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### The optimization of school dental health initiatives (Usaha Kesehatan Gigi Sekolah/UKGS) in improving the dental health level of the students of SMP kertha budaya MAS, UBUD District

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#### ABSTRACT

World Health Organization (WHO), in 2000 introduced an approach of health promoting school. Usaha Kesehatan Gigi Sekolah (UKGS) is one of the efforts for the achievement of Health Promoting School. The objective of this study is to analyze the effectiveness of the UKGS optimization in improving the dental health level of the students of SMP (Junior High School) Kertha Budaya Mas, Kecamatan Ubud.

The design of this study is repetitive measurement in pre test and post test. The type of this study is non equivalent control group design. This study is conducted in SMP Kertha Budaya Mas, Ubud District. The size of respondents of this study is 122 persons.

From the finding of this study and data analysis, it is found that there is significant improvement in the average score of the students' knowledge in dental and oral health of the case group from 5.4 to 8.1. In control group, there is also an improvement of average score from 5.8 to 7.1 with significance value of 0.000. The average score of OHI-S of case group decreases from 1.9 (medium category) to 0.6 (good category) which means that there is a meaningful improvement in dental and oral hygiene which is with significance value of 0.000. In control group, there is no meaningful difference in average score of OHI-S between the first and the second measurements.

The conclusion of this study is that the optimization of UKGS of the students of SMP Kertha Budaya Mas, Ubud District is effective in the improvement of the students' knowledge in dental and oral health and in the improvement of dental health level. Based on such conclusion, it is suggested that the implementation of UKGS in SMP (Junior High School) is to be done optimally by the involvement of all relevant stakeholders.

**Keywords:** Optimization, UKGS, Dental and Oral Health Knowledge, OHI-S

#### INTRODUCTION

World Health Organization (WHO), in 2000, introduced an approach of Health Promoting School. The technical program of Department of Non-Communicable Disease and Health Promotion

which accommodate dental and oral health program globally is WHO Global Oral Health Programme (GOHP). This program suggests that countries around the world are to develop policies in the prevention of dental and oral diseases. One of the priority actions of GOHP is the promotion of dental

health to students and teenagers (Ministry of Health, 2012).

School Dental Health Initiatives (UKGS) which has been developed since 1951 is one of the Government's program which has been being done with various developments based on the situations and conditions. UKGS is an integral part of the UKS, in provision of services for dental health in a planned manner with minimum package, standard and optimum (Department of Health, 1996).

The data of the Basic Health Research (Risksedas) in 2013, shows that children in the age of 10 – 14 years in Bali Province, at 22.4% has dental and oral health issues. Only 31.3% receive dental health services by medical officers. And then, High Scholl graduates at 24.4% suffer from dental and oral health issues, and only 41.8% receive dental health services by medical officers. The DMF-T average of the high school graduates is at 3.17. This number is much higher than the national target of 1.0.

The behaviors in teeth brushing of the people of Bali Province is reported that majority (91.8%) of the people at the age of 10 years and older has brushed their teeth every day, but majority (86.8%) brush their teeth while they take a bath in the morning and in the afternoon. The recommended of good brushing teeth is for a minimum of twice a day, which is after breakfast and in the evening before going to bed.

Based on the research in one of the high schools in South Sulawesi, it is found that only 3.37% students have healthy gum, 61.8% students have medium level of dental and oral hygiene (Ministry of Health, 2012). Based on the Basic Health Research (Risksedas) in 2013 in Bali Province, it is identified that only 4.1% of the population of Bali Province who have the ability to brush their teeth in the right manner, 22.4% of the people at the age of 10-14 years have dental health issues and high school graduate teenagers at 24.4% have dental health issues [9]. The national target of dental health in 2020 are: an average of caries at a maximum of 1, average OHI-S at 1, 2, PTI value at 50%.

Junior High School/Sekolah Menengah Pertama (SMP) Kertha Budaya Mas is one of the schools within the service area of Community Health Center/Puskesmas I Ubud. The results of interviews of some teachers who work for the school, it is found that the school has never received UKGS services. In addition to that, the distance of the

school to the Community Health Center/Puskesmas is relatively far at about five kilometers. Based on such conditions, the researcher like to analyze the effectiveness of the Optimum UKGS for the students towards the improvement of the knowledge and the dental hygiene of the students of SMP Kertha Budaya Mas.

The objective of this study is to analyse the effectiveness of the Optimum UKGS for the students towards the improvement of the knowledge and the dental hygiene of the students of SMP Kertha Budaya Mas, Ubud in 2016.

## RESEARCH METHOD

The design of this study is Quasi Experiment, because the researcher divided the groups without differentiation between control group and case group explicitly by maintaining the reference to the existing natural form (Creswell, 2003). The type of this study is non equivalent control group design, which is to identify the effectiveness of the optimization of UKGS in improving the knowledge and the dental hygiene of the students of SMP Kertha Budaya Mas, Ubud. This design used repeated measurements which are during pre test dan post test.

This study was conducted in Mas Village Mas, Ubud District, Gianyar Regency. This study started with the development of proposal until the final report (starting in May 2015 until September 2016). The population was all students of SMP Kertha Budaya Mas, Ubud. The sample identification was conducted using Purposive Sampling, which was based on various considerations by the research team and the school so that the identified sample was decided to be all students of Grade VIII with 122 students. Subsequently, the sample were grouped into control group and case group. Inclusive criteria in this research consisted of; students who were willing to be respondents, and were still active as the students of SMP Kertha Budaya Mas. If the respondents were absent during the pre test, they would not be involved in the post test.

This study was conducted with univariate and bivariate analysis. Univariate analysis was to determine the mean, and the bivariate analysis with t-test, which was to determine the difference of mean of the first and the second measurements of the coupled samples [7].

**Research Findings and Discussion**

Based on the data collection, the univariate analysis can be presented which shows the

overview of the knowledge on dental and oral health and Oral Hygiene Index Simplified (OHI-S) of the respondents including the percentages and averages.

**Table 4: Knowledge Criteria of SMP Kertha Budaya Mas Students at the Pre test**

Knowledge Criteria	Case		Control		Total	
	f	%	f	%	f	%
Very Good	5	8.1	8	13.3	13	10.7
Good	10	16.1	17	28.3	27	22.1
Average	13	21	11	18.3	24	19.7
Poor	14	22.6	12	20	26	21.3
Fail	20	32.3	12	20	32	26.2
Total	62	100	60	100	122	100

Table 3 shows that in both case and control, the number of respondents who had very good category of their knowledge in dental and oral health was at the lowest number which was 5 students (8.1%) for the case group and 8 students (13.3%) for the

control group. Respondents with failure category shows higher number in case group which was 20 students (32.3%) and 12 students (20%) in control group.

**Table 4: Knowledge Criteria of SMP Kertha Budaya Mas Students at the Post test**

Knowledge Criteria	Case		Control		Total	
	f	%	f	%	f	%
Very Good	44	71	24	40	68	55.7
Good	18	29	21	35	39	32
Average	0	0	8	13.3	8	6.6
Poor	0	0	1	1.7	1	0.8
Fail	0	0	6	4.9	6	4.9
Total	62	100	60	100	122	100

Table 4 shows that in case group, majority of the respondents had knowledge in dental and oral health with very good criteria which was 44 students (71%) and there were no longer students having knowledge with average and poor criteria. In control group, there were 24 students (40%) who

had knowledge in dental and oral health with very good criteria but there were still some students with failure category which was 6 students (4.9%). The average score of knowledge of respective groups before and after the interventions are as per Table 5.

**Table 5: Average Score of Knowledge of the Students of SMP Kertha Budaya Mas**

	Pre test	Post test
Case	5.4	8.2
Control	5.8	7

Table shows that in both case and control groups, there was an improvement in the average score of knowledge in dental and oral health from the pre test to the post test.

**Oral Hygiene Index Simplified (OHI-S)**

The examination of the dental and oral hygiene of the students of SMP Kertha Budaya Mas was

conducted with the index of OHI-S. Such examination was also conducted for two times for each examination which were before and after the interventions (for case group). For both case and control groups, the examination result of OHI-S is presented in the following Table:

**Table 6: OHI-S Overview before the Intervention**

Knowledge Criteria	Case		Control		Total	
	f	%	f	%	f	%
<b>Good</b>	17	27.4	18	30	35	28.7
<b>Average</b>	41	66.1	40	66.7	81	66.4
<b>Poor</b>	4	6.5	2	3.3	6	4.9
<b>Total</b>	62	100	60	100	122	100

Table 6 shows that before the intervention, there was 4 students (6.5%) who had the score of OHI-S with poor criteria in case group and only 17 students (27.4%) with OHI-S with good criteria. In

control group, there was 2 students (3.3%) who had the score of OHI-S with poor criteria and there was 18 students (30%) with OHI-S score with good criteria.

**Table 7: Overview of OHI-S After the Intervention**

Knowledge Criteria	Case		Control		Total	
	f	%	f	%	f	%
Good	60	96.8	18	30	78	64
Average	2	3.2	37	61.7	39	32
Poor	0	0	5	8.3	5	4
Total	62	100	60	100	122	100

Table 7 shows that after the intervention, there were no students with OHI-S score under poor criteria in case group and 60 students (96.8%) were with OHI-S score of good criteria. In control group, there were 5 students (8.3%) who had OHI-S score

with poor criteria and 18 students (30%) with OHI-S score with good criteria. The averages score of OHI-S for respective groups before and after the intervention are as in Table 8.

**Table 8: Average Score of OHI-S of SMP Kertha Budaya Mas Students Before and After the Interventions**

	Before	After
<b>Case</b>	1.9	0.6
<b>Control</b>	1.76	1.8

Table 8 shows that there was a reduction of average score of OHI-S in case group after the intervention which was from average criteria to become good criteria. The average score of OHI-S in control group, there was an improvement in the second measurement but remain at the average criteria.

### Overview of the Dental Caries

Data collection result on dental caries of the students of SMP Kertha Budaya Mas is presented in Table 9.

**Table 9: Percentage of Dental Caries Patients of Students of SMP Kertha Budaya Mas**

Dental Conditions	Case		Control		Total	
	f	%	f	%	f	%
Caries-Free	43	69.4	30	50	73	59.8
With caries	19	30.6	30	50	49	40.1
Total	62	100	60	100	122	100

Table 9 shows that more of the students of SMP Kertha Budaya Mas had the condition of caries-free which was at 59.8% and those with caries was at

40.1%. The average caries among the students of SMP Kertha Budaya Mas is presented in Table 10.

**Table 10: Average Caries among Students of SMP Kertha Budaya Mas**

	Case	Control	Total
Number of Caries	37	59	96
Number of Respondents	62	60	122
Average	0.6	0.98	0.79

Table 10 shows that the number of caries being found was an overall of 96 teeth so that the average number of caries among the students of SMP Kertha Budaya Mas is at 0.79.

**Bivariate Analysis**

The bivariate analysis being used in this study is t-test which aims to analyze the effectiveness of the UKGS optimization in the improvement of the level of dental and oral health among the students of SMP Kertha Budaya Mas. The indicators being

used in this study is the knowledge of the students about the dental and oral health and the score of OHI-S which were respectively measured twice (pre dan post test).

**Knowledge of the students about the dental and oral health**

The analysis on the knowledge of the students about the dental and oral health among the students of SMP Kertha Budaya Mas is as per Table 11.

**Table 11: The Distribution of The Average Score of Knowledge about the Dental and Oral Health Among the Students of SMP Kertha Budaya Mas**

Group	Pre test		Post test		p-Value
	mean	SD	mean	SD	
Case N = 62	5.4	1.47	8.2	0.95	0.000
Control N = 60	5.8	1.64	7.0	1.33	0.000

Table 11 shows that there was an improvement of the knowledge of the students of SMP Kertha Budaya Mas from pre-test to post test for both case and control groups with significance value of 0.000.

**Oral Hygiene Index Simplified**

The analysis of the knowledge of the students of SMP Kertha Budaya Mas is as per Table 12.

**Table 12: The Distribution of Average Score of OHI-S among Students of SMP Kertha Budaya Mas**

Group	Pre test		Post test		p-Value
	mean	SD	mean	SD	
Case N = 62	1.89	0.87	0.6	0.36	0.000
Control N = 60	1.76	0.83	1.8	0.85	0.074

Table 12 shows that there was no significant difference of average score of OHI-S of the students of SMP Kertha Budaya Mas from pre test to post test in case group which was with significance value of 0.000. In control group, it was with significance value of 0.074 (higher than 0.05).

**DISCUSSION**

Based on the research finding and statistical analysis, it shows that the knowledge about dental and oral health during pre-test (Table 3) of 122 students of SMP Kertha Budaya Mas, the knowledge score with failure criteria was 26.2%. (the most). Knowledge score with very good criteria was only at 10.7% (the least). Based on the

groups, it is found that in case group, the very good criteria was at only 8.1% and failure criteria at 32.3%, then in control group, the criteria of very good was only at 13.3%. While the most was with criteria of poor and failure which were respectively at 20%. In post test (Table 4), it is found that there was an percentage increase of the number of students of SMP Kertha Budaya Mas who scored in the criteria of very good knowledge which was at 55.7% (the most) and the knowledge score of failure was only at 4.9% and poor criteria at 0.82% (the least). In the case group, there was no more students of SMP Kertha Budaya Mas who had the knowledge score of average, poor and failure criteria, the majority was with very good criteria which was at 71%. In control group, the criteria of very good knowledge was up to 40% (the most) but there were still some with knowledge score with poor and failure criteria.

For the average score of the knowledge about dental and oral health in posttest, there was a good increase in both case and control groups. The increase in case group was from 5.4 to 8.2 while in control group was from 5.8 to 7.0 (Table 5). Bivariate analysis (Table 11) shows that there was meaningful improvement in both groups with significance value of 0.000 (lower than 0.05). This was caused by the fact both groups had already had the overview of the posttest so that they tried to search for the information related to the dental and oral health. Such information might have been got from various media such as posters being displayed in the school, booklet being provided in the library or other media such as radio and television. This statement is supported by Cangara (2005), radio and television are relatively effective in providing information to communities so that it is able to improve the knowledge of the community. These days, almost in every spare time, the time was dominated by watching television especially for the students during holidays in which it was predicted that more than 8 hours, the children watched television every day. Teachers become the source of information for the improvement of the knowledge of the targets. In the research activities, the teachers and staff of SMP Kertha Budaya Mas had already been given counseling on the dental and oral health so that there was a possibility of the knowledge transfer to the students. According to Department Of Health of Republic of Indonesia (2004), education and counseling on dental and oral

health can be done by sport teachers/ UKS teachers based on the prevailing curriculum.

Case group showed higher increase in average score of the knowledge on dental and oral health from 5.4 to 8.2. This might have been caused by the counseling and practices in group brushing teeth during the research period, especially during intervention. According to Notoatmodjo (2007), the knowledge can be influenced by various factors such as: experience, educational level, age, information frequency in the forms of training, seminar, counseling and others. Other opinions with regard to the benefits of counseling is also stated that counseling is an effort to change the behavior of someone, a group of people or community in such a way so that they have the ability and habit of healthy life in the dental and oral health (Department of Health RI, 1999). In the concept of dental and oral health in general, health counseling is defined as health educational activities which are done by dissemination of message and establishment of confidence so that the community members will not only be aware of, know, understand but also are willing and able to action on the recommendations related to the dental and oral health (Azwar. 2003).

The improvement of knowledge in dental and oral health in case group might have also been caused by the fact that in addition to counseling, there was also group teeth brushing activity. This is supported by the opinion by Warkatiri (1990) that for the improvement of knowledge and skill of someone can be done by improvement of learning process through new experiences or through learning by doing. According to Jost's theory, learning through more experiences regardless of the less time will be better than the learning frequency from less experience regardless of the longer time. The dental hygiene of the students of SMP Kertha Budaya Mas with OHI-S index in the first measurement (Table 6), it is found that the majority was with average criteria at 66.4% and the minority was with poor criteria at 4.9%. Based on the groups, it was found that in case group, the majority was with average criteria at 66.1% and the minority was with poor criteria at 6.5%. In control group, the majority was also with average criteria at 66.7% and the minority was with poor criteria at 3.3%. In the second measurement which was after the intervention for the case group, it was found an improvement in OHI-S with good criteria at 64%. In case group, there was



96.8% with good criteria and there was no more with poor criteria, while in control group, there was an improvement in OHI-S with poor criteria at 8.3%.

The average score of OHI-S among the students of SMP Kertha Budaya Mas for both for the case and control groups in the first measurement were at average criteria which was at 1.9 for the case group and at 1.76 for the control group. In the second measurement, after the intervention, especially, for the case group, it was found the reduction in the average score of OHI-S in case group to 0.6 (good criteria), while control group remained in average criteria with an average score of 1.8. The result of bivariate statistical analysis with t-test shows that there was a meaningful difference of OHI-S among the students of SMP Kertha Budaya Mas between the first and the second measurement of the case group with significance value of 0.000.

This indicated that the intervention being done in the forms of caries cleaning, counseling on dental and oral health and practice in group teeth brushing and teraphatic communication could reduce the average score of OHI-S among the students of SMP Kertha Budaya Mas. According to Puteri (2002), caries cleaning is one of the initiatives in improving the dental and oral hygiene because the score of OHI-S is the sum of Calculus Index and Debris Index so that after the caries cleaning (calculus), the OHI-S score will reduce. Furthermore, it is mentioned that Debris or plaque can be cleaned by effective teeth brushing. Counseling on dental and oral health which is followed by practice in group teeth brushing may have been practiced at homes by students so that this also becomes the factor in reducing the average score of OHI-S.

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## CONCLUSIONS AND SUGGESTIONS

Based on the research finding and discussion, the conclusions include the following:

- The average score of the knowledge on dental and oral health of the students of SMP Kertha Budaya Mas, Ubud before the UKGS Optimization was at 5.4 (poor criteria).
- The average score of the knowledge on dental and oral health of the students of SMP Kertha Budaya Mas, Ubud after the UKGS Optimization was at 8.2 (very good criteria).
- Average score of OHI-S of the students of SMP Kertha Budaya Mas, Ubud on dental and oral health before the UKGS Optimization was at 1.89 (average criteria)
- Average score of OHI-S of the students of SMP Kertha Budaya Mas, Ubud on dental and oral health after the UKGS Optimization was at 0.6 (kriteria baik).
- There was an significant improvement of knowledge on dental and oral health in control group and case group from the pre test to post tes.
- UKGS Optimization was effective in improving dental and oral health among the students of SMP Kertha Budaya Mas.

Based on this research finding, it is suggested that the Office of Health Department plan UKGS to be conducted by Community Health Center/Puskesmas which is to be in a comprehensive manner for promotive, preventive and simple curative plans and by implementation of referral system for students who need further care. The implementation of UKGS needs to involve school, medical officers and parents.

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