

The effects of audio-video instruction in brushing teeth on the knowledge and attitude of young slow learners in Cirebon regency

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ABSTRACT

Background: Young slow learners are children with special needs who require special attention to satisfy their personal hygiene needs, especially those of dental hygiene since they are particularly susceptible to tooth decay. Changing the knowledge and attitudes of those slow learners can be achieved by a proper method **Purpose:** This study aimed to analyze the effects of teaching effective methods of brushing teeth by means of an audio video approach on the knowledge and attitude of young slow learners in Cirebon regency. **Methods:** This study was quasi-experimental in nature using pre test-post test methods within a two-group design. The sampling technique employed was purposive in nature. The number of young slow learners as respondents in this research totalled 31 individuals. Those children were, subsequently, divided into two groups; Group I containing 16 children, instructed in tooth brushing techniques by means of an audio video method and Group II composed of 15 children who were taught tooth brushing techniques manually. The variables measured consisted of subjects' knowledge of and attitude towards how to brush teeth most effectively identified by means of a questionnaire, in order that the interval data could be collected. **Results:** The results of an independent T-test showed there to be significant differences in the mean scores of the knowledge variable and the attitude variable ($p = 0.003$ and $p = 0.000$ respectively) between Groups I and II, at that stage of the investigation. **Conclusion:** It can be concluded that instructional audio-videos on how to brush teeth most effectively can improve both the knowledge and attitude of children with slow learning problems.

Keywords: audio video; knowledge; attitude; young slow learners

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INTRODUCTION

Young slow learners are children with special needs, who are physically, mentally, intellectually, socially, and emotionally disadvantaged, a condition significantly influencing their growth and development processes compared to those of normal children.¹ The World Health Organization (WHO) estimates that individuals with such disabilities to represent about 7-10% of the total number of children in Indonesia. However, according to national socio-economic survey data, in early 2011 there were 679,048 school-age children with special needs, constituting approximately 21.42% of the total number of children with special needs.²

Moreover, based on the national socio-economic survey of March 1, 2011, out of a total population of Indonesian children amounting to 82,980,000, no fewer than 9,957,600 demonstrated some form of special needs, being categorized as individuals with disabilities. Meanwhile, the proportion of gifted children demonstrating special and exceptional intelligence stood at 2.2% of the school-age population (4-18 years old) or about 1,185,560 children.¹ Actually, it is essential to identify individuals with special needs within groups of children since they require particular attention, such as medical services, tailored education, or specific exercises aimed at reducing their limitations in order to maximize their independence when living as part of a community.²

One of the groups of children with special needs requiring special provision is that of young slow learners. According to the National Institute of Health, the United States of America (USA),³ slow learning constitutes a learning disturbance in children and adolescents characterized by a significant gap between the expected level of intelligence and academic ability and that actually achieved. It is further explained that learning difficulties are probably caused by disturbances within the central nervous system (brain neurobiological disorders) resulting in developmental disorders, such as those of speech development, reading, writing, understanding, and numeracy. Slow learners tend to demonstrate limited ability with an intelligence quotient (IQ) score of between 70 and 89 or slightly below what is generally considered to be normal. However, individuals falling within this category are not regarded as being mental retardation.⁴

The phenomenon of slow learning has recently become a significant problem since the number of children presenting this type of problem is outstripping that of those suffering from other disabilities, such as mental retardation, learning disabilities, visual/hearing disorders, and brain/head trauma.⁵ The proportion of slow learners has even reached 14% of the total population of children with special needs. Once this percentage exceeds 10%, it is considered to be relatively large. Moreover, the physical condition of slow learners is similar to that of normal children, causing them to be neglected although they actually need relatively special guidance. In other words, slow learners are children with disorders, but who do not present physical symptoms which highlight their developmental condition.⁶

Slow learners are also characterized by a slightly lower than average intellectual potential, but are excluded from the various categories of mental disorder. Such individuals take a long time and require repetitive practice in order to be able to complete tasks, both academic and non-academic in nature.¹ Child health care for slow learners, for instance, requires more attention since their condition can trigger oral health problems due to their not being prioritised within individual health services.⁷ Based on the results of preliminary research, the majority of young slow learners (80.64%) suffer from poor oral hygiene and unattended dental needs.

These problems will worsen such children's general health, while also undermining their overall feelings of well-being, thus increasing the difficulties in satisfying their nutritional requirements. Consequently, dental hygiene in young slow learners should attract more concern since their oral hygiene and dental health status remain poor. According to the WHO global oral health indicator on the dental and oral health status of Indonesians, the government has succeeded in maintaining that of children, adolescents, adults, and elderly people. In addition the Ministry of Health's target of keeping every child free from caries and able to maintain healthy teeth and mouth has reached 90%.⁸

Changing the knowledge and attitudes of those slow learners can actually only be achieved through a deliberate policy with a grand design, involving certain processes.⁹ A method used to implement the master plan must be supported by an appropriate strategy.¹⁰ Thus, a proper method is very helpful for the effecting of behavioral changes in target populations. Changes in behavior or adoption of behaviors based on knowledge and attitude can be enduring in nature. There are actually various factors affecting one's knowledge and attitude, one of which is the media.¹¹

The media can support participants in acquiring a better understanding of health education. Indeed, health workers use its various channels as a means of delivering health-related materials. The health education media most commonly used for demonstrations are models of human body (dummies) and audio video.¹² The latter, is one form of audio-visual aid that can display a moving object together with natural sound. It may hold learners' attention and concentration during the teaching process as well as enabling them to focus on those explanations of material that need to be emphasised.¹³

Video has several advantages. For instance, it is dynamic, impressive and stimulating, thus accelerating the development of one's understanding.¹⁴ However, this particular audio-visual aid also has several drawbacks. For example, an unclear image can lead to a lack of certainty on the part of the audience. Video also requires some means of projection equipment to display the image, thereby rendering it comparatively expensive. Nevertheless, previous research shows that video could positively influence the dental and oral health care behavior of those slow learners with special needs.¹⁵

Consequently, it is necessary to adopt an appropriate approach to providing dental and oral health services for young slow learners in order to increase their self-reliance in maintaining healthy teeth and achieve optimal dental and oral health. The approach must be capable of stimulating their health as well as prioritizing and promoting preventive efforts at an early age in order to improve their behavior in maintaining oral health.

This study aimed to analyze the effects of teaching effective brushing by means of an audio video-based methodology on the knowledge and attitudes of young slow learners. Therefore, the results were expected to influence the behavior of those young slow learners in maintaining their oral health as well as in improving their dental and oral hygiene by means of an audio video method.

MATERIALS AND METHODS

This study was a quasi-experimental research incorporating the use of pre test-post test methods within a two-group design.¹⁶ The sampling technique used was purposive in nature. The number of respondents with slow

learning problems participating in this research totalled 31 divided into two groups. Group I consisted of 16 children instructed in brushing technique using an audio video method, while Group II contained 15 individuals who were taught by means of demonstration. Before performing intervention, Groups I and II had to complete questionnaires. This research was conducted at Sekolah Dasar Negeri 1 Astana (model inclusion school) Gunung Jati Subdistrict Cirebon regency West Java Province.

Both groups were evaluated at day 21¹⁷ with the variables measured at this stage of the research being knowledge of and attitude to tooth brushing collected from subjects by means of questionnaires. Data collected was then subjected to an independent t-test. The knowledge variable in this research was interpreted as the slow learners' level of understanding and awareness about dental and oral hygiene maintenance. The attitude variable in this research was interpreted as their attitude to the maintenance of oral hygiene.

RESULTS

Characteristics of the research respondents based on gender can be seen in Table 1. Based on Table 1, the majority of respondents in Groups I and II were male at 56.25% and 60% respectively. Another characteristic of the research respondents, namely, that based on age is shown

in Table 2. Based on the contents of Table 2 most of the respondents in Groups I and II were aged ten years old. In group I, they numbered five (31.25%), while in Group II the total was four (26.67%). The independent sample T-test results illustrating the mean knowledge of the respondents in both groups based on the pre test and the post test can be seen in the Table 3.

Based on the results of the pre test and post test in Table 3, a difference in the mean scores of the knowledge variable between Groups I and II existed. The mean score of the knowledge variable of Group I young slow learners during the pre test was 43.75, higher than that of Group II at 35.11. However, there was no significant difference in the mean scores of the knowledge variable between Groups I and II during the pre test as indicated by a p value of 0.81 ($p > 0.05$).

Similarly, the mean scores of the knowledge variable of the group I young slow learners during the post test was

Table 1. Characteristics of the research respondents based on gender

No	Gender	Group I		Group II	
		n	%	n	%
1	Males	9	56.25	9	60
2	Females	7	43.75	6	40
	Total	16	100	15	100

Table 2. Characteristics of the research respondents based on age

No.	Age (years)	Group I		Group II	
		n	%	n	%
1	8	2	12.5	2	13.33
2	9	4	25	3	20
3	10	5	31.25	4	26.67
4	11	1	6.25	2	13.33
5	12	2	12.5	2	13.33
6	13	2	12.5	2	13.34
	Total	16	100	15	100

Table 3. Analysis of the mean score for the knowledge variable in both groups based on pre test and post test results

No.	Knowledge variables	Pre test			Post test		
		n	Mean	p	n	Mean	p
1	Group I	16	43.75	0.81	16	55.00	0.003
2	Group II	15	35.11		15	40.45	

Table 4. The analysis results of the mean score of the attitude variable in Groups I and II based on pre test and post test results

No.	Knowledge variables	Pre test				Post test			
		n	Mean	t	p	n	Mean	T	p
1	Group I	16	40.56	1.66	0.81	16	47.43	5.083	0.000
2	Group II	15	38.13			15	41.26		

55.00, a level higher than that of Group II (40.45). There was a significant difference between Groups I and II's knowledge variable mean scores during the post test as indicated by a p value of 0.003 ($p > 0.05$). The independent sample t-test results indicating the mean scores of the attitude variable for both groups based on the pre test and post test results can be seen in Table 4.

Based on the pre test and post test results, there was no difference in the mean scores of the attitude variable between Groups I and II ($p = 0.253$) during the pre test. In contrast, there was a significant difference in the mean scores of the attitude variable between Groups I and II ($p = 0.000$) during the post test (Table 4).

In addition, the mean score of the knowledge variable of those young slow learners in group I during the post test was 47.43, higher than for Group II at 41.26. There was a significant difference in the mean scores of the attitude variable during the post test between Groups I and II as indicated with a t value of 5.083 and a p value of 0.000 ($p > 0.05$).

DISCUSSION

Children with a slow learning condition are also known as slow learners and include individuals with special needs who require specific forms of support. Slow-learning constitutes a learning disorder in children and adolescents characterized by a significant gap between the level of intelligence and academic ability. It is most probably caused by disturbances to the central nervous system, especially the brain (neurobiological disorders) that can cause developmental problems, such as ones affecting speech development, reading, writing, understanding, and numeracy.⁸

Slow learners typically demonstrate restricted IQ levels between 70 and 89 which, although slightly below normal, are not necessarily indicative of mental retardation.⁴ As a result, they tend to require considerable time and repeated attempts to complete both academic and non-academic tasks.¹ Based on an analysis of the respondent characteristics (gender and age) in the research described here, there was a balance in the frequency and percentage of data distribution in both Groups I and II consisting of 16 and 15 children respectively, given intervention in the form of audiovisual teaching about brushing technique, see Tables 1 and 2.

The results of the analysis confirmed no significant difference between the Groups I and II pre test mean scores. However, the mean score of the pre test for group I was higher than that for Group II. This is because these respondents' knowledge about tooth brushing remained low due to an uninteresting and non-repetitive teaching methodology. This result is in line with that of a research project conducted by Fitrika.⁸

The study also indicates that there was a significant difference in the mean scores of the knowledge variable between Groups I and II during the post test. Group I was significantly higher than Group II (Table 3) because the material of the two groups was delivered using different methods. The slow learners in Group I acquired the material by means of an audio video presentation method, while those in Group II acquired the material on a face-to-face basis. The former employed displays such attractive images that could attract the attention and hold the concentration of those slow learners during the learning process as well as focusing on those explanations of the materials requiring considerable emphasis.

According to the statistical analysis, there was no significant difference in the mean scores of the attitude variable between Groups I and II during the pre test. Nevertheless, the mean score of the attitude variable in Group I during the pre test was higher than of Group II (Table 4). Besides, it was established that after the post test, the mean score of the attitude variable of Group I was higher than of Group II. This result was supported by statistical analysis, confirming there to be a significant difference in the mean scores of the attitude variable result between Groups I and II (Table 4) during the post test. This is because the teaching method used with group I was different from that with Group II and affected the mean result for attitudes.

Based on the description above related to behavior influenced by knowledge and attitude variables, a dynamic balance between such variables promoting both positive dental and oral hygiene habits and results was to be expected. Factors potentially affecting the behavior of young slow learners with regard to dental and oral health care can be assigned to one of three categories, namely; predisposing factors, supporting factors and driving factors. Predisposing factors consist of triggering behavioral changes motivating the formation of particular behavior, including; knowledge, attitudes, beliefs, and values. Supporting factors are ones facilitating individual or group behavior, encompassing three main aspects. These are firstly, the availability, affordability and effectiveness of health care resources, secondly, community priorities and commitments, and thirdly, government and health-related measures. Driving factors constitute those which encourage the strengthening of the behavior of community leaders, health workers, teachers, and families.^{8,18,19}

The use of audio video depicting a moving object accompanied by natural or appropriate sound can promote the concentration of the young slow learners during the teaching process. In addition, it can focus their attention on the explanation of material deserving of special emphasis. An audio video method also can stimulate the brain cells of those young slow learners since audio-visualization can attract attention and focus it on explanations, thus resulting in a better understanding of the concept compared

to that resulting from a manual method. In conclusion, the provision of awareness-raising material regarding effective forms of tooth brushing to young slow learners via audio video methods can change their knowledge and attitude related to their oral hygiene activity.

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