CORRELATION BEHAVIOR OF MAINTAINING ORAL AND DENTAL HEALTH AND ENVIRONMENTAL FACTORS WITH DENTAL CARIES IN 11-12 YEARS OLD CHILDREN IN SD NEGERI 1 AND MI NEGERI KALIKURMO BRINGIN SUBDISTRICT

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ABSTRACT

Background: Oral and dental health problems in Indonesia still occur a lot. Poor oral and dental health will impact the individual by causing pain, reducing quality of life and decrease individual productivity. Caries is serious oral and dental health problem in society, therefore it needs attention and involvement from all parties to overcome it. Environmental factors are very important in maintaining oral and dental health and teaching healthy living behaviors. Objective: To determine the correlation behavior of maintaining oral and dental health and environmental factors with caries incidence in 11-12 years old children in Bringin Subdistrict. Methods: This study was an analytic observational study with cross sectional study approach. This research sample method using total sampling method. The sample used is all members of the population as many as 60 research subjects. This study consist of 4 assessment factors, there are the consumption level of cariogenic foods, tooth brushing habits, parents income level, and parents education. The results of this study are the scores of these four factors and the DMF-t index. Results: There was a correlation on the results of chi square test on the level of education and cariogenic food consumption with caries status in 11-12 years old children in Bringin Subdistrict. Conclusion: There is a correlation on behavior of maintaining oral and dental health and environmental factors with dental caries in 11-12 years old children in SD 1 and MI N Kalikurmo, Bringin Subdistrict.

Keywords: Maintaining oral and dental health, environmental factors, dental caries.

INTRODUCTIONS

Caries is one of the causes of oral dental health problems that occur a lot in communities.¹ Caries is a multifactorial disease that influenced by bacteria, host tissue, substrate and time, where bacteria are the main cause.² Streptococcus mutans is the most dominant caries-causing bacteria. Streptococcus mutans can synthesize acids from sugar rapidly and produce polysaccharides. Streptococcus mutans produces polysaccharides especially from sucrose, so that facilitating early colonization and causing plaque formation³.

The number of oral and dental health problems in Indonesia is very high, according to the Riset Kesehatan Dasar (RISKESDAS) in 2018, number of oral dental health problems is quite high, about 57.6%, Central Java province is one of the provinces with a very high level of caries / cavities, about 43.4%.⁴ The high incidences of caries in 6-12 years old children who are categorized as school age is due to the snacking habbit on food and drinks they want, and majority food and drinks consumed are contain high sugar⁵ ³. This should be a concern because at this age the child is having mixed teeth period. Permanent teeth that just emerged are more susceptible to caries because the structure of the mixed teeth is still developing so the risk of caries in school-age children is very high.⁶

The high incidence of caries in school age children can be overcome by prevention and treatment.⁷ One of the effective efforts to reduce this is introducing and teaching of healthy living behavior by teaching children to always brush their teeth regularly two times a day and introducing them to environmental factors for clean and healthy teeth.⁸ According to this, it is necessary to conduct research on correlation maintaining behavior of oral and dental health and environmental factors with dental caries in 11-
12 years old children at SD 1 and MI N Kalikurmo, Bringin Subdistrict.

RESPONDENTS AND DESIGN METHODS

This study is an observational study with cross sectional design that has been implemented in the Bringin Subdistrict, Semarang Regency.

Respondents

This study respondent as many as 60 people, different target sample included in this study was caused by that area had only 2 elementary schools with very few students. Sample should be fulfill the requirement of inclusion criteria and has no exclusion criteria. The inclusion criteria are children who are in SD 1 and MI Negeri Kalikurmo, Bringin Subdistrict and aged 11-12 years at the time of the study, children are cooperative and willing to be examined with prior consent, fill in the informed consent provided. The exclusion criteria consist of bad health condition when the study was carried out, which resulted in uncooperation during the examination, also children in SD N 1 and MI Negeri Kalikurmo, Bringin Subdistrict who used dental accessories or tools ( dental braces and dentures).

Methods

Sterilize the tools with alcohol 90%. Then, fill in the sample identity. In the beginning, briefing was carried out for this study and filling in the informed consent provided.

The researcher provides directions for filling out the questionnaire given so that there are no filling errors. The questionnaire consisted of tooth brushing habits, cariogenic food consumption level, parents' income, and parental education level. The final stage is checking/examining dental caries in the subject using a sonde and mouth glass.

Research Ethics

The research permit has been approved by ethical clearance with No. 403 / EC / H / KEPK / FK-UNDIP / IX / 2019.

RESULT

The results of statistical data processing were obtained from bivariate analysis using the Chi Square test. By using the 95% degree of confidence (α = 0.05). With a smaller p-value (p <0.05) there is a significant relationship.

| Variable             | Caries Status |        |        | p    |
|----------------------|---------------|--------|--------|------|
|                      | Low Status    | High   |        |      |
|                      | n             | %      | n      | %    |
| Class                |               |        |        |      |
| 5                    | 8             | 28.6   | 20     | 71.4 | 0.055¥ |
| 6                    | 3             | 9.4    | 29     | 90.6 |        |
| Age                  |               |        |        |      |
| 11                   | 8             | 20.5   | 31     | 79.5 | 0.731£ |
| 12                   | 3             | 14.3   | 18     | 85.7 |        |
| Gender               |               |        |        |      |
| Male                 | 6             | 19.4   | 25     | 80.6 | 0.833¥ |
| Female               | 5             | 17.2   | 24     | 82.8 |        |
| Education level      |               |        |        |      |
| Basic                | 4             | 10.5   | 34     | 89.5 | 0.040* |
| Middle               | 7             | 36.8   | 12     | 63.2 |        |
| High                 | 0             | 0      | 3      | 100  |        |
| Income level         |               |        |        |      |
| Low                  | 10            | 20.4   | 39     | 79.6 | 0.670£ |
| High                 | 1             | 9.1    | 10     | 90.9 |        |
| Brushing habit       |               |        |        |      |
| Low                  | 0             | 0      | 6      | 100  | 0.581£ |
| High                 | 11            | 20.4   | 43     | 79.6 |        |
| Cariogenic food      |               |        |        |      |
| Low                  | 8             | 34.8   | 15     | 65.2 | 0.015* |
| High                 | 3             | 8.1    | 34     | 91.9 |        |

a. Information: * Significant (p <0.05); ¥ Pearson chi square; £ Fisher's exact; ‡ Kruskal wallis Source: Primary data processed, 2019
The equation model finds that the variables showing p value <0.05 are the level of education and cariogenic food so that it can be interpreted that there is a significance or relationship between these variables and the dental caries status.

DISCUSSIONS
This study aims to determine the relationship between oral health care behavior and environmental factors that are considered to have an influence on the incidence of caries that occurs in school age children aged 11-12 years.

In this study, the reason the researchers involved respondents from children aged 11-12 years (school age) were guided by WHO which reported that dental and oral health that most often experienced was caries in school-age children.9

The results of this study indicate a significant relationship between cariogenic food and the incidence of caries in children aged 11-12 years, this is also supported by the results of a study conducted by Meisi PRL (2015) showing significant results in the level of cariogenic food consumption on the incidence of caries in Private SD Medan.10 Some respondents with high cariogenic food consumption scores got low caries scores, this shows that there is already a good pattern of applying the habit of brushing their teeth and doing it at least 2 times a day.4,11

Research by R. Nantung et al. Reported that economic factors and the level of education of parents are important for teaching healthy lifestyles.12 Even when parents are more educated, they will show a more caring attitude towards healthy lifestyles, so that they can teach children to Implementing a pattern of dental and oral hygiene by brushing teeth at least 2 times a day.13,15

Parents economy is measured from the level of parents' income, the better the income level, the more able they are to have the opportunity to get better health services for their children.14

CONCLUSIONS
Based on the results of this study, it can be concluded that the research that has been conducted at SD N 1 and MI Negeri Kalikurmo, Kecamatan Bringin, is:
1. There is a relationship between parental education level and caries status.
2. There is a relationship between cariogenic food consumption and caries status.

REFERENCES
1. Riskesdas. Riset Kesehatan Dasar Kementerian RI. Proceedings, Annu Meet - Air Pollut Control Assoc. 2013;6.
2. Budirahardjo Roedy. Karies Gigi Dan Fluoridasi Elastomer. Stomatognatic Jurnal Kedokteran Gigi Universitas Negeri Jember. 2010;7(1):1–4.
3. Mitchell L, Mitchell DA, McCaul L. Kedokteran Gigi Klinik: Semua Bidang Kedokteran gigi. 5th ed. jakarta: EGC; 2014.
4. Kementrian Kesehatan RI. Riset kesehatan dasar RISKESDAS 2018. Indonesia: Kementrian Kesehatan RI, 2018.
5. Hestieyonini Hadnyanawati. Pengaruh Pola Jajan di Sekolah Terhadap Karies Gigi Pada Siswa Sekolah Dasar Di Kabupaten Jember. Jurnal Kedokteran Gigi Universitas Indonesia 2002 : 9 (3) : 24-27. FKGUI
6. SS I. Petunjuk Praktis System Merawat Gigi Anak di Klinik. Penerbit Buku Kedokteran. EGC; 2010. 2–3.
7. Almohefer SA, Levon JA, Gregory RL, Eckert GJ, Lippert F. Caries Lesion Remineralization With Fluoride Toothpastes And Chlorhexidine - Effects Of Application Timing And Toothpaste Surfactant. Journal Appl Oral Sci. 2018;26(0):1–8.
8. Horst JA, Tanzer JM, Millgrom PM. Fluorides and Other Preventive Strategies for Tooth Decay. Dental Clin North Am. 2018;62(2):207–34.
9. Mulu W. Dental Caries and Associated Factors Among Primary School Children in Bahir Day City: a cross-sectional study.
2014:1-7.
10. Fauzi I. Hubungan Konsumsi Makanan Kariogenik Dan Kebiasaan Menggosok Gigi Dengan Karies Gigi Pada Anak Sdn 2 Cireundeu Di Tangerang Selatan. Fak Kedokt Dan Ilmu Kesehat Univ Islam Negeri Syarif Hidayatullah. 2016.
11. Khotimah K, Suhadi, Purnomo. Faktor - Faktor Yang Berhubungan Dengan Kejadian Karies Gigi Pada Anak Usia 6-12 Tahun Di SD NEgeri Karangayu 03 Semarang. STIKES Telogorejo Semarang. 2013;014:1-10. http://ejournal.stikestelogorejo.ac.id/index.php/ilmukeperawatan/article/view/177.
12. Tk DI, Tuah H, Ngantung RA, Pangemanan DHC, Gunawan PN. PENGARUH TINGKAT SOSIAL EKONOMI ORANG TUA TERHADAP KARIES ANAK DI TK HANG TUAH BITUNG. J e-Gigi (eG ). 2015;3:542-548.
13. Nurlia R. Faktor Penyebab Terjadinya Karies Gigi pada Murid SDN 1 Raha Kabupaten Muna. J Stud Ilmu-ilmu Sos dan Keislam. 2015:127-139.
14. Agusta, Maria Victa., Ismail A, Firdausy MD. Hubungan pengetahuan kesehatan gigi dengan kondisi. Hub Pengetah Kesehat GIGI DENGAN KONDISI ORAL Hyg ANAK TUNARUNGU USIA Sekol (Studi pada Anak Tunarungu Usia 7-12 tahun di SLB Kota Semarang). 2014;2:64-68.
15. Worotijan Indry, Mintjelungan Christy N, & Gunawan Paulina. 2013. Pengalaman Karies Gigi Serta Pola Makan dan Minum Pada Anak Sekolah Dasar di Desa Klawa Kecamatan Kawangkoan Utara. Journal e-Gigi (eG), 1(1), 59-68.
16. Rahtyanti et al. (2018). Hubungan Pengetahuan Kesehatan Gigi dan Mulut dengan Karies Gigi pada Mahasiswa Baru Fakultas Kedokteran Gigi Universitas Jember Tahun Akademik 2016/2017. Januari, 2018 : 6 (1)