

## The Correlation Between Teeth Brushing Time and the Number of DMF-T On Iv And V Grade Elementary Students In Surabaya

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### Abstract

The problem in this research was high number of DMF-T on elementary students in Surabaya. As preliminary data, it was conducted observations at four elementary schools in Surabaya. The schools were in South Surabaya that the data were collected in SDN Bendul Merisi II and obtained DMF-T average (1.72), in East Surabaya that the data were collected in SDN Pacar Kembang I Surabaya and obtained DMF-T average (2.43), in West Surabaya that the data were collected in SDN Sukomanunggal IV and obtained DMF-T average (1.56), and in North Surabaya that the data were collected in SDN Perak Utara II and obtained DMF-T average (1.50). This indicated that the health and knowledge level about oral maintenance of VI grade elementary students in Surabaya were not in accordance with Indonesia Dental Health indicators 2010 that was less than 1 (Kemenkes RI, 2012). Health research results in 2013 showed that the number of proper teeth brushing (teeth brushing time) was 2.3%. Furthermore, the purpose of this study was to determine the correlation between high number of DMF-T and teeth brushing time. The method used in this research was analytic research. The location of the research was at four elementary schools in Surabaya which it represented the North, East, South, and West Surabaya. In order to determine the correlation between teeth brushing time and the number of high DMF-T, it was conducted chi square test. The results showed that there was a correlation between teeth brushing time and the frequency in brushing teeth, and high number of DMF-T on IV and V grade elementary students in Surabaya, meanwhile, the intensity in brushing teeth did not have any correlation with high number of DMF-T.

**Keywords:** Teeth Brushing Time, DMF-T

## I. INTRODUCTION

### Background

School was an extension of family in laying behavior foundation for subsequent child's life, including healthy behavior. Meanwhile, the population of schoolchildren in community was quite large, from 40% to 50%. Therefore, the promotion or health education in school was very important. In Indonesia, the form of health promotion in schools was the School Health Unit (Notoadmodjo, 2005). According to Wahyuningrum (2007) in Kawuryan (2008), school age was the time to lay a strong foundation for the realization of qualified human, and health was an important factor that determined the quality of human resources. The role of schools was indispensable in maintenance of children's oral health due to environmental factors, which one of the factors was a school that had a great power in determining behavior. The determination of behavior in this case was to produce children's brushing habits, which was done in everyday life without feeling forced (Kawuryan, 2008). The results of the Basic Health Research 2013 showed that DMF-T index of Indonesian population aged  $\geq 10$  years was 4.6. This meant that among 100 Indonesian, there were 460 damaged teeth. While the proportion of people who were more than 10 years old brushed their teeth correctly only in 2.3%. Most of the population brushed their teeth during bath time, which was in morning bath (94.2%) and evening bath (79.7%). The proportion of brushing time after eating and before bedtime was very small. Brushing time after breakfast was 3.8%, after lunch was 6.2%, and before bed was 27.3%. Status of dental caries in individual or society could be measured by utilizing DMF-T index (*Decay, Missing, Filling Teeth*) for permanent teeth and def-t for primary teeth. This index was utilized to look at person's teeth condition that had experienced damage (*Decayed*), missing because of caries or residual root (*Missing*), and fillings (*Filled*) in permanent teeth (*Filling Teeth*). This index reflected the cumulative spread of caries in a population (kidd & Bechal, 1992). Agtini, et al. (2005) in Warni (2010) stated that many dental caries affected children and adults either to primary teeth or to permanent teeth. School-age children which were between 6 until 12 years old were vulnerable age group that required closed attention, because in this period, there were primary teeth and permanent teeth simultaneously in oral cavity (Warni, 2010). As preliminary research data, it was conducted observation at elementary schools in Surabaya. In South Surabaya, it was conducted data collection at SDN Bendul Merisi II Surabaya and it was obtained DMF-T average (1.72). Meanwhile, in East Surabaya; the data was collected at SDN Pacar Kembang I Surabaya and it was obtained DMF-T average (2.43). In West Surabaya, the data were collected at SDN Sukomanunggal IV Surabaya and it was obtained DMF-T average (1.56). In North Surabaya, the data was collected at SDN Perak Utara II Surabaya and it was obtained DMF-T average (1.50). However, based on these data, the research problem was high number of DMF-T on IV grade elementary students in Surabaya 2016 which perhaps, it was caused by wrong time in brushing teeth.

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### A. Problem Identification

Based on the existing problems, it could be explained the cause of the problem, which were:

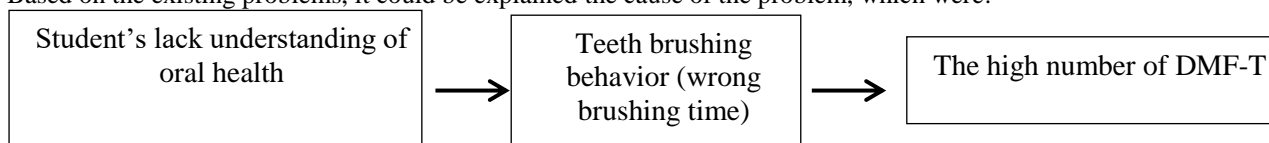


Figure 1. Factors of high number of DMF-T on IV grade elementary students in Surabaya 2016

Based on Figure 1, it could be explained that the students' lack of knowledge about oral health maintenance caused a mistake of teeth brushing time, hence, finally it caused high number of DMF-T on IV grade elementary students in Surabaya 2016.

### B. Objectives

The objectives of this study were:

1. Measuring the number of DMF-T on IV grade elementary students in Surabaya
2. Identifying teeth brushing time on IV grade elementary students in Surabaya
3. Analyzing the correlation between brushing time and high number of DMF-T on IV grade elementary students in Surabaya.

## II. METHOD

This research was analytical research by which the research target were IV and V grade elementary students in Surabaya 2016. In addition, this research was conducted at four elementary schools in Surabaya, which it represented the North Surabaya (SDN Perak Utara II), East Surabaya (SDN Pacar Kembang I), South Surabaya (SDN Bendul Merisi), and West Surabaya (SDN Sukomanunggal IV). The research was conducted from April to October 2016. Data about teeth brushing time were collected through interviews; while data on dental caries (DMF-T) were collected through dental examination. Furthermore, the data were analyzed by utilizing *Chi-square test*.

## III. RESULTS

### A. Respondent Characteristics

Table 1. Age Distribution

No	Age	Total	Percentage
1.	8 years old	1	0.5
2.	9 years old	36	17.3
3.	10 years old	99	47.6
4.	11 years old	51	24.5
5.	12 years old	18	8.7
6.	13 years old	3	1.4
Total		208	100

Table 2. Gender Distribution

No	Gender	Total	Percentage
1.	Boy	103	49.5
2.	Girl	105	50.5
Total		208	100

The table above showed that most of respondents were 10 years old and it balanced between the number of boys and the number of girls.

### B. Teeth Brushing Time

Table 3. Teeth Brushing Time Distribution in the Morning

No	Teeth Brushing Time	Total	Percentage
1.	Bath Time	156	75.0
2.	After Eating Breakfast	34	16.3
3.	After Eating Lunch	18	8.7
Total		208	100

Table 3 showed that most students were brushing their teeth in the morning during taking a bath (75%).

Table 4. Teeth Brushing Time Distribution in the Afternoon

No	Teeth Brushing Time	Total	Percentage
1.	Bath Time	111	53.4
2.	After Eating Dinner	34	16.3
3.	Before Going to Bed	63	30.3
Total		208	100

Table 4 showed that most of brushing time in the afternoon was done by the students in the afternoon bath (53.4%).

### C. Number of DMF-T

Table 5. DMF-T Average Distribution

No	DMF-T Criteria	Total	Percentage
1.	Very Low	89	42.8
2.	Low	63	30.3
3.	Medium	23	11.1
4.	High	23	11.1
5.	Very High	10	4.8
Total		208	100

Table 5 showed that most of respondents had the number of DMF-T in very low category (42.8%).

### D. The Correlation between Teeth Brushing Time and the Number of DMF-T

*Chi Square test* results showed that p-value was <0.05. Thus, it was concluded that there was a significant correlation between teeth brushing time and the number of DMF-T on elementary students.

## IV. DISCUSSIONS

### A. The Number of DMF-T on IV and V Grade Elementary Students in Surabaya

The average number of student's DMF-T from four elementary schools in Surabaya was 1.80. The lowest number of DMF-T was in SDN Perak Utara II, which was 1.50 and the highest one was in SDN Pacar Kembang I, which was 2.43. This number was in high category due to exceeding the WHO standard, which was less than 1. However, this number was still under the average of National DMF-T in Indonesia based on basic health research that was held by Indonesia Ministry of Health in 2016, which was 4.6. The high number of DMF-T was perhaps influenced by food and teeth brushing. Food and dental hygiene had strong influence in teeth decay (Krisdapong S, 2013). Toothache and tooth loss would cause much cost and long time for dental care (Ricardo Teles, 2014).

### B. Teeth Brushing Time on IV dan V Grade Elementary Students in Surabaya

Most of elementary student's teeth brushing time in Surabaya, which was in the morning, were during bath time (75.0%). Meanwhile, brushing teeth which were done after eating breakfast were only in 16.3%. In the afternoon and evening, more than 50% students brushed their teeth during bath time (53.4%). Brushing teeth before bedtime was in 30.3% and after eating dinner was in 16.3%. This might be influenced by their parents' habit that they would brush their teeth during bath time in the morning. Another reason was because it was practice; they did two things in a time (bathing and brushing teeth). Another factor that might influence was the song with lyrics, *bangun tidur ku terus mandi, tidak lupa menggosok gigi*, which meant that do not forget to brush your teeth when you are bathing in the morning. Based on the theory of dental caries process, one of factors that influenced occurrence of dental caries was the time. Teeth brushing time should be after eating in order to do not make food residual that patched too long on teeth surface.

### C. The Correlation between Teeth Brushing Time and High Number of DMF-T on IV Grade Elementary Students in Surabaya

The results showed that there was a correlation between teeth brushing time and high number of DMF-T on elementary school students in Surabaya. This was appropriate with the theory stated by Taringan (1990) that the process of caries was influenced by four factors: teeth and saliva, substrates, microorganisms, and time. It was also supported by Oktrianda's research (2011) which stated that there was a correlation between brushing time and dental caries occurrence. Budisuari et al. (2010) concluded that the respondents who lived in cities had higher risk of dental caries rather than the respondents who lived in the village. People who frequently ate sweet

foods tended to have greater caries rather than people who ate fibrous foods. Respondents who brushed their teeth had lower caries risk rather than respondents who did not brush their teeth. Perhaps the factor of diet and food types had greater influence of dental caries risk rather than teeth brushing time.

Abraham (2007) stated that the group who rarely brushed the teeth had 1,23 times risk for tooth decay rather than those who brushed twice a day. Moreover, the frequency factor was more prominent than brushing time factor. In addition, age, gender, education background, and employment also affected dental caries. Ramadan and Sukmana (2016) concluded that there was a significant correlation between the level of oral health knowledge and the number of dental caries. Besides, it could be concluded that many factors affected the occurrence of dental caries. Teeth brushing time was not the only factor that influenced the occurrence of dental caries. There were still a lot of internal and external factors that influenced dental caries.

*Chi-square* test results showed a significant correlation between teeth brushing time and DMF-T occurrence. This was appropriate with Taringan's explanation (1990) that teeth brushing time factor influenced the caries. It meant that the longer the food residual on teeth, the sooner the occurrence of tooth decays. Therefore, more often in brushing teeth, especially after meals, it could help to prevent dental caries.

## V. CONCLUSION

1. The number of DMF-T on elementary students in Surabaya was higher than WHO standards. However, it was lower than the average of national DMF-T.
2. Teeth brushing time on elementary students in Surabaya was mostly during bath time in the morning and afternoon.
3. DMF-T occurrence on elementary students in Surabaya related to teeth brushing time.

## VI. SUGGESTION

1. The elementary school teachers should make a meeting with student's parents to give more attention to their child's dental health, especially time and frequency of teeth brushing and to reduce foods that can damage teeth.
2. The headmaster of elementary school should contact the Public Health Center in order to increase the frequency of dental counseling and dental check for the students.

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