



THE INFLUENCE OF BEAD STRINGING PLAY THERAPY THE FINE MOTOR SKILL OF CHILDREN WITH INTELLECTUAL DISABILITY

Shinta Dewi^{1,2*}, Intan Parulian², Agung Setiyadi², Dyah Agus Triwidnyansari¹

¹Rumah Sakit Soeharto Heerdjan, Jl. Prof. Dr. Latumeten No.1, Jelambar, Grogol petamburan, Jakarta Barat, Jakarta 11460, Indonesia

²Nursing and Midwifery Study Program, Universitas Binawan, Jl. Dewi Sartika No.25-30, Kalibata, Kramat Jati, Jakarta Timur, Jakarta 13630, Indonesia

*purity.shinta@gmail.com

ABSTRACT

This study examines the use of bead-stringing activities at Soeharto Heerdjan Hospital as a therapeutic intervention for children with intellectual disabilities, whose population continues to increase each year. Bead-stringing has not yet been incorporated into the hospital's child rehabilitation program, highlighting the need for nurse play specialists to develop innovative therapeutic play approaches. In this study, play therapy was implemented through beading activities, in which children arranged beads or small objects into specific patterns. This activity is intended to stimulate hand-eye coordination and enhance fine motor skills. A quasi-experimental design with pre-test and post-test measurements was used. The sampling technique employed was purposive sampling, involving 36 children aged 5–6 years with mild to moderate intellectual disabilities who actively participated in the Kuas Biru program at the Child and Adolescent Unit of Soeharto Heerdjan Hospital, Jakarta. Fine motor skills were assessed using the Denver II Developmental Screening Test. The Wilcoxon test results showed a significant effect of bead-stringing play therapy on fine motor skills in children with intellectual disabilities, with a p-value of 0.000. The analysis demonstrated an increase in fine motor skill scores, from a pre-test mean of 2.14 to a post-test mean of 3.00. These findings indicate that play therapy using beading activities has a positive impact on improving fine motor skills in children with intellectual disabilities.

Keywords: fine motor skill; play therapy; stringing beads

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INTRODUCTION

Mental retardation or intellectual disability is a condition characterized by below-average intellectual functioning and limitations in adaptive behavior that appear before the age of 18 (American Psychiatric Association, 2022). Children with this condition often experience delays in various aspects of development, including fine motor skills. According to the International Classification of Diseases (2022), mental retardation is classified into mild, moderate, severe, and even profound levels, often accompanied by physical limitations that require lifelong supervision and full support. Early intervention for children with mental retardation can improve their quality of life in the future. Education and training for children with mental retardation should be adjusted to their developmental needs. The prevalence of children under the age of 18 with intellectual disability in developed countries is around 0.5–2.5%, while in developing countries it is about 4.6%. The incidence of children with intellectual disability is estimated at 19 per 1,000 live births (WHO, 2018). Each year, the numbers continue to increase in several developing countries.

In Indonesia, according to data from the Ministry of Health of the Republic of Indonesia (2014), the prevalence of children with intellectual disability is estimated at 1–3% of the total population, or around 6.6 million people. Among them, 2.8% are children with severe intellectual disability, 2.6% with moderately severe intellectual disability, 3.5% with mild intellectual disability, and 2.5% with profound intellectual disability. According to the 2018 Basic Health Research (Riskesdas), the prevalence of disability among children aged 5–17 years was found to be higher in boys than in

girls. Disability rates at ages 5–9 years were 2.5%, at ages 10–14 years were 3.5%, and at ages 15–17 years were 4.2%. Furthermore, 7 reports stated that 8.3% of Indonesia's total population experienced disability. There has been an increase in the prevalence of disability, including intellectual disability, from 2003 to 2006, rising from 0.69% to 1.38%, and again from 2009 to 2012, rising from 0.92% to 2.45% of Indonesia's total population.

Children with intellectual disability require therapy to improve their abilities, particularly fine motor skills. They often experience low muscle tone, poor coordination, difficulties in motor planning, and limited attention span. Children with intellectual disability struggle to perform simple tasks and therefore need proper and continuous stimulation and therapy to bring about changes and improvements in their ability to carry out daily activities. Motor development in children is the process of improving the body's ability to control movement through coordination between the brain, nerves, and muscles (Ifalahma & Zetia, 2023).

Play therapy can be conducted either indoors or outdoors. According to Axline (2000), play therapy is defined as an interpersonal relationship between a child and a trained therapist who provides a purposeful selection of toys and a comfortable environment in which the child is free to fully express themselves through play experiences. Beading is an activity of threading various small objects onto a string or thread, used as a tool to stimulate fine motor coordination, as well as to practice accuracy, patience, and perseverance. There are many types of objects that can be used for beading, varying in shape, material, and function. The choice should match the child's developmental interests, abilities, and needs (Ananda & Tri, 2024). According to Sumanto (2023), beading is the process of creating decorative or functional items by arranging perforated materials—or those deliberately made with holes—using thread, string, or similar tools. In conclusion, beading is an activity related to art, which carries inherent aesthetic value.

Beaded activities using beads as a form of play therapy for children with intellectual disability help train fine motor skills by strengthening finger grip, improving flexibility and hand function, enhancing hand–eye coordination, increasing concentration and focus, and fostering patience and perseverance. While engaging in beading, children are also stimulated to think creatively about the movements needed to complete the activity. Beading encourages imagination through shapes and materials while also allowing children to convey messages, stimulate their thinking, and reflect appreciation for the beauty of objects around them.

Soeharto Heerdjan Hospital in Jakarta is a mental health care facility that provides services through its child and adolescent unit. Treatment for children with intellectual disability may include outpatient care, inpatient care, and the Kuas Biru program. This special program for children with special needs (ABK) provides Cognitive–Behavior Play Therapy tailored to their individual needs. The researcher chose the beading activity because, until now, therapeutic activities have mostly been limited to drawing, coloring, folding origami paper, pasting pictures, playing with Lego, and making collages, while the beading technique has never been applied. Therefore, the researcher is interested in introducing beading so that children can become familiar with the activity, learn to perform it, and gain its benefits. Beading not only enhances children's creativity but also develops patience, concentration, hand–eye coordination, and other aspects of development.

The author hopes that play therapy in hospitals will continue to develop, and by creating a play therapy program with bead-stringing, this activity can be recommended at Soeharto Heerdjan Hospital as part of the rehabilitation care program for children. It is also expected to foster the development of nurse play specialists who can innovate play therapy activities for children. Based on the background above, the researcher was inspired to conduct an intervention study entitled: "The Effect of Bead-Stringing Play Therapy on the Fine Motor Skills of Children with Intellectual Disability at Soeharto Heerdjan Hospital Jakarta. The objective of this study is to explain the effect of bead-stringing activities on the fine motor skills of children with intellectual disability at Soeharto Heerdjan Hospital Jakarta.

METHOD

This study uses a quasi-experimental pre– post test design. The population of this study consists of all children with mild and moderate intellectual disability who participate in the Kuas Biru program at the Child and Adolescent Unit of Soeharto Heerdjan Hospital Jakarta. The sampling technique used is total sampling. The respondents consist of 36 children, aged 5–6 years, with mild and moderate intellectual disability. All respondents actively participate in the Kuas Biru program and have no visual impairments.

The instruments used in this study are pre- test and post-test instruments. The questionnaire consists of one section assessing fine motor skills of the respondents. The observation instrument used to measure fine motor skills is the Denver Development Screening Test (DDST II). The data obtained from the pre-test and post-test will be tested for normality using the Kolmogorov–Smirnov test. If the results show that the data are not normally distributed, the Wilcoxon test will be used. Data collection and data analysis for this study were conducted from May to June 2025.

RESULT

Univariate Analysis

Univariate analysis is the analysis of data related to the measurement of a single variable. In this study, the variable examined was fine motor skills before and after the bead-stringing play therapy intervention. The respondents were children aged 5 years. Based on gender, 22 were boys (61.1%) and 14 were girls (38.9%). The pre-test results of fine motor skills among 36 respondents before the bead- stringing play therapy intervention showed that 32 respondents (88.9%) were assessed as *Failed*. The post-test results indicated improvement, with 27 respondents (75%) assessed as *Pass*.

Bivariate Analysis

The purpose of the bivariate analysis in this study was to determine the effect of bead-stringing play therapy on the fine motor skills of children with intellectual disability at Soeharto Heerdjan Hospital Jakarta. The Kolmogorov–Smirnov normality test showed Asymp-Sig (2- tailed) = 0.000, indicating that the data were not normally distributed. Therefore, the researcher applied the Wilcoxon signed-rank test, a non-parametric statistical method.

Table 1.
Wilcoxon Signed-Rank Test Analysis

	N	Mean	Sum of Ranks
Pre test-Post test	0	0.00	0.00
Negative Ranks	28	14.50	406.00
Positive Ranks	8	-	-

Table 1, the Negative Rank, representing the decrease in fine motor skills from pre-test to post-test, had a mean rank of 0.00 and a sum of ranks of 0.00. The Positive Rank, representing the improvement in fine motor skills, included 28 respondents with a mean rank of 14.50 and a sum of ranks of 406, indicating a significant increase from pre-test to post-test. Ties (no change between pre-test and post-test) occurred in 8 respondents.

Table 2.
Hypothesis Test Post-test – Pre-test

Z Asymp	Sig (2-tailed)
-5.070	0.000

Table 2, the Asymp. Sig (2- tailed) value of 0.000 is smaller than 0.05. Since $0.000 < 0.05$, the hypothesis is accepted, meaning there is a significant difference between the two paired samples.

Table 3.
Effect of Bead-Stringing Play Therapy on Fine Motor Skills

	N Statistic	Range statistik	Minimum statistik	Maksimum Statistik	Mean Statistik	Std.Error	Std. Deviasi
Pre test	36	1	2	3	2,14	0,058	0,351
Post test	36	2	2	4	3,00	0,113	0,676

Table 3 shows an increase in fine motor skills, with a pre-test mean of 2.14 and a post-test mean of 3.00.

DISCUSSION

Based on univariate analysis, 36 children actively participated in the Kuas Biru program, all aged 5 years. The majority of respondents were boys (22 children, 61.1%), while 14 were girls (38.9%). In the pre-test, 32 respondents (88.9%) Failed. After the intervention, the post-test showed improvement, with 75% achieving Pass. This study aligns with the findings of research conducted by S. Novitasari et al. (2024), which showed that approximately 3.53 respondents experienced an improvement in fine motor skills, with a standard deviation of 0.640. According to research by Hatia (2020), it was concluded that natural bead-stringing activities can enhance fine motor skills in early childhood, as such activities help address developmental problems related to children's fine motor abilities. Research by MSH Pamungkas (2023) also demonstrated that play therapy using playdough, origami, and bead-stringing has a positive effect on improving fine motor skills in children aged 5–6 years. The average fine motor skill score in the pre-test was 2993, and the average score in the post-test increased to 4953.

Previous studies have demonstrated that play therapies such as playdough, origami, and beading improve fine motor skills in children aged 5–6 years. This study confirms that bead-stringing play therapy can effectively enhance fine motor skills in children with intellectual disability. Motor development is influenced not only by genetic factors but also by various stimuli provided by parents, caregivers, or others. The more stimulation children receive, the better their motor development. Improvements in fine motor skills also support children with intellectual disabilities in achieving optimal academic development. Based on bivariate analysis, bead-stringing play therapy significantly improved fine motor skills from pre-test to post-test. Thus, the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted, confirming the significant effect of beada – stringing play therapy on fine motor skills in children with intellectual disability.

CONCLUSION

The average age of respondents was 5 years (100%), with more boys (22 children, 61.1%) than girls (14 children, 38.9%). Before the intervention, most children with intellectual disability were assessed as Failed in fine motor skills (88.9%). After bead-stringing play therapy, the majority (75%) were assessed as Pass. There is a significant effect of bead-stringing play therapy on improving fine motor skills in children with intellectual disability at Soeharto Heerdjan Hospital Jakarta.

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