The Impact of Puzzle Stimulation in Fine Motor Development of Preschool Aged Children

Reny Siswanti [1], Dewi Nopitasari [1]

[1] *Senior Lecturer, Academy of Midwifery Wijaya Husada, Bogor, Indonesia*

Corresponding Author:
Reny Siswanti, MHSc
Academy of Midwifery Wijaya Husada
Jl. Letjen Ibrahim Adjie No. 180, Bogor, Indonesia
Email: wijayahusada@gmail.com

Abstract

Background: The growth and development of children involve physical changes and other several aspects, namely fine and gross motor, cognitive, language, emotional and social. Growth and development of children is influenced by internal and external factors. Children who received positive stimulations from the surrounding environment will help them grow and develop optimally. Puzzle play can be an option to stimulate the growth and development of preschool aged children.
Objective: This study is aimed to determine the effect of puzzle play in fine motor development of preschool aged children in Leuwiliang Village, Bogor City.
Material & Method: This study used quasi-experimental with one group pre-test and post-test design. The population in this study was 23 parents or caregivers of children. The tool used in this study was observation sheet with DDST (Denver Developmental Screening Test) rating scale.
Result: Wilcoxon test obtained the value Asymp. Sig. (2-tailed) 0.000 <0.05 which means that there is an influence ofGame Stimulation on Puzzle Fine Motor Development of Children aged 2-5 Years in KP. The Leuwiliang.
Conclusion: It can be concluded that knowledge about stimulation with games puzzles is needed by parents in the process of fine-motor development of children to improve finger skills, and eye-hand coordination so that children are ready to learn to draw, paint and write beginning.

Keywords: Fine motor, Puzzle, Preschool aged children, Stimulation

Introduction

Early childhood is defined as period from the child is born up until the age of 6 years old. This period is the age which determines the formation of the character and personality of a child. At this stage, children experience rapid growth and development and it is called as the golden age period. Foods that are nutritious and well-balanced as well as stimulation are needed for growth and development[(1)].

Early childhood development are divided into four primary areas: social and emotional, language/communication, physical development, and cognitive development.

Stimulation should be given early according to development of each child [(3)]. According to research by Utaminingtyas (2019), there are many preschool aged children who have not received sufficient stimulation, while only about 48-72% of family households provide stimulation for their children[(4)].

Fine motor skill involves coordination of small muscles in movement with the eyes, usually involving the synchronization of hands and fingers[(5)]. Motor skills can be developed through play activities related to physical skills that involve small muscles and coordination between the eyes and hands, such as playing

puzzles, maze, composing blocks, inserting objects into holes according to their shapes, making lines, folding paper, and writing with letters according to its shape [15].

According to Hartshorne of the year (2016), 8.1% of toddlers were found with developmental disorder and 1.92% of preschool aged children were diagnosed with mental retardation [7]. Data from Indonesia Ministry of Health (2016) showed that 16% of children under five years old in Indonesia experienced developmental disorders. the better the development of fine motor and gross motor, social, self-reliance, intelligence less and delays. Judging from the proportion of Indonesia's population to 40% of the total population consists of children and adolescents aged 0-16 years and as much as 13.5% of children under five in Indonesia is the age group at high risk of developmental disorders[8].

In West Java the number of children aged 12-59 months in 2018 as many as 3.929.704 child. Moh screening development in 30 Provinces in Indonesia and is reported 45% of infants experiencing developmental disorders. Research in West Java to give the results that 30% of children experience a developmental disorder and 80% of them caused by the lack of early stimulation [3].

Hayuningtyas (2020) found that out of 73 children who participated in the study, 40 children (54.8%) had low cognitive skill and 50 children (68.5%) experienced delayed fine motor skill [9].

Puzzle is the method of collecting the pieces of small pictures into a complete large image. Image is something that is manifested visually in the form of two-dimensional as the outpouring of feelings and thoughts, the puzzle is a tool of educational fun that can be used to develop fine motor skills. Use the puzzle as a play tool has advantages compared with other games, because it stimulates cognitive development, the stimulation of the child, and the motor is smooth [10].

Materials and Methods

This type of research is *Quasi experimental* design with *One Group Pre Test-Post Test Design*. The population in this study as many as 23 of the parents or caregivers of children aged 2-5 years who live in Kp.The Leuwiliang Rw 03 Kecamatan Leuwiliang Kabupaten Bogor 2020. The sampling technique is *total sampling.*

The research was conducted in KP. The Leuwiliang RW 03 Desa Leuwiliang, Bogor Regency, on 11 October – 18 October 2020 using a data Collection sheet *checklist* and DDST filled on the same day, i.e. on the time before and after a given stimulation of the puzzle for 30 minutes. The Data is then stored and analyzed using a computer program. This study uses a test preconditions, namely homogeneity test *(levene statistics)* and normality test *(Shapiro wilk).* Hypothesis testing using analysis of non-parametric (Wilcoxon test) with a value of $p<0.05$.

Results

Characteristics of the respondents consisted of age and gender, can be seen in the table below

Table 1. Characteristics of Respondents

Parameters	Frequency	Percentage (%)
Gender		
Female	15	65,2
Male	8	34,8
Age		
2 - 3 years	7	30,4
4 - 5 years	16	69,6

Based on the results above it is known that of the 23 respondents, the majority of respondents aged 4-5 years as many as 16 respondents (69,6%) and female gender as many as 15 respondents (34,8%).

Table 2. Test of Homogeneity and Normality fine motor development of children ages 2-5 years

	Tests of Normality (Shapiro-Wilk) Sig.	Levene Statistic
Pretest	0,049	0,357
Posttest	0,005	

Based on the results above it is known that of the 23 respondents, it was found that the Results of the Normality Test using the formula *shapiro-wilk* shows all the data on the *pretest* and posttest p value 0,049 (p *value* < 0,05) , it can be concluded that the value of the residual distribution is not normal. The results of the Homogeneity Test using the formula *Levene Statistic* seen from the value of Sig. (Significant) or the value of the probability that 0,357. Then, if the value of Sig. (significant) or probability value > 0.05 then the data come from populations that have a variant of the same or homogeneous.

Table 3. Fine Motor development of children aged 2-5 years before and after the stimulation of the game *puzzle* in Kp.The Leuwiliang Kabupaten Bogor.

No	Tags	PreTest		PostTest		P value
		Frequency	Percentage (%)	Frequency	Percentage (%)	
1.	Unstable	4	17,4	1	to 4.3	0,000
2.	Suspect	14	60,9	3	13,1	
3.	Normal	5	21,7	19	82,6	
	Total	23	100	23	100	

Based on the results of the above Table it is known that from the 23 respondents, the influence of the stimulation of the game *puzzle* when the pre-test there are 14 children's suspect (60,9%), and after stimulation game *puzzle* achieved 19 (82,6%) of children in the category of normal. The results of the Wilcoxon test obtained p-value 0,000 (<0,05) which means showed a significant difference, it can be concluded that "the Ha is accepted and Ho is rejected". That there is the influence of the Stimulation of the Game *Puzzle* On Fine Motor Development of Children Aged 2-5 Years in KP. The Leuwiliang RW 03 Kabupaten Bogor

Discussion

a. The development of the child's fine motor before stimulation games *puzzle*

Based on the results of Table 3 above it is known that of the 23 respondents, shows that most of the fine motor development of the child before the given therapy play *a puzzle* is *Suspect* (60,9%).

The results of this study are in line with Inggried Claudia Muloke Amatus Yudi Ismanto Yolanda Bataha (2017) with the title the Influence of Educational Games *Puzzle* On the Cognitive Development of Children Aged 5-6 Years in the Village Linawan District Pinolosian Kabupaten Bolaang Mongondow Selatan Type used in this research is *Quasi - experimental* approach with *One group pre-test and post-test Design*, the Results of the statistical test of *wilcoxon* p value = 0,002 (p < 0.05), means at α = 0.05, look there is the influence of Educational Games *Puzzle* On the Cognitive Development of Children Aged 5-6 Years in the Village Linawan District Pinolosian Kabupaten Bolaang Mongondow Selatan [(11)].

b. The development of the Child's Fine Motor After Stimulation Games *Puzzle*

This puzzle game is to rely on instinct or intelligence. The game is made by dismantling and re-installing the suitability of shape,

pattern or color. With this game children can practice finding, rearranging and making something seemingly unrelated to being a form of unity that is meaningful[12].

Based on the results of Table 3 above it is known that of the 23 respondents, shows that most of the development of the child's fine motor after a given play therapy *puzzle* is normal (82,6%)

The results of this study are in line with Lilis Maghfuroh Program Studi S1 Keperawatan STIKes Muhammadiyah Lamongan with the title of the Methods to Play the *Puzzle* Effect On the Fine Motor Development of Children of Preschool Age. Research design Experimental using one-*group pre-post test design* without control. Based on the results of processing with SPSS, the obtained value of Z is -3.464. Because the test is 2-sided, then the probability of the (asymp. sig.) is 0.001. The results of the Z count away from the critical numbers Z ±1,96, then H1 is accepted, there is the influence of methods of play *a puzzle* on the development of fine motor pre-school children in KINDERGARTEN Solar system New Plosowahyu Lamongan[13].

c. The influence of fine motor before and after the implemented stimulation game *puzzle*.

The influence of fine motor skills in children aged 2-5 years, based on data showed the majority of respondents experienced an increase fine motor before and after the stimulation of the game *puzzle.*

Media *puzzle* is a simple media that is played with a disassembly. *Puzzle* is one of the forms of the game are very trusted as a medium that can help you to develop your skills and fine motor with the coordination between hand and eyes, set the *puzzle* to be a form of animal, aircraft, ships and so on. *Puzzle* is one of the types of educational games that attractive to be introduced on the children[14].

The purpose and function of motor development is the mastery of skills that are reflected in the ability to complete the task specific motor. The quality of the motor looks of how much the child is able to display motor tasks given with a certain level of success. If the success rate in performing motor tasks is high, means the motor is done effectively and efficiently[15].

Based on the research Erni Yuniati the Nursing Department nursing department Setih Setio Muara Bungo, titled *Puzzle* Affects the Fine Motor Development of Preschool Age Children In Tk At Taqwa Mekarsari Cimahi, this Study uses a research design is a quasi experiment with the design using *pretest* and *posttest*. To measure *pretest* and *posttest* using the t test and t test 2 sample dependent used to see whether there is the influence of *pretest* and *posttest* in the intervention group given game *puzzle*. After the game educative type of *puzzle* or *posttest*, showed an average development of fine motor is 1.88 with a standard deviation of 0.600. Seen that the mean difference between the *pretest* and *posttest* is 1,47 with a standard deviation of 0,624. Statistical test results obtained p value = 0,0001 it can be concluded there is a significant difference in the average fine motor before and after the game educative type of puzzle [5].

Based on the results of table 3 the obtained value *p value* 0.000 <0.05, which means there are significant differences, it can be concluded that Ha is accepted and Ho is rejected. That there is the influence of the Stimulation of the Game *Puzzle* On Fine Motor Development of Children Aged 2-5 Years in KP. The Leuwiliang RW 03 Kabupaten Bogor.

So the conclusion of research conducted by the researchers the presence of the influence of fine motor skills in children aged 2-5 years. Caused because the child that follows stimulation according to the SOP and follow the instructions of the researcher. The benefits of stimulation of fine motor skills one of which is to stimulate the fine motor skills, flexibility fingers and hand-eye coordination so that the child is ready to learn to draw, paint

and write the beginning. In addition, it is able to control the emotions in day fine motor.

Limitations of the study

Limitations of research this is the time of the research brief and the parents of the respondents who work, lack of parental knowledge about the stimulation to the development of the child.

Future Directions

Expected to Health personnel and the entire people of old that there can perform the detection of early to growth early childhood due to optimal growth is very important for the sustainability of the generation successor of the nation , where the old man diligently perform ihc against his daughter, who can detect delays in the development of what is experienced by the child.

Conclusion

There is the influence of the Stimulation of the Game *Puzzle* On Fine Motor Development of Children Aged 2-5 Years in KP. The Leuwiliang RW 03 Kabupaten Bogor.

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