

Original Research Article

Habit of tooth brushing with the dental caries incidence

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ABSTRACT

Background: Teeth and mouth are important parts that must be kept clean, because through these organs various germs can enter. In general, dental and oral hygiene was very important for the health and well-being of the human body because it can affect the function of mastication, speech and confidence.¹ Dental caries was an infectious disease that damages tooth structure and can cause cavities. Children age under 12 years old who suffer from dental and oral diseases can be affected with student achievement in school. A preliminary study conducted at SDN 2 Ngabean was 7 out of 10 children with dental caries marked with cavities, accumulating plaque and black teeth.

Methods: Quantitative research with Cross Sectional study design. The population in this study were all students of grade 4 and 5 SD Negeri 2 Ngabean Boja District Kendal District in the academic at June 2017 amounted to 80 students. Statistical test using Chi Square. Instrument used in this study was a questionnaire of 14 questions submitted to respondents using Likert scale type. The statistical test used was chi square nonparametric correlation because independent and dependent variables use ordinal and nominal scale.

Results: Results of research obtained from 80 respondents in school-age children in SD Negeri 2 Ngabean showed that of respondents students who experience dental caries as many as 48 students (60.0%), while students who did not experience dental caries as many as 32 students (40.0%). Based on the result of chi square test it can be seen that p value = 0.000 (p value $< \alpha$) or $0.000 < 0.05$ then H_0 was rejected, and H_a accepted.

Conclusions: There was a correlation of tooth brushing habit with the dental caries incidence of school age children at the elementary school state Ngabean 2 Boja District, Kendal Regency.

Keywords: Dental caries, Tooth brushing habit, School age children

INTRODUCTION

Dental and oral health of Indonesian people was a matter that needs serious attention from health workers, both doctors and dental nurses. Teeth and mouth are important parts that must be kept clean, because through these organs various germs can enter. In general, dental and oral hygiene was very important for the health and well-being of the human body because it can affect the function of mastication, speech and confidence. Dental and oral diseases were still suffered by 90% of Indonesia's population, dental and oral diseases that many suffered in Indonesia was a disease of dental support

networks and dental caries. Lack of knowledge and understanding of health makes people put aside attention to the health of oral and dental cavities.^{1,2}

Based on the health profile of Kendal district in 2012, dental and oral health service activities that have been implemented by Puskesmas in 2012 were permanent dental tobaccons of 1.108 cases with a ratio of 488 cases for males and 620 cases for women. While the action for permanent dental extraction was 1.667 cases, with a ratio for dental tooth compared with tooth extraction of 0.7%. Dental caries in children was a serious problem in oral health in Indonesia with a prevalence of up to 90.05%.

Then according to data from PDGI (Persatuan Dokter Gigi Indonesia) mentioned that at least 89% of people with cavities are children under 12 years old.^{3,4}

School age was a time to lay a solid foundation for the realization of quality human beings and health was an important factor that determines the quality of human resources. Dental and oral health issues of concern in the development of health one of them caused by vulnerable groups of school-aged children to dental health disorders. In children aged 6-12 years required more intensive treatment because at that age there was a change of teeth and permanent teeth. By age 12 all primary teeth have been dated and the majority of permanent teeth have grown. School-aged children have a risk of caries because of the large number of snacks in schools, with sweet foods and drinks, which threaten the dental health of children.⁵

The 2010 Indonesian Ministry of Health Survey shows that the prevalence of Indonesian dental caries sufferers was 80-90% of whom are school-aged. According to Central Java provincial health profile data in 2014, mass toothbrush activity in elementary school or MI was one of the activities of UKGS (School Dental Health Effort) aimed at elementary school children can understand the right way and time to do toothbrush. Of the 30 districts or municipalities entering the data, the percentage of primary schools or MI who have carried out bulk toothbrushes by 69%. While who get dental service equal to 77.7%. There was a decrease in the percentage of mass toothbrush activity in elementary school or MI 2014, as well as for primary school or MI who received dental health services also the percentage decreased compared to the 2013.⁶

The results of research by Maulidta, Wahyuningsih and Sri Hastuti entitled dental brushing and caribetic snack consumption relationship with the incidence of dental caries in preschool children at Pondok Beringin Pondok Semarang showed that the habit of brushing the teeth was not good 40% Cariogenic foods in the high category of 88.3% and obtained dental caries prevalence of 85%, while for oral hygiene examination 41.67% in the category less. The results of statistical tests show that there was a significant relationship between the habit of brushing teeth.⁷

Based on data from dental and oral health services of elementary or junior high school children and at the same level in Kendal District in 2012 from 20 sub-districts in Kendal Regency which consists of 664 SD/MI, it was found that the highest percentage of elementary or junior high school students requiring maintenance in Boja sub-8.107 and only 1.415 are treated.⁸

From the results of the preliminary study conducted interviews in 4 SDN involving grade 4 and 5 SDN. SDN involved, among others, SDN 1 Tampingan, SDN 3 Ngabean, SDN 1 Ngabean and SDN 2 Ngabean as many

as 10 students in each SDN was obtained SDN 1 Tampingan data there are 4 children who have dental caries, SDN 3 Ngabean there are 3 Children with dental caries, SDN 1 Ngabean there are 5 children who have dental caries, in SDN 2 Ngabean there are 7 children with dental caries. The data can be done by doing a direct examination of the child's teeth and the researchers also ask how tooth brushing habits awere. With the data obtained, the researcher was interested to conduct research at SDN 2 Ngabean prevalence higher than 3 other SDN.

Based on the above description, the writer was interested in researching about "The correlation between habit of tooth brushing with the dental caries incidence of school age children at the elementary school state Ngabean 2 Boja district Kendal regency".

METHODS

This research was quantitative research with Cross Sectional study design. This research type was quantitative non eksperimental by using approach of correlation study. The respondents of this research were all students of grade 4 and 5 SD Negeri 2 Ngabean Boja district Kendal district in the academic at June 2017 amounted to 80 students. Variable in research was independent variable that is habit rub the tooth and variable dependent that is occurrence of karies tooth of school age child. Statistical test using Chi Square. The data collection instrument used in this study was a questionnaire of 14 questions submitted to respondents using Likert scale type with validitas and reliabilitas test. The validitas and reliabilitas test at SD negeri 1 Ngabean because have the same characteristic. Kuesioner consisted of three shares that is:

- Part A contain the characteristic of name respondent, age, gender.
- Part B about habit rub the tooth contain 14 question by using scale likert.
- Part C observation of caries tooth.

Analyse univariat explain the characteristic of respondent and variable habit rub the tooth. Analyse bivariate used to know what there is relation habit rub the tooth with the occurrence of caries tooth. Statistic test used by correlation chi square, because independent variable and dependen use the scale ordinal and nominal.

RESULTS

Based on Table 1 it can be seen that respondents gender male as much as 41 people (51.3%), while respondents gender female as much as 39 people (48.8%). Based on table shows that from 80 respondents aged 12 years amounted to 1 student (1.3%), then respondents aged 11 years amounted to 31 students (38.8%) and respondents aged 10 years amounted to 35 students (43.3 %), And

respondents aged 9 years amounted to 13 students (1.3%).

Table 1: Characteristics by gender, age, and based on dental brushing habits.

Gender	Frequency	Percentage (%)
Male	41	51.3
Female	39	48.8
Total	80	100
Age	Frequency	Percentage (%)
9 years old	13	16.3
10 years old	35	43.8
11 years old	31	38.8
12 years old	1	1.3
Total	80	100
Age	Frequency	Percentage (%)
9 years old	13	16.3
10 years old	35	43.8
11 years old	31	38.8
12 years old	1	1.3
Total	80	100

Table 2: Respondent characteristics based on dental brushing habits.

Dental Brushing Habits	Frequency	Percentage (%)
Less Good	44	55.0
Good	36	45.0
Total	80	100

Based on Table 2 shows that school-age children in SD Negeri 2 Ngabean who have a habit of brushing teeth was not good as many as 44 students (55.0%), while those who have good brushing habit as much as 36 students (45.0%).

Table 3: Characteristics of respondents based on dental caries.

Dental Caries	Frequency	Percentage (%)
Yes	48	60.0
No	32	40.0
Total	80	100

Based on Table 3, the percentage of dental caries experienced by school-aged children was 48 students (60.0%), while the non-dental caries were 32 students (40.0%).

Based on Table 4 shows that the habit of brushing teeth that are considered less good amounted to 44 students (55.0%) presentase more than the students who have good brushing habits of 36 students (45.0%).

Based on calculation of analysis result using chi square test formula obtained p value 0.000, then H_0 rejected and

H_a accepted means there was relation between tooth brushing habit with dental caries incident at school age children in SD Negeri 2 Ngabean Boja district Kendal district.

Table 4: Habitual Tooth Brushing Relation with Dental caries.

Dental brushing habits	Dental Caries				Total	Value
	Yes		No			
	N	%	N	%	n	%
Less Good	44	100	0	0	44	100
Good	4	11.1	32	88.9	36	100
Total	48	60%	32	40%	80	100

DISCUSSION

Based on the result of research with 80 respondents, it was found that male respondents were 41 students (51.3%), while female respondents were 39 students (48.8%). Based on research Diana, that there are differences in the value of dental hygiene between girls and boys. The high value of dental and oral hygiene is thought to be caused by girls who have a tendency to better maintain their oral health. This behavior is thought to be influenced by children's psychological differences, in boys tending to ignore their own circumstances including oral and dental health.³

According to Wahyuningkintarsih, revealed more women apply brushing teeth before bedtime (31.6%) than men (25.5%). It shows that women have awareness in applying good habits in brushing their teeth before bedtime than men.⁹

Based on the results of the study with 80 respondents of students with age between 6 to 12 years obtained data that respondents aged 9 years as many as 13 students (16.3%), respondents aged 10 years as many as 35 students (43.8%), 11 years old as many as 31 students (38.8%), while respondents aged 12 years only 1 student (1.3%).

Based on these data the age category of children is classified in school-aged children. School-age children 6-12 years old majority still do not know the risks to health problems, so they tend not to care about the behavior of clean and healthy life. School-aged children need full guidance from parents because at this age there was a transition period of growth and physical development of children.

Based on research conducted by Khusnul, respondents aged 6-7 years' experience more dental caries by 86.7%, compared with 8-9 years old respondents of 80.8% and respondents aged 10-12 years Amounted to 55.5%.¹⁰

Based on the result of the research with 80 respondents, it was known that the percentage of students have the habit

of brushing their teeth in good category that was 36 students (45.0%), whereas the habit of brushing the teeth was not good as much as 44 students (55.0%). According Pratiwi, efforts to maintain oral health should be done from an early age. The role of the school was indispensable in the process of creating a habit of brushing your teeth for children for example by doing a live demonstration or by using audio visual media to attract the attention of children to imitate and apply it in everyday life. Brushing your teeth was cleaning your teeth from food particles, plaque, bacteria, and reducing discomfort from uncomfortable smells and flavors.¹¹

Research conducted by Gede ID, students who had brushed their teeth with frequency 2 times a day had exceeded 50% but seen from the time when brushing teeth, only 3.7% who had done it properly morning after breakfast and night before bed. When viewed separately, students who brush their teeth properly in the morning or evening was still below 15%. This indicates a lack of discipline over time and a lack of student knowledge.¹² According to the theory Kusumawardani E, another thing to note was the form of toothbrush. Toothbrush should be replaced regularly at least 3 months because the brush was damaged and hairy can damage the gums and can lead to gradual depletion of email.⁸

Based on the results of research presented in Table 4 it was known that students who experience dental caries as many as 48 students (60.0%), while students who did not experience dental caries as many as 32 students (40.0%). The results of this study supported by research conducted by Rahayu that as many as 60% of respondents involved in research have dental caries. The results of this study are also in accordance with research Grewal, which revealed that 52.3% of children aged 9 to 12 years in Delhi India have dental caries. Thus, dental caries occurs in many respondents who are school-aged children.^{12,13}

Dental caries was a process of destruction of the local classification network that begins at the surface of the tooth by declassification process of enamel layer followed by enzymatic organic structure lysis to form cavities (holes) which, if ignored, will penetrate the enamel and dentine and can affect the pulp. Dental caries can be detected by inspection if it has been formed in a tooth cavity visually visible and has changed color to brownish and blackish.¹⁴

According Anggraeni ZR, children in Indonesia age to 12 years who experienced dental caries reached 77%. In the last three years from 2009 to 2011 about dental and oral health services activities showed that from the number of 1.604.075 students who needed care 26.552 and who received care 10.154 students (38.73%). Dental and oral diseases will affect the health and development process of children. Pain in the teeth and mouth obviously will decrease the appetite of children and can affect the ability of children to learn that will affect the learning achievement until the loss of the future of children.^{15,16}

Results of research obtained from 80 respondents in school-age children in SD Negeri 2 Ngabean showed that of respondents who have poor habits 44 students (55.0%). Based on the result of chi square test it can be seen that p value = 0.000 (p value $< \alpha$) or 0.000 < 0.05 then H_0 was rejected and H_a accepted. So, there was a relationship between the habit of brushing teeth with the incidence of dental caries in school-age children in SD Negeri 2 Ngabean Boja district Kendal district Indonesia.

Based on the results of research conducted by Anwar, entitled the relationship between the habit of brushing teeth with the incidence of dental caries at SDN 04 Pasa Gadang in the working area Puskesmas Pemancungan Padang Selatan that 64% have the habit of brushing teeth in the category is not good, and 63.6 % Suffering from dental caries. In this study, the results of statistical tests there was a significant relationship between tooth brushing habit with the incidence of dental caries with p value (0.010 < 0.05). This research is in line with research conducted by Rizki, et al, stated that the result of statistical test obtained p value = 0.000 (p value < 0.05), that there was a significant relationship between tooth brushing habit and dental caries incidence. In line with the results of research conducted Bedi Oktrianda in Payakumbuh in 2011 with the results of research that is, there is a relationship between time brushing teeth with dental caries events ($p = 0.047$).¹⁷ Another theory says that there was a relationship between brushing your teeth with caries development, it begins with plaque control that can be done by brushing your teeth. Plaque has a soft consistency that was easy to clean by brushing your teeth properly and properly.¹⁸ Based on the results of research conducted by Khusnul, said that respondents who brushed < 2 times/day greater dental caries compared with respondents brushing teeth ≥ 2 times/day proved by statistical test results obtained p value = 0.014 ($p < 0.05$) concluded there was relation between brushing teeth with dental caries incident at SDN Karangayu 03 Semarang. The absence of student effort to do correct brushing shows that students do not behave positively in the health sector, especially in terms of maintaining oral health. As explained in the health theory that health maintenance behavior (health maintenance) was a person's behavior or business to maintain and maintain health so as not to be sick.¹⁹ Based on the results of research conducted that students who have a habit of brushing teeth less good category and students who experience dental caries more than students who have good habit of brushing teeth and do not have dental caries. It was recommended for health workers who work together with the school to provide guidance and counselling to students in raising awareness of good and correct tooth brushing and the role of parents needed to monitor their children in order to avoid the risk of dental caries.

CONCLUSION

Most of the habit of brushing teeth at 4th and 5th grade students in SD Negeri 2 Ngabean Boja subdistrict of

Kendal regency found the habit of brushing the teeth was not good as much as 44 students (55.0%), and the habit of brushing well there are 36 students (45.0 %). Most experienced dental caries as many as 48 students (60.0%), while That did not experience dental caries as much as 32 students (40.0%). There was a habitual relationship to brushing teeth with dental caries events in school-age children in SD Negeri 2 Ngabean district Boja Kendal district.

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REFERENCES

1. Jain M. Oral Health Status of Mentally Disabled Subject in India. *J Oral Science*. 2009;51:3333-340.
2. Kawuryan U. Knowledge Relations About Dental and Oral Health with Genesis Dental Caries of Children of SDN Klecco II Class V and VI, Laweyan Surakarta. Indonesia: Fakultas Health Sciences University of Muhammadiyah Surakarta; 2008.
3. Ningsih DS. Relathionship Type Genital Agains Child Mouth Oral Hygiene Orphanage. Pdf; 2015.
4. Sariningsih, Endang. Caring for Children's Teeth Since Early Age. Jakarta: Gramedia; 2012.
5. Wong DL, Hockenberry M, Eaton, Wilson, D, Winkelstein ML, Indry W, et al. Experience Dental Caries and Diet and Drinking in School Children in Kiawa Village North Kawangkoan. Subdistrict. *E-Dental Journal*. Retrieved 20 July 2017.
6. Health Office, Central Java. Health Profile of Central Java; 2014. Available at: <http://www.dinkesjatengprov.go.id/dokumen/2015>. Retrieved 10 December 2016.
7. Maulidta, Wahyuningsih, Sri Hastuti. Habitual Tooth Brushing Relationships and Habit to Consume Kariogenik Foods with Dental Caries Incidence in older children Preschool in Kindergarten Pondok Beringin Semarang; 2010.
8. Central Java Provincial Health Office. Health Profile of Kendal Regency; 2012.
9. Nursalam. Research Methodology of Science Nursing: A Practical Approach. Issue 3. Jakarta, Salemba Medika; 2013.
10. Khusnul K, Purnomo. S Factors Associated With Genesis Dental Caries in Children Aged 6-12 years in elementary school Negeri Karangayu 03 Semarang; 2013.
11. Pratiwi D. Healty and Beatiful Teeth Daily Practical Treatment. Jakarta: Kompas Media Nusantara; 2009.
12. Kusumawardani E. The Bad Dental and Oral Health. Bantul: CYCLE; 2011.
13. Notoatmodjo S. Health Promotion and Theory of Application. Jakarta: Rineka Cipta; 2010.
14. Dewa Gede IBDP. Deskriptif of Behaviour Brushing Teeth at Grade 1 students with Caries Teeth in the Working Area at Puskesmas Rendangn Karangasem Bali October 2014. Faculty Medical Udayana University; 2016.
15. Dorland WA, Newman. Medical Dictionary. Dorland Edition 31. Jakarta: Medical Book. EGC. P. 2010;702:1003.
16. Anggraeni ZR. Teeth Hollow 77% Children of Indonesia; 2010. Available at: <http://tulisan-ebas.com/gigiberlubang-hinggapi-77-anak-Indonesia/>
17. Sihite, Johan H. Social Level Relations Economy of Parents with a status of Dental Caries 7-11 years old; 2012. Available at: <http://repositoy.usu.ac.id/bitstream/123456789/33762/6/Cover.Pdf>.
18. Anwar FD. Relationship Between Habits Brushing Teeth with Dental Caries Events at Student of SD Negeri 04 Pasa Gadang in working area Puskesmas Pemancangan Padang Selatan 2011; 2011.
19. Tarigan R. Dental Caries 2nd Edition. Jakarta: EGC Medical Book Publishers; 2013:15-90.
20. Grewal H, Verma M, Kumar A. Prevalence of dental caries and treatment needs amongst the school children of three educational zones of urban Delhi, India. *Ind J Den Resea*. 2011 Jul 1;22(4):517.
21. Wahyuning KV. Berani Unjuk Gigi; 2009. Available at: http://www.femina.co.id/archieve/main/issue/issue_detail.asp?andcid=2andviews=9.
22. Oktrianda B. Relationship Time, Technique Brushing Teeth ang Which Type of Food Consumed with Dental Caries Events at Students of SDN Payakumbuh in working area Puskesmas Lampasi Payakumbuh 2011. PhD thesis. Universitas Andalas Padang; 2011.
23. Rahayu S. Relationship Between Behaviour Brushing Teeth Before Sleeping at Night Day with Dental Caries in School age children in the Madrasah Ibtidaiyah (MTS) Al Istiqomah Tangerang; 2012.
24. Talibo RS. Frequency Relation Consumption of Kariogenik and Habit Foods Brushing Teeth with Dental Caries Events at Student Class III SDN 1 dan 2 Sonue. Universitas Sam Ratulangi; 2016.
25. Saryono. Health Research Methodology Practical Guide For Beginners. Jogjakarta: Partners Cendikia Press; 2009.
26. Suryawati PN. 100 Important Questions Child Dental Care. Jakarta: Dian Rakyat; 2010.

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