Journal of Health and Medical Sciences

Senjaya, Asep Arifin, Sirat, Ni Made, Wirata, I Nyoman, and Ratmini, Ni Ketut. (2021), OHIS Differences on Primary School Students in Relation to Little Dentist Training. In: *Journal of Health and Medical Sciences*, Vol.4, No.3, 1-7.

ISSN 2622-7258

DOI: 10.31014/aior.1994.04.03.170

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The Asian Institute of Research

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The Asian Institute of Research
Journal of Health and Medical Sciences
Vol.4, No.3, 2021: 1-7
ISSN 2622-7258

DOI: 10.31014/aior.1994.04.03.170

OHIS Differences on Primary School Students in Relation to Little Dentist Training

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Abstract
Dental healthcare is very important since dental and oral hygiene should be maintained. Statistics showed that more than 80% of children in developed and developing countries suffer from dental disease. This study aimed to see the safety of OHIS (Oral Hygiene Index Simplified) in primary school students who got and did not get little dentist cadre training in Bangli Regency in 2019. The study was done in an experimental design: pre and post-test with control design, which was conducted in August-September 2019. The sample in this study is 366 students. The difference in OHIS scores before and after treatment in the control group and treatment group was carried out by the bivariate Mann Whitney U Test. The results of the study showed that before dental health training was conducted, there were 54.3% of primary school students in the treatment group with good OHIS score criteria, and after the training was carried out as many as 98.4% of the students in the treatment group had a good OHIS. Additionally, prior to the training, 57.5% of the control group had fair OHIS criteria score. Then, after the training was carried out, 73.7% of the control group had good OHIS score. Hence, the study concluded that there was a significant difference in the OHIS of primary school students who got little doctor training prior to and after the training. Also, there was a significant difference in the OHIS of the students who did not get such treatment before and after the training.

Keywords: Oral Hygiene Index, Simplified (OHI-S), Primary School Students, Little Dentists

1. Introduction

Dental and oral disease is experienced almost by everyone. Statistics showed that more than 80% of children in developed and developing countries suffer from dental disease. Caries and periodontal disease are the most common diseases, and represent a major public health problem, due to their prevalence and incidence everywhere in the world. Dental caries was a dental and oral disease that affects 90% of school-age children. Caries are also a primary pathological cause of dental avulsion in children, which occurs due to the lack of attention of the child

and parents' knowledge. Caries is a well-known disease throughout the world, and has been found thousands of years BC on mummified teeth in Pharao, Ancient Egypt.

In Indonesia, there was an increase in the prevalence of dental caries in the population from 43.4% in 2007 to 53.2% in 2013. Basic Health Research Data (Riskesdas) of Bali in 2013 showed that people having dental and oral problems in the last 12 months in Bali were 24.0% and the highest was in Bangli Regency, 41.5%(Ministry of Health of Indonesia, 2013). The 2018 health research data recorded the proportion of dental and oral problems in Indonesia of 57.6%(Ministry of Health of Indonesia, 2018).

There have been many studies that revealed that dental caries is related to student achievement (Suwelo, 1992) (4). The impact of dental caries was that children had difficulty in eating due to discomfort when chewing food. Then, the children got weight loss because they are not able to eat comfortably, felt the pain due to cavities which lead to disruption of the learning process at school as well as the discolouration of teeth from clean to black (Puspitoningsih et al., 2015). There was a significant relationship between dental-oral health status and student achievement at SD Negeri Sangga Beru, Gunung Merah District, Aceh Singkil, with a p-value = 0.009. The dental and oral health status in this study was measured by the caries index, namely the DMF-T index (Nurhamidah et al., 2016).

Most dental and oral health problems are preventable. There are many ways to reduce and prevent dental and oral diseases, including self-care (Putri et al., 2011). Taking care of dental health is very important because dental and oral hygiene must be maintained. Brushing teeth is the first thing to do to remove plaque. The purpose of cleaning the teeth is to remove the plaque. Plaque can appear at any time, although teeth are already brushed. Plaque is a thin, colorless layer containing many bacteria and adheres to the tooth surface. According to Green and Vermillion, there is an index to measure oral hygiene, namely the Oral Hygiene Index Simplified (OHI-S). This OHIS measurement is carried out on six surfaces of the six specific permanent teeth that had fully grown. The OHIS score is the sum of the debris index and calculus index. The 2018 health research data showed that the percentage of people aged 3 years old and over who brush their teeth every day in Bali is 94.7%, this data is the same as the national data. However, there were only 2.81% of those brushing their teeth properly, meanwhile, it was 5.4% in Bali, and the highest was South Sulawesi with 8.8% (Ministry of Health of Indonesia, 2018). In Bangli, the population aged 10 years old and over who brushed their teeth every day was 86.5% and only 3.2% had the proper behaviour of tooth brushing (Ministry of Health of Indonesia, 2013). The result of Mulyani's research on Bayunggede Kintamani elementary school students, Bangli in 2017, showed that only 11.6% or 0.12 of students had OHIS score with good criteria.

A quasi-experimental study on "The effectiveness of little dentist training to improve dental and oral hygiene for students at SDN 1 Kerobokan, Badung Regency in 2017" conducted by Sirat, Sumerti, and Senjaya, obtained results that there were differences in OHIS scores before and after the little dentist cadre training in Primary School 1 of Kerobokan Badung Regency, with a p-value= 0,000. This study concluded that the training of little dentist cadre was effective in improving the dental and oral hygiene of students at SDN 1 Kerobokan, District of Badung (Sirat et al., 2019).

The objective of this research was to determine the differences in OHIS of the primary school students who received and did not receive the little dentist training in the district of Bangli in 2019.

2. Method

2.1 Study Design

The study was conducted with an experimental design: pre and post-test using control design. The research was carried out at Public Primary School in the district of Bangli, Bangli Regency, from August to September 2019.

2.2 Population of Study and Sample Size

The population in this study were all students of grades 4 and 5 in the district of Bangli in 2019.

Sample size calculation and sampling method: The minimum sample size for each group is 166 people. Also, the sample was added as much as 10%, that is 17 (rounding). Therefore, the number of samples of the treatment group and the control group, each has 183 students. Then, the total sample is 366 students (Sastroasmoro, 1995).

2.3 Statistical Analysis Method

The data were analyzed using univariate statistics in the form of frequency and percentage. The difference in OHIS scores before and after the training in each group (control or treatment) was carried out using the Wilcoxon bivariate test. Meanwhile, the difference in OHIS scores between the control group and the treatment group after the training was done by using the Mann-Whitney Test.

Regarding reliability and validity of instruments, in order to determine the effectiveness of small dentist training in improving knowledge of dental and oral health, a paired T-test pre and post-test values were conducted. Sig. value less than 0.05 proved to be differences of OHIS before and after the training of little dentist besides showing effectiveness to improve dental and oral hygiene.

3. Results

The results of OHIS examination to the students prior to the little dentist cadre training in the 5 primary schools of the treatment group is shown in Table 1.

Table 1: Students' *OHIS* Prior to the Little Dentist Cadre Training in 5 Primary Schools of the Treatment Group

OHIS	Frequency	Percentage (%)
Poor	3	1,6
Fair	82	44,1
Good	101	54,3
Total	186	100

Table 1 showed that before the training was conducted, 54.3% of primary school students in the treatment group had good OHIS scores. The result of OHIS examination to the students after the little dentist cadre training in the 5 primary schools of the treatment group is presented as follows.

Table 2: Students' OHIS after the Little Dentist Cadre Training in 5 Primary Schools of the Treatment Group

OHIS	Frequency	Percentage (%)
Poor	0	0
Fair	3	1,6
Good	183	98,4
Total	186	100

Table 2 showed that after the training was conducted, 98.4% of students in the treatment group had good OHIS criteria.

Furthermore, a different test was conducted on the OHIS score of the primary school students in the treatment group before and after the training, using the Wilcoxon Signed Ranks Test. The test results showed the sig value of 0.000. The results of OHIS examination on students prior to the little dentist training in 5 primary schools of the control group are shown in table 3 below.

Table 3: Students' OHIS Prior to the Little Dentist Cadre Training in 5 Primary Schools of the Control Group

OHIS	Frequency	Percentage (%)
Poor	5	2,7
Fair	107	57,5
Good	74	39,8
Total	186	100

Table 3 showed that 57.5% of students in the control group had fair OHIS scores before the training was conducted. The results of OHIS examination on students after the little dentist training in 5 primary schools of the control group are in table 4 as follows.

Table 4: Students' OHIS After the Little Dentist Cadre Training in 5 Primary Schools of the Control Group

OHIS	Frequency	Percentage (%)
Poor	3	1,6
Fair	46	24,7
Good	137	73,7
Total	186	100

Table 4 showed that after the training of little dentists conducted, 73.7% of students in the control group had good OHIS scores.

Then, a different test was carried out on the OHIS score of the control group students before and after the dentist training, using the Wilcoxon Signed Ranks Test. The test resulted in the sig value of 0.000.

In accordance with tables 1, 2, 3 and 4, there was an increase in the dental and oral hygiene of students both in the treatment and control group. To determine the effectiveness of little dentist training, it is necessary to know whether there is a difference in OHIS among primary school students who experienced and did not experienced such training in the district of Bangli in 2019. The difference of after-training-OHIS score of primary school students who experienced and did not experience the little dentist training in Bangli Regency in 2019 was tested by the Mann-Whitney Test. The test results showed the sig value of 0.000.

The little dentists were selected from grade 4 and 5 students in the treatment group, each has 10 little dentists so that there are 50 students as little dentists. The little dentist was appointed according to the criteria specified in a book entitled Pedoman Pelatihan Dokter Gigi Kecil. They were not included in the sample of the present study. The knowledge of the little dentists about dental and oral healthcare was tested using the basic questions, as many as 15 questions (taken from the book aforesaid). Table 5 below is the pre and post-test results of dental health knowledge of those as little dentists.

Table 5: Pre and Post Test Score of the Little Dentists

	Score		
Test	Minimum	Maximum	Mean (Average)
Pre	0	73	50,42
Post	46	100	77,50

According to table 5, there were still students who got a score of 46 through the training which had been conducted. Generally, the average score increased from 50.42 to 77.50. To determine the effectiveness of little dentist cadre training in improving the knowledge of dental and oral health, a paired T-test of pre and post-test scores was carried out. It resulted in the sig value of 0.000.

4. Discussion

Table 1 above showed that before the training of little dentist was carried out, 54.3% or 101 primary school students in the treatment group had good OHIS score. Besides, table 3 showed that 39.8% or 74 students in the control group had good OHIS score before the training was conducted. This number is much better than the results of previous research in 2017 in Bayunggede Kintamani, Bangli, showing the proportion of dental and oral hygiene for grade IV and V students with good criteria of 12%. This condition is possible because Banyugede is not located in Bangli District so that factors such as environmental and limited health services also determine. The health status of a person or society is influenced by four factors, namely: environment, behavior, heredity, and health services (Cockerham et al.2017).

Table 2 above showed that 98.4% or 183 SDN students in the treatment group had good OHIS score, whereas the data before the training was conducted showed 54.3% or 101 SDN students in the treatment group had good OHIS score. There was an increase from 54.3% to 98.4%. The Wilcoxon test resulted in the sig value of 0.000. This value is less than 0.05 meaning that there is a significant difference between the OHIS score before and after the training of little dentists in the treatment group. The students who were the samples of this study were given toothbrushes, toothpaste and dental hygiene books. Then, the little dentists provide counselling and information to them once a week. The results of this study are in line with the research conducted on primary school students in grades IV, V, and VI, as there were 64% of respondents had good oral hygiene score, as measured by Oral Hygiene Index simplified (OHIS) (Gopdianto et al.,2015). Good dental hygiene is because the respondents maintain their teeth cleanliness. Also, the information about dental healthcare is obtained from counselling and advertising media.

The factors affecting a person's knowledge are: education, occupation, age, interests, experience, and access to information (Karasneh and Al-zoubi, 2018). Counselling carried out by little dentists play an important role in improving students' knowledge of tooth brushing, which then encourages them to behave. A person's behavior is influenced by three factors, namely predisposing factors, enabling factors, and reinforcing factors. Predisposing factors include education, knowledge, attitudes, and perceptions. Enabling factors includes the availability of facilities and time, and reinforcing factors include regulations, attitudes and behavior of either role models or parents (Morgan et al.,, 2019).

Table 4 noted that after training of little dentists as many as 73.7% or 137 primary school students in the control group had good OHIS score. Previously, only 39.8% or 74 students in the control group had good OHIS score. The Wilcoxon test showed the sig value of 0,000. This value is less than 0.05 which means that there is a significant difference between the OHIS score before and the OHIS score after the training was applied to the control group. Although the students were not given counselling and information by little dentists, the control group got the same facilities as the treatment group did, such as toothbrushes, toothpaste, and dental hygiene books. Therefore, the students can obtain information and knowledge about maintaining dental hygiene through the books about the health that are distributed. At the time of the assessment, the researchers also briefly explained how the study will undergo to the school principal and physical education teacher. Hence, the principal and physical health teacher are the ones who perhaps act as reinforcing factors also motivate students to brush their teeth. As a result, the number of students who get good OHIS score in the control group increases.

The distribution of toothbrush and toothpaste in both groups plays a role as a supporting factor so that it is expected the students can take it into action by brushing their teeth. Taking care of dental health is very important so that dental and oral hygiene should be maintained. Brushing teeth is the main action to remove plaque (Herrera et al., 2013;Sluijs, et al.,2018). Plaque contributes to the pathogenicity of caries and periodontal disease. Therefore, the purpose of tooth brushing is to remove plaque itself. Plaque can form at any time, even after the teeth are already brushed. Plaque is a thin, colorless layer containing many bacteria and adheres to the tooth surface (Huang, et al., 2011).

Table 1 and Table 2 as well as Table 3 and Table 4, showed an increase in the number of students having good oral hygiene criteria. According to the Wilcoxon test results in both groups, the sig value showed 0.000. This means that there is a difference in the OHIS score before and after the little dentist training. Besides each group showed significant differences, there are also differences in the OHIS score of primary school students who get and did not get the little dentist training in Bangli Regency in 2019 after such training was done, which was then tested with the Mann-Whitney Test. The test showed the sig value of 0.000. This result indicates the increase in the number of students in dental and oral hygiene into a good criterion, is more significant in the group who got the treatment in form of little dentist training. The results showed that there was a difference in OHIS scores before and after the training of little dentists at Primary School 1 Kerobokan in Badung Regency, with a p-value 0.000. This study thus concluded that the training of little dentists was effective to escalate dental and oral hygiene for students at SDN 1 Kerobokan, Badung Regency in 2017 (Senjaya, et al., 2019).

The effectiveness of little dentist training in increasing the knowledge of dental and oral hygiene was tested by using a paired T-test as well as the scores in both pre and posttest. The result showed sig value of 0,000 which

means less than 0.05. Hence, the training of little dentist is effective to widen the knowledge and understanding towards dental and oral hygiene for those who have a role as little dentists at primary schools in the district of Bangli in 2019. Training is a form of education, which can increase one's knowledge. The factors that influence a person's knowledge are education, occupation, age, interests, experience, as well as access to information (Harackiewicz, et al., 2018).

5. Conclusion

Our work has led us to conclude that there is a significant difference in the OHIS of primary school students who got the little dentist training in the district of Bangli in 2019 before and after training was conducted. Besides, there is a significant difference in the OHIS of elementary school students who did not get the training in Bangli in 2019 before and after such training was conducted. In additions, differences in the OHIS among primary school students who experienced and did not experienced the little dentist training in Bangli in 2019 occurs. The training of little dentist is effective to improve the dental and oral hygiene of primary school students in the district of Bangli District. This approach has the potential features to regularly conduct training of little dentists and monitor as well as evaluate its implementation. In addition, physical education teachers can motivate students to maintain dental and oral hygiene by brushing their teeth correctly.

Acknowledgments

The research team would like to express gratitude to the Director Politeknik Kesehatan Kemenkes Denpasar and all the staffs, who have provided support for the implementation of this research.

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