

COMPARISON OF CARIES INDEX IN PERMANENT DENTITION UNDER ACTIVE UKGS AND NON-ACTIVE UKGS

Observation on elementary school sixth grade students or of the same level in Puskesmas Kertak Hanyar Kecamatan Kertak Hanyar Kabupaten Banjar's working area

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ABSTRACT

Background : UKGS is an effort to improve oral and dental health of students in school. UKGS program has been running since 1951, but the dental health of elementary school students is yet to be satisfactory. 2013th RISKESDAS reports show that 36,1% citizens living in Kalimantan Selatan had oral health problems, and the prevalence of people who had oral health problems in Kabupaten Banjar is 48,6% but only 13,8% received treatments and cares from dental staffs. **Purpose** : The purpose of this study was to assess the comparison of caries index in permanent dentition of elementary school students under active UKGS and non-active UKGS. **Methods** : This was a quantitative analytic study using cross sectional approach. The samples were 100 students picked using proportionate random sampling. Data were obtained from DMF-T index assessments. **Results** : The caries indexes of students under active UKGS and non-active UKGS were 1,36 (low) and 2,72 (moderate) respectively. **Conclusion** : There was a significant comparison ($p < 0,05$) of DMF-T index in permanent dentition of students under active UKGS and non-active UKGS in Puskesmas Kertak Hanyar Kecamatan Kertak Hanyar Kabupaten Banjar's working area.

Keywords : Caries index, active UKGS, non-active UKGS

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INTRODUCTION

Oral and dental health in Indonesia is still apprehensive, which is worthy to note because dental health is a very important aspect in many functions, such as masticatory, and speech. Dental health also holds a special part in children's growth and development. This is why the most favourite *promotive, preventive, and curative* effort to improve oral and dental health targets elementary school students (6-12 years old), because at this age, permanent dentition starts to erupt and needs an effective early prevention of caries. Why is caries still a nightmare in Indonesia? Even now, it is the most prevalent oral and dental disease of Indonesian people. According to Hockenberry and Wilson (2007), elementary school students had high caries

index because they liked to consume food and beverages that mostly had negative effects on their dental health.^{1,2,3,4}

The high caries index was portrayed in Pratiwi's research in 2010, in which the caries index of children aged between 6-16 years old even reached 90%. The research showed 60% samples of children aged 6-12 years old had at least one deciduous tooth decayed or filled. In permanent dentition of 41 children aged 9-16 years old, 40% permanent teeth were decayed or filled. The lack of understanding about dental health in children's mind at this age was mostly the cause of this high index. Sadly if this continues, advanced caries can significantly decrease the quality of a child's life. Thus, dental treatment is very important to be carried out to prevent further

dental decay and periodontal disease in children. Prevention can be started by growing a habit to maintain optimal dental health as early and continuous as possible.^{5,6,7,8}

Caries is a decay of tooth, which happens as a sustainable process that gradually dissolves enamel and infiltrates the deeper part of tooth. Maintaining dental health is very important to cut this chain; and considering children's young age, a character building plan needs to be carried out using the correct approach as a preventive effort, and one of the approaches offered by the government is UKGS program. UKGS (Usaha Kesehatan Gigi Sekolah) is a program to improve oral and dental health of students in school.^{3,9,10,11,13}

According to 2013th RISKESDAS, the highest percentage of citizens having dental health problems came from Kalimantan Selatan, the number as high as 36,1%. Kalimantan Selatan's DMF-T (Decay Missing Filled Tooth) index for age group 12 years old was 2,3. The prevalence of Kabupaten Banjar citizens who had oral health problems was 48,6% but only 13,8% received treatments and cares from dental staffs.^{12,14}

Puskesmas Kertak Hanyar is one of the public health centres located in Kabupaten Banjar. The total students in Puskesmas Kertak Hanyar's working area reached 3,856 children. Elementary students who have been examined were 1,117 children, with 428 children needing treatments, 263 have received treatments, and 165 children haven't yet received treatments. Based on the reports above and a preliminary study, the number of children having received treatments was bigger than those who have not, and this indicated the UKGS program's effectiveness running in Puskesmas Kertak Hanyar's working area was favourable.¹⁵

Elementary schools in Puskesmas Kertak Hanyar's working area were categorized into under active UKGS (18 schools) and non-active UKGS (6 schools). The running UKGS program was supposed to decrease caries index, but in reality, the caries index of children in Kalimantan Selatan was still high. The high index was reported in Ringga's 2014th research, in which free-caries index in 10 elementary schools under active UKGS in Puskesmas Cempaka Putih Banjarmasin's working area was only 17%. The low free-caries index could be affected by a number of things such as students' knowledge,

motivation, awareness in maintaining oral and dental health, the basic medical treatments given, and voluntarily untreated decay.^{5,8} Based on the analysis above, author was interested in researching about the comparison of caries index in permanent dentition of elementary school grade sixth students or of the same level under active UKGS and non-active UKGS in Puskesmas Kertak Hanyar Kabupaten Banjar's working area.

MATERIALS AND METHODS

Author used quantitative analytic study with cross sectional approach. Materials used were 70% alcohol, cotton, tissue, writing tools, diagnostic tools, nierbekken, handsocon, mask, small flashlight, informed consent sheets, and DMF-T assessment sheets. The population in this study was year 2016/2017 600 elementary school sixth grade students, with 522 students under active UKGS and 78 students under non-active UKGS in Puskesmas Kertak Hanyar Kabupaten Banjar's working area. Samples were chosen using cluster random sampling as many as 100 sixth grade students, with 50 students under active UKGS and 50 students under non-active UKGS.

Variable in this study was DMF-T index in permanent dentition of students under active and non-active UKGS in Puskesmas Kertak Hanyar Kabupaten Banjar's working area. Data were collected by examining oral cavity and dental status of all samples and recorded in DMF-T index to assess decay level of elementary school sixth grade students. The equation of DMF-T was = (total decayed teeth + total missing teeth + total filled teeth) / total students examined. DMF-T categories according to WHO were very low (0,0 – 1,1), low (1,2 – 2,6), moderate (2,7 – 4,4), high (4,5 – 6,5), and very high (>6,6).

RESULTS

The study was carried out in sixth chosen elementary schools. The results were as following :

Caries index in permanent dentition under active UKGS

There were three chosen elementary schools under active UKGS in Puskesmas Kertak Hanyar Kabupaten Banjar's working area: SDN Kertak

Hanyar 1.1, SDN Kertak Hanyar 1.3, and SDN Manarap Lama 1. The results could be seen in table 1 and 2.

Table 1. Total caries and free-caries samples in elementary schools under active UKGS

Status	Total samples under active UKGS	Caries and free-caries samples	Percentages
Caries	50 students	17 students	34%
Free-caries	50 students	33 students	66%

Table 1 showed number of students with free-caries status (33 students or 66%) was higher than students with caries (17 students or 34%).

Table 2. Total DMF-T samples in elementary school sixth grade under active UKGS

DMF-T under active UKGS				
DMF-T	Males	Females	Total	Percentages
<i>Decay</i>	16	10	26	38%
<i>Missing</i>	6	8	14	21%
<i>Filled</i>	15	3	28	41%
Total	37	13	68	100%

Table 2 showed *filled* percentage (41%) was higher than *decay* percentage (38%).

Caries index in permanent dentition under non-active UKGS

There were three chosen elementary schools under non-active UKGS in Puskesmas Kertak Hanyar Kabupaten Banjar’s working area: SDN Pasar Kamis 1, MIS Thalabul Khair, and MIN Manarap Baru. The results could be seen in table 3 and table 4.

Table 3. Total caries and free-caries samples in elementary schools under non-active UKGS

Status	Total samples under non-active UKGS	Caries and free-caries samples	Percentages
Caries	50 students	37 students	74%
Free-caries	50 students	13 students	26%

Table 3 showed number of students with caries (37 students or 74%) was higher than free-caries students (13 students or 26%).

Table 4. Total DMF-T samples in elementary school sixth grade under non-active UKGS

DMF-T under non-active UKGS				
DMF-T	Males	Females	Total	Percentages
<i>Decay</i>	50	46	96	70%
<i>Missing</i>	21	15	36	26%
<i>Filled</i>	2	3	5	4%
Total	72	64	136	100%

Table 4 showed *decay* percentage (70%) was higher than *filled* percentage (4%). The DMF-T indexes of elementary schools under active and non-active UKGS could be seen in figure 1.

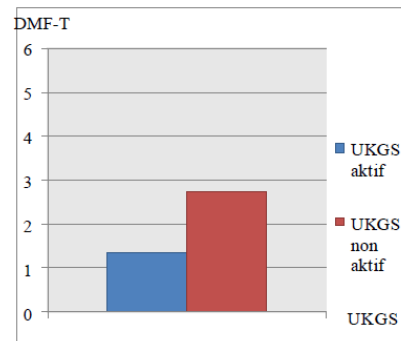


Figure 1. The DMF-T indexes of elementary schools under active and non-active UKGS

The figure showed that DMF-T index of schools under active UKGS was lower than that under non-active UKGS.

Comparison of indexes in permanent dentition under active and non-active UKGS

Based on the results, the comparison of DMF-T indexes could be seen in table 5.

Table 5. Comparison of DMF-T caries indexes

UKGS status	Dentition status		Caries index
	Caries	Free-caries	
Active	17 students	33 students	1,36
Non-active	37 students	13 students	2,72

The table showed total students experiencing caries was higher in schools under non-active UKGS, and total students with free-caries status was higher in schools under active UKGS. The DMF-index of schools under active UKGS was lower than schools under non-active UKGS.

Analysis of comparison of DMF-T index under active and non-active UKGS

Data from results were analysed using *kolmogorov smirnov* normality test, and the test showed p as 0,001 ($p < 0,05$), which meant the data weren't normally distributed. The next analytic study was *mann-whitney* non-parametric test with confidence level of 95%. The result showed p as 0,001 ($p < 0,05$) which meant there was a significant comparison of DMF-index in schools under active and non-active UKGS in Puskesmas Kertak Hanyar Kabupaten Banjar's working area.

DISCUSSION

Table 1 showed percentage of free-caries students in schools under active UKGS as 66% of 50 students, with caries-experiencing students as the rest 34%. Decay percentage in table 2 only showed 38% which meant students have received dental health education, mass tooth-brushing session, and dental examination. According to the results, DMF-T index of schools under active UKGS was 1,36 or low caries index. This low index showed UKGS has been running actively.

Schools under UKGS active had received positive responses, wherein students gained a lot of dental health knowledge, and in turn encouraged their motivation to maintain dental health. Corresponding to Yohanes' study in 2013, which reported schools under active UKGS could improve the dental health knowledge in children. An active UKGS program meant students would have known how to maintain

oral and dental health, and shaped their dental behaviours.¹⁶

The results also corresponded to Silvia Anitasari and Liliwati's study in 2005 about dental health in SDN Kecamatan Palaran Kotamadya Samarinda Provinsi Kalimantan Timur sixth grade students, which reported students receiving correct counselling and training of effective tooth brushing affected their dental health level. The counselling and training given were easy to understand and to be practiced daily by students.¹⁷

Table 3 showed percentage of students experiencing caries in schools under non-active UKGS as 74%, and free-caries students as 26%. Decay percentage in table 4 was 70%, which meant the students were lacking dental knowledge and dental-friendly behaviours. The DMF-T index in schools under non-active UKGS was 2,72 or moderate. This index showed that the UKGS program hadn't run actively.

The higher decay percentage was caused by non-active UKGS and showed the lack of students' motivation to maintain dental health because of lack of knowledge, socioeconomic level, and behaviours. The non-active UKGS program had received negative responses, wherein students and teachers' knowledge of dental health were still low that the routine mass tooth-brushing was halted. This was caused by teachers not knowing the correct way to deliver dental health education, and the correct tooth-brushing method. Students' knowledge was very vital as the foundation of dental-friendly behaviours.

In accordance to Ignatia and Sutarmi's study in 2009, knowledge was an important domain to shape one's behaviour. Knowledge could be gained naturally or planned, such as through educational process. The low dental knowledge correlated to caries index and students with low dental knowledge usually didn't refer to dental staffs for further treatment.^{18,19}

According to table 5, schools under active UKGS had lower DMF-T index (1,36) than non-active UKGS (2,72). UKGS that had been running actively or non-actively were categorized using decay percentages. Decay percentage of schools under active UKGS was lower than non-active UKGS because students under non-active UKGS had lacking dental health knowledge, and lacking dental health-friendly activities; the location of schools in rural areas also affected these factors, because dental staffs had difficulties reaching the schools to provide basic

treatments. This was in accordance to Widyawati's study in 2009 which reported that dental health counselling affected one's behaviour to maintain dental health. Knowledge, attitude, and action were parts of behaviour affecting dental health level.²⁰

According to results, DMF-T index of sixth grade students under active UKGS was 1,36 or low, meanwhile the index of those under non-active UKGS was 2,72 or moderate. In conclusion, there was a significant comparison of DMF-T index in permanent dentition of students under active and non-active UKGS in Puskesmas Kertak Hanyar Kabupaten Banjar's working area.

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