

# The effect of peer support education on dental caries prevention behavior in school age children at age 10-11 years old.

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Research Report

**The effect of peer support education on dental caries prevention behavior in school age children at age 10-11 years old**

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**ABSTRACT**

**Background:** Dental caries is an infectious disease and it is preceded by a progressive demineralization in hard tissue surface of the crown. Dental caries is one of the most common diseases that experienced by school-age children. Health education on the prevention of dental caries and peer support education method can improve the behavior of caries prevention. **Purpose:** This study aimed to determine the effect of peer support education on dental caries prevention behavior in children of school age. **Method:** This study is a quasi-experimental design with pretest and posttest control group design. The sampling technique is simple random sampling. The study was conducted in SDN Bandulan 3 Sukun Malang with 35 respondents (experimental group) and in SDN Bandulan 2 Sukun Malang with 35 respondents (control group). The experimental group was treated using peer support education while the control group was given health education with the lecture method. The data of student's dental caries prevention behavior (knowledge and attitudes) is obtained through a questionnaire. Data were analyzed using paired t-test and independent t-tests with significant p value <0.05. **Result:** The results showed the average score of knowledge in the experimental group at 20.48 and knowledge among respondents in the control group amounted to 18.02, and the average total score of the attitude of the respondents in the experimental group at 20.08 and in control group of 17.77. Results of independent t test analysis test that there is a significant difference in the average scores of knowledge and attitudes of respondents in the experimental group and the control group (p value 0.000, <0.05). **Conclusion:** Health education with peer support education method is effective in improving dental caries prevention behavior in children at school age.

**Keywords:** peer support education; school age children; dental caries prevention behavior

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**INTRODUCTION**

Dental caries are existed around the world without looking at age, race or status. Research in European countries, US and Asia, including Indonesia, showed that 80-95% of children under 18 years old are suffered of dental caries. World-widely, 90% of school age children ever suffered of dental caries.<sup>1</sup> Data from the Ministry of Health in 2010 showed that the prevalence of caries in Indonesia reaches 60-80% of the population, and at the 6<sup>th</sup> ranks as the most disease that suffer.<sup>1</sup> In Indonesia there is an increase in the prevalence of dental caries in 2007, from 43.4% to 53.2% in 2013. That means in Indonesia

there are approximately 93,998,727 people who suffer dental caries.<sup>1</sup>

One way to prevent caries through health education with the current methods is peer support education. The method of prevention includes primary prevention, secondary, and tertiary. One of the strategies is community empowerment. Kreisberg describe that empowerment is a process of formation of knowledge and skills that can enhance one's mastery over the decisions that affect their lives. Community empowerment at schools, in an effort to control caries disease can be carried out by empowering school students in the form of empowering peer educators approach peer support education. School-age children

usually start a lot of activity outside the home, at school and play with peers outside the home. This condition leads to school-age children begin to have a close emotional relationship with a peer group than family.<sup>2</sup>

Peer support education can be identified as sharing experiences and learn from a group of people who have similarities such as age, gender, culture or a place to stay that is effective in improving knowledge, attitudes and positive behavior.<sup>3</sup> Peer support education conducted in school-age children more effectively done in school compared to other institutions, because the school is well organized, easy to reach the target group because legally the child must attend school and do an evaluation.

The results of a review of research by Mellanby et al showed that health education in school age children through peer support education is more effective than the education that directed to adult.<sup>4</sup> The same fact was also shown from the results of research on the influence of Biological peer support education on the behavior of children of school age in determining a healthy snack in Lhokseumawe in 2009. The results showed that an increase in behaviors (knowledge, attitudes and skills) are significant in children of school age in determining a healthy snack in the experimental group after a given peer support education, and there are differences in the behavior of children of school age in determining a more healthy snacks both in the experimental group compared with the control group after given by peer support education.<sup>5</sup>

Health education to school-age children typically use the lecture method with presenters who are experts in their field that tends to make passive students, just listening to what the presenters and lack of feedback between the speakers and the students were given materials, so in this study used a control group health education lecture method. Based on the phenomenon, which is supported by the results of research on peer support education, it is necessary to study how the effect of peer support education on dental caries prevention behavior in school age children.

## MATERIALS AND METHODS

This study is a quasi-experimental design with pretest and posttest control group design. The sampling technique is simple random sampling. The study used two groups: the experimental group received peer support education treatment and control groups were treated with a health education lecture method. The location of this study in SDN Bandulan 3 Sukun Malang for the experimental group and SDN Bandulan 2 Sukun Malang for the control group.

Respondents in this study is 70 students (35 respondents for the experimental group and 35 respondents to the control group) with the inclusion criteria: 1) registered officially in the schools studied; 2) school-age children aged 10-11 years; 3) following the research activities of the initial stage to the final stage; 4) obtain consent from the parents to get involved as the respondents of this study.

Research on the experimental group begins with the selection of 8 students as peer educator candidates that chosen directly by the teacher. Then they got training to increase the prevention of dental caries for 4 days, so that they can forward the information on peer support education to participants in a small-group (peer group) members who have been determined at random by teacher and researchers, each group contains 4-5 children. Peer support education process hold a total of 10 sessions of meetings for approximately 4 weeks with several method such discussions, demonstrations, singing and games, whereas in the control group received health counseling methods lectures in twice meeting by a dentist. Data were collected using a questionnaire of dental caries prevention behavior that previously consulted by a dentist, lecturer of psychology, and lecturer of Elementary School Education. According to the experts the questionnaire was appropriate for school age children. Questionnaire in this study consists of two aspects, namely the knowledge and attitude of prevention of dental caries. Measurements of behavior at pretest (before treatment) and one week after the treatment are completed (post test). Data analysis using SPSS program with paired t test and independent t test with significance level  $p < 0.05$ .

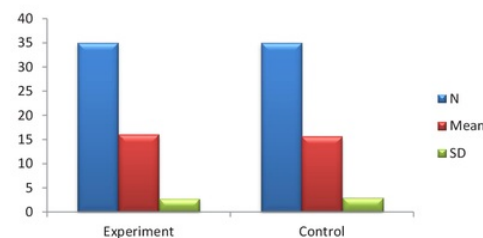
## RESULTS

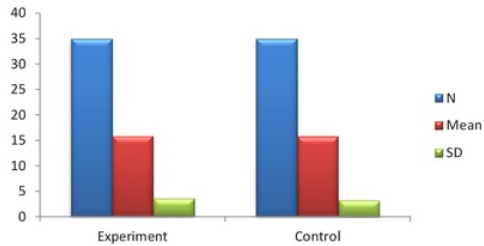
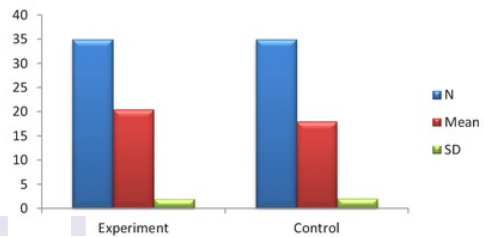
Table 1 shows that the knowledge of the respondent before the treatment between the experimental and the control group do not have any differences with  $p = 0.626$  ( $p > 0.05$ ). Similarly Table 2 shows the attitude of the respondent before the treatment between the experimental and the control group is not different  $p = 0.918$  ( $p > 0.05$ ).

The results in Table 3 shown that average score of knowledge of respondents on experimental group before peer support education is 16.11, and score knowledge after peer support education was conducted 20.48. There is a difference in the average score it is 4.37.

The average score of attitude of respondents on experimental group before peer support education is 15.97, and score attitude after peer support education was conducted 20.08. There is a difference in the average score

**Table 1.** Results of test behavior analysis on knowledge of the experimental and control group before the treatment (Pre Test) with  $p = 0.626$  ( $p > 0.05$ )



**Table 2.** Results of test behavior analysis on attitude of the experimental and control group before the treatment (Pre Test) with  $p=0.918$  ( $p>0.05$ )**Table 4.** Results of test behavior analysis of knowledge between the experimental and the control group after the treatment (Post Test) with  $p=0.000$  ( $p>0.05$ )

of 4.11 attitude. Based on the results of further analysis it can be concluded that there is a meaningful difference in the knowledge and attitude of the respondent after the given peer support education better than before given peer support education on experimental group  $p = 0.000$  ( $p<0.05$ ).

The mean score in the knowledge of control group before treatment is 15.77 and after treatment is 18.02. There is a difference in the mean score for knowledge amounted to 2.25. Based on the results of further analysis it can be concluded that there is a difference in the knowledge of the respondents after treatment is better than before  $p=0.000$  ( $p<0.05$ ).

The same conditions from the results of the analysis of the mean score of attitudes in the control group before treatment is 15.88 and score attitude after treatment is 17.77. There is a difference in the mean score it is 1.89.

Based on the results of further analysis in Table 4 and 5 it can be inferred that there is a meaningful difference to the mean score of the knowledge and attitude of respondents on experimental group and control group after treatment  $p=0.000$  ( $p<0.05$ ).

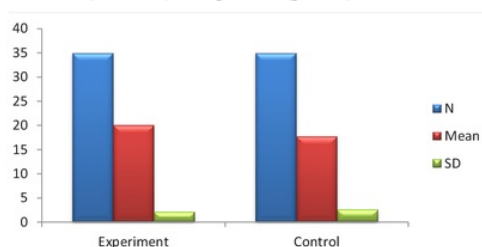
After further analyzed it can be inferred that there is a meaningful difference to the average score of respondents knowledge and attitude before and after the given peer support education between experimental and control group  $p=0.000$  ( $p<0.05$ ).

**Table 3.** Results of analysis of the difference in behavior (knowledge and attitudes) before and after the treatment of the experimental and control group

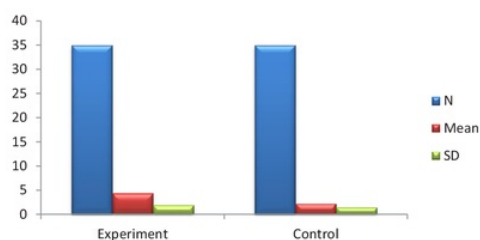
Group	Variable	n	Mean	SD	p	
Experiment	Knowledge :					
	Before	35	16.11	2.78	0.000	
	After	35	20.48	2.00		
	Difference	-	4.37	0.78		
	Experiment	Attitude :				
		Before	35	15.97	3.60	0.000
After		35	20.08	2.14		
Difference	-	4.11	1.46			
Control	Knowledge :					
	Before	35	15.77	3.00	0.000	
	After	35	18.02	2.12		
	Difference	-	2.25	0.88		
	Control	Attitude :				
		Before	35	15.88	3.30	0.000
After		35	17.77	2.63		
Difference	-	1.89	0.67			

Note: \*significant on  $p<0.05$

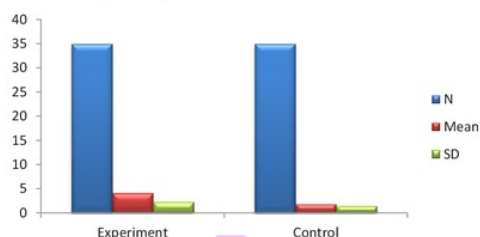
**Table 5.** Results of test behavior analysis of attitude between the experimental and the control group after the treatment (Post Test) with  $p=0.000$  ( $p>0.05$ )



**Table 6.** Results of the analysis of the difference in behavior of knowledge between the experimental and the control group after the treatment (Post Test) with  $p=0.000$  ( $p<0.05$ )



**Table 7.** Results of the analysis of the difference in behavior of attitudes between the experimental and the control group after the treatment (Post Test) with  $p=0.000$  ( $p<0.05$ )



## DISCUSSION

The results of the analysis show that there is an increase in the average score a meaningful knowledge between before and after peer support education in experimental group with average 16.11 (before treatment) become 20.48 (after treatment) and  $p=0.000$  ( $p<0.05$ ). In the analysis of control group show that there is an increase in the average score of knowledge before and after the research with an average 15.77 (before treatment) become 18.02 (after treatment) and  $p=0.000$  ( $p<0.05$ ).

The research results obtained in accordance with research done earlier by Hayati that indicates an increase in the average score of knowledge about healthy snacks that are meaningful in the group that given peer support education  $p=0.000$  ( $p<0.05$ ).<sup>3</sup> Bleeker also describe that the results of the meta-analysis of the abuse of drugs, show improvement in aspects meaningful knowledge at 143 people adolescents who participate in peer support education.<sup>7</sup> Peer support education is one approach that is often used to change knowledge on the level of group.<sup>8</sup> Changes on knowledge that occur are influenced by the communicator and the content of the message. A communicator of messages that originate from the group itself has a strong influence in attracting the attention of a group of.<sup>3</sup> If the communicator is an adult will be able to give a gap in the use of language, terms, and the speech could hinder the understanding of the meaning of the message and the cause of the condition is less interactive learning. This opinion also supported the Zioleny *et al.*<sup>9</sup> stated that the utilization of media such as videos and popular culture's approach through the game and sing in the implementation of the peer support education sessions can increase interest and better absorption material in children.

Increased knowledge in the control group is certainly influenced by health education given by dentists in the control group twice. The granting of information on prevention of dental caries by the method of lecturing in the control group will enhance the knowledge in the control group on the prevention of dental caries. The results of this research has a similarity with another assumption as expressed in the WHO in Notoatmodjo that one of the strategies for behavior change is the giving of information to enhance the knowledge that can rise the awareness so that in the end people will behave in accordance with his knowledge. One of the method is by giving information through outreach. The increase in the average score a meaningful stance in experimental group was influenced by the presence of educator in the form of sharing, play with the media of video and game material. Other similar research conducted by Ergene *et al.*<sup>10</sup> that aims to see the change of knowledge and attitude of students in Turkey. The study also showed the same results, in the form of a meaningful increase in positive attitudes in the prevention of HIV/AIDS on peer support education.

Behavioral changing that occurred in this study, obtained as a result of change of knowledge school age children from peer support education process. Peer support education process conducted during the 4-week increase contacts or interactions that continuously between one and the other in peer group members particularly in the school environment, which ultimately affects the score of school-aged children. Score changing that is affected by the grant of a peer support education provides learning experiences among one another on a group of school age children. Attitudes are shaped by a specific value can be learned gradually, perceived as a way and the response shown to family, peers, and social influence.<sup>11</sup>

Improvement of the attitude in the control group is influenced by outreach health care that provided by the dentist in the control group twice. The information on prevention of dental caries by the method of lecturing in the control group will improve the attitude in the control group on the prevention of dental caries. Notoatmodjo also stated that a change in attitude is basically influenced by the factors of the knowledge and belief/trust that is derived from the results of sensing, one of which is obtained through the education or learning process.<sup>6</sup> The difference in score on knowledge after the peer support education between experiment and control groups influenced the existence of peer support education. McDonald et al stated that based on a review of research has shown that peer support education is effective in improving knowledge.<sup>3</sup> Knowledge is a process of thinking, remembering and recognizing knowledge that can enhance the capabilities and skills of a person.<sup>11</sup>

Peer support education is effective in increasing knowledge. Peer support education is a method of empowerment group, so in school-aged children who have the new system in the form of peers also have the same interest with the teenagers, if the information provided is derived from their peer group.<sup>3</sup> It is also supported by the opinion of Wawan and Dewi that increased a person's knowledge can be influenced by the characteristics of the physical and non-physical environment such as family, peers, interacting with the child spontaneously and continuously. Characteristics of non physical form of peer support education treatment gets experiments such interact and affect each other between the members of the group, resulting in the change of knowledge.<sup>12</sup> On the peer support education process in this study went success, peers educator and children who were given education in a healthy state and calm in the peer support education process. Peers educator very motivated in providing material to participants of dental caries prevention, children who were given education give their attention to peers educator in providing the material to the prevention of dental caries.

In the control group given health counseling of specialists, namely dentists tend to make students look passive such only listening to what was said by the presenters and the lack of feedback between presenters and students. Based on the results of the research which has been described and some of the concepts that support, stating there is a meaningful difference in knowledge of school age children having given peer support education between the experimental and the control group. Significant differences in average score between the control group and the experimental group after treatment influenced by the process of improving knowledge and value through peer support education on experiments group. This is in line with the opinion of Usoro that stating that a change in attitude can be obtained from the learning process continuously and can vary.<sup>13</sup>

Peer support education is an approach to give health information through peer groups, that sometimes can be

more successful than education through professional, due to members in a group of peers influence each other and interacting with a powerful.<sup>7</sup> Peer support education in this research can take place interactively so that it can increase the interest of the group in following the education process. This is demonstrated by the increase of the peer group members outside the group who researched after a peer support education sessions running. The increased interest and consistency of school age children in the following peer support education on this research, pointed out that way and the message appealing to school-aged children. This condition also occurs on the research that shows Zok Garcia and an increase in positive attitudes towards the importance of making healthy food choices in children in the community. This research also proves the existence of an increased participation of the members of the group from 35% to 50%, the increase in children that become educator was from 2 to 35 people. This condition caused by the presence of interaction and the influence of peer group members who previously have been following education to other peers.<sup>14</sup>

Peer support education about prevention of dental caries by peers educator can take place in accordance with the ordinance, the culture and habits of school-aged children, making it easier in acceptance and understanding of dental caries prevention information provided. Dental caries prevention information that given by peers educator, considered it a meaningful and important to be accepted and understood by members of the group, thereby increasing the attachment between the members of the group responsible for the increases in knowledge and understanding of the peer group. The results of the research and concepts that have been described there is a meaningful difference expressed knowledge of school-aged children between the experimental and control group before and after the given peer support education.

The results of the analysis in this study also shows that there is a difference between the average total score of attitudes before and after peer support education between the experimental and the control group with  $p=0.000$  ( $p<0.05$ ). The results of this research are aligned with the results of research conducted by Dianita<sup>15</sup> that there is an increase in clean and healthy living behaviors in school-aged children after peer support education done. Behavioral changing on this research, it is a success that gained from the implementation of the peer support education is done with various methods and media by using media such as videos, games, pictures and guess which are considered relevant to the development of school-aged children. In addition the implementation of peer support education in the form of structured encounter sessions in schools makes it easy to support changes in the skills of school age children due to remind each other, teach and support each other between group members. This suggests that peer support education session conducted at the school is the right choice, because in addition to be able to reach a large number of peer groups target school-aged children, the relationship of the

child became very closely with the school environment especially peers.<sup>7</sup> The same opinion also showed by Stanhope and Lancaster that school age children in daily is a lot to learn and play with peers at school and going on a few things meaningful social interaction processes of school age children with peers. First children's ability to provide increasing appreciation of different views from my peers. The views of the different school age children about the prevention of dental caries can be facilitated and influenced by peers educator as a new information, in which group members can receive it without forced. Second, the increasing sensitivity of school-aged children against the rules and the pressure from the peer group. Peer support education can increase the motivation of children to apply the same motivation as peer educator.<sup>16</sup>

The results of this study showed that there is a significant difference in behavior (knowledge and attitude) of school age children before and after peer support education between the experimental and the control group. It concluded that health education with peer support education method is more effective in improving dental caries prevention behavior in school age children rather than health counseling with lectures method.

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