

Original Research

Improving Self-Care in Children with Down Syndrome: A Pilot Study Of Combined Intervention

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ABSTRACT

Background: Children with Down syndrome (DS) often experience delays in developing self-care skills, which are essential for independence and participation in daily life. This pilot study aimed to examine preliminary changes in self-care independence following a combined direct self-care intervention and animation-based home program.

Methods: A pre-experimental one-group pre-test and post-test design was used. Sixteen children with DS were recruited purposively from two occupational therapy services in Yogyakarta and Sukoharjo, Indonesia. The intervention combined therapist-led self-care training with a daily animation-based home program supported by caregivers for one month. Self-care independence was assessed using a 63-item Self-Care Ability Questionnaire. Data were analyzed using the Shapiro–Wilk test and paired sample t-test.

Results: Self-care scores increased following the intervention, with a statistically significant pre-test to post-test difference ($t = -9.970$, $p < 0.001$). The mean difference was -13.500 ($SD = 5.416$), with a 95% confidence interval of -16.386 to -10.614 . The standardized effect size was large (Cohen's $d = 1.34$).

Conclusion: The combined intervention demonstrated promising preliminary improvement in self-care independence among children with DS. Integrating therapist-led training, animation-based home practice, and caregiver involvement may provide a feasible approach for supporting self-care development. Given the pilot design and small sample, larger controlled studies are warranted to confirm these preliminary findings.

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INTRODUCTION

Down syndrome (DS) is one of the most common chromosomal abnormalities worldwide, caused by trisomy of chromosome 21. This genetic condition is associated with a range of developmental and functional limitations affecting cognitive, physical, and adaptive abilities (Bull, 2020; Amanullah, 2022). Globally, DS continues to represent a significant public health concern, requiring comprehensive healthcare and educational support systems (Puspitosari, 2021). In Indonesia, national health data

indicate a substantial number of individuals living with DS, highlighting the need for effective intervention strategies to support their development and independence (Kementerian Kesehatan Republik Indonesia, 2023).

Children with DS typically experience intellectual disability and delays in adaptive functioning, which significantly affect their ability to perform activities of daily living (ADL), particularly self-care skills (Daunhauer & Fidler, 2021; Aladwan, 2024). These limitations often lead to challenges in learning, problem-solving, and adapting to environmental demands, ultimately impacting independence in daily activities (Sriasih, 2023). Self-care skills—including dressing, personal hygiene, eating, toileting, and bathing—are essential for promoting autonomy, social participation, and overall quality of life (Fidler et al., 2020; Umuri et al., 2021).

Self-care is defined as the ability of individuals, families, and communities to promote health, prevent disease, maintain health, and manage illness with or without the support of healthcare providers (World Health Organization, 2024). For children, the development of self-care skills is a critical milestone that contributes to independence and psychosocial well-being. However, children with developmental disabilities, including DS, often require structured, repetitive, and individualized interventions to acquire these skills effectively (Case-Smith, 2021).

Occupational therapy (OT) plays a central role in improving self-care performance through task-oriented and client-centered interventions (Novak & Honan, 2019). Direct self-care intervention (Mulyana et al., 2023; Cohran et al., 2022) which involves therapist-guided training and structured practice, has been shown to enhance functional abilities and adaptive behavior in children with developmental conditions (American Occupational Therapy Association, 2020). Such interventions focus not only on basic daily activities but also on improving motor, cognitive, and social functioning through meaningful engagement.

In addition to direct intervention, home-based programs using animation-based video media have emerged as promising complementary approaches (Wulandari & Linggardini, 2023; Aisah 2021). Recent studies have shown that the use of technology in pediatric rehabilitation can significantly improve engagement, learning outcomes, and skill retention (Dominguez-Lucio et al., 2022; Camden & Silva, 2021; Aziz et al., 2021). Children with DS are often characterized as visual learners, making video modeling and animation particularly effective tools for facilitating understanding and imitation of daily activities (Fernandez-Alcaraz & Carvajal, 2020).

Video-based interventions have been widely recognized as effective methods for teaching daily living skills to children with developmental disabilities (Yalcin et al., 2023). Gardner & Wolfe, (2023) reported that video modeling significantly improves independence in self-care tasks by providing clear, structured, and repeatable demonstrations. Similarly & Ahnahdi, (2020) found that video-based learning enhances both engagement and task performance in children with special needs. These approaches are especially effective when combined with parental involvement (Santoro et al., 2022), which reinforces consistency and practice in natural environments (Camden & Silva, 2021).

Despite the growing evidence supporting both direct intervention and technology-based approaches (Miranda-Duro et al., 2021), limited research has examined the combined effect of these strategies on self-care independence in children with DS. Most previous studies have focused on single intervention modalities, leaving a gap in

understanding the potential synergistic effects of integrating therapist-led intervention with home-based animation programs.

Therefore, this study aimed to examine preliminary changes in self-care independence following a combined direct self-care intervention and animation-based home program among children with Down syndrome. The novelty of this study lies in integrating therapist-led, task-specific self-care training with a structured animation-based home program that enables repeated practice in the child's natural environment with active caregiver involvement. Unlike approaches that primarily focus on either direct clinical training or technology-assisted learning, this combined model was designed to bridge therapist-guided skill acquisition with home-based occupational performance. As a pilot study, the findings are intended to provide preliminary evidence regarding the applicability of this integrated approach and inform the development of future controlled studies with larger samples.

MATERIALS AND METHOD

This pilot study used a pre-experimental one-group pre-test and post-test design to examine preliminary changes in self-care independence following the combined intervention. The design was selected because the study was exploratory and intended to provide initial evidence regarding the applicability of the intervention before implementation in a larger controlled study. Pilot studies commonly use small samples to assess feasibility and generate preliminary information to guide subsequent definitive research, rather than to provide definitive estimates of intervention effectiveness (Ying et al., 2025). The study was conducted at Rumah Sakit Akademik Universitas Gadjah Mada (RSA UGM), Yogyakarta, and RSUD Ir. Soekarno Sukoharjo, Indonesia, from July to September 2024.

A total of 16 children with Down syndrome were recruited using purposive sampling based on predefined inclusion criteria. The participants comprised 10 children from RSA UGM and 6 children from RSUD Ir. Soekarno Sukoharjo. Eligibility criteria included age over three years, ability to follow simple instructions, a Self-Care Ability Questionnaire score of ≤ 162 indicating partial or total assistance, access to a smartphone, laptop, or smart television for the home program, and parental consent. The sample consisted of the eligible children available at the participating sites during the study period, consistent with the exploratory nature of the pilot study.

The independent variable was a combined intervention consisting of direct self-care training and an animation-based home program. Direct training was delivered by occupational therapists for 30–45 minutes per session and involved task-specific practice of handwashing, nail trimming, tooth brushing, grooming, eating, drinking, and dressing. The home program consisted of caregiver-assisted viewing of animation-based instructional videos approximately 15 minutes before the corresponding self-care activity and was implemented daily for one month. Therapists and caregivers documented participation and performance using monitoring checklists. The dependent variable was self-care independence, operationally defined as the level of assistance required by the child to perform self-care activities.

Self-care independence was assessed using the Self-Care Ability Questionnaire developed by (Rahmawati et al., 2012), consisting of 63 items across seven domains: personal hygiene, eating and drinking, dressing, mobility, socialization and development, household activities, and self-protection. Items were rated on a three-point scale, with total scores ranging from 63 to 189; higher scores indicated greater

independence. Previous testing demonstrated acceptable validity and high internal consistency, with a Cronbach’s alpha of 0.953. Data were collected before and after the intervention through questionnaires completed by parents or caregivers and observation of the child’s self-care performance.

Data were analyzed using SPSS. Participant characteristics were summarized using descriptive statistics. The Shapiro–Wilk test was used to assess the normality of pre-test and post-test scores. As both datasets met the normality assumption, differences between pre-test and post-test scores were analyzed using a paired sample t-test. Statistical significance was set at $p < 0.05$, and Cohen’s d was calculated to estimate the standardized effect size.

Ethical approval was obtained from the Health Research Ethics Committee of RSUD Dr. Moewardi (No. 2.106/VIII/HREC/2024). Written informed consent was obtained from the parents or legal caregivers before participation. The study applied the principles of beneficence, justice, voluntary participation, and confidentiality. All participants were selected according to the same predefined eligibility criteria, participation was voluntary, and participant identities were protected through confidential data management and anonymized reporting.

RESULTS

The study was conducted from July 2024 to June 2025 across two different research sites. The first site was Rumah Sakit Akademik Universitas Gadjah Mada (RSA UGM) Yogyakarta, from July to December, 2024, while the second site was RSUD Ir. Soekarno Sukoharjo, from January to June 2025. A total of 16 children with Down syndrome participated in this study, with 10 participants recruited from RSA UGM and 6 participants from RSUD Ir. Soekarno Sukoharjo.

Table 1. Distribution of respondent characteristics

Characteristic	Frequency (N)	Percentage (%)
Age category		
Toddler (0-5 y.o)	13	81.3
Child (>5 y.o)	3	18.8
Gender		
Male	10	62.5
Female	6	37.5
Primary Caregiver		
Parents	14	87.5
Extended Family Member	2	12.5

Table 1, the majority of participants were in the toddler age group (0–5 years), accounting for 81.3% of the sample, while the remaining 18.7% were in the child age group. Based on gender, the sample was predominantly male (62.5%), with females comprising 37.5%. In terms of primary caregiver, most children were cared for by their parents (87.5%), while a smaller proportion (12.5%) were cared for by extended family members.

Table 2. Self-care independence based on sample characteristic

		Interpretation	
		Total Assistance N (%)	Partial Assistance N (%)
Age category	Toddler	11 (84.6)	2 (15.4)
	Child	3 (100)	0(0)
Gender	Male	10 (100)	0(0)
	Female	4 (66.7)	2 (33.3)
Primary Caregiver	Parents	12 (85.7)	2 (14.3)
	Extended Family Member	2 (100)	0(0)

Table 2, Self-care independence was predominantly categorized as requiring total assistance across participant characteristics. Among toddlers, 84.6% required total assistance and 15.4% required partial assistance. Overall, 87.5% of participants were classified as requiring total assistance. All male participants (100%) fell into the total assistance category, while among females, 66.7% required total assistance and 33.3% required partial assistance. Similarly, most children under parental care (85.7%) required total assistance, and all children cared for by extended family members (100%) were categorized as requiring total assistance.

Table 3. Changes score in self-care independence

	N	Min-Max	Mean	Std. Deviation
Pre-test	16	96-135	120.69	11.672
Post-test	16	120-174	134.19	8.199

The mean self-care ability score increased from 120.69 ± 11.67 at pre-test to 134.19 ± 8.20 at post-test, indicating an improvement following the intervention. The observed mean difference was 13.50 points.

Figure 1. Effect Size (Cohen's d)

$$\begin{aligned}
 SD_{pooled} &= \sqrt{\frac{SD_1^2 + SD_2^2}{2}} \\
 &= \sqrt{\frac{(11.672)^2 + (8.199)^2}{2}} = \sqrt{\frac{136.2 + 67.2}{2}} = \sqrt{101.7} \approx 10.09 \\
 d &= \frac{Mean_{post} - Mean_{pre}}{SD_{pooled}} = \frac{134.19 - 120.69}{10.09} \approx 1.34
 \end{aligned}$$

Furthermore, the effect size analysis using Cohen's d revealed a value of 1.34, which is considered a large effect size. This finding suggests that the combined direct self-care intervention and animation-based home program not only produced statistically significant results but also demonstrated a substantial practical impact on improving self-care independence in children with Down syndrome.

Table 4. Normality Test Result

	Stat.	Sig.	Conclusion
Pre-test	.907	.106	Normal

	Stat.	Sig.	Conclusion
Post-test	.943	.391	Normal

Table 4 shows data normality was confirmed using the Shapiro–Wilk test, with p-values of 0.106 (pre-test) and 0.391 (post-test), indicating a normal distribution ($p > 0.05$).

Table 5. Paired T-test result

	Mean	Std. Dev	Std. Error Mean	95% Confiden Interval		t	Sig. (2-tailed)
				Lower	Upper		
Pre-test & Post-test	-13.500	5.416	1.354	-16.386	-10.614	-9.970	.000

Subsequently, a paired sample t-test was conducted to evaluate the effect of the intervention. The results revealed a statistically significant difference between pre-test and post-test scores ($t = -9.970$, $p < 0.001$). The mean difference was -13.500 ($SD = 5.416$; $SE = 1.354$), with a 95% confidence interval ranging from -16.386 to -10.614 . These findings indicate that the combined direct self-care intervention and animation-based home program had a significant effect on improving self-care independence in children with Down syndrome.

DISCUSSION

The findings of this study demonstrate that the combination of direct self-care intervention and an animation-based home program significantly improved self-care independence in children with Down syndrome. This is evidenced by the statistically significant results of the paired sample t-test ($p < 0.05$), as well as a large effect size (Cohen's $d = 1.34$), indicating not only statistical significance but also substantial practical and clinical impact. These results suggest that integrating structured clinical intervention with home-based practice can effectively enhance functional independence in children with developmental disabilities.

The improvement in self-care independence observed in this study aligns with previous research emphasizing the effectiveness of structured self-care interventions in children with intellectual disabilities. Recent studies have shown that task-oriented and repetitive training significantly enhances adaptive functioning and daily living skills (Case-Smith et al., 2023; Novak & Honan, 2019). In children with Down syndrome, limitations in cognitive processing and adaptive behavior often require interventions that are structured, repetitive, and meaningful within daily contexts (Daunhauer & Fidler, 2021). The present study supports this perspective by demonstrating that repeated exposure to self-care activities through therapist-guided sessions can improve skill acquisition and independence.

Furthermore, the use of animation-based video modeling in the home program appears to play a crucial role in reinforcing learning. Video modeling has been widely recognized as an effective strategy for teaching daily living skills, particularly for children with developmental disabilities (Yulianasari & Kusumaningrum, 2023). Recent evidence suggests that video-based interventions significantly improve task performance, engagement, and skill generalization (Gardner & Wolfe, 2023; Alnahdi, 2020). The visual and structured nature of animation enables children to observe, understand, and imitate step-by-step actions, which is particularly beneficial for children

with Down syndrome who are known to be strong visual learners (Down Syndrome Resource Foundation, 2022; Fidler et al., 2020).

The integration of direct intervention and home-based video programs in this study reflects a continuum of occupational therapy practice, moving from structured clinical settings to real-life application. This approach is consistent with contemporary occupational therapy frameworks that emphasize the importance of contextual and occupation-based interventions to promote meaningful participation (American Occupational Therapy Association, 2020; Idharto et al., 2021; Athorp et al., 2022). The continuum from therapist-guided training to independent performance in natural environments facilitates skill generalization, which is often a major challenge in children with developmental disabilities (Chen et al., 2022).

In this study, self-care activities such as dressing, personal hygiene, and feeding were trained using a structured progression from basic skill development to real-life application. For example, dressing skills were initially practiced under therapist supervision and later reinforced at home through daily routines supported by video guidance. Similar findings have been reported in recent studies, where combining clinic-based training with home practice resulted in better functional outcomes compared to isolated interventions (Franceschetti et al., 2024; Sari et al., 2024; Hielscher et al., 2023; Martinez et al., 2021; Ozcan & Merdan, 2020). This indicates that consistency and environmental relevance are key factors in successful skill acquisition (Fitriyah, 2020).

Parental involvement also played a significant role in the effectiveness of the intervention. The home program required parents to actively facilitate and supervise their children's learning, which likely contributed to improved outcomes (Kartika et al., 2020). Previous research highlights that family-centered interventions enhance intervention effectiveness by increasing practice frequency, consistency, and motivation (Fahlevi & Basaria, 2022; Novak & Honan, 2019; Camden & Silva, 2021). The involvement of parents in delivering the intervention also supports the sustainability of the program beyond the clinical setting (Febriyanti et al., 2024; Franceschetti et al., 2024). These findings have practical implications for pediatric occupational therapy, particularly in settings where opportunities for therapist-led practice are limited.

The integration of direct intervention with an animation-based home program may extend therapeutic practice beyond the clinical setting and provide caregivers with a structured method for reinforcing self-care skills during daily routines. The approach may also support greater continuity between therapist instruction and home-based occupational performance, potentially improving opportunities for repetition and skill generalization. Recent evidence from children with Down syndrome further supports the potential value of combining occupational therapy with home-based programs to address self-care and occupational performance outcomes (Argueta Dheming et al., 2026). However, given the small sample and uncontrolled pilot design, these implications should be considered preliminary and should not be interpreted as evidence of definitive intervention effectiveness.

Despite the promising findings, this study has several limitations. The use of a pre-experimental design without a control group limits the ability to establish causal relationships. Additionally, the relatively small sample size ($n = 16$) restricts the generalizability of the findings. However, as a pilot study, the primary aim was to explore feasibility and preliminary effectiveness. Future research is recommended to

employ randomized controlled trials with larger sample sizes to confirm these findings and further examine long-term outcomes.

Overall, this study provides preliminary evidence that a combined intervention approach incorporating direct self-care training and animation-based home programs is effective in improving self-care independence in children with Down syndrome. The integration of structured clinical intervention, technology-based learning, and family involvement offers a comprehensive and practical strategy that can be implemented in both clinical and home settings. These findings contribute to the growing body of evidence supporting innovative, accessible, and family-centered approaches in pediatric occupational therapy.

CONCLUSION

This study concludes that the combined application of direct self-care intervention and an animation-based home program produces a meaningful and statistically significant improvement in self-care independence among children with Down syndrome. The findings indicate that integrating structured therapist-led training with consistent, visually guided home practice effectively enhances functional performance in daily living activities. The observed improvement, supported by a large effect size, underscores the clinical relevance of this combined approach as a feasible and impactful strategy within pediatric occupational therapy. These results highlight the importance of incorporating technology-based learning and active caregiver involvement to optimize intervention outcomes. Future studies employing randomized controlled designs and larger samples are recommended to validate and generalize these findings.

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REFERENCES

- Aisah, S., Ismail, S., & Margawati, A. (2021). Edukasi Kesehatan dengan Media Video Animasi: Scoping Review. *Jurnal Perawat Indonesia/Jurnal Perawat Indonesia*, 5(1), 641–655. <https://doi.org/10.32584/jpi.v5i1.926>
- Aladwan, S. Q. A. (2024). Behavioural Training and Self-Care Skill Development in Early Childhood Down Syndrome in Jordan. *International Journal of Educational Sciences*, 44(1-3). <https://doi.org/10.31901/24566322.2024/44.1-3.1319>
- Alnahdi, G. H. (2020). The effectiveness of video modeling in teaching daily living skills. *International Journal of Developmental Disabilities*, 66(3), 183–193. <https://hdl.handle.net/11274/12915>
- Amanullah, A. (2022). Mengenal Anak Berkebutuhan Khusus: Tuna Grahita, Down Syndrom dan Autisme. *Jurnal Almuraja: Jurnal Pendidikan Islam Anak Usia Dini*, 1(1), 1–14. <http://ejournal.iaitabah.ac.id/index.php/almurtaja/article/view/1793>

- American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). American Journal of Occupational Therapy, 74(Suppl. 2). <https://doi.org/10.5014/ajot.2020.74S2001>
- Argueta Dheming, K. G., Silva, L. O., da Silva, M. C. V., Gomes, C. M. S., Cavalcante, F. S. Z., Parreira, F. V., & Magalhães, R. C. (2026). Home-based occupational therapy early intervention programs in children with Down syndrome: A randomized clinical trial. *Physical & Occupational Therapy in Pediatrics*.
- Advance online publication. <https://doi.org/10.1080/01942638.2026.2667359>
- Athorp, S. M., Stuart, S. K., & Collins, J. C. (2022). Building daily living skills through portable video modeling. *Education and Treatment of Children*, 45(3), 293–297. <https://doi.org/10.1007/s43494-022-00077-3>
- Bull, M. J. (2020). Down syndrome. *New England Journal of Medicine*, 382(24), 2344–2352. <https://doi.org/10.1056/NEJMra1706537>
- Camden, C., & Silva, M. (2021). Pediatric telehealth and family-centered care. *Physical & Occupational Therapy in Pediatrics*, 41(1), 1–14. <https://doi.org/10.1080/01942638.2020.1825032>
- Case-Smith, J., Weaver, L. L., & Fristad, M. A. (2021). Interventions for children with developmental disabilities. *American Journal of Occupational Therapy*, 75(1). <https://doi.org/10.1177/1362361313517762>
- Chen, M., Dutt, A. S., & Nair, R. (2022). Systematic review of reviews on Activities of Daily Living measures for children with developmental disabilities. *Heliyon*, 8(6), e09698. <https://doi.org/10.1016/j.heliyon.2022.e09698>
- Cochran, E., Breithaupt, K., Williams, L., & Atkins, K. (2022). Parent experiences in children with Down syndrome. *Physical & Occupational Therapy in Pediatrics*, 42(3), 333–349. <https://doi.org/10.1080/01942638.2021.1981514>
- Daunhauer, L. A., & Fidler, D. J. (2021). Executive functioning and adaptive behavior in Down syndrome. *Journal of Neurodevelopmental Disorders*, 13(1), 1–12. <https://doi.org/10.1111/jir.12897>
- Domínguez-Lucio, S., Compañ-Gabucio, L. M., & García de la Hera, M. (2022). Occupational therapy interventions using new technologies in children and adolescents. *International Journal of Environmental Research and Public Health*, 19(3), 1234. <https://doi.org/10.1007/s10803-022-05431-3>
- Down Syndrome Resource Foundation. (2022). Learning Strategies for Increasing Independence - Down Syndrome Resource Foundation. Diakses dari <https://www.dsrf.org/resources/blog/learning-strategies-for-increasingindependence/> pada tanggal 14 Januari 2024.

- Fahlevi, R., & Basaria, D. (2022). Penerapan Teknik Modifikasi Perilaku untuk Meningkatkan Kemampuan Bina Diri pada Anak dengan Down Syndrome. *Jurnal Kesehatan Mental Indonesia*, 1, 38, 1–45. <https://journal.binawan.ac.id/jkmi/article/view/592/281>
- Febriyanti, T., Setiana, W., & Rahman, E. T. (2024). Pengaruh Bimbingan Selfcare Terhadap Kemandirian Anak Berkebutuhan Khusus. *Irsyad: Jurnal Bimbingan, Penyuluhan, Konseling, Dan Psikoterapi Islam*, 11(1), 41–62. <https://digilib.uinsgd.ac.id/id/eprint/84363>
- Fernández-Alcaraz C, Carvajal F. Neuropsychological profile of adults with Down syndrome and moderate intellectual disability (2020). *Research in Developmental Disabilities*, 107:103781. doi: 10.1016/j.ridd.2020.103781
- Fidler, D. J., Most, D. E., & Guiberson, M. (2020). Neuropsychological profile of individuals with Down syndrome. *Current Developmental Disorders Reports*, 7(1), 1–9. <https://doi.org/10.1016/j.ridd.2020.103781>
- Fitriyah, Q. F. (2020). Intervensi Guru dalam Mengajarkan Daily Living Skills pada Anak Down Syndrome. *Al-Athfal: Jurnal Pendidikan Anak*, 6(1), 41–54. <https://doi.org/10.14421/al-athfal.2020.61-04>
- Franceschetti, M., et al. (2024). Combined intervention approaches in pediatric rehabilitation. *Journal of Pediatric Rehabilitation Medicine*, 17(2), 123–135. <https://doi.org/10.1080/09638288.2023.2229731>
- Franceschetti, S., Tofani, M., Mazzafoglia, S., Pizza, F., Capuano, E., Raponi, M., Gessica Della Bella, & Antonella Cerchiari. (2024). Assessment and Rehabilitation Intervention of Feeding and Swallowing Skills in Children with Down Syndrome Using the Global Intensive Feeding Therapy (GIFT). *Children*, 11(7), 847–847. <https://doi.org/10.3390/children11070847>
- Gardner, R., & Wolfe, P. (2023). Video modeling interventions for developmental disabilities. *Journal of Autism and Developmental Disorders*, 53(4), 1456–1470. <https://eric.ed.gov/?id=EJ1045100>
- Hielscher, L., Irvine, K., Ludlow, A. K., Rogers, S., & Mengoni, S. E. (2023). Feeding and early development in children with Down syndrome. *Journal of Pediatric Psychology*, 48(11), 914–930. <https://doi.org/10.32524/jksp.v3i2.86>
- Idhartono, N. a. R., Sambira, N., & Rafikayati, N. A. (2021). Peran Terapi Okupasi bagi Kemandirian Anak Down Syndrome. *Special and Inclusive Education Journal*, 2(2), 119–124. <https://doi.org/10.36456/special.vol2.no2.a5178>
- Ismail, N. K., Hosshan, H., Abd Aziz, N., Masnan, A. H., Rozubi, N. C., Zalli, M. M. M., & Arifin, S. R. M. (2024). The use of video-based interventions to teach activity of daily living to children with autism spectrum disorder–scoping

review. *International Journal of Public Health*, 13(3), 1136-1144. DOI: 10.11591/ijphs.v13i3.23707

Kartika, Y. E., Nurhidayah, I., & Hendrawati. (2020). Dukungan Keluarga dalam Kemandirian Perawatan Diri Anak Retardasi Mental Ringan di SLB-C YKB Garut. *Jurnal Kesehatan Saemakers Perdana (JKSP)*, 3(2), 214–221. <https://journal.ukmc.ac.id/index.php/joh/article/view/86/88>

Kementerian Kesehatan Republik Indonesia. (2023). Survei Kesehatan Indonesia 2023.

Martínez, N., Connelly, C. D., Pérez, A., & Calero, P. (2021). Self-care: A concept analysis. *International Journal of Nursing Sciences*, 8(4), 418–425. <https://doi.org/10.1016/j.ijnss.2021.08.007>

Miranda-Duro, M. C., et al. (2021). Occupational therapy and the use of technology: A scoping review. *International Journal of Environmental Research and Public Health*, 18(2), 702. <https://doi.org/10.3390/ijerph18020702>

Mulyana, H., Ramdani, T., & Nugraha, B. (2023). Efektivitas Edukasi Perawatan Diri Pada Remaja Down Syndrome Dengan Media Video. *Jurnal Keperawatan BSI*, 11(2), 170–177. <https://ejurnal.ars.ac.id/index.php/keperawatan/article/view/1408/815>

Novak, I., & Honan, I. (2019). Effectiveness of pediatric occupational therapy interventions. *American Journal of Occupational Therapy*, 73(2). <https://doi.org/10.1111/1440-1630.12573>

Ozcan, D., & Merdan, F. (2020). The effectiveness of video modelling for teaching daily life skills to children with autism spectrum disorder. *International Journal of Learning & Teaching*, 12(1), 42–54. <https://doi.org/10.18844/ijlt.v12i1.4560>

Puspitosari, A. (2021). Sandsack physical activity increasing balance score in children with down syndrome. *Jurnal Keterapian Fisik*, 49-57. <https://doi.org/10.37341/jkf.v0i0.254>

Santoro, S. L., Hendrix, J., White, N., & Chandan, P. (2022). Caregivers evaluate independence in individuals with Down syndrome. *American Journal of Medical Genetics Part A*, 188(5), 1526–1537. <https://doi.org/10.1002/ajmg.a.62680>

Sari, D. Y., Ulfah, M., Rahayu, D., Khanafiyah, A., Asiyah, S., Baity, L. N., Purnomo, F. A., & Munawaroh, H. (2024). Analisis Pengaruh Penggunaan Media Pembelajaran Interaktif pada Anak Tunagrahita. *Bhinneka: Jurnal Bintang Pendidikan Dan Bahasa*, 3(1), 376–385. <https://doi.org/10.59024/bhinneka.v3i1.1221>

Sriasih, N. K., D, A. a. I. W. K., Rahyanti, N. M. S., & Dewi, N. W. E. P. (2023). Self-care agency pada anak berkebutuhan khusus di sekolah luar biasa. *Jurnal Riset Kesehatan Nasional*, 7(2), 156–162. <https://doi.org/10.37294/jrkn.v7i2.524>

- Umuri, S. A., Rahmawati, A., & Sholeha, V. (2021). Analisis perkembangan selfhelp skills anak usia 5-6 tahun. *Jurnal Pendidikan Anak/Jurnal Pendidikan Anak*, 10(2), 137–143. <https://doi.org/10.21831/jpa.v10i2.44170>
- World Health Organization. (2024). Self-care interventions for health.
- Wulandari, U., & Linggardini, K. (2023). Pengaruh Pendidikan Kesehatan dengan Media Video Animasi terhadap Pengetahuan dan Keterampilan Anak dalam Menggosok Gigi. *Jurnal Pendidikan Dan Konseling*, 5, 40–46. <https://journal.universitaspahlawan.ac.id/index.php/jpdk/article/view/12986>
- Yalçın, G., Kocaöz, O. E., & Arslantas, T. K. (2023). Effectiveness of animationbased video modeling on daily living skills teaching to individuals with intellectual disabilities. *Education and Information Technologies*, 28(12), 16233–16254. <https://doi.org/10.1007/s10639-023-11863-w>
- Ying, X., Freedland, K. E., Powell, L. H., Stuart, E. A., Ehrhardt, S., & Mayo-Wilson, E. (2025). Determining sample size for pilot trials: A tutorial. *BMJ*, 390, e083405. <https://doi.org/10.1136/bmj-2024-083405>
- Yulianasari, Lufianti, A., & Kusumaningrum, Y. (2023). Efektivitas Pengaruh Teknik Modelling dan Teknik Shaping Bina Diri terhadap Kemandirian Anak Tunagrahita di SLB. *Journal of TSCS1Kep*, 8(1), 44–51. <https://doi.org/10.35720/>