



Implementation of Dental Health Education to The Deaf Students of SLB-B Kiaracondong and MuhammadiyahSukagalih Bandung

Denden Ridwan Chaerudin¹, and Eliza Herijulianti²

¹Department of Dental Hygiene, Poltekkes Kemenkes Bandung. Jalan Prof. Eyckman No. 40 Bandung, Indonesia. ZIP code 40161

Email : dendenchaerudin@gmail.com

Abstract. **Background :** Lack of knowledge of oral and dental health for the deaf, resulting in lower dental and oral hygiene values compared to normal students. This leads to their susceptibility to dental and mouth diseases. An effort to improve oral hygiene of hearing impaired children is providing dental health training to teachers.

Methods : The purpose of this activity is to improve the knowledge and skills of deaf children about oral and dental health through their teachers. Targets of training are 8 teachers and 38 children with hearing impairment. This activity contains of training, producing 5 pieces of interactive CDs with the theme of Dental Health Education, audio sounding interactive test that has been held on students in the two SLB-B and making of Dental Health Modul which is then translate in sign language for deaf children.

Results : The result of the training in both SLB-B showed an increase in knowledge aspect in SLB-B Muhammadiyah from 57,5% before training to 70,5% after training, and from 45,8% to 70,8% in SLB-B Sukapura. The result of an interactive CD test for students showed that the highest score in SLB-B Muhammadiyah was 73,3%.

Conclusion : The brushing teeth skill in students with hearing impairment in both school after being given education by the teachers showed the children become skilled in brushing teeth.

Introduction

Dental and oral disease is a disease that is very commonly found in the community. Both diseases attack hard tissue (caries) and supporting tissues (periodontal disease) and can attack at any age¹.

Caries prevalence, especially in school-age children, is quite high, even showing an increase of 2.5%. The high prevalence of caries, 42.6% is experienced by children under the age of 12 years. so that is a problem that must be considered properly. Based on the results of Riskesdas, the DMF-T index in the 12-year-old school age group was 1.3. With their limitations, special needs children, in this case deaf, will be more vulnerable to dental and oral diseases so that dental health problems in special needs children, should be handled more seriously. Based on the results of the study, it was explained that people with disabilities had high rates of tooth decay and low oral hygiene compared to normal

people. The results of research on dental and oral hygiene in deaf children revealed a high index of Oral Hygiene Simple Index (OHI-S) on average children aged 11-12 which was 2.8 and 2.5 at the ages 14-16 years compared to normal children. The value of DMF-T is higher compared to children who are not deaf. The higher prevalence of caries and tooth support tissue due to low value of dental and oral hygiene in deaf children, because knowledge about dental health is still limited so they have not realized the importance of maintaining dental health. This situation is reflected in daily dental and oral health maintenance behaviors. Based on the results of Riskesdas (2013), community behavior in terms of brushing teeth, most people (76.6%) brush their teeth in the morning or evening bath, and only 2.6% brush their teeth properly and correctly¹.

Preventing caries and tooth supporting tissue disease in deaf children is a serious problem. A series of caries prevention and periodontal

diseases should be applied to people with hearing impairment as well as other healthy humans⁴.

Attempts to increase self-awareness of deaf children are carried out by learning in the classroom by the teacher. There are several types of learning principles. Deaf children learn primarily through their senses of vision because these children experience hearing organ disorders (lack of hearing or even deafness) so they use their sense of sight more, they have a high visual capturepower⁵.

Referring to learning pattern in deaf children using visual senses, research conducted by Chaerudin and Hedyati (2013) on 86 students at Cicendo SLB-B, SLB-B Sukapura and SLB-B Kiaracondong Bandung, who were treated in the form of learning using 2 media in the form of visual film media and jaw model media. The results showed that there were significant differences in oral hygiene between before and after learning, respectively in the group using visual film media ($p = 0.00$) and for the jaw model group it was not significant ($p = 0.343$). The results of data analysis with independent t-test showed that there were differences in changes in the oral hygiene index before and after learning between the two groups of samples ($p = 0.00$). As a conclusion from the study, when taught how to brush teeth using visual film media and jaw models, the dental and oral hygiene scores of the deaf students were improved, but when they wanted to know which media were more effective, the results showed that there were significant differences between these two media. This means that visual film media can be applied in carrying out tooth brushing learning for deaf children⁶.

Learning to brush teeth using visual film media can be taught classically in the classroom by teaching teachers personally who have received training in dental health education. Associated with the dental and oral health conditions of SLB-B students in Bandung, there are several priority problems as follows: 1) lack of student knowledge about dental health. 2) lack of teacher's ability to direct students in maintaining dental health and 3) the lack of dental health facilities and infrastructure, one of which is dental health teaching aids⁶.

To overcome the problems that exist in the SLB-B, the Bandung Polytechnic Dental Nursing Department, which is an educational institution that graduates professional dental nurses, where one of the activities is implementing Tri Dharma Perguruan Tinggi in the form of community service. Community service activities planned to be carried out.

Method

The community service method used is training with lecture and practice methods. Lectures are used to convey material related to knowledge about recognizing teeth, cavities, tissue diseases, dental support, healthy food and tooth decay, and tooth brushing. Knowledge evaluation from the training was carried out with written tests in the form of pre and post test. While the practice method is used to train participants' skills in brushing their teeth. The skills evaluation from the training was carried out by observing the participants when brushing their teeth. Training activities can be seen in the scheme below:

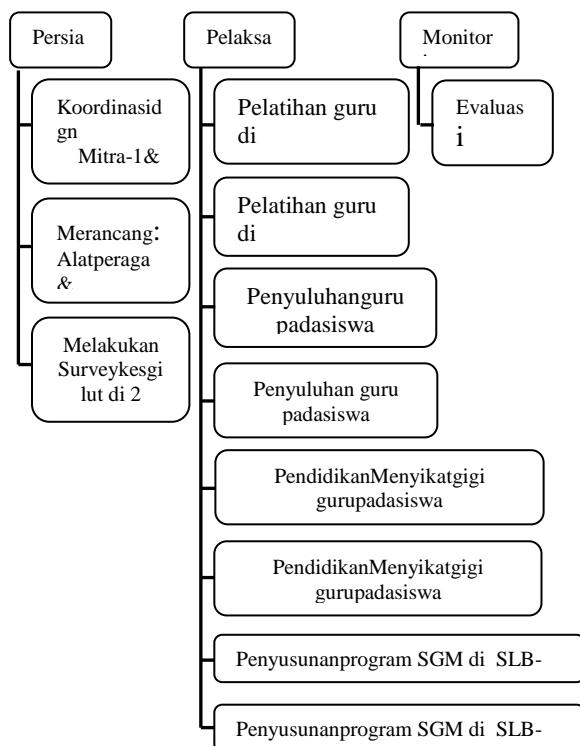


Fig 1. Dental Health Scheme for Deaf Students in Teachers at the Kiaracondong and Muhammadiyah Special School

Results and discussion

The activity takes place in 2 stages, namely the first stage between May to August 2016 and the second stage between October and November 2016.

The first stage of the activity includes:

1. Coordinate with SLB-B Muhammadiyah and SLB-B Sukapura Kiaracondong Bandung.

The coordination of the training included assessment activities on the Muhammadiyah and Sukapura Kiaracondong Special School Bandung. The objectives of the assessment are: explain the

purpose of community service, ask permission to conduct training, and determine the objectives, place and time of training. The assessment was held on May, 25th and 26th 2016, and from the results of meetings with the Principal and after submitting an activity proposal, it was agreed that training for the Muhammadiyah SLB-B teachers could be held on June 26th 2016, while the SLB-B teacher training in SukapuraKiaracondong Bandung held on June 29th 2016. The application for permission for the implementation of community service was made by the proponent institution, in this case the Department of Dental Nursing, Health Polytechnic, Bandung.

The training will be attended by 8 teachers including 2 teachers from SLB-B Muhammadiyah and 6 teachers from SLB-B SukapuraKiaracondong. The teachers involved in this training are the teachers who are the subjects of each SLB-B. The teacher also teaches how deaf students can help themselves to daily skills for their lives, for example bathing, self-care, eating alone, etc. so students do not have to depend on others. Based on input from one of the school principals to include parents involved in the training, the training was also attended by parents with the aim that parents get knowledge about dental health so that they can help maintain dental health programs in their respective homes. The trainees from parents at the Muhammadiyah SLB-B with 6 participants while 38 from the SLB-B SukapuraKiaracondong.

Training preparation include provision of dental health module in the form of audio visual media, namely power point and LCD programs. With that media, the training material can be delivered systematically.

The dental health education module consists of 5 topics namely:
a. Various type of teeth, tooth function, number of teeth in the period of deciduous and permanent teeth, the period of teething and structure of the teeth.
b. How can teeth be perforated, factors that cause cavities, the interrelationships of these factors, recognizing dental plaque, the process of tooth decay, complaints that accompany cavities, how to cope with cavities and caries prevention.
c. Periodontal disease, contains tartar and gingivitis which include tooth supporting tissue diseases, how the process of tartar occurs, and symptoms of gingivitis, how to cope with tooth supporting tissue diseases and prevention of periodontal disease.
d. Foods that are good for dental health (constructive food) and foods that can damage teeth (destructive food).
e. All about teeth brushing contains time and frequency of brushing teeth, how to choose the right toothbrush, correct brushing techniques and toothbrush aids.

2. Dental health training for SLB-B teachers at Muhammadiyah and Sukapura Bandung. This activity was held on June 20th, 2016 at the SLB-B Muhammadiyah Bandung and on June 29-30th 2016 at SLB-B SukapuraKiaracondong, Bandung. The training was attended by 8 teachers.

SLB-B class SukapuraKiaracondong Bandung. The training was attended by 8 teachers and 38 student. The training objectives are: providing knowledge about dental and oral health, and practicing skills in maintaining oral and dental health.

The training held at the Muhammadiyah SLB-B was divided into two sessions. At the first session, participants were given training modules 1 to 3. The training method was lecturing by the competent lecture, question and answer and two-way discussion about problems that arise. The tools and media used are LCD, a power point program, handout of the topics, gargles, tooth brushes and toothpaste, and jaw models. At the second session, participants were given training modules 4 and 5, using the same tools and media.

During the training, the participants' responses were good and enthusiastic, all participants were active. This can be seen from the many questions asked by the teacher participants

The implementation of counseling for SLB-B teachers was assisted by three students of the Bandung Nursing Dental Department. They demonstrated how to brush teeth properly and correctly. The training at SLB-B SukapuraKiaracondong Bandung held by the same method as the previous trained at Muhammadiyah SLB-B.



3. Implementation of dental health survey for SLB-B Muhammadiyah and SukapuraKiaracondong Bandung students. The implementation of dental health survey activities for students implementation can be realized only at the Muhammadiyah SLB-B. The implementation at SLB-B Muhammadiyah was held on the 27th August 2016. The survey was an dental health examination of SLB-B students. The result of the survey was data availability of students' teeth and mouth status. It can be used as a reference for judging the changes in dental and oral hygiene status of students after getting learning from their teachers. Muhammadiyah Bandung SLB-B teachers who receive dental health training are required to conduct dental health learning activities, for example joint toothbrushes with their students. These two activities must be carried out regularly. The conduct of the survey was not only carried out by the chief executive and executive lecturer of the community service but was also supported by the students of the Department of Dental Nursing at the Health Ministry of Bandung. The purpose of involving is so that they get experiences when they have to carry out their service to the community. In this survey activities, both students recorded the results of dental and oral health examination.



4. Evaluation of the results of the training was held on August 20th, 2016 at the SLB-B Muhammadiyah. Evaluation of trainees was carried out on 2 aspects, namely cognitive (knowledge) and psychomotor aspects (skills). The objectives of this evaluation activity are: assessing trainees' understanding in cognitive aspects (knowledge) about oral and dental health, and assessing trainees' skills (psychomotor aspects) about correct brushing techniques that are simulated in the jaw model. The evaluation instrument consists of 20 questions derived from the five modules and are answered in multiple choices. Cognitif evaluation is done by assessing the correct answer to the questionnaire, than comparing the value of the pretest to the posttest. The evaluation results show that the average correct answer before training is 57.5% and the average correct answer after training is 70.5%. Evaluation on psychomotor aspects (skills) was carried out by means of participants showing how to brush their teeth with simulations on the jaw model. The

lecturer observed the participants when they did a tooth brushing motion on 7 parts of the tooth in the oral cavity, and wrote the results of their observations on the observation sheet. The seven parts of the tooth that need to be brushed are: the surface of the tooth facing the left cheek, the surface of the tooth facing the right cheek, the surface of the tooth facing the lips, the maxillary chewing area, the mandibular chewing area, the maxillary tooth surface facing the palatum, and the surface of mandibular teeth facing the tongue. The expected brushing movement is a combination of vertical, horizontal and rotating movements for the surface of the teeth facing the cheeks and lips, and the gouging movement for the surface of the upper and lower teeth facing inward (to the palatum and to the tongue). The results of the evaluation of the skills aspect show that the surface that often missed rubbing during brushing is the upper tooth surface facing the palatum and the surface of the lower teeth facing the tongue. Evaluation of the results of the training was conducted at SLB-B SukapuraKiaracondong Bandung. Evaluation on cognitive aspects is carried out by comparing the average value of the correct answer before the implementation of the training (pretest) with the average value of the correct answer after the training of 6 participants (posttest) Correct answers obtained by filling out the questionnaire. The evaluation results show that the average correct answer before training is 45.8% and the average correct answer after training is 70.8%. Evaluation on psychomotor aspects (skills) was carried out by means of participants showing how to brush their teeth with simulations on the jaw model. The lecturer observed the participants when they did a tooth brushing motion on 7 parts of the tooth in the oral cavity, and wrote the results of their observations on the observation sheet. As found on Muhammadiyah SLB-B, the results of the evaluation of the skills aspect show that the surface that often missed rubbing during brushing is the upper tooth surface facing the palatum and the surface of the lower teeth facing the tongue.

Activities in the second semester are emphasized in making of learning media for both school. In several activities, also involved teachers who had been trained as well as students of the Bandung Polytechnic Dental Nursing Department. Learning media that is made must facilitate hearing impairment/limitation. Therefore, in this community service activity, lecturers of the Bandung Poltekkes Dental Nursing Department created a module on dental health education which would later be transformed into a multipurpose media in the form of voiced interactive CDs. This media can be used by

students to study dental health problems, this media is called multi-use because it is not merely audio-visual but uses **sign language** that is needed by deaf people. The steps in preparing the module are : compiling the module text, changing the text into interactive CD. The time needed to produce the interactive CD was about 1 month. The interactive CD used sign language done by one of the SLB-B teachers and IT implementers.

2. Make a sound interactive CD. The activity of making a sound interactive CD begins with the compilation of manuscripts from the five modules that have been made at the beginning. Manuscript is created for each slide in the module. The total number of slides found in the five modules is 41 slides, thus the number of manuscripts were also 41. Voice recording is done by involving 2 students from the Bandung Polytechnic Department of Dental Care. In the process of uniting the sound according to the slide image, here involves IT implementers who master the process. The results obtained are the realization of 5 voiced interactive CDs, complete with images to be displayed visually and soundly enough to be used for learning SLB-B students and as learning media for teachers to teach about dental and oral health.

3. Conduct a voice interactive test CD. The interactive CD needs to be tested at school. The trial was carried out on October 17-18th, 2016. The trial process included: the results of the voiced interactive CD were played and seen by the implementing members to observe the suitability between the slide of the picture, and the sound of the filler material. If there is a discrepancy in both the image, intonation, duration, then steps will be taken to repair it by the IT and voice actor, but if it is deemed to have fulfilled the prescribed rules, then this interactive CD can be used.



4. Make interactive CD translations sound into sign language. The voiced interactive CD will be multipurpose so sign language is added to this interactive CD. This insensi language is useful for translating all messages of audio material into a visual form. The integration of sign language in the form of visual video gestures into one show in one interactive CD module is carried out by IT implementers

5. Trial of the SLB-B voiced interactive CD SukapuraKiaracondong Bandung. The interactive CD trial for SLB-B students was conducted on October 29th, 2016. The trial will only

be carried out on some students, because there are some students who are not cooperative, which besides experiencing deafness is also accompanied by mental disorders (sensitive) so it is difficult to follow learning. Finally an agreement was reached with the school that the trial would only be carried out on 5 students at the Muhammadiyah Bandung SLB-B and 15 students at SLB-B SukapuraKiaracondong Bandung. The place for conducting the trial was agreed in class for listening activities (knowledge), and in the toilet yard for evaluation of brushing skills. The module chosen to be tested for SLB-B students is the fourth module which is about: food that is good for dental health (constructive food) and foods that can damage teeth (destructive food).

Trials are carried out in the following sequence of activities:

- a. The student listens when the CD is displayed
- b. CD playback is repeated per manuscript section
- c. Students are asked questions verbally by lecturer.
- d. Students who can answer raise their fingers
- e. Students answer simultaneously the questions asked
- f. The chief executive of the community service noted how many students raised their finger marks to answer the questions asked
- g. The evaluator matches the student's answer with the expected answer recorded on the evaluation sheet.

The results of the voiced interactive CD test for the fourth module show that 66.67% of SLB-B students in SukapuraKiaracondong can understand the contents, while the results of voiced interactive CD tests on SLB-B Muhammadiyah students shows 73.33% of SLB-B Muhammadiyah students can understand the contents contained in module 4. The skills evaluation was carried out on 2 students both at SLB-B Muhammadiyah Bandung or SukapuraKiaracondong Bandung selected to demonstrate how to brush their teeth properly with a brush that was distributed to the jaw model after students listened the 5th module CD. Generally, allsurface can be cleaned properly but on the surface of the upper teeth facing the palatum and the surface of the lower teeth facing the tongue is still stiff. The same fact found in the SLB-B Muhammadiyah students.

6. Assistance in making joint toothbrush programs.

Assistance for the making of joint toothbrush program for Muhammadiyah and SukapuraKiaracondong Bandung high school students was held on November 5th and 19th 2016. The aim of the mentoring program is: provide guidance on how to make joint toothbrush programs for students and monitor dental health

program activities. Assistance in making the joint toothbrush program is directed at how to make an activity schedule (preparation, materials used, frequency in a month, etc.), how to make this program to provide habituation to students in maintaining dental health so that behavioral changes can occur as early as possible. The success of community services in SLB-B was there because of supported by all the people involved, and must be a continuous activities. Monitoring of the activities must be carried out to find the problem solutions so that activities will work well.



Conclusion

Community Service activities in the form of Science and Technology Program for the Community were carried out by the Lecturer of the Bandung Polytechnic Department of Dental Nursing for SLB-B Muhammadiyah and SukapuraKiaracondong Bandung during the period from May to November 2016. Results were: 1) Dental Health Training for 8 teachers in two partners; 2) Making learning media for teachers and deaf students with the theme Dental Health Education in the form of a sound interactive CD consisting of 5 CDs; 3) Trial Interactive audio CD for SLB-B students and Making audio-visual interactive CD as learning media for both teachers and students. 4) The training results for partner teachers are quite good. The results of the voiced interactive CD trials for SLB-B students on selected modules were also quite good. The interactive CD is worthy of being used as a learning media for teachers and students at SLB-B.

References

- [1]. Health Research and Development Agency of the Republic of Indonesia.National Report on Basic Health Research (RISKESDAS 2013).2013
- [2]. Jain, manish, et al., Oral Health Status and treatment Need Among Institutionalized Bindings for Children and young Adults in Journal, Vol. Number 1. 2013
- [3]. Krista Veronica Slagian. Overview of Oral Hygiene and Dental Caries in Deaf and Deaf Schools 11-12 Years and 14-16 Years Ages. (Thesis not published). University of North Sumatra; 2005
- [4]. Cristensen GJ. Special oral hygiene and preventive care for special needs.J.Am.Dent.assoc. 2005
- [5]. ArifiantoSalim. Designing visual communication based learning media for deaf children. (Thesis not published). Surabaya: Department of visual communication design faculty of art and design Petra Christian University; 2005
- [6]. Chaerudin DR and Sri Hediati. The Effect of Teeth Brushing Learning Using Visual Film Media with Jaw Model Media on the Hygiene of Teeth and Mouth Deaf Students in the City of Bandung. Journal of Health Polytechnic Bandung. 2013