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The Effectiveness of B-FRESH (Blind-Friendly Efficient Smart Hygiene) Media in Improving Oral Hygiene Among Blind Students at SMPLB and SMALB A YPAB Surabaya

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ABSTRACT Blind children are children with special needs who have abnormalities in the sense of vision that require services, both in terms of education and health specifically. WHO defines as visual acuity in healthy eyes less than 10/200 or visual field less than 10 degrees of fixation. There was a high percentage of oral hygiene in the poor category in blind students aged 12-18 years at SMPLB and SMALB A YPAB Surabaya. The purpose of this study was to determine the effectiveness of using B-FRESH (Blind-Friendly Efficient Smart Hygiene) media on improving oral hygiene in blind students. This research is an applied research experiment involving 28 samples. The data collection instrument used was a plaque index assessment sheet and a tooth brushing checklist sheet. The data analysis technique used is the Mann-Whitney test. Based on the Mann-Whitney test, the results obtained P (0.001) <0.05. This value indicates H0 is rejected, so there is an effectiveness of using B-FRESH (Blind-Friendly Efficient Smart Hygiene) media on improving oral hygiene in blind students. The conclusion of the study is that there is an improvement in oral hygiene after being given B-FRESH (Blind-Friendly Efficient Smart Hygiene) media to blind students, namely from poor to moderate. This study has implications for the importance of tooth brushing practices in maintaining oral hygiene in blind students to improve the oral health of blind students.

INDEX TERMS oral hygiene; tooth brushing; B-FRESH media

I. INTRODUCTION

A visually impaired child is a child who experiences a disturbance or damage to his/her sense of sight, which results in a reduced ability to see or even the inability to see at all [1]. There are two types of blind people that can be divided into two groups, namely totally blind and low vision [2]. Totally blind are those who can only distinguish between dark and light, while low vision are those who are still able to identify objects with a certain viewing distance [3]. They can also see colors with contrast such as blue, green, yellow, orange, red, purple, and magenta [4].

Several factors that can affect dental health in the blind, namely physical limitations that cause a lack of knowledge about dental and oral hygiene [8], make a lack of knowledge in the process of receiving about dental and oral hygiene because the more five senses that are involved in receiving something, the more complex the knowledge obtained [9]. In addition, the lack of practice in brushing teeth makes it difficult for the blind to apply it [10], which causes low motor skills because they are less active in moving or tend to be silent [11] so that in the context of education, audio-visual media is used as a supporting tool that can help convey information, shape attitudes and increase understanding in blind children [12]

The results of research conducted by Istadi (2020), revealed that the level of dental and oral hygiene of blind children aged between 12-16 years was in the poor category with an average OHI-S index score of 4.02 [13]. The results of another study by Tandra (2018) showed that most of the blind people at the Tumou Tou Manado Bina Netra Social Home (PSBN) mostly had poor dental and oral hygiene status [14]. Based on the results of the initial examination data on plaque index in blind students of SMPLB and SMALB A YPAB Surabaya on November 8, 2023, it shows that 8 out of 10 blind

students obtained an average plaque index of 4.1 which is included in the poor category.

Poor oral hygiene levels in students and the absence of oral health efforts from the school will further worsen the state of oral hygiene in students [15]. The efforts made by the author in improving oral hygiene in blind people are using B-FRESH as a medium for oral health education. B-FRESH media is media that has sound elements and image elements that can increase student motivation in learning because songs containing the material can be more easily understood and stored in long-term memory [16].

B-FRESH media is a learning media that contains elements of sound, motion how to brush teeth properly on anterior, posterior and tongue teeth with brushing movements in each part. In this media there is sound and music so that its use is not boring, the results are easier to understand, and the information received is clearer and faster to understand. There is a dental phantum accompanied by a brush that can be moved according to the correct way of brushing teeth so that blind students can feel the brush move. The purpose of this study was to analyze the effectiveness of B-FRESH media on improving oral hygiene in blind students.

II. METHODS

This type of research is an applied research experiment with pretest and post-test. Data collection tools used are plaque index assessment sheets, observation sheets for brushing teeth, tools and materials for measuring plaque index. In the intervention group, B-FRESH media treatment was carried out by guiding the hands of blind children so that they could feel the movement of brushing their teeth in each part and then there was audio in the form of a mini mp3 player sd card which contained a song brushing their teeth in each part and the activity was repeated so that blind children could understand the material optimally. Then the Mann Whitney U-Test statistical test was conducted to test the comparison of the results of tooth brushing skills on oral hygiene in the control group and the intervention group.

III. RESULT

A. RESPONDENT CHARACTERISTICS

TABLE 1
Respondent Characteristics

Category		F	%
Age	13 years	1	7,1%
	14 years	3	21,4%
	15 years	3	21,4%
	16 years	4	28,6%
	17 years	3	21,4%
	18 years	0	0%
Gender	Male	9	64,3%
	Female	5	35,7%

Based on TABLE 1, it is known that in the age category most respondents are 15 years old, and based on gender most are male.

B. ORAL HYGIENE RESULTS IN VISUALLY IMPAIRED STUDENTS BEFORE EDUCATION USING B-FRESH MEDIA

TABLE 3
Frequency Distribution of Oral Hygiene Pre-test in Intervention and Control Groups at SMP SMA LB A YPAB Surabaya and SLB Keleyan Bangkalan

Group	Plaque Index Value Category	F	%
Intervention	Good	0	0%
	Moderate	2	14%
	Poor	12	85%
	Amount	14	100%
Control	Good	0	0%
	Moderate	1	7,14%
	Poor	13	92,8%
	Amount	14	100%

Based on TABLE 2, it can be seen that out of 14 blind students before being given education using B-FRESH media in the intervention group and control group, most of them had poor plaque index values.

C. ORAL HYGIENE RESULTS OF VISUALLY IMPAIRED STUDENTS AFTER EDUCATION USING B-FRESH MEDIA

TABLE 4
Frequency Distribution of Post-test Oral Hygiene in the Intervention Group at SMP SMA LB A YPAB Surabaya

Group	Plaque Index Value Category	F	%
Intervention	Good	2	14,2
	Moderate	10	71,4%
	Poor	2	14,2%
	Amount	14	100%
Control	Good	0	0%
	Moderate	1	7,14%
	Poor	13	92,8%
	Amount	14	100%

Based on TABLE 3, it can be seen that of the 14 blind students after being given education using B-FRESH media in the intervention group, most of them had moderate plaque index values and in the control group, most of them had poor plaque index values.

D. DATA ANALYTICS

TABLE 5
Mann-Whitney Test Results on Post-test Values of Intervention Group and Control Group

Category	Group		p-value
	Intervention	Control	
Good	2	0	
Moderate	10	1	0,001
Poor	2	13	

Based on TABLE 5, the results of the post-test plaque index value in the intervention group and the control group carried out the Mann-Whitney test, the p value = 0.001 (<0.05), so H0 is rejected and H1 is accepted, which means that there is an effect of using B-FRESH (Blind-Friendly Efficient Smart Hygiene) media on oral hygiene in blind children with a control group that does not get treatment from the use of B-FRESH media.

IV. DISCUSSION

Based on the results of data analysis, the percentage of plaque index values in students after being given education in the intervention group increased the percentage of plaque index values from 85% (poor) to 71.4% (moderate). The increase in the percentage of plaque index values in the intervention group occurred because B-FRESH (Blind-Friendly Efficient Smart Hygiene) media education was given, while the control group did not experience an increase in the percentage of plaque index values.

The average percentage of plaque index value in the intervention group was higher than the control group. This shows that the percentage of plaque index value in the intervention group increased more than the control group. In the process of absorbing information, blind people are different from people in general. If ordinary people can obtain a lot of information by looking at their surroundings, blind people must rely on their sense of touch and sense of hearing. They obtain visual information (text) through reading materials printed in braille that can be touched. However, the availability of information in braille is very limited, so this limitation is an obstacle for blind people.

In B-FRESH (Blind-Friendly Efficient Smart Hygiene) media is a media that contains two elements, namely elements of motion and sound elements. In the motion element, there are four levers that can be moved on the front teeth with a movement from top to bottom, the part facing the cheek with a circular motion, the chewing part of the teeth with a back and forth motion, and the inside facing the tongue with a gouging motion. In the sound element (auditory) of B-FRESH media there is a mini SD card mp3 player that has a USB plug so that in addition to functioning as an mp3 player it can also function as a flash drive to store files directly from the USB port. Mp3 player has a small form so that it can be easily carried everywhere, and there is a headset that can be used especially for blind children to focus more on the delivery of the material in it.

In the mp3 player, there are sounds of how to brush teeth in each part with a combination of songs so that the use is not boring, the results are easier to understand, the information received is clearer and faster to understand. Then at the end there is an evaluation of the song by repeating how to brush your teeth with a slower intonation to provide understanding of the audio education for blind children.

In accordance with Skinner's theory (1938), that behavior is the target's response or reaction to a stimulus (external stimuli). This behavior occurs through a process of stimulus to the organism, then the organism responds, therefore Skinner is called the S-O-R theory or Stimulus Organism Response.

The conclusion between the results and Skinner's 1938 theory is that education with B-FRESH (Blind-Friendly Efficient Smart Hygiene) media can affect students' knowledge about how to brush their teeth, then it can affect students' attitudes, these attitudes will form an action. The action in this case is that the student is willing and able to practice how to brush teeth properly and correctly. Changes in behavior in these students can affect the dental and oral hygiene status of blind students, thus good oral hygiene status will be achieved optimally.

B-FRESH (Blind-Friendly Efficient Smart Hygiene) media can be a medium for transferring knowledge in the process of absorbing information in blind children by using other organs that are still functioning, namely the senses of hearing and touch. This research is in line with Maryani et al. (2019) which states that providing oral health education to blind people using audio media is effective.

This research is in line with that conducted by Mardiati (2018), which shows an increase in OHI-S criteria before and after being given education using audio [17]. The results of another study by Alamsyah (2018) showed an increase in OHI-S scores using audio compared to braille [18]. The results of Maryani's research (2019) with a pre and post test quasi-experimental research design increased education through audio media [19]. The results of Deolia's research (2019) showed an increase in the percentage of respondents who fell into the good plaque score category [20].

This research has implications for the importance of tooth brushing practices in maintaining oral hygiene in blind students to improve the oral health of blind students. In addition, this media has benefits in developing fine motor skills so that they can feel different textures that can improve hand coordination and manipulation skills. Another benefit with B-FRESH media is that blind children can improve cognitive abilities by learning about shapes, sizes and patterns by touching. B-FRESH media can also increase independence to understand how to feel and use objects in their environment, they can become more independent in doing daily activities, especially in terms of brushing their own teeth.

This research takes one month to be able to apply to blind children and has shortcomings in the B-FRESH (Blind-Friendly Efficient Smart Hygiene) media material made of wood so that in the application of practice it must be slow because it is prone to breaking, so that the research carried out must be patient and repeated so that the delivery of material to blind students is also well conveyed.

V. CONCLUSION

This study aims to determine the effectiveness of B-FRESH media on improving oral hygiene in blind students 2024 by conducting pre and post tests, measuring plaque index values and brushing teeth together. B-FRESH media can be useful for blind children in the future because it provides a richer sensory experience to develop cognitive and spatial abilities, with this media blind children can improve social interaction skills, increase independence and develop creativity in art tools that allow them to feel shapes and textures to be creative in ways that may have been difficult before.

From this study, it was found that the value of oral hygiene before being given B-FRESH media in blind students was poor, namely in the intervention group by (85%) and control by (92.8%) then there was an increase in oral hygiene after being given B-FRESH media in blind students in the intervention group by (71.4%) and control by (92.8%), namely from poor to moderate, B-FRESH (Blind-Friendly Efficient Smart Hygiene) media is effective in improving oral hygiene in blind students.

This research can be used as information in delivering appropriate education to blind students as well as improving motor skills and cognitive abilities by learning about shapes, sizes and patterns by touching. This research can also be developed by using other media materials such as metal so that its use is not easily damaged.

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