



The Impact of Oral Health Education Intervention for children and young adults with Intellectual Disability In Special School : A Systematic Review

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ABSTRACT

People with intellectual disabilities with intellectual and mental limitations have a high risk of disease teeth and mouth than normal people. Inability to brush teeth causes poor dental and oral hygiene so that they are susceptible to dental caries and periodontal disease. Adaptive behavior and fine motor disorders as the main factors causing children and adolescents with disabilities. Intellectuals have difficulty brushing their teeth. This study aims to examine the impact of dental and oral health education interventions for intellectually disabled children and young adults in special schools. Research is a systematic review, by reviewing research through data sources Pub Med, Proquest, Cochran, and Wiley, in English. There are five studies according to the criteria inclusions. The results of a review of research articles show oral health education interventions in special schools can improve knowledge and dental and oral hygiene of children and adults young adults people with intellectual disabilities.

Keywords: *Oral health education, Intellectual Disability*

I. Background INTRODUCTION

Poor oral and dental hygiene can affect a person's quality of life, this is because of the taste pain and discomfort while eating, low self-esteem, or sleep disturbances due to dental caries, including people with intellectual disabilities. Intellectual limitations, adaptive behavior, and disorders of motor skills cause people with intellectual disabilities to have difficulty brushing their teeth so that they have poor oral and dental hygiene, including in children and young adults

with intellectual disabilities. This puts them at greater risk of developing dental caries and disease periodontitis than normal people. Intellectually disabled children at an excellent school in the Indian city of Jodhpur experienced a prevalence of dental caries 79.2% and lymphadenopathy (dental periodontal tissue abnormalities) 76.3%. Other studies show the dental health status of children with intellectual disabilities, who have good hygiene bad teeth, poor gum condition, and some caries were found in permanent teeth and no differences in caries experience between women and men. Rates of caries and pain experience Due to dental caries in children and young adults, cerebral palsy (intellectual disability) harms their quality of life. Health promotion or special training through dental health education and mouth should be given to this group. American Association on Intellectual and Developmental Disabilities (AAIDD) states intellectual disability or mental retardation is characterized by limitations in intellectual functioning and adaptive behavior that includes many social skills and in everyday life, this happens before the age of 18. Children and young adults with. Practically intellectual disabilities have an IQ (Intelligence Quotients) below 70. Classification based on IQ consists of from the light category with an IQ of 55-70, the medium category with an IQ of 45-55, the heavy category with an IQ of 25-45, a very severe (deep) category with IQ below 25. Those with mild disability category and being able to be trained in daily self-care such as brushing their teeth, while they are in heavy and very heavy categories should always be assisted in self-care throughout their lives. In school-based programs, children and young adults with intellectual disabilities have the potential to improve their ability to brush teeth, through individual training with supervision, so

that dental plaque and Gingival inflammation will be reduced. Purpose Assessing the impact of dental and oral health education interventions on children and young adults with disabilities intellectuals in special schools.

II. Research methods

2.1 Methods

This research method is a *systematic review* that is carried out systematically using the *Preferred Reporting Items for Systematic Reviews and Meta-analysis* method (*PRISM*). Search review studies through Pub Med, Proquest, Cochran, and Wiley databases, in English. Keywords intellectual disability AND dental and oral health education. The strategy used in the search for articles using the Picos Framework consists of 1) Population: children and young adults with intellectual disabilities (Down syndrome, intellectual disability) 2) Intervention: Dental and Oral Health Education 3). Result: increased knowledge and improvement in oral hygiene 4) Study design is the research design used in the articles reviewed, namely: quasi-experimental. Article searches were carried out from February to October 2021.

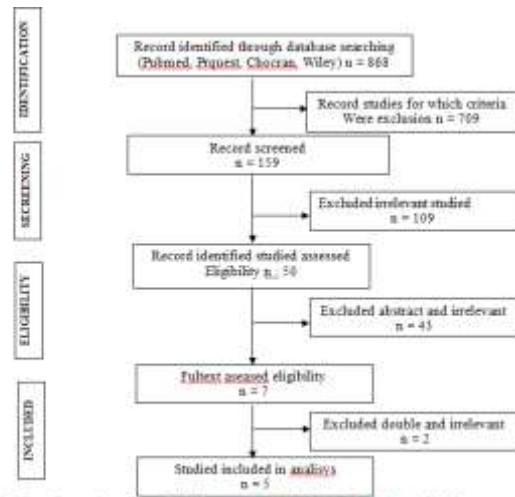


Figure 1: Flow chart of search and selection process (PRISMA) form Moher et al 2009

Article search was carried out according to keywords and inclusion criteria, there were 868 articles found, but After evaluating 50 articles, 5 articles met the inclusion criteria. Then, 5 articles are rated quality, which can be seen in chart 1.



Table 1. Summary of Literature Study Search Results for a systematic review

Author (s), year of publication	Country	Research purposes	design	n	Studi Participant	Polpulation Age Range	Duration intervention
Shyama et. al.2003	Kuwait	To determinate effectiveeffectiveness of a short-term, school-based supervisedtoothbrushing program	Quasi Experimental study	112	Down syndrome children	11-22 years	3 months
K. Kavvadia, etal 2009	Athens	To test a school-based programme for young adults with intellectual impairment, by evaluating their plaque removal efficacy when trained weekly for three months and the effectiveness of this programme, two years after training	Quasi Experimental study	57	Intellectual Impaired	15-30	2 years
Kittichai.S and Patcharaphol 2017	Thailand	To examine the oral health status of children with special health care needs and evaluate a preventive oral health care program	Quasi-experiment	35	Down's syndrome, autistic, cerebral palsy, and mentally retarded	-	1 years
Radhika L et.al2015	India	The aim of this study was to assess the oral hygiene status before and after supervised toothbrushing education	quasi-experiment	60	Phisical and mentaldisability	6-18 years	3 months
Andreia DH et.al2017	Brazil	To assess the effects of an oral health education strategy targetedat students with disabilities	quasi-experiment	61	Down syndrome Intellectual Impairmen	11-24 years	4 weeks

2.2 Research object

There are 335 total samples in the study. The research subjects of the 5 articles are children and adults young people with intellectual disabilities from mild to severe (down syndrome).

2.3 Results

Article searches were carried out according to keywords and inclusion criteria, there were 868 articles found, but After evaluating the 50 articles, 5 articles met the inclusion criteria. Then, the 5 articles were assessed for quality, which can be seen in table 1.

1. Intervention Description

The intervention method used by all articles is to provide knowledge about dental health and mouth and teeth brushing training for children and young adults with intellectual disabilities. Intervention carried out in special schools by involving teachers and caregivers. Dental hygiene check mouth using the OHI-S index and plaque. Checks to measure the level of cleanliness teeth and mouth of children and young adults with

intellectual disabilities before the intervention and after intervention to measure the success of dental and oral health education interventions. Intervention dental and oral health education using attractive poster media with different colors Attractively placed in front of the class, posters contain messages about the importance of dental health. Flipcharts and videos animations about dental and oral health are used by dental hygienists to convey dental health care messages. Videos that are played for 12 minutes will attract attention and the motivation of children and young adults with intellectual disabilities to practice brushing teeth. Slogan dental health through a song that keeps repeating to convey the message of dental and oral health.

Table 2. Summary of Results for a systematic review

Authors	Description of the intervention	Outcome
Shyama et. al 2003	The oral health education intervention was carried out for 3 weeks, the first week starting with a dental and oral hygiene examination followed by knowledge about dental and oral health in children with mental disabilities using attractive and attractive dental and oral health posters. Furthermore, the technique of brushing teeth is taught. In the third week, an evaluation of knowledge and evaluation of brushing skills was carried out.	This three- month supervised toothbrushing program was effective in reducing plaque and gingivitis scores, but the key to long-term success of the program is sustaining the children's motivation to make oral hygiene a part of their daily life.
K. Kavvadia et.al 2009	The sample consisted of 57 students with intellectual impairment, mean IQ 45 and mean age 21-years-old, who attended a special school in Athens, Greece and whom it was thought could be trained in oral hygiene practices. For three months, students watched a weekly oral health presentation, practised brushing on model teeth, had their plaque disclosed and recorded by OHI-S index and then brushed their own teeth under supervision. Plaque was re-evaluated two years after training. Results were analysed using paired t-test.	The mean plaque scores before and after training were 10.9 and 9.3 respectively. This improvement was statistically significant ($p<0.05$). Those students who attended more than six sessions demonstrated the greatest improvement in plaque scores ($p<0.05$). At the end of two however, students were less efficient in plaque removal and the mean plaque scores were not statistically significantly different from the baseline.
Kittichai.S and Patcharapho 2017	Oral health education interventions are not only for children with intellectual disabilities but also for teachers, parents, and caregivers. The intervention started from checking the dental caries status of children with intellectual disabilities with the DMF-T index and also checking dental hygiene with OHI-S. The teacher provides training on how to brush their teeth and after every meal, the children practice brushing their teeth.	The increase in oral hygiene rate of children with intellectual disabilities and DMF-T adoption did not increase in the sense that there were no new caries occurrences.
Radhika L et.al 2015	The first intervention was by conducting dental and oral health examinations using the caries index, plaque index and gingival then being given dental and oral health education and practicing tooth brushing. Intervention for 3 months and then an evaluation of dental and oral hygiene	Educational intervention effectively improves knowledge intellectual disability
Andreia DH et.al 2017	The oral health status was assessed for 60 children with physical and mental disabilities from a special need school in India. The Fone's/circular scrub method of tooth brushing was taught. Oral hygiene was assessed before tooth brushing education and again after 15 days expecting a distinct and significant improvement in the oral hygiene post health education. Caries index, plaque accumulation, and gingival health were assessed using decayed, missing and filled teeth index, plaque index, and gingival index, respectively	The disabled groups showed poor oral hygiene even after the education which may be attributed to the lack of coordination, understanding, physical disability or muscular limitations. More attention needs to be given to the long-term dental needs of these special children through accurate disease detection, diagnosis, prevention through habit forming and relevant treatment interventions.

2. Impact of oral health education interventions for children and young adults with disabilities intellectual

The results of a review of 5 articles show that oral health education interventions in schools specifically can increase knowledge about oral health for children and young adults with intellectual disabilities, in addition to improving tooth brushing skills. This program is also able to invite teachers, parents, and caregivers to be actively involved. The oral health education program in special schooling of short duration (4 weeks) can significantly reduce DI scores in children and young adults with intellectual disabilities, especially if the intervention is long-term which is old.^{8,9,10,14}

3. Discussion

The prevalence of dental caries in children and young adults with intellectual disabilities is similar with the general population¹². However, their oral health is deterioration at a higher rate rapidly with age. There are more untreated dental caries, more missing teeth, and fewer restorations found in adults with disabilities intellectual-property than the general population¹³. Low motor and intellectual impairment make children and young adults with intellectual disabilities have difficulty brushing their teeth.

Results of a systematic review of 5 articles on children and young adults with intellectual disabilities. Articles with the subject of children and young adults with intellectual disabilities (down syndrome) age 11-12 years old who are given intervention for 3 months, and every week they are given knowledge dental and oral health by

using posters and brushing practice for 3 months. In the third month, the children's knowledge and skills of brushing teeth were evaluated and for young adults with intellectual disabilities, the results showed a reduction in plaque scores (1.93 to 0.95, $p < 0.001$) and gingivitis (2.00 to 0.83, $p < 0.001$) and their increased motivation to Always keep your teeth and mouth healthy.¹⁰

The results of research in Athens, with a sample consisting of 57 students with intellectual disabilities at school specifically, the average IQ was 45 and the median age was 21 years. Intervention for 3 months students are given dental and oral health materials and practice brushing teeth every week, before students Dental and oral hygiene were measured using the plaque index. Evaluation after 2 years with a paired T-test showed that there was a difference in students' plaque scores, there was a reduction in plaque score after an intervention. The results of the study also show students with disabilities intellectuals benefit from this intervention not only in terms of oral hygiene skills but also by increasing their attitudes and motivation towards dental and oral health.¹⁴

The results of research in Thailand on children and young adults with intellectual disabilities amounted to 36 people. Research by providing dental and oral health education intervention through a dental health prevention program involving teachers and caregivers for 1 years. At the beginning of the intervention, the average DMFT score was 3.2 and the DI-S score was 2.15. after one year there is a decrease in DMFT, namely 1.4 and 1.6, and the average DI-S score is 2.1. This result demonstrated by involving teachers and caregivers, dental health education interventions, and mouth effectively increases the knowledge and motivation of children and young adults with disabilities intellectual property in dental and oral health.¹⁸

The results of a study in India on 60 mentally disabled children in special schools. Intervention by providing dental and oral health education and the practice of brushing teeth. Duration intervention for 3 months. There was a significant decrease in plaque and gingival scores after given intervention.⁸ Research results on children with Down syndrome and intellectual impairment (intellectual disability) in Brazil who was given dental and oral health education for 5 weeks. An intervention involving teachers and caregivers. Teachers are involved in supervising children's

brushing practices intellectual disability at school, while caregivers supervise the practice of brushing teeth at home.

The results of the intervention significantly reduced the debris index in children with Down syndrome and intellectual limitations. The study concludes that dental health education interventions and mouth in a short time can have a positive impact on them.⁹ Oral health education in the form of training on simple tooth brushing procedures carried out for children and adolescents with intellectual disabilities will continuously increase motivation to maintain dental and oral hygiene. Education with attractive and attractive dental health posters causes children and young adults with intellectual disabilities to be motivated to implement and apply it in their lives. This intervention also involves teachers, parents and caregivers. The involvement of teachers in providing knowledge and skills to children and young adults with intellectual disabilities will facilitate the program to run effectively.^{8, 14, 17}

4. Conclusion

The results of the review article show that oral health education interventions for children and young adults with intellectual disabilities in special schools are effective in improving knowledge and skills of brushing their teeth, this is with improved hygiene teeth and mouth and their motivation to pay attention to the health of their teeth and mouth. The importance of teacher and caregiver involvement in dental health education interventions and the mouth of children and young adults with intellectual disabilities.

III. Recommendations for Future Studies

This Future studies need to be done to develop an oral health education intervention model with intellectual disability teachers as the main implementers in special schools

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2. Conflict of interest

The authors involved in this study do not declare any competing conflicts of interest.

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