

## ORIGINAL ARTICLE

# Effectiveness of Occupational Therapy on Improving Eating Independence in School Age Children With Down Syndrome at Kendari Autism Service Center, Indonesia

Sri Wahyuni<sup>1</sup>, Anisa Purnamasari<sup>1</sup>, Faridah Mohd Said<sup>2</sup>, Nisha Nambiar<sup>2</sup>

<sup>1</sup> Nursing Study Program, Faculty of Health Sciences, Mandala Waluya University, Kendari, Sulawesi Tenggara 93561, Indonesia

<sup>2</sup> Faculty of Nursing, Faculty of Applied Science; LINCOLN UNIVERSITY COLLEGE. No. 2, Jalan Stadium, SS 7/15, Kelana Jaya, 47301, Petaling Jaya, Selangor Darul Ehsan, Malaysia

## ABSTRACT

**Introduction:** Down syndrome is a genetic syndrome that causes sufferers to experience delays in growth, disability, physical weakness and have a relatively low IQ. There are 8 million people with Down syndrome in the world, of which 3,000-5,000 children are born with chromosomal abnormalities per year. Every child has a developmental task, including children with Down syndrome. One of the developmental tasks that must be achieved by children is to achieve independence. To achieve the level of independence in children with Down syndrome, children need to get a therapy, one of which is occupational therapy. The purpose of this study was to determine the effectiveness of occupational therapy on increasing the eating independence of school-age children with Down syndrome at the Kendari Autism Service Center. **Methods:** The type of research used in this study was pre-experimental with a one-group pretest-posttest design. The population in this study were 60 children with Down syndrome who were at the Kendari Autism Service Center. The sampling technique was purposive sampling with a total sample of 52 people. **Results:** The results of the study is eating independence before being given occupational therapy was in the independent category with a median value (minimum-maximum) of 14.00 (0-36), after being given occupational therapy, the respondents were in the independent category with a median value (minimum-maximum) of 57.00 (36-64). The results of the Wilcoxon analysis showed that the value of  $p = 0.001 < 0.05$ . **Conclusion:** The administration of occupational therapy is effective in increasing eating independence in school-age children with Down syndrome at the Kendari Autism Service Center.

**Keywords:** Occupational Therapy, Eating Independence, Down Syndrome, Children Aged School, Kendari Autism Service Center

## Corresponding Author:

Sri Wahyuni, M.Kes  
Email: sriw5205@gmail.com  
Tel: +62 853-9543-2668

## INTRODUCTION

Down syndrome is a genetic syndrome that is often found and easy to recognize in children. Down syndrome causes sufferers to experience delays in growth, disability, physical weakness and have a relatively low IQ (1). Initially, Down syndrome was seen as a disorder caused by psychological factors, namely the pattern of parental caregivers who were not emotionally warm. Down syndrome is defined as a developmental disorder with three main characteristics, namely impaired social interaction, impaired communication, and limited interests and imagination abilities (2).

According to WHO, it is estimated that there are 8 million people with Down syndrome in the world, of

which 3,000-5,000 children are born with chromosomal abnormalities per year (3). The epidemiology of Down syndrome has reached 8 million cases. In France the number of people with Down syndrome 2,690 cases consisting of 678 cases (25.2%) experienced live births, 46 cases (1.7%) experienced fetal death and 1,966 cases (73.1%) experienced termination of pregnancy for anomaly related to orthodontic problems with anatomical structures related to the growth and development of the skull, jaw teeth or a combination of both that will affect the shape of the face. In Ukraine it was reported that there were 4,550 cases of Down syndrome where as many as 2,220 cases (48.8%) experienced live births, 155 cases (3.4%) experienced fetal death and 2175 (49.8%) pregnancy terminations for anomalies (4).

The Ministry of Health's Basic Health Research stated that in Indonesia there were 0.12% of people with Down syndrome in 2017. That number increased to 0.13% in 2018. The same source stated that the prevalence of

Down syndrome children in Indonesia reached 300,000 people with a ratio of 1:1000 (5). Based on data from the Social Service of Southeast Sulawesi Province (2020) the number of people with Down syndrome (Students with intellectual disabilities) has increased from 2019 to 2020. From the available data, the number of people with Down syndrome in 2019 was 470 cases, while in 2020 there were 1006 cases, with the most cases in Konawe Regency 300 children (31.38%), followed by Kendari City 230 children (24.05%), Buton Regency 202 children (21.1%), Muna Regency 175 children (18.30%) and Wakatobi Regency 99 children (10.35%) (6).

Every child has a developmental task, including children with Down syndrome. One of the developmental tasks that must be achieved by children is to achieve independence. The independence that must be taught to children, especially children with special needs is self-development activities such as eating, drinking, toilet training, bathing, tidying up toys and dressing without the help of others. However, teaching independence is not an easy thing, especially for children with special needs such as children with Down syndrome and autism (7). To achieve this level of independence, children must be able to coordinate between motor, cognitive and language abilities. The motor development of children with Down syndrome is different from the development of other normal children. Independence problems in children with Down syndrome, such as difficulty combing their hair, buttoning their clothes, learning difficulties, being unable to eat and fulfilling daily activities (8). To achieve a level of independence in children with Down syndrome, children need to get therapy that can support the process. One of the therapies that can be given to children with Down syndrome is occupational therapy. Occupational therapy is a therapy that combines art and science to direct the patient to a selective activity so that health can be improved and maintained, and can prevent disability through activities and work activities for people with mental or physical disabilities (4). Occupational therapy is very useful for children in developing independence and increasing focus or concentration not only for children with Down syndrome but also for autistic children in learning and interacting (9).

The purpose of this study was to determine the effectiveness of occupational therapy on increasing the eating independence of school-age children with Down syndrome at the Kendari Autism Service Center.

**MATERIALS AND METHODS**

**Sample**

The type of research used in this research is pre-experimental with one group pretest-posttest design, which is an experimental design carried out on one group of subjects without a comparison group. The population in this study was 60 children with Down syndrome

who were at the Kendari Autism Service Center. The sampling technique was purposive sampling with a total sample of 52 people. Standard Operating Procedures and observation sheets were made by researchers and used to obtain data in this study. Respondents will be measured the level of independence before being given occupational therapy. After that, intervention in the form of occupational therapy was carried out to the respondents for 4 sessions and continued to measure the level of independence after being given therapy.

**Ethical Approval**

Ethical approval for this study was obtained from the Mandala Waluya Kendari School of Health Sciences (Ref No : 1006.D/STIKES-MW/VI/2020). The confidentiality of participants is strictly protected.

**Statistic Analysis**

We use computer programs to perform data analysis. The analysis carried out, in this case is a univariate analysis carried out to describe each variable, namely the dependent variable is an increase in the eating independence of school-age children with Down syndrome, while the independent variable is the provision of occupational therapy. Bivariate analysis was conducted to determine whether or not the effectiveness of occupational therapy on increasing the eating independence of school-age children with Down syndrome at the Kendari Autism Service Center was carried out.

**RESULTS**

The results of the univariate analysis were based on the effectiveness of giving occupational therapy to increase the eating independence of school-age children with Down syndrome at the Kendari Autism Service Center before and after the intervention. Based on the distribution of respondents by age group. Table 1 shows that among the 52 respondents aged 3 years there were 29 respondents (55.8%), aged 4 years there were 8 respondents (15.3%), aged 5 years there were 15 respondents (28.9%). Based on the distribution of respondents' gender groups, it can be seen in Table 1 that of the 52 research respondents, the number of male respondents was more than female, male respondents were 37 respondents (71.1%), while 15 respondents were female (28.9%).

**Table 1: Distribution of Respondents by Age and Gender**

Variable	n (52)	%
Age		
3 years	29	55.8
4 years	8	15.3
5 years	15	28.9
Gender		
Male	37	71.1
Female	15	28.9

Before analyzing the intervention, the data were first tested for the normality of the intervention which was analyzed using the Shapiro-Wilk test. The results of the normality test in table II show that the  $\rho$ -value before being given occupational therapy is 0.023 ( $p$ -value  $<0.05$ ) and after being given occupational therapy, the  $\rho$ -value is 0.014 ( $p$ -value  $<0.05$ ) This value indicates that the data distribution is not normal.

**Table II: Normality Test**

Independent Eating	$\rho$ -value	$\alpha$	Conclusion
Before being given Occupational Therapy	0.023	0.05	Abnormal
After being given Occupational Therapy	0.014	0.05	Abnormal

Analysis of the effectiveness of the independence of autistic children before and after being given occupational therapy, the intervention analyzed by testing (Wilcoxon), as shown in table III. The results of the analysis in table III show that in this study, the respondents who were not independent before receiving the intervention (pre-test) were 51 respondents (98.1%), reduced to 3 respondents (5.8%) after receiving the intervention (post-test). While the independent respondents before receiving the intervention (pre-test) were 1 respondent (1.9%) and increased after receiving the intervention (post-test) as many as 49 respondents (94.2%). So it can be seen that there is a positive effect of occupational therapy on increasing the independence of autistic children.

The statistical test (Wilcoxon) showed that the study results had a significant difference in increasing the independence of autistic children before and after being given occupational therapy intervention with a  $p$ -value of 0.001 less than 0.05. Therefore, the occupational therapy provided has effectiveness in increasing the independence of autistic children at the Kendari autistic service center.

**DISCUSSION**

Trisomy 21, the presence of a supernumerary chromosome 21, results in a collection of clinical features commonly known as Down syndrome. Down syndrome is among the most genetically complex of the conditions that are compatible with human survival post-term, and the most frequent survivable autosomal aneuploidy(10). Down syndrome children are a group that it difficult to carry out activities independently because of the limitations experienced. To increase independent assistance in carrying out their daily lives,

children with Down syndrome have difficulties such as walking, eating, and cleaning themselves, they need other people. Down syndrome children have intelligence levels below 30. With this intelligence, down syndrome children only have optimal intelligence equivalent to normal children aged 3 years (9,10).

Independent children will have good self-adjustment, quality of life and greater self-satisfaction can carry out self-management and can cope with everyday problems. The independence of children with Down syndrome will bring happiness to their parents and siblings. However, there is a group of children with special needs who from birth are expected to experience difficulties in establishing independence (11). Based on the results of this study, after intervention in the form of occupational therapy, the results were in the form of increasing the respondent’s eating independence. In the types of activity items, some children who previously could not do activities at all or needed a stimulus, after being given occupational therapy the child became able to carry out activities on their own without being stimulated.

The occupational therapy given has a role in increasing independence in children with Down syndrome, this is because occupational therapy can restore the main physical functions, increase joint space, muscle strength and coordination of movements that can increase the independence of children with IQ below normal such as Down syndrome. In children with Down syndrome IQ is very influential on growth and development, be it motor development, language, cognitive and personal-social. Children with higher IQ levels will be quick to acquire and process information (stimulus) that has been received (4).

**CONCLUSION**

This study concludes that there is an effect of giving occupational therapy in increasing eating independence in school-age children with Down syndrome at the Kendari Autism Service Center.

**ACKNOWLEDGEMENTS**

The authors are thankful to the Kendari Autism Service Center for permitting the researcher to use the data collected during this intervention and to publish the findings. The authors are thankful to the participant children, therapists, and heads of autism services without whose direct support this research would not

**Table III: Independence of Autistic Children before and after Occupational Therapy**

Independent Autism Children’s Eating	Independent		Not Independent		Total		Median (Min-Max)	p Value
	n	%	n	%	N	%		
Before occupational therapy	1	1.9	51	98.1	52	100	14.00 (0-36)	0.001
After occupational therapy	49	94.2	3	5.8	52	100	57.00 (36-64)	

have been carried out properly.

## REFERENCES

1. Wong DL. Textbook of Pediatric Nursing 6th Edition. 2015. Vol. 01. Jakarta: EGC;
2. Davison GC. Abnormal Psychology. 2012. Jakarta: PT. Rajagrafindo Persada;
3. World Health Organization. The Health Service [Internet]. 2012. Available from: [http://www.who.int/topics/health\\_services/en/](http://www.who.int/topics/health_services/en/)
4. Raffi I, Indriati G, Utami S. The Effectiveness of Giving Occupational Therapy to Increase Eating Independence in School-Age Children with Down Syndrome. 2018. J Sriwij Nurs [Internet]. 05(01). Available from: [https://ejournal.unsri.ac.id/index.php/jk\\_sriwijaya/article/view/5098](https://ejournal.unsri.ac.id/index.php/jk_sriwijaya/article/view/5098)
5. Basic Health Research. Research Agency and Health Development Ministry of the Republic of Indonesia [Internet]. 2018. Available from: [http://www.depkes.go.id/resources/download/infoterkini/materi\\_rakorpop\\_2018/Hasil%20Risikesdas%202018.pdf](http://www.depkes.go.id/resources/download/infoterkini/materi_rakorpop_2018/Hasil%20Risikesdas%202018.pdf)
6. Southeast Sulawesi Provincial Social Service. Down Syndrome Data Throughout Southeast Sulawesi. Kendari; 2020.
7. Matson JL, Hattier MA, Belva B. Treating adaptive living skills of persons with autism using applied behavior analysis: A review. *Res Autism Spectr Disord*. 2012 Jan;6(1):271–6.
8. Soetjningsih, Ranuh. *Child Growth*. 2017. 02 ed. Jakarta: EGC;
9. Katsiana A, Strimpakos N, Ioannis V, Sofologi E, Bonti E, Stilian K, et al. Health-related Quality of Life in Children with Autism Spectrum Disorder and Children with Down Syndrome. *Mater Socio Medica*. 2020;32(2):93.
10. Antonarakis SE, Skotko BG, Rafii MS, Strydom A, Pape SE, Bianchi DW, et al. Down syndrome. *Nat Rev Dis Primer*. 2020 Jan;6(1):9.
11. Krell K, Haugen K, Torres A, Santoro S. Description of Daily Living Skills and Independence: A Cohort from a Multidisciplinary Down Syndrome Clinic. *Brain Sci*. 2021 Jul 30;11(8):1012.
12. Bremner GJ, Wachs DT. *Infant Development*. 2012. Second. Vol. 02. Applied and Policy Issues;