Suciari et al, 2015 in Rahman, 2017).

Dental caries is damage to hard tooth tissue caused by acids in carbohydrates through microorganisms in saliva (Intan & Irma, 2013). Caries often occurs in children because children eat too often cemilang which is sticky and contains a lot of sugar. The sticky nature determines the length of exposure to carbohydrates with bacterial plaque. Plaque is a sticky gelatinous mass that adheres to the teeth and gums (Arisman, 2014).

Food consistency, such as stickiness, also determines the length of time carbohydrates are exposed to bacterial plaque. Sticky candy is an example of a food that easily sticks to the surface of the teeth. Foods with coarse particles easily clog any gaps between the teeth and gums.

Meanwhile, foods that can stimulate saliva secretion have the ability to shorten food retention and are cariogenic. (Arisman, 2014). Cariogenic foods increase the risk of caries by affecting the PH value. Foods that can easily cause caries include potato chips, candy (especially chewing gum), cakes containing cream, pastries and sweet drinks (Arisman, 2014). It is estimated that 90% of school- age children throughout the world and most adults have suffered from caries. The highest prevalence of caries is in Asia and Latin America. The lowest prevalence is in Africa. In the United States, dental caries is a chronic childhood disease that often occurs and the rate is 5 times higher than asthma. Caries is the primary pathological cause of tooth loss in children. Between 29% and 59% of adults over 50 years of age experience caries (Irma Z & Intan, 2013).

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Dental caries occurs throughout the world, regardless of age, nation or economic situation. According to research in European, American and Asian countries, including Indonesia, it turns out that 80-95% of children under the age of 18 are affected by dental caries (Tarigan, 2016).

The results of research by Mintjelungan et al (2017) conducted at GMIM 1 Kawangkoan Elementary School showed that the highest consumption of cariogenic foods was candy, with consumption ≥ 2 times a day included in the very frequent category (46.25%), and the lowest cariogenic consumption category was pudding. with consumption once a month is included in the never category, namely (40.74%). Candy is the type of food most often consumed by children and is consumed more than twice a day.

2. Research Methods

This research was conducted on 20 June – 20 July 2018 at SD Negeri 10 Kampung Baru. The population is 95 grade 5 children at SD Negeri 10 Kampung Baru. From the results of sample calculations, a sample of 77 people was obtained. The sampling technique is consecutive sampling technique in accordance with the inclusion criteria.

1) Criteria inclusion
   a. Student and school girl 5th grade in SD Negeri 10 Kampung Baru.
   b. Willing become respondents.
   c. Students in attendance at the time of research
2) Criteria exclusion
   a. Student and schoolgirl 5th grade no from SD Negeri 10 Kampung Baru.
   b. No willing be a respondent.
   c. Student Which no present on momentstudy.
3) Data collection
   a) Secondary Data

      Secondary data in this research is secondary data obtained and collected by researchers from the Puskesmas Work Area.

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b) Primary data

The primary data used in this research was obtained through distributing questionnaires consisting of several questions using a scale.

c) Data processing

a. Editing

Editing is the stage of checking the validity of incoming data, such as checking the completeness of filling out the questionnaire, clarity of answers, relevance of answers and uniformity of measurements.

b. Coding

Coding is the activity stage of classifying data and answers according to their respective categories, making it easier to group data.

c. Processing

Processing is the stage of activities to process data so that it can be analyzed. Data processing is carried out by entering data from filling out the questionnaire into the master table.

d. Data analysis

Univariate data analysis, namely analysis carried out on each variable from the research results. In general, this analysis only produces the distribution and presentation of each variable because this research wants to know the frequency distribution and presentation of each variable studied.

3. Results and Discussion

a. Results

Table 1.
Connection consumption food cariogenic with incident caries tooth on child 5th grade in SD Negeri 10 Kampung Baru

Food cariogenic	Caries tooth				Total	
	No caries		caries			
	n	%	n	%	n	%
No risky	19	24.7	19	24.7	38	49.4
risky	7	9.1	32	41.6	39	50.6

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Total	26	33.8	51	66.2	77	100
ρ = 0.003						

Based on table 1. show from 77 respondents Which consume food cariogenic no risky but experience caries tooth as much 19 respondents (24.7%) and those without caries tooth as much 19 respondents (24.7%). Meanwhile, respondents who consumed food cariogenic risky but experience caries tooth as much 32 respondents (41.6 %) and those without caries as much 7 respondents (9.1%). Based on results test statistics *Chi Square Fischer Exact Test* obtained mark *P* =0.003 with thereby p < α (0.05) so that Ha accepted with interpretation "There is a relationship between food consumption cariogenic with incident caries tooth on child 5th grade in SD Negeri 10 Kampung Baru.

b. Discussion

The results showed that of the 77 respondents, the number of respondents who were not at risk was 38 respondents (49.4%), of which 19 children (24.7%) who consumed cariogenic foods were not at risk but did not experience dental caries and as many as 19 children (24.7%) who consumed cariogenic foods were not at risk but experienced dental caries. Meanwhile, 39 respondents (50.6%) were at risk, of which 7 children (9.1%) who consumed cariogenic foods were at risk but did not experience dental caries and 32 children (41.6%) who consumed cariogenic foods were at risk. but had dental caries. The results of statistical analysis using the "Chi Square" Fisher Exact Test obtained a value of p=0.003, which means it is smaller than the value α= 0.05. So Ho is rejected while Ha is accepted. So in this study it can be concluded that there is a relationship between consumption of cariogenic foods and the incidence of dental caries in grade 5 children at SD Negeri 10 Kampung Baru.

According to Arisman (2014), foods that can easily cause caries include potato chips, candy (especially chewing gum), cakes containing cream and sweet drinks. Children too often eat snacks that are sticky and contain lots of sugar. The sticky nature determines the length of exposure to carbohydrates with bacterial plaque. Plaque is a sticky gelatinous mass that adheres to the teeth and gums. It is in this

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plaque that acid-forming bacteria reproduce and ferment carbohydrates. The bacteria that most like to live in plaque include mutant streptococci. This bacteria prefers sucrose, a class of sugar that is widely used as a sweetener for snacks and meals for children (and adults).

According to Tarigan (2016), there are many factors that influence dental caries apart from cariogenic foods, including heredity, race, gender, age, vitamins, chemical elements and saliva.

This is in line with research by Rizki Safira Talibo et al (2016) with the title "The relationship between frequency of consumption of cariogenic foods and tooth brushing habits with the incidence of dental caries in class III students at SDN 1 & 2 Sonuo" which states that based on the results of research data processing, results were obtained from Frequent consumption of cariogenic foods and experiencing dental caries amounted to 26 students (65%) while frequent consumption of cariogenic foods and did not experience dental caries amounted to 1 student (2.5%). The results of the chi square test (X2) at a significance level of 95% ($\alpha < 0.05$) show a value of $p = 0.000$. This p value is smaller than the α value, indicating that there is a relationship between the frequency of consumption of cariogenic foods and the incidence of dental caries in class III students at SDN 1 & 2 Sonuo.

Based on the description above, researchers assume that children prefer to consume cariogenic foods, where cariogenic foods that can cause dental caries are foods that contain lots of sugar and sucrose. The more often a child consumes cariogenic foods, the more acidic the mouth will become, making it more likely that enamel demineralization will occur on the teeth and cause caries. This is also influenced by students' lack of effort in caring for dental health, such as brushing their teeth. Good and correct tooth brushing habits can improve students' oral and dental health. Apart from that, there are other factors that influence people's dental and oral health, both as service providers (providers) and users (customers), according to the Blum 974 concept which is influenced by 4 main factors, namely: environment, behavior, health services and heredity (heredity).

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4. Conclusion

Based on the results of research regarding the relationship between consumption of cariogenic foods and the incidence of dental caries in grade 5 children at SD Negeri 10 Kampung Baru, it can be concluded that there is a relationship between consumption of cariogenic foods and the incidence of dental caries in grade 5 children at SD Negeri 10 Kampung Baru. Where the Fisher Exact Test "Chi Square" statistical test value is obtained P=0.003 which means it is smaller than the value α=0.05. So Ho is rejected while Ha is accepted.

5. Compliance with ethical standards

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Disclosure of conflict of interest

This research collaboration is a positive thing for all researchers so that conflicts, problems and others are absolutely no problem for all writers.

Statement of informed consent

Every action we take as authors is a mutual agreement or consent.

References

1. Arisman. (2014). Nutrition in the Life Cycle : Textbook of Nutrition, 2nd Ed. Jakarta: EGC Medical Books.
2. Adam, AM, Prabu Aji, S., Banne Tondok, S., Yulis, DM, Pannyiwi, R., & K, H. (2023). Story Telling Method on Students' Level of Knowledge About Dental and Oral Hygiene. Barongko: Journal of Health Sciences, 1(2), 85–87. https://doi.org/10.59585/bajik.v1i2.22
3. Dewanti. (2012). The relationship between the level of knowledge about dental health and dental care behavior in school-age children at SDN Pondok Cina Depok.
4. Efendi Rahayu, Ameliawati, & Indriati, G. (2018). The relationship between the way you brush your teeth and the incidence of dental caries in school -aged children. Riau University Nursing Science Study Program.

Publish: Association of Indonesian Teachers and Lecturers
International Journal of Health Sciences (IJHS)
Journal Homepage: https://jurnal.agdosi.com/index.php/IJHS/index
Volume 2 | Number 3 | September 2024 |

5. Fitriani, F., Abdullah, N., Alimuddin, H., Fabliana, AW, & Agustang, A. (2022). Descriptive of Nighttime Teeth Brushing Habits and Dental Caries Status in Class VI Children at Minasaupa State Elementary School. Barongko: Journal of Health Sciences, 1(1), 5–10. https://doi.org/10.59585/bajik.v1i1.16
6. Irma Indah, Z & Intan Ayu, S. (2013). Dental, Oral and ENT Diseases. Yogyakarta: Nuha Medika.
7. Kusumawaty, I., Yunike, Y., & Astuti, RD (2023). Increasing Community Mental Health Achievement through the Development of Health Cadres in Talang Buluh Village. Social Friends: Journal of Community Service, 2(1), 28–39. https://doi.org/10.59585/sosisabdimas.v2i1.212
8. Mintjelungan, C et al. (2017). Description of Cariogenic Food Consumption in Children at GMIM 1 Kawangkoan Elementary School. Research Journal Volume 5 Number 1.
9. Novianus, C. (2016). Relationship between characteristics and consumption of cariogenic foods with the incidence of dental caries in students aged 11-12 years in selected public elementary schools in the working area of the Taktakan Community Health Center, Serang City. Research journal Volume 1, Number 2.
10. Pariati, P., Alfah, S., Wijaya, A., Iskandar, N., Adam, A., & Sangkala, S. (2022). The Effect of Cigarettes on the Formation of STAIN. Barongko: Journal of Health Sciences, 1(1), 1–4. https://doi.org/10.59585/bajik.v1i1.15
11. Ramli, R., Mainassy, MC, Leli, L., Saad, R., Jariyah, A., Putra, ES, & Hasibuan, ER (2024). 4 Pillars of Balanced Nutrition with Nutritional Status in the Use of Simple Food Ingredients. Social Friends: Journal of Community Service, 2(2), 212–220. https://doi.org/10.59585/sosisabdimas.v2i2.313
12. Rahman E & Norfai. (2017). Relationship between knowledge and habits of brushing teeth with the incidence of dental caries at SDI Darul Mu'Minin, Banjarmasin City. Research Journal volume 8 Number 1.
13. Rizki ST et al. (2016). Correlation between Frequency of Cariogenic Food Consumption and Teeth Brushing Habits with the Incidence of Dental Caries in Class III Students of SDN 1 & 2 Sonuo. Research Journal Volume 4 Number 1.
14. Tarigan, R. (2016). Dental Caries, Ed. 2. Jakarta: EGC Medical Books.
15. Srianingsih, S., Wijaya, A., Pannyiwi, R., Anto, S., Muhajrin, M., & Rauf, NI (2022). Family Nursing Care with Environmental Health Problems. Barongko: Journal of Health Sciences, 1(1), 53 –56. https://doi.org/10.59585/bajik.v1i1.41
16. Susanti, R., Imran, A., Briliannita, A., Akbar, A., Yermi, Y., B, M., Pannyiwi, R., & Rasyid, D. (2023). Counseling on clean and healthy living behavior in Minasatene District, Pangkajene Islands Regency. Social Friends: Journal of Community Service, 1(3), 92–98. https://doi.org/10.59585/sosisabdimas.v1i3.70
17. Wiknjosastro, 2018. Midwifery Science Ed III. Jakarta : Bina Pustaka Sarwono Prawirohardjo foundation Wulandari, S., Jamila, S., Rabiah, R., Mardini, RS, Magelo, WG, & Pratiwi, A. (2023). Educational Outreach on the Dangers of Smoking at SMP Negeri 11 Sigi. Social Friends: Journal of Community Service, 1(4), 152–159. https://doi.org/10.59585/sosisabdimas.v1i4.127

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Donny Aditia; Fransina Tubalawony; Son; Mochamad Robby Fajar Cahya; Nur Febrianti; Risca Hamdanesti; Goddess Kokmesa; Islaeli ; Kurniati Nawangwulan; Yusnita Yusfik. Wound Care And Treatment For Health. No. ISBN: 978-623-09-8231-6. https://agdosi.com/2024/01/10/wound-care-and-treatment-for-health/

Tri Ayu; Devin Mahendika; Nurul Aini Suria Saputri; Dr. M. Risal Tawil; Suratno Kaluku; Cut Mutia Tatisina; Egy Sunanda Putra; Lili Amaliah; Dr. Dwi Moerjoedianto; Dr. Djusmadi Rasyid; Lina Yunita. Sociocultural Dynamics Of Health. No. ISBN: 978-623-09-8156-2. https://agdosi.com/2024/01/30/sociocultural-dynamics-of-health/