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The Effect of Puzzle-playing on Fine Motor Development in Preschool Children

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ABSTRACT

Background: Development is developing human maturity and psychological processes that cannot be measured, such as increasing skills. The development speed in children is influenced by various factors such as the environment, health, nutrition, stimulation, and the role of parents. Fine motor development can be improved by applying the learning process and playing with interesting media, so children do not get bored easily. The media should be educative, like a puzzle game. Physiotherapy plays a role in preventing and reducing further complications that do not occur in children who experience fine motor delays. This research aims to determine the effect of giving puzzle games on fine motor development in preschool children.

Methods: The method applied is a literature study by looking for theoretical references related to the research carried out. This literature review uses secondary data and information from journals collected from the Google Scholar, PubMed, and ScienceDirect databases over the last ten years as data sources.

Results: Four studies discuss the impact of puzzle games on the fine motor development of preschool children. According to all journals, puzzle games impact the fine motor development of preschool-aged children. On average, about 25 children participate in each study.

Conclusion: The findings obtained based on the literature that has been reviewed and the discussion state that giving puzzle games affects fine motor development in preschool children. The findings of this research can be used as a basis for puzzle therapy in children and are expected to be used to improve children's fine motor development through other games. There isn't any clinical implication from this literature review.

Keywords: Fine Motor, Puzzle, Preschooler.

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BACKGROUND

Children are the nation's next generation, so from an early age, children should be provided with quality education. Every child has the right to a proper education because education is a vital or most basic thing. Early childhood education is critical because, at this age, children can understand and develop various intellectual potentials. Early age is also known as the golden age, including birth to six years, while preschool children are between the ages of 3 to 6 years.[1] The growth and development of children at this age are very impactful because they will be the basis for their future growth.

Development is a process of maturation and human psychological processes that cannot be measured, such as increasing skills. Religious and moral development, socio-emotional, cognitive, linguistic, and gross and fine motor development can all be observed in preschool children.[2] Fine motor development is an aspect of child development that can be observed. Fine motor development is very important because it makes it easier for children to perform basic daily tasks, such as eating, writing, or other activities that require the work of small muscles in the body. Most parents need to pay more attention and provide the right stimulation for their children's fine motor development.

In 2012, research from the Center for Nutrition Research and Development of the Ministry of Health of the Republic of Indonesia utilizing the Denver Development Screening Test (DDST) II survey revealed that the prevalence of fine and gross motor disorders in toddlers was 25%, or 2 out of every 1,000 children under five. According to a 2013 study conducted by Basic Health Research (Riskesdas), it was determined that 9.8% of children had problems with fine motor development.[3] This figure shows that children's development of fine motor skills still needs more attention. If this is left unchecked, it will cause the child to experience delays in growth and development (Delay Development), which will interfere with the child's daily activities.

The speed of development in children is influenced by various factors such as the environment, health, nutrition, stimulation, and parental involvement. Children's fine motor development can be improved by providing stimulation that can attract their attention. One of

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them is by inviting him to play. When applying the learning process and playing, we need interesting media so children can stay energized. The media should be educative, like a puzzle game. A puzzle is a game containing parts of a picture arranged randomly to form a whole.[4] Through puzzle games, children can develop a coordination system of the small muscles in the eyes and hands to hold and place picture pieces, maintain concentration or focus, train patience, and hone their memory of the child. The advantage of puzzle compared to other games is that it is easy to carry, can be played anywhere, and does not require a large room.

This research intends to examine the effect of puzzle games on fine motor development in preschoolers. Well-facilitated fine motor development will result in optimal development and being able to be independence in fulfilling daily activities. This is the urgency of this research.

METHODS

This research methodology utilizes literature studies to find theoretical references related to the research carried out. Previous studies should have been described using inclusion and exclusion criteria. This literature review uses secondary data and information in the form of journals collected from the Google Scholar, PubMed, and ScienceDirect databases over the last ten years as data sources.

RESULTS

In preschool-age children, playing puzzle games has the following impact on the development of their fine motor skills, according to research published in four publications published in the last ten years and has the following relevant data and information.

Rahmi NY, Meldafia I, and Dewi F (2018)[5] have researched The Effect of Puzzle Playing Stimulation on Fine Motor Development in Toddlers, using Quasi Experiment with 17 children resulted in the puzzle play stimulation affected children's fine motor development from 7.71 to 8.65.

Lilies Maghfuroh (2018)[6] has research titled Puzzle Playing Method Affects Fine Motor Development of Preschool Age Children, using the experimental study design with a single group of 44 young people employed as participants for this research. This study used DDST II, specifically the exemplary motor component. Most preschool-age children's fine motor improvement was average before being given a puzzle-playing approach (59%) and after being given a method (88.4%). The study findings indicated that the puzzle-playing strategy affects the fine motor development of preschool children.

Yuanita Ananda's study (2019)[7] utilized 15 kindergarten students. The instrument used in this research is an observation sheet for fine motor skills. The findings represent a significant difference (p-value <0.0001) between the typical fine motor development before kindergarten puzzle play therapy of 7.87 (with SD of 1.246) and after the puzzle-playing treatment of 9.93 (with SD of 1.534). Therefore, it could be interpreted that kindergarten puzzle play therapy improves the fine motor development of kindergarten-age children. Moreover, Pembronia NF, Yosefina DP's study (2020)[8] used a pre-experimental design with a single-group pretest-posttest of 30 participants. This research utilized the observation sheet of fine motor development according to the DDST. The study also revealed significant improvement (p-value < 0.0001) in the fine motor development score of 1.53 before receiving the puzzle educational game media and the average post-test score was 2.70.

Neriman A, Figen G, Munevver, CY's study (2012)[9] used an experiment design, two groups, pretest-posttest with 28 children as subjects. This study used the 'Brigance Early Development Inventory II (a child assessment form consisting of motor skills, receptive and expressive language skills, academic or cognitive skills, emotional social, and daily life skills) as the measurement tool. The results obtained there was a significant change before and after being given a puzzle game of 2.80 - 3.19. This study showed that implementing puzzle games contributed to children's fine motor development. In addition, Pavilion, Padilla, Asih DS, Harsismanto J, Andry S's study (2020)[10] used a quasi-experimental study, a pre-post-test, for a single group with 15 children as subjects. This research utilized the Developmental Pre-Screening Questionnaire. The average score before the intervention was 60% and after the intervention was 66.7% of the total score (from 7.40 to 9.07).

DISCUSSION

The goal of the puzzle game is to rearrange the scrambled pictures into the correct order. Children's fine motor skills can be strengthened through the use of puzzles. According to four studies cited in this statement, puzzle games in preschoolers influence the development of fine motor skills.[11] The fine motor development in question is the thing that is assessed in this study.

Based on research conducted by Rahmi DY et al. in 2019 suggested stimulation through puzzle games can help children's fine motor development, where children will actively learn how to use their fingers,

such as how to hold a pencil, write, and assemble the correct picture.[12] In addition, researchers say that the child's five senses will receive frequent stimulation from playing puzzles, which are sent to the brain to process the information and continue to the muscle contraction to improve fine motor skills.[13]

The puzzle-playing method affects the fine motor development of preschoolers, which the parents' education and profession might influence; for example, mothers have more time to encourage their children's motoric development.[14] The more educated a person, the easier it is for her to obtain information to improve their children's motor skills. In addition, the sex and age of the child affect motor development. Girls are easier to manage and more obedient to their parents than boys, who are often more aggressive and less obedient.[15]

The effect of puzzle-playing can improve fine motor skills and hand-eye coordination, engaging active learning by using their fingers to put the pictures in the correct place.[16] The puzzle-playing is fun and requires precision, improving the children's focus on finishing a task. Also, playing puzzled is a simple game with attractive colors to enrich color knowledge and improve children's memory. Once children like the puzzle-playing, they will try diligently to disassemble and reassemble the game, which can help improve their reasoning and imagination to be formed as better fine motor functions. The previous study found puzzle-playing is an educational and practical game that allows children to contribute to the motor and cognitive development.[17] Using the game for the children impacts both fine and gross motor development balancing between the hands and eyes works. However, the puzzle-playing would not have a significant effect when the physical therapist or trainer gave unclear instructions confusing the children. During the puzzle-playing, we should get the children's attention and assist them in the correct direction to make them reasonably follow the playing situation and have fun repeating the game.[18]

Another study entitled "Stimulation of Preschool Motor Development Through Brain Gym And Puzzle" stated that respondents who experienced deviations or obtained inappropriate results were due to the concentration of preschool children when the researchers did the instructions the children did not pay attention to even though the teacher was assisted at the time of direction and when doing movements.[10] tend to arbitrarily without paying attention to the direction of the research team. In addition, this research shows that the brain gym and puzzle interventions have an impact on the fine and gross motor development of preschool children because the two interventions can coordinate hand and foot movements and train balance between motor and eyes, thus training and developing children well.[19]

Children's brain growth and development would ideally improve with adequate and appropriate stimulation.[20] The puzzle-playing stimulation would stimulate the sensory nerves through touch and sight from the eye's coordination, then transmitted to the brain by afferent nerves. The brain will process the information and give orders to move the hand by transmitting information in the form of impulses through the motor nerves from the brain to the hands to initiate the movement precisely to the muscles.[21]

This study had some limitations to be acknowledged. The results are challenging to generalize to a specific population. Usually, the children have individual characteristics usually different from the study populations. Thus, individual puzzle-playing training doses could be used in clinical practice. Most studies did not mention the children's environments, which might influence the quality of care, including socioeconomic support, home locations (urban or rural), parental status, nutrition, and sleep quality. Thus, the physical therapist or trainer must consider these factors to make an appropriate program for the children.

CONCLUSION

Based on the review of the studies, the puzzle-playing method might improve preschool children's fine motor development. By playing puzzles, children will understand shapes, colors, sizes, and quantities that their five senses can accept and stimulate the brains to receive, process, and produce appropriate stimulations to develop significant improvement in fine motor skills.

ETHICAL CONSIDERATION

This review study used published articles that are accessible. Thus, this study did not require any informed consent or ethical consideration.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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AUTHOR CONTRIBUTIONS

NKDA conceived the study design, searched the literature, and drafted and revised the manuscript; AANTND and AWI searched the literature and revised the manuscript.

REFERENCES

1. Ariyanti T. The Importance of Childhood Education for Child Development. Din Elementary Educators. 2016;8(1):50–8.
2. Talango SR. Concept of Early Childhood Development. Early Child Islam Educ J. 2020;1(1):92–105.
3. Silawati V, Nurpadilah, Surtini. Early Detection of Early Childhood Growth and Development at the Tapak Sunan Islamic Boarding School, East Jakarta in 2019. BERNAS J Servant to Masy. 2020;1(2):88–93.
4. Yuniati E. Puzzle Affects Fine Motor Development of Preschool Age Children in Kindergarten At-Taqwa Mekarsari Cimahi. J Health. 2019;11(2):65–74.
5. Abdillah N, Putri AN. Medical Scientific Journal of Health. J Health Med Saintika Vol. 2018;10(2):11–24.
6. Maghfuroh L. The Method of Playing Puzzles Affects. Endurance. 2018;3(1):55–60.
7. Ananda Y. The Effect of Puzzle Playing Therapy on Fine Motoric Development in Pre-School Children at Tulip III Kindergarten Core, Padang in 2018. J Abdurrab Nursing. 2019;2(2):29–35.
8. Fembbi PN, Pora YD. Media Puzzle Educational Game in Improving Fine Motor Development of Preschool Children in Kindergarten St. Antonius Kewapante. J Nursing and Public Health. 2020;VII(1):1–11.
9. Aral N, Gursoy F, Yasar MC. An Investigation of the Effect of Puzzle Design on Children's Development Areas. Procedia - Soc Behav Sci [Internet]. 2012;51:228–33. Available from: http://dx.doi.org/10.1016/j.sbspro.2012.08.150
10. Panzilion, Padila, Asih DS, Harsismanto J, Andry S. Stimulation of Preschool Motor Development Through Brain Gym And Puzzle. JOSING-Journal Of Nursing and Health [Internet]. 1 (1) 10-17. Available from: https://doi.org/10.31539/josing.v1i1.1166.
11. Heri M, Pratama AA, Ariana PA, Dewi KAK. The Effect of Puzzle Playing on Smooth Motor Development in Children Aged 5-6 Years at TK. Kumara Canthi (Kindergarten) Singaraja. Nursing and Health Sciences Journal (NHSJ). 2022;2(4):332-5.
12. Rahmi DY, Indarti N. Examining the relationships among cognitive diversity, knowledge sharing and team climate in team innovation. Team Performance Management: An International Journal. 2019.
13. Mulyana A, Nurcahyani N. The Effect of the Puzzle Playing Method on Improving the Cognitive Development of Children Aged 4-6 Years. KnE Life Sciences. 2022:542–8-–8.
14. Islaeli I, Yati M, Fadmi FR. The effect of play puzzle therapy on anxiety of children on preschooler in Kota Kendari hospital. Enfermería Clínica. 2020;30:103-5.
15. Gurney PW. Self-esteem in children with special educational needs: Routledge; 2018.
16. Murti NN, Urnia EE. The Effect of the Educational Plaything Number Puzzle on Fine Motor Improvement of Preschooler Aged 4-6 Year. Health Notions. 2018;2(10):1072-6.
17. Da'i M, Maulidaty IE. The Effect of Playing Puzzle Therapy on the Fine Motoric Development of Pre-School Children in TK Tunas Harapan Batokan Kasiman. Widyagogik: Jurnal Pendidikan dan Pembelajaran Sekolah Dasar. 2021;8(2):79-85.
18. Wu J. How can unguided instruction in a puzzle game affect the player's perception of the game?: A case study. 2022.
19. Healey A, Mendelsohn A, Sells JM, Donoghue E, Earls M, Hashikawa A, et al. Selecting appropriate toys for young children in the digital era. Pediatrics. 2019;143(1).
20. Ministry of Education and Culture. Parenting Based on Children's Brain Development. Parenting Based on Child Brain Development Prints. 2020;
21. PE Sijens. iMedPub Journals A Brief Explanation of Neuron Structure in Brain and its Functions. 2021; 2021.

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