

Implementation of Video Modeling Animation on Toilet Training Ability in Autism Spectrum Disorders

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ABSTRACT

INTRODUCTION: Toilet training is critical for the quality of life of individuals with autism spectrum disorders (ASD) and other developmental disabilities. This is essential because an individual with ASD is often late to acquire these skills or fails to do so. This study aims to identify and analyze the implementation of animation video modeling (AVM) to improve toilet training abilities in children with autism spectrum disorders.

MATERIALS AND METHODS: The research uses a quantitative descriptive approach with an experimental research design using One Group Pretest Posttest Design. The pretest was carried out before the intervention, and the posttest was carried out after the AVM gave toilet training intervention. The sampling technique was in the form of total sampling, namely 50 children (43 boys and 7 girls) with autism. The research instrument was a checklist of statements. Data analysis using the Wilcoxon Sign Rank Test.

RESULTS: The results showed that almost half of the ability levels of children with autism before being given AVM toilet training were in a suitable category, nearly half of the children with autism after being given treatment were in a good type with a p-value 0.011; there was a significant difference in the level of ability before and after given an AVM. **CONCLUSION:** AVM is one of the effective interventions to improve toilet training abilities in children with ASD. AVM can help children in the elimination process that can be done independently in improving the quality of life in children with autism.

Keywords

Autism Spectrum Disorder, Toilet Training, Quality of Life

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INTRODUCTION

Autism spectrum disorder (ASD) is a developmental disorder characterized by impaired communication, language, and social interaction, as well as an interest in certain things and repetitive behavior.¹ Children with ASD experience neurodevelopmental disorders characterized by two main symptoms, lack of social communication and social interaction in various contexts, and limited and repetitive patterns of behavior, interests, or activities. Behavioral characteristics of autistic children include hyperactivity, self-injury, and obsessive behavior.² Abnormalities that occur in children with autism are experiencing child development disorders both from cognitive, affective, and psychomotor aspects.

These disorders can affect children in communicating, behaving, interacting socially, and controlling unstable emotions. Disorders experienced by children with autism can hinder their learning process, but they still have the potential to be trained in their abilities. As a result, they

may find it challenging to understand what they want, and are not easily motivated by a desire to please their parents or caregivers. They may not care about the environment around them and are preoccupied with the world they have created.³ This can affect different developmental disorders. So, the most important training that needs to be done in children with autism is so that they can help themselves or take care of themselves, such as how to eat, bathe, defecate, wear clothes, and others.

Globally, the incidence of ASD is increasing every year. In 2014, 1 in 59 children had ASD. The prevalence of ASD worldwide is estimated at 6 out of every 1000 children, and people treated with ASD are experiencing significant health problems.^{4,5} In the United States of America (USA), children diagnosed with autism increases yearly and is estimated to be 1 in 88 children aged eight years. It is not limited by race, ethnicity, and socioeconomic circumstances. Centre for Disease Control

and Prevention (CDC) data is limited to the USA and Europe.⁶ In Indonesia, in 2015, it was estimated that approximately 12,800 children had ASD or 134,000 people with ASD.⁷ In children with autism, certain daily activities can affect them, such as eating, toilet training, and sleeping.⁸

The activities of daily living (ADL) that need independence in children include the toilet training process. The toilet training process involves the body's organs, besides that in toilet training activities, there is urinating or urinating and defecating. So, it is essential that children need to be independent to carry out toilet training activities, so that they don't depend on others. This is one of the developmental tasks in children.⁹ All children must complete this developmental task by obeying the rules to gain self-reliance and self-esteem.¹⁰ Toilet training is an additional skill that is important to do through urination and defecation exercises. Defecation in the toilet or bathroom is done by following the stages of the child's age and time so that the child can do it independently and is socially acceptable.¹¹

The implementation of the toilet training process in children with autism will have a positive impact on their mental and physical² development, such as increasing social interaction and motor skills in meeting their needs independently.¹² Thus, the ability of toilet training in children with autism has some difficulty. Toilet training of children with autism is very complex and requires various skills to teach it to children. In addition, toilet training procedures depend on the child's needs, age, and ability as an essential factor in implementing toilet training. Independent toileting is a critical functional skill in life. These skills are often delayed in children with autism.¹³

These problems are often faced by autistic children who require a solution in the form of support from parents and families to guide and train these children to form the necessary independence. Failure of toilet training or urination and defecation skills acquired during the toilet training period can lead to dysfunctional micturition problems or disturbances in the form of enuresis, urinary tract infections, constipation, encopresis, and refusal to

use the toilet.¹⁴ If it continues into adolescence when children cannot have bladder control at night, it will psychopathological problems and suicidal behavior.¹⁵ The process of model intervention through video representation can involve individuals watching the demonstration shown in the video and then imitating the demonstrated behaviours.^{6,17,18} The use of video modeling as an alternative to learning new behaviour formation in providing stimulation to the visual, auditory, and other senses is more quickly accepted.¹⁹

Video modeling is widely applied because respondents can immediately watch and remember what they care about through the show and use it as an example so that respondents can quickly understand what is given through the video. In addition, the steps can be combined with the use of other film techniques, such as animation, which combines still and motion images and can be played back.²⁰ Used animated videos to provide toilet training to children with autism, showed that this intervention was effective in increasing the behavior of children walking to the toilet, undressing, sitting, and urinating in the bathroom, the toilet, and pressing the flush.²¹ Currently, there has been many research on toilet training for children with autism. However, there is still very little research related to educational media for children with autism through animated video modeling about toilet training. Therefore, it will be useful to conduct this research. This study aims to identify and analyze the implementation of video modeling animation to improve toilet training abilities in children with autism spectrum disorders.

MATERIALS AND METHODS

Study Population and Design

This study used a quantitative descriptive approach with an experimental research design that uses the One Group Pretest Posttest Design. A pretest was conducted to measure before intervention. Subsequently, the posttest was shown after being given an animated video modeling toilet training intervention for children with autism spectrum disorders. This research was conducted at Our Dream Indonesia, the Center for Growth and Development Therapy for Children and Adolescents with

Special Needs In Bandung, West Java Province, in July 2022.

Sample Size

The sampling technique in this study was total sampling, namely, all 50 children (43 boys and 7 girls) with autism in Our Dream Indonesia.

Data Collection and Research Instruments

The data collection process was carried out with an explanation of the aims and objectives of the study to the participants and accompanying teachers. After obtaining informed consent from the school or the accompanying teacher, we assembled the children in an open area to watch the video on the toilet training process accompanied by their respective teachers. Given the intervention, the children were pretested using an observation sheet by their accompanying teachers, who then watched the video. Afterward, a post-test was carried out with statement questions on the same observation sheet. The research instrument used in this study was a questionnaire. In this questionnaire instrument, yes or no answer options were provided so that respondents only need to provide a checklist in the statement column that has been provided on the questionnaire sheet the researcher has made.

Before carrying out the research, the researchers tested the validity and reliability of the research instrument. The validity test was carried out among 20 children with autism while still carrying out health protocols, starting from washing hands, wearing masks, and keeping a 1 metre distance. The validity test result showed that from the 14 statement items, there were nine valid statement questions with $r_{count} > r_{table}$, where r_{table} product moment for 20 people with a significant level of 5%, namely 0.444. Obtained the question of a valid statement, and The r_{count} was between 0.462-0.818. The reliability results test showed that the value of Cronbach's Alpha was 0.770.

Statistical Analysis

Data entry and analysis were performed with the SPSS version 20. Descriptive statistics including frequencies and percentages analysis were used to describe characteristic

respondents. The Wilcoxon Test was used to determine the effect of video modeling animation on toilet training abilities in children with autism spectrum disorders.

INSTITUTIONAL REVIEW

This research received ethical approval from the Health Research Ethics Commission, Faculty of Health Science and Technology, Universitas Jenderal Achmad Yani Cimahi, Indonesia with No. 10/KEPK/FITKES-UNJANI/V/2022 on 19 May 2022.

RESULTS

Characteristics of Parents and Children

The characteristics respondent included the ages of the parents, the occupation of the parents, the education of the parents, and the gender and age of the child which can be seen in Table 1

Table 1: Characteristic Frequency Distribution (n= 50)

Characteristic		
	Frequency	Percentage (%)
Parent's age		
31-35 year	2	4
36-40 year	4	8
41-45 year	7	14
46-50 year	9	18
51-55 year	14	28
56-60 year	8	16
>60	6	12
Parents' job		
Work	22	44
Doesn't work	28	56
Parent's education		
SMA	10	20
Diploma	23	46
Sarjana	3	6
Magister		
Child Gender		
Boys	43	86
Girls	7	14
Child Age		
3-5 year	10	20
6-12 year	17	34
12-15 year	11	22
>15 year	12	24

As shown in Table 1, it was found that almost half of parents who have children with autism were in the age group 51-55 years, totaling 14 people (28%). The parents the distribution of work, parents who did not work as many as 28 people (56%), almost half of the distribution of parental education are undergraduate graduates, which were 23 people (46%), and nearly all of the respondents

were males, namely amounted to 43 people (86%) and almost half of the respondents were in the age of 6-12 years (34%).

Description of the child's ability level before and after being given animated video modeling about Toilet Training for Autism Spectrum Disorder (ASD) children.

Table 2: Frequency distribution of the ability level of children with autism in toilet training Years before and after 2022 (N=50)

No	category	Pre Test			Post Test		
		F	%	Mean	F	%	Mean
1.	Good	20	40		22	44	
2.	Enough	22	44	3,00	21	42	5,78
3.	Less	8	16		7	14	
	Jumlah	50	100		50	100	

As shown in Table 2, the results of the research from all respondents (50 people) can be explained that almost half of the ability levels of children with autism before being shown the animated video modeling toilet training was in a good category, namely as many as 22 children (44%) with an average value of 3.00 and almost half of the ability level of children with autism after being given treatment were in a good category as many as 22 children (44%) with an average value of 5.78.

Table 3: Test Results for Different Levels of Toilet Training Before and After Animated Video Modeling Using Wilcoxon Test

	N	Percentage (%)	<i>p Value</i>
Decrease	1	2	
Increase	26	52	0.011
Permanent	23	46	
Jumlah	50	100	

Table 3 shows that 26 respondents experienced an increase in toilet training ability, 23 respondents with a fixed level of toilet training ability, and one decreased ability level. This indicates that the posttest value is greater than the pretest, with an average increase of 2.78. The statistical test results obtained a p-value of 0.011, which means that at 5% alpha, it can be concluded that there is a significant difference in the level of ability before and after being given animated video modeling about toilet training in children with autism spectrum disorders.

DISCUSSION

The results revealed that most of the parents in this study were in the 51-55 year age group, not working, and undergraduate graduates education. Parental education is very influential in the success of toilet training in children. Parents who have higher education will understand the issues better. The higher the person's level of knowledge, the better their behavior will be.

Parental education can support the success of the toilet training process. This is because people who are highly educated will understand better things that might have a positive impact on their children. Parents with higher education will also find it easier to understand that if toilet training is not carried out, it can lead to enuresis, encopresis, and defecation in the pants. Toilet training in autistic children is a fundamental skill for them to grow and develop. Toilet training in autistic children is a process of training and inculcating the habit of being able to urinate and defecate in its place, namely in the toilet.

This research indicates that the posttest value is greater than the pretest, with an average increase of 2.78. Statistical test results obtained a p-value of 0.011, meaning that at 5% alpha, it can be concluded that there is a significant difference in the level of ability before and after being given animated video modeling about toilet training in children with autism spectrum disorders. In this case, based on the results of observations, several factors can affect the increase in ability in toilet training in children with autism, namely the presence of animated video modeling media that can be watched repeatedly to be imitated, the availability of posters about the steps of toilet training in the toilet, closeness, and trust with caregivers.

The use of Video Modeling is an effective intervention in teaching the sequence of behaviours needed for successful toileting and independently (e.g., walking to the toilet, undressing, sitting on the toilet, dressing, and flushing) and urinating or defecating in children with autism. This modeling video includes watching a video of a model

actor engaging in the target behaviour, with the aim that the observer will imitate this behaviour. This modeling video effectively trains children with various diagnoses of diverse skills, including language, play, behavioral expectations, self-care, and social skills.^{22,23,24}

Practical toilet training uses animated toileting videos with operant conditioning strategies. Animation can facilitate toilet training elimination in the toilet, which is an essential step in toileting.²⁵ Video modeling media can attract the interest of children and focus on watching videos or toilet training skills demonstrated by the model in the video.²⁶ Parents or caregivers of children with autism can do this toileting intensively with patience, perseverance, and consistency in implementation. Video modeling in conjunction with operant conditioning techniques can improve the achievement of urination skills, especially during the day, among children with autism compared to operant conditioning techniques alone. In the treatment/control conditions, the frequency of urination in the toilet was more significant in children who watched toileting videos than in children who did not.

Some factors that may be important in toileting include video modeling, operant conditioning techniques, the setting where the training takes place, privacy, and frequency of toilet visits.²⁷ This child with autism has a disorder in the developmental aspects of communication, social interaction, and behavior. Support from the family is needed by parents who have ASD children. Family support has several aspects, including social support, emotional support, instrumental support, and informational support.²⁸ Therefore, family support plays an essential role for children, one of which is toilet training. Toilet training in children is one of the stages of development that must be achieved. The achievement of this stage of development can shape the character of the child development stage to be independent and understand personal hygiene.

Early childhood to develop independence, by habituating from an early age can grow the value of autonomy in children. So that it can affect their lives as adults, especially for children with special needs, it is essential to be trained on their independence from an early age. In the

implementation of toilet training, the value of children's independence can be seen from the way children know the method of urinating, open their pants, and carry out personal hygiene. A child can be said to be ready to carry out toilet training if he or she is physically and mentally able to do it.²⁹ There are four aspects of a child's readiness to carry out toilet training: The child's physical readiness, where the child must be able to stand or squat strongly; the child's psychological readiness, the child already feels uncomfortable using diapers; the child's mental readiness, the child is able and knows the desire to urinate and the child can communicate his desire to urinate; parental readiness, knowledge and mental readiness of parents are essential before the toilet training process is implemented because it can affect the success factors in implementing toilet training for children.³⁰ Children with autism need visual information to help them independently carry out daily living activities.³¹ The support and attention given by parents and the many interactions generated between parents and children will give good results in the implementation of toilet training for children. Mothers play an essential role in the upbringing and development of their children. Other family members also need to be physically and psychologically supported.³²

LIMITATIONS OF THIS STUDY

This study has several research limitations, including the small number of samples and the process of collecting data during the COVID-19 pandemic. However, the researchers believe that the findings of this study can support further research with a broader scope. The results of this study can be promoted to parents, especially mothers, families, and specialized professionals in health services.

CONCLUSION

Toilet training is essential for children according to their developmental stages. Children learning to use the toilet independently generally are 2-3 years old, but children with autism can be more than three years old. Therefore, parents must continue to accompany their autistic children so that they can know when their children can start to train their children to toilet training. With the

proper family support and animated video modeling media, it can help facilitate the implementation of toilet training for children with autism.

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CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest in this study.

REFERENCES

1. Wang Y, Xiao L, Chen RS, et al. Social impairment of children with autism spectrum disorder affects parental quality of life in different ways. *Psychiatry Research* 2018; 168:174-266.
2. Sitimin SA, Fikry A, Ismail Z, et al. Work-family conflict among working parents of children with Autism in Malaysia. *Procedia Computer Science* 2017; 345:352-105.
3. Richardson, D. Toilet training for children with autism. *Nursing children and young people* 2016; 16:22-28. Available at: <https://pubmed.ncbi.nlm.nih.gov/>. Accessed February 20, 2023.
4. Bearss K, Burrell TL, Stewart LM, et al. Parent training in autism spectrum disorder: what's in a name. *Clinical Child and Family Psychology Review* 2015; 170:182-18.
5. Bearss K, Johnson C, Smith T, et al. Effect of parent training education on behavioral problems in children with an autism spectrum disorder. A randomized clinical trial. *JAMA* 2015; 1524:1533-313.
6. Center for Disease Control and Prevention. Autism Spectrum Disorder [online]. Available at: <https://www.cdc.gov/ncbddd/autism>. Accessed February 18, 2023.
7. Oktaviana W, Amir Y, Indriati, G. Identifikasi tingkat pengetahuan ibu tentang diet casein free dan gluten free pada anak autis. *JOM FKp* 2015; 677:682-5.
8. Lichtle J, Downes N, Engelberg A, et al. The Effects of Parent Training Programs on the Quality of Life and Stress Levels of Parents Raising a Child with Autism Spectrum Disorder: a Systematic Review of the Literature. *Review Journal of Autism and Developmental Disorders* 2020; 242:262-7.
9. Hockenber JM, Wilson D. *Essential Pediatric Nursing*. St.Louis, Mosby, 2009.
10. Karolien , Nore K, Jean JW, et al. Parents' views on toilet training (TT): A quantitative study to identify the beliefs and attitudes of parents concerning TT. *Journal of Child Health Care* 2015; 265:274-19.
11. Klassen TP, Kiddoo D, Lang ME, et al. The Effectiveness Of Different Methods Of Toilet Training For Bowel And Bladder Control. *Evidence Report/Technology Assessment Number 147* 2006; 1:57-147.
12. Francis K, Mannion A, Leader G. The assessment and treatment of toileting difficulties in individuals with autism spectrum disorder and other developmental disabilities. *Review Journal of Autism and Developmental Disorders* [online] 2017; 190:204-4. Available at: <https://link.springer.com/article/10.1007/s40489-017-0107-3>. Accessed January 30, 2023.
13. Sutherland J, Carnet A, van der Meer L, et al. Intensive toilet training targeting defecation for a child with Autism Spectrum Disorder. *Taylor & Francis: Research and Practice in Intellectual and Developmental Disabilities*, 2018: 87:97-5.
14. Hodges SJ, Richards KA, Gorbachinsky I. The association of age of toilet training and dysfunctional voiding. *Res Reports Urol* 2014; 127:130-4.
15. Pratiwi D. Hubungan Antara Tingkat Pengetahuan Ibu Tentang Toilet Training dengan Pelaksanaan Toilet Training pada Anak Usia 1-3 Tahun di PAUD Pelangi di Sukoharjo. *IJMS – Indones J Med Sci* 2019; 65:68-2.
16. Wahyuni AS, Amelia R, Nababan IFF. The difference in educational effectiveness using the presentation slide method with a video about the prevention of hypertension on increasing knowledge and attitude in people with hypertension risk in the health center. *Open Access Maced J Med Sci* 2019; 3478:3482-7
17. Kamba I, Razak A, Saifuddin S. The effect of video on the change of attitude toward stunting prevention among children in state senior high school 1 Topoyo,

- central Mamuju. *Indian J Public Heal Res Dev* 2019; 1315:1320-10.
18. Agustien R, Umamah N, Sumarno S. Pengembangan Media Pembelajaran Video Animasi Dua Dimensi Situs Pekauman di Bondowoso Dengan Model Addie Mata Pelajaran Sejarah Kelas X IPS. *J Edukasi* 2018; 19-5
 19. Abrar EA, Yusuf S, Sjattar EL. Development and evaluation of educational videos of diabetic foot care in traditional languages to enhance knowledge of patients diagnosed with diabetes and risk for diabetic foot ulcers. *Prim Care Diabetes* 2019; 104:110-14.
 20. Nurfajriyani I, Prabandari Y, Lusmilasari L. Influence of video modeling to the toileting skill at the toddler. *Int J Community Med Public Heal* 2016; 2029:2034-3
 21. Drysdale B, Lee CYQ, Anderson A. Using Video Modeling Incorporating Animation to Teach Toileting to Two Children with Autism Spectrum Disorder. *J Dev Phys Disabil* 2015; 149:165-27.
 22. Baker SD, O'Reilly M, & Lang R. Review of video modeling with students with emotional and behavioral disorders. *Education and Treatment of Children* 2009; 403:420-32.
 23. Lang R, Shogren K, Machalicek W, et al. Use of video self-modeling to teach classroom rules to two children with Asperger's syndrome. *Research in Autism Spectrum Disorders* 2009; 483:488-3.
 24. Tereshko L, MacDonald R, Ahearn WH. Strategies for teaching children with autism to imitate response chains using video modeling. *Research in Autism Spectrum Disorders* 2010; 479:489-4.
 25. Keen DL, Karen, Brannigan CM. Toilet Training for Children with Autism: The Effects of Video Modeling. *J Dev Phys Disabil* 2007; 291:303-19.
 26. Kuo CC, Tseng YC, Chang CF, et al. Using Video Modeling Package on Improving Workplace Social Skills of Young Adults with Talent Traits and Autism: A Case Study. *Universal Journal of Educational Research* 2019; 2806:2816-7.
 27. McLay L, Carnett A, Lang R. Using a Video Modeling-Based Intervention Package to Toilet Train Two Children with Autism, *J Dev Phys Disabil* 2015; 27.
 28. Boutot E, & Tincani M. *Autism Encyclopedia*. Waco: Prufrock Press Inc, 2009.
 29. Yasin Z, Aulia NA. Dukungan Keluarga tentang Toilet Training dengan Keberhasilan Toileting pada Anak Usia 1-6 Tahun di Paud Al Hilal Kabupaten Sumenep. *Journal Of Health Science (Jurnal Ilmu Kesehatan)* 2019; 11:20-4. Available at: <https://www.ejournalwiraraja.com/index.php/JIK/article/view/696>. Accessed January 27, 2023.
 30. Wong, Donna L. *Buku Ajar Keperawatan Pediatrik Volume 1 Edisi 6*. Alih Bahasa Agus Sutarna dkk. Jakarta: EGC, 2009.
 31. Prawestri, G & Hartati E. Gambaran Mengenai Status Kebersihan Gigi Dan Mulut Serta Kemandirian Toilet Training Pada Anak Tunagrahita. *Jurnal Ilmu Keperawatan Komunitas [online]* 2019; 7:14-2. Available at: <http://journal.ppnijateng.org/index.php/jikk/article/view/409>. Accessed February 8, 2023.
 32. Andriyani S, Darmawati I, Rahmu U, et al. Qualitative Exploration of Mother's Experience in Caring Children With Autism. *Malaysian Journal of Medicine and Health Sciences* 2021; 56:59-7.