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## Effect of teacher empowerment in maintaining oral health of mentally disabled students on decrease of debris index

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### Abstract

**Background:** Through teacher empowerment activities, teachers will become motivated through new ideas and experiences. Following teacher empowerment on the importance of maintaining oral and dental hygiene for mentally disabled students will motivate teachers to further improve oral and dental hygiene maintenance for mentally disabled students.

**Materials and methods:** The purpose of this study is to Analyze the Effect of Empowerment of teachers in the maintenance of teeth and mouth of mentally disabled children on the decrease in index debris. The type of research used is quasi-experimental analytics. The targets in this study were all BC Optimal SLB (*Sekolah Luar Biasa*, School for Disabled Students) teachers. The data collection method used questionnaires and observations. The data analysis technique used the T-Test and all variables were tested together with Manova Test

**Result:** The results of the study that maintenance of dental and oral hygiene in mentally disabled children can be obtained through empowerment efforts involving SLB teachers. In this study, teacher empowerment is able to improve the knowledge, attitudes and skills of teachers in terms of maintenance of dental and oral hygiene of mentally disabled children

**Conclusion:** An increase in the knowledge, attitudes and skills of teachers in the maintenance of dental and oral hygiene of mentally disabled children has not shown a decrease in the value of the index debris in mentally disabled children.

**Keywords:** Teacher empowerment, mentally disabled, debris index

### 1. Introduction

Children with special needs are children who need more specific attention, affection, both at home and at school. These specifications exist because they have various obstacles in their growth and have special characteristics that are different from children in general. Children with special needs are one of the human resources whose quality must be improved in order to play a role in the society. Children with disabilities need to be recognized and identified from the group of children in general, because they need special services, such as medical services, special education or training that aims to reduce the limitations and dependencies due to disabilities suffered and foster independence in the community. Children with mental abilities below average are known as mentally disabled (Intellectual and Development Disability or IDD). Children with intellectual disabilities are identified as having a level of intelligence that is so low (below normal) that development requires special assistance or services, especially the need for educational programs and guidance.

Research by (Darwita 2011) <sup>[6]</sup> shows that mentally disabled people are more likely to have poor oral hygiene and periodontal disease who have a higher risk of caries than people without intellectual disabilities. Through teacher empowerment activities, teachers will become motivated through new ideas and new experiences they will get. With teacher empowerment has a positive relationship with teacher motivation. Following teacher empowerment on the importance of maintaining oral and dental hygiene for mentally disabled students will motivate teachers to further enhance the importance of maintaining oral and dental hygiene for mentally disabled students. For this reason, there is a need for efforts to empower teachers as a starting point in changing the behavior of mentally disabled students in maintaining oral and dental hygiene.

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## 2. Materials and methods

The type of research used is Quasi experiment. The study design used was one group pre-test and post-test control group. The treatment group was 12 BC Optimal SLB teachers, while the control group was the teachers in

Gedangan SLB. Data collection using questionnaire sheets and index debris sheets the analysis used in this study is the bivariate test Paired Sample t-test or t-test, while for the test of all variables together using the MANOVA test.

## 3. Result

### 3.1. Empowerment of Teachers in Knowledge of Maintenance of Dental and Mouth Hygiene of Children with Disabilities in the Intervention and Control Groups

Table 1: Knowledge of The Groups

	n	Mean ± Std. Deviation	Δ	Mean Difference (IK 95%)	p
Knowledge of Interventional Group	12	10,50 ± 1,00	1,33 ± 1,61	2,35 - 0,30	0,015
Knowledge of Control Group	12	9,17 ± 1,19			

Based on table 1 shows that there are differences in teacher empowerment in the knowledge of maintenance of dental and

oral hygiene of mentally disabled children in the intervention group with the control group with p value (0.015) <0.005.

### 3.2. Teacher empowerment in attitudes to maintain dental and oral hygiene of children with tuna grahita in the intervention and control groups

Table 2: Attitudes of both groups

	n	Mean ± Std. Deviation	Δ	Mean Difference (IK 95%)	p
Attitudes of Interventional Group	12	34,76 ± 2,06	12,91 ± 2,42	14,46 – 11,37	0,000
Attitudes of Control Group	12	21,75 ± 1,76			

Based on table 2 shows that there are differences in the empowerment of teachers in the attitude of maintaining dental and oral hygiene care for mentally disabled children in the

intervention group with the control group with a p value (0,000) <0.005

### 3.3. Empowerment of Teachers in Dental and Oral Hygiene Maintenance Skills of Children with Disabilities in the Intervention and Control Groups

Table 3: Skills of both groups

	n	Mean ± Std. Deviation	Δ	Mean Difference (IK 95%)	p
Skills of Interventional Group	12	0,83±0,38	0,58±0,51	0,91±0,25	0,002
Skills of Control Groups	12	0,25 ± 0,45			

Based on table 3 shows that there are differences in the empowerment of teachers in the maintenance of dental and oral hygiene skills of mentally disabled children in the

intervention group with the control group with a p value (0.002) <0.005

### 3.4. Debris Index in Control and Interventional Groups

Table 4: Debris Index

Mean of Debris Index	n	Mean ± Std. Deviation	p
Intervention Group	12	2,00±2,01	0,000
Control Group	12	2,17±2,017	

Table 4 shows the differences in the mean debris index of mentally disabled children in the intervention group (2.00) and in the dick debris index group with an average of 2.17.

There was a significant difference in the mean index debris between the intervention group and the control group (0,000 <0.05).

### 3.5. Manova Test of All Variables

Table 5: Manova Test

Groups	n	Teache Empowerment	Debris Index	
			Mean	Sig
Interventional Groups	12	Knowledge	0,817	0,689
		Attitudes	0,044	

Control Groups	12	Skills	0,067	0.080
		Knowledge	0.080	
		Attitudes	0,000	
		Skills	0,002	

Table 5 shows that through the manova test there was no significant effect on teacher empowerment (knowledge, attitudes and skills) in the maintenance of dental and oral hygiene of mentally disabled children on decreasing the debris index between the intervention group (0.689) and the control group (0.080).

#### 4. Discussion

The teacher is a professional educator with the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students in early childhood education through formal education, basic education and secondary education. SLB teachers have a very important role in the success or failure of learning that takes place in schools in special-skilled children, especially mentally disabled students. The teacher has an important role in preventing students' mouth problems such as tooth decay, which generally occurs in school-aged children at school. Haolei *et al.* (2012) <sup>[9]</sup> and Worotijan *et al.* (2013) <sup>[30]</sup> teachers who have extensive knowledge about dental health can be a source of information about dental health for their students.

Mental disability accompanied by motor disorders affect mentally disabled people in maintaining oral and dental hygiene so that it has an impact on the condition of mental health and mental retardation. To optimize the oral hygiene of teeth in mentally retarded children, the role of the teacher is needed, especially the empowerment of teachers which includes the knowledge, attitudes and skills of teachers in the maintenance of dental and oral hygiene in mentally disabled students. The results of research on the empowerment of teachers in the knowledge of dental and mouth hygiene maintenance of mentally disabled children in the intervention group with the control group showed significant differences. If seen from the characteristics of the level of education between the control groups with the intervention there is no difference, the majority of the last level of education of teachers in SLB BC Optimal and SLB Negeri Gedangan is bachelor degree. Notoatmodjo (2003) states that the factors that influence knowledge are influenced by the level of education of a person, the higher a person's education, the easier it is to obtain information. Intervention of teacher empowerment in the form of training in the maintenance of dental and oral hygiene of mentally disabled children shows a significant influence on changes in teacher knowledge. SLB on dental and oral hygiene maintenance measured on the 7th day after training. This is indicated by the average value of knowledge that is higher than the control group. Tirahiningrum, *et al.* (2011) there was an increase in dental and oral health knowledge for teachers and cadres after counseling on oral health.

Training has a very significant effect on the effectiveness of a school's education. Training gives teachers the opportunity to gain new knowledge, skills and attitudes to change their behavior which will ultimately increase learning achievement (Sari, 2012). Arianto (2013) Teachers can play a role as counselors, instructors, motivators in showing something good, as well as SLB teachers should be able to provide instructions about maintaining the dental and mouth hygiene of their students, especially in mentally disabled children.

According to Lawrence Green's theory, knowledge is one of the factors that influence behavior, including predisposing factors, namely factors that provide rational thinking or motivation to behave, factors that can facilitate and predict the occurrence of behavior changes in a person or society (Notoatmodjo, 2005). Increasing the SLB teacher's knowledge regarding dental and oral hygiene maintenance for mentally retarded children is expected to increase the teacher's role in informing students of special needs especially mentally retarded children about how to maintain oral and dental hygiene starting from the way, time, frequency and duration of tooth brushing. This increase in teacher knowledge can improve the oral hygiene status of mentally retarded children. The results of research on the empowerment of teachers in the attitude of maintaining dental and oral hygiene of mentally disabled children in the intervention group with the control group showed significant differences. In line with Nuratni's (2014) <sup>[18]</sup> research on the empowerment of UKS teachers in dental nursing care for attitude enhancement in the intervention group is greater than the control group. Notoatmodjo (2012) <sup>[19]</sup> attitude is an action or activity but it is a predisposition to the action of a behavior. That attitude is still a closed reaction, not an open reaction. In this study showed a change in teacher attitudes on the 14th day after empowering teachers in maintaining dental and oral hygiene of mentally disabled children, namely the intervention group has a higher average attitude value (the intervention group is the SLB BC Optimal Kenjeran Surabaya teacher) rather than the control group (SLB Negeri Gedangan). Text

School teachers if given general information get good information and their attitudes and actions are in good enough criteria (Mwangosi and Nyandindi, 2002) <sup>[15]</sup>. The above can occur because teachers have a positive attitude towards oral health education for students, as part of the teaching curriculum, however, despite that there are still a few and require recommendations for improvement (Mwangosi and Nyandindi, 2002) <sup>[15]</sup>. Attitudes can be influenced by personal experience, what we have experienced and are experiencing will help shape and influence our appreciation of social stimulus. The response will be one of the basic forms of attitude. In this case the teacher experience that has been obtained through teacher empowerment in the maintenance of dental and oral hygiene of mentally disabled children, can form a positive attitude and can then be transmitted to mentally disabled students in terms of dental and oral hygiene maintenance. In the control group in SLB Negeri Gedangan showed a low average value of attitude, this is because SLB Negeri Gedangan has never received training on maintenance of dental and oral hygiene in children with special needs. Teachers need to be motivated to increase their awareness of oral health information so that it can facilitate the role of teachers as school oral health education providers in schools (Mwangosi and Nyandindi, 2002) <sup>[15]</sup>. Attitudes associated with education means the attitudes or responses of students to the educational material provided (Mubarak, 2012) <sup>[14]</sup>. Attitude is a reaction that is still closed from someone to a particular stimulus or object that already involves the opinion and emotion factors concerned (happy-not happy, agree-

disagree, good-not good, and so on). Attitude is a tendency to act (practice) and is not necessarily manifested in action, because for the realization of actions need other factors including the presence of facilities or facilities and infrastructure (Notoatmodjo, 2010) [17]. The results of research on teacher empowerment in the skills of maintaining dental and oral hygiene of children mentally disabled in the intervention group with the control group showed significant differences.

Behavior according to Lawrence Green's theory is influenced by 3 factors: predisposing factors, enabling factors, reinforcing factors. Predisposing factors are factors that provide rational way of thinking or motivation to behave, factors that can facilitate and predict the change in behavior in a person or society. Included in this factor is the knowledge and attitude of a person or community towards what will be done (Notoatmodjo, 2005). In the intervention group (teachers in the Optimal BC SLB) on the 21st day it was seen that they had a very high average score of skills compared to the average value of the control group (Gedangan SLB teacher). This is because teachers in SLB BC are optimally given training in the form of empowering dental and oral hygiene maintenance for mentally disabled children. One's knowledge and attitudes can be enhanced, one of which is by empowering teachers in the form of training in maintaining oral hygiene in mentally disabled children. The training is useful to help teachers develop the skills and abilities of teachers in the field of dental and oral hygiene, so that SLB teachers are expected to be able to provide training in maintaining oral hygiene in the form of toothbrush demonstrations for mentally disabled students. The ability of mentally retarded children requires learning from a teacher in improving the ability of various things one of which increases the child's independence in understanding instructions, to be more effective, learning to maintain oral and dental hygiene must be concrete and clear. The teacher as an educator or teacher is a determining factor or key holder of student success in healthy behavior in school. Teachers in schools not only teach but also continue to follow the process of changing student behavior and teachers behave healthily by applying brushing teeth in schools so that students can imitate and create an activity that better integrates messages about brushing teeth (Arianto, 2013). This is supported by the opinion of Yongky Ariguna (2011) UNY students with the title Effect of Training on Brushing Teeth on Motor Skills of Brushing Teeth in Children with Mental Retardation. From the results of the Yongky Ariguna research it was found that there was an influence. In addition, with the opinion of Sekar Wirakusuma (2010) UNY student entitled Training on Tooth Brushing to Improve the Independence of Mental Retardation Children. From the results of these studies using quantitative research with research conducted eight times with two treatments. In this study also found significant differences in the index of mentally disabled children in the intervention group and the control group. This is indicated by the existence of the average value of debris index of mentally disabled children in SLB BC Optimal which is low compared to the average value of debris index of mentally disabled children in SLB Negeri Gedangan. Debris index value of mentally retarded children in SLB BC Optimal is low, due to teacher training in the form of teacher empowerment in the form of knowledge, attitudes and skills of teachers in maintaining dental and oral hygiene of mentally disabled children. Debris is food residue left in the oral cavity, on the surface and between teeth and gingiva. Debris is easily cleaned by the

movements of the tongue, lips and cheeks or by gargling (Putri *et al*, 2010 cit. Jamal, 2013).

In this study it can be seen that the average value of the debris index in the optimal BC SLB is still relatively moderate. This is because mentally disabled children have limited abilities and motor skills in maintaining oral and dental hygiene, although in this SLB there is an involvement of the teacher's role in empowering the maintenance of dental and oral hygiene care for mentally retarded children. Developmental retardation (mental retardation) is a child who is clearly experiencing obstacles and retardation of mental development far below the average (IQ below 70) so that we experience difficulties in academic, communication and social tasks, and therefore require special education services. Teixeira *et al*. (2015) and Jain *et al* (2009) that their oral hygiene is influenced by the degree of mental deficiency or their IQ level. Dental and mouth hygiene of children with special needs, especially mentally disabled people, are related to their ability to communicate, socialize, and daily physical activities (Venkataraghavan *et al.*, 2016). Children with mental disabilities tend to have low levels of dental and oral hygiene (Mahardika, 2010). Based on the results of the manova test it is known that in the intervention group there was no significant effect on teacher empowerment in maintaining oral and dental hygiene of mentally disabled children on the debris index. In accordance with research by Suwargiani *et al*. (2017) [27] with the title effect of dental health maintenance training on full day system elementary school teachers on changes in students' oral hygiene status. In the study, the results of the test of the influence of the training variables together on the status of students' oral hygiene showed no significant effect on the results of training on teachers as measured through knowledge, attitudes and actions together on the status of students' oral hygiene. The results above indicate that empowerment good teacher in the form of knowledge, attitudes and skills of teachers in the maintenance of dental and oral hygiene of mentally disabled children does not affect the value of the debris index for mentally disabled children, this can also occur because teachers have only received one training. SLB teachers find it difficult to teach how to brush their teeth with mentally disabled children, because of the characteristics of mentally disabled children themselves who have many limitations both intelligence, physical and motor. SLB teachers feel the knowledge gained from this training is still limited, besides that SLB teachers need a long and repeated time to be able to optimize mentally disabled children in the maintenance of dental and oral hygiene. Research Bridges *et al*. (2014) [2] states that the knowledge of the material giver is closely related to the status of oral hygiene.

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## 5. Conclusion and recommendation

Dental and oral hygiene maintenance for mentally disabled children can be obtained through empowerment efforts that involve SLB teachers. In this study the empowerment of teachers is able to improve the knowledge, attitudes and skills of teachers in terms of maintenance of dental and oral hygiene of mentally disabled children. An increase in the knowledge, attitudes and skills of teachers in the maintenance of dental and oral hygiene of mentally disabled children has not shown a decrease in the value of the index debris in retarded children.

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## Declaration

Author(s) declare that.....

## Authors contribution (if more than one author)

Author 1: .....

Author 2: .....

Author 3: .....

Author 4: .....

Author 5: .....

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