



## The Effect of Dental Health Education Methods through Teacher Training to the Behaviors of the Teachers and Dental Hygiene of Children with Intellectual Disability

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### Abstract

**Background:** Government efforts to prevent oral disease in school-age children were done through dental school program which was not only carried out at regular school but also in a special school. Based on data from Semarang Regency Health Office in 2010, there were 14 primary schools used as the pilot implementation of the program, but the program did not run properly. The problem of dental hygiene activities in special school is the limitations of children with intellectual disability who can not do dental health care independently. Through empowerment and optimization of the role of teachers in schools by conducting training on dental and oral hygiene, it is expected that children with intellectual disability will be able to implement the skills on dental and oral hygiene.

**The Objective:** The purpose of this study was to determine the effect of dental health education methods through teacher training to the behaviors (knowledge, attitudes, and skills) of the teachers and dental hygiene of children with intellectual disability in special schools in Semarang Regency.

**Method:** The type of this research was quasi-experiment with the pre-test and post-test with group design. The subjects of this research were all teachers and children with intellectual disability in special schools in Semarang Regency. A total number of the subject was 30 people consisting of 10 teachers and 20 children.

**Result:** Teachers' behavior including knowledge, attitudes, and skills which were tested statistically by paired t-test had increased significantly before and after the training, proved by the value of  $p = 0.000$  ( $p < 0.05$ ). Statistical test with paired t-test also showed that dental uncleanness in children decreased significantly, proved by the value of  $p = 0.000$  ( $p < 0.05$ ).

**Conclusions:** Dental health education methods through teacher training had shown to be effective to significantly increase the teachers' behaviors and dental hygiene of children with intellectual disability in special schools in Semarang Regency.

**Keywords:** Children, Dental hygiene, Intellectual disability, Special schools, Teacher.

### Introduction

Poor mouth condition will disrupt the function and activity of the oral cavity so that it affects the nutritional status of the child. This may affect the growth of children, such as reduce the frequency

of school attendance, interfere concentration of studying, and disturb the uptake of nutrient so that it can lead to growth disorders and can have implications on child intelligence (Siagian, 2008).

Dental and oral health problems are not only experienced by normal school-aged children but also experienced by school-age children with disabilities. People with disabilities may have barriers and obstacles to engage in appropriate activities. The kinds of disability are physically, mentally, and physically and mentally disabled people. Purwanto (2012) argued that students with a physical and mental disability have limited physical, developmental, behavioral or emotional conditions that lead to the limitation of their mobility, which makes them unable to do their daily activities normally. Children with physical and mental disability are including children with intellectual disability.

Children with intellectual disability are often called children with mental retardation. According to WHO (1992), mental retardation is a state of stagnant or incomplete mental development, characterized primarily by the existence of impairment skills during development so as to affect all levels of intelligence, cognitive, linguistic, motor, and social abilities. According to Sumaryanti et al. (2010), one of the prominent characteristics in children with intellectual disability is that they are unable to perform activities independently, but require the help of others.

According to Norahmasari (2014), students with special needs have lower levels of dental health and hygiene than normal students. This is evidenced by Kaur et al. (2013) in his study which showed that 69% children with intellectual disability in Mohali, India had poor oral hygiene. Further, a preliminary study conducted by students of Department of Dentistry of Minister of Health Polytechnic Semarang on December 11, 2014, at special schools in Semarang Regency, showed that the average of dental hygiene of child with an intellectual disability was included in the bad category.

Government efforts to prevent oral disease in school-age children were done through dental school program which was not only carried out at regular school but also in a special school. Based

on data from Semarang Regency Health Office in 2010, there were 14 primary schools used as the pilot implementation of the program, but the program did not run properly. The problem of dental hygiene activities in special school is the limitations of children with intellectual disability who can not do dental health care independently. Through empowerment and optimization of the role of teachers in schools by conducting training on dental and oral hygiene, it is expected that children with intellectual disability will be able to implement the skills on dental and oral hygiene.

Dental school program in special schools can be done through empowerment and optimization of teachers role in the school. Limitations of the condition of children with intellectual disability cause them to be unable to maintain dental health and hygiene independently but require the teacher assistance (Petersen et al., 2010). Therefore, teachers need to get training on dental and oral hygiene, so as to be able to implement the knowledge and skills about the dental and oral hygiene of children with intellectual disability.

The purpose of this study was to determine the effect of dental health education methods through teacher training to the behaviors (knowledge, attitudes, and skills) of the teachers and dental hygiene of children with intellectual disability in special schools in Semarang Regency.

### **Materials and Methods**

The type of this research was quasi-experiment with the pre-test and post-test with group design. The subjects of this research were all teachers and children with intellectual disability in special schools in Semarang Regency. A total number of the subject was 30 people consisting of 10 teachers and 20 children.

This research consisted of independent and dependent variables. The independent variable was dental and oral hygiene training, consisting of dental and oral health counseling, simple dental disease identification technique, dental brushing technique, and dyeing technique to observe plaque with nominal measurement scale. The dependent

variables were knowledge, attitudes, and skills of the teachers and the dental cleanliness of the children.

**Results**

Table 1 shows the data of the research after tested using normality test by using Shapiro Wilk. the

results showed that the data of knowledge, attitude, and dental uncleanliness are distributed normally so that data analysis can be done by paired t-test, while the data of skill is categorical data type so that data analysis is done using Wilcoxon.

**Table 1.** The results of normality test

Group	Variable	p-value
Teachers	Knowledge (before the training)	0.192
	Knowledge (after the training)	0.193
	Attitude (before the training)	0.835
	Attitude (after the training)	0.394
	Skill (before the training)	0.111
	Skill (after the training)	0.471
Children with intellectual disability	Dental uncleanliness (before the training)	0.131
	Dental uncleanliness (after the training)	0.163

The teachers' behaviors (knowledge, attitudes, and skills) which were tested statistically by using paired t-test showed that there was an improvement of teachers' knowledge before and after the training. It was significantly increased with  $p = 0,000$  ( $p < 0,05$ ). Attitudes increased in  $p$ -value =  $0,000$  ( $p < 0,05$ ), and skills increased in  $p$ -

value =  $0,000$  ( $p < 0,05$ ). Statistical test with paired t-test showed that the dental uncleanliness in children with intellectual disability decreased significantly, proved by  $p$ -value =  $0.000$  ( $p < 0,05$ ). The result of the significance of teachers' behaviors and dental uncleanliness can be seen in Table 2.

**Table 2.** The results of significance test

Variable	Mean	Standard Deviation	Sign (p)	Method
Knowledge (before the training)	19.200	3.22490	0.000	Paired t-test
Knowledge (after the training)	32.8000	4.28952		
Attitude (before the training)	21.9000	2.64365	0.000	Paired t-test
Attitude (after the training)	29.5000	1.95789		
Skill (before the training)	4.3000	1.05935	0.001	Wilcoxon
Skill (after the training)	7.0000	1.56347		
Dental uncleanliness (before the training)	1.2750	0.27314	0.001	Paired t-test
Dental uncleanliness (after the training)	0.6400	0.22100		

**Discussion**

According to Darby and Walls (2003), intellectual disability is a decline in intellectual function in terms of communication, self-care, home living, social/interpersonal skills, self-direction, academic skills, occupation, recreation, health, and safety. intellectual disability Occurs before the age of 18 years old and usually has an IQ (intelligence quotient) below 70, as well as having a skill, social, and daily disorder. Someone is said to be having intellectual disability if it meets the

following criteria: 1) general intellectual functions under normal, 2) There are constraints in social adaptive behavior, 3) The symptoms arise in the development period that is usually under the age of 18 years old. Children with intellectual disability have higher levels of fear and anxiety than normal children in general. Children with an intellectual disability take longer to react to new situations, but they show their best reaction when doing routine and consistent work (Sandra, 2010).

Dental health education for children with intellectual disability was not much different from normal children, that was using lecture method with powerpoint media and booklet. the difference was that parents/nannies were included in the subjective and objective examination of the child so that they can directly know the condition of the child's oral cavity. Teachers played a role in the dental health education. This could be seen in teachers' behaviors (knowledge, attitude, and skill) which improved significantly before and after given the training, as shown in Table 2. Teachers experienced improvement in dental and oral hygiene skills after training, so it can be concluded that the training program was successful. Notoatmodjo (2011) stated that the implementation of the training program can be said to succeed if participants experienced a process of transformation of the ability to perform tasks and behavior, that is reflected in attitudes, discipline and work ethic.

Training programs are able to change a person's behavior through a process of learning about a particular job related to knowledge, skills, and behavior. Santoso et al. (2017) said that dental health training is a planned activity through teaching and learning process that aims to provide knowledge, inculcate attitudes, and train skills so that someone can independently perform oral hygiene maintenance.

Knowledge of dental and oral hygiene health care was a new knowledge obtained by teachers of special schools in Semarang Regency. In training activity, transfer of knowledge happened through teaching and learning process. In the process, the teacher performed maximum sense. The sense of hearing was done by listening to the material that was delivered through lectures and discussions, while the sense of sight was done by reading the training module. Santoso et al. (2015) said that knowledge is the result of learning obtained by someone after the person senses a particular object.

Statistically, teachers of special schools in Semarang Regency had significantly improved

skills in dental and oral hygiene training. This was because teachers begin to try something they get based on their knowledge and attitudes. The lesson materials given at the training program were done well without being dependent on others. The teachers applied daily dental and oral hygiene practices to themselves and the action was not just a routine, but done with sincerity and quality. According to Notoadmodjo (2010), the action which is not just a routine but has been done with sincerity and quality indicates that the person has reached the stage of adoption.

After having knowledge, attitude, and skill, the teacher will teach students with intellectual disability about dental and oral hygiene. Teachers are a professional educator with the main duty to educate, teach, guide, direct, and train the students. Another opinion says that teachers are educators, who become role models for students and their environment (Mulyasa, 2013)

According to Sariningsih (2012), teachers can perform dental care in schools by doing any of these activities: a) provide health dental education with the help of posters and dental study model. Education methods are lectures, question and answer sessions, and playing games; b) motivate and change the child's behavior towards a healthy lifestyle in general and dental health in particular; c) be a model for students, such as by being discipline, maintaining hygiene, not smoking, saying good words; d) teach how to brush teeth to the students; e) direct a good diet for child development; and f) continuously check the child's teeth.

Teachers who were trained would teach the way to brush teeth to the children with intellectual disability in a different model. Teachers taught them many times using multi-methods so that children with mental and physical limitations will be able to brush their teeth properly. after being guided and taught by the teacher every day, brushing teeth would be a new habit for them. This is evidenced by the decrease in the dental uncleanliness score of the children with

intellectual disability after the teacher had given training.

### Conclusion

From the results of this study, it can be summarized that dental health education methods through teacher training had shown to be effective to significantly increase the teachers' behaviors and dental hygiene of children with intellectual disability in special schools in Semarang Regency.

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