

THE EFFECT OF PUZZLE GAMES ON THE DEVELOPMENT OF FINE MOTORCY IN CHILDREN AGED 3-5 YEARS AT POSYANDU, BANTARJAYA VILLAGE, PEBAYURAN DISTRICT, BEKASI DISTRICT 2023

Sri Resti Nurhabibah^{*}, Sonda Nur Assyidah

Sekolah Tinggi Ilmu Kesehatan Abdi Nusantara

Jl. Swadaya No.7, RT.001/RW.014, Jatibening, Kec. Pd. Gede, Kota Bks, Jawa Barat 17412, Indonesia

Email: sriresty2910@gmail.com

Abstract

Introduction; Fine motor skills are movements that involve fine muscles or certain parts of the body. The government program is to detect children's growth and development by conducting Early Growth and Development Intervention Detection Stimulation (SDIDTK). SDIDTK can prevent developmental deviations and emotional deviations. Several factors influence the development of fine motor skills in children, such as genetic factors (gender, ethnicity, biological factors, physical environmental factors, psychosocial, and family factors (parental parenting patterns, customs, parental education) (Ulfa, 2021). A preliminary study was carried out at the Anggrek Posyandu, Bantarjaya Village, by implementing early growth and development intervention detection stimulation (SDIDTK) for children aged 3 - 5 years. Data obtained at the Anggrek Posyandu, Bantarjaya Village, Pebayuran District, obtained results from 185 children, 28 of whom had deviant assessment results. , 47 children with doubtful results, and 110 children with normal results. Of the 28 children with deviant assessment results, 14 of them were due to low parental education, unsupportive environment, low economic status, and never being introduced to puzzle games. Meanwhile, 10 of them had doubtful assessments. 47 children due to the environment and economics. Problem Formulation: The impact of fine motor skills in children carries the risk of affecting psychosocial maladaptation and academic achievement. Research Objectives: To determine the influence of puzzle games on the fine motor development of children aged 3-5 years at Posyandu, Bantarjaya Village, Pebayuran District, Bekasi Regency in 2023. Research methods; Using quantitative methods, a quasi-experimental approach. The data processing system uses SPSS Version 25. Univariate, bivariate analysis (starting with a normality test using Shapirowilk, with normal results if the condition is $p \geq 0.05$, followed by the T-dependent test (paired sample T-test) if the data is normally distributed to see the mean differences in groups and use the Independent T-test for mean differences in groups and the Mann-Whitney test). Research results: Based on the age of the respondents, most of them were 5 years old, 18 people 952.95). while 4-year-olds numbered 10 people (29.4%) and 3 year olds 6 people 917.6%), parents' education was mostly SMA/PT as many as 20 people (58.8), parents' occupations were mostly working parents as many as 21 people (61.8) In the Developmental Intervention group fine motor The average fine motor development before intervention was given was 2.47-3.00 with a minimum value of 2 and a maximum of 6 and a standard deviation value of 0.615. After being given the intervention, it was found that the average value of fine motor development increased to 2.94 - 3.00 with a minimum value of 4 and a maximum of 6 and a standard deviation value of 0.239. In the control group before it was given it was 4.76 - 5.00 with a minimum value of 3 and a maximum value of 6 and the standard value deviation 1,147. After being given the intervention, it was found that the average value of fine motor development increased to 5.76 - 6.00 with a minimum value of 5 and a maximum of 6 and a standard deviation value of 0.437. The Mann-Whitney test obtained a value of $p = 0.350$, meaning the value is greater than the significance level,

namely $\alpha = 0.05$. Conclusions and suggestions: H_0 is accepted and H_a is rejected, which means there is no influence of the puzzle playing method on the fine motor development of children aged 3-5 years at Posyandu Anggrek, Bantarjaya Village, Pebayuran Bekasi District. Suggestion ; It is hoped that this research can be developed further with different variables and can develop methods and media that have been innovated.

Keywords: Playing with Pazzle, Fine Motor Skills For Children 3-5 Years Old

Introduction

Motor development is the basis for developmental progress, when physical development is good it allows children to be able to further develop their physical skills, explore their environment without the help of other people. Children's physical development is characterized by the development of motor skills, both fine motor skills and gross motor skills (Adelia, 2018). Comparison of the development index of children aged 36-59 months, Indonesia is in third place with a total development index of 88.3%, while the highest is Thailand at 91.1% and the lowest is Nepal with a total development index of 64.4% (Risksdas , 2018). Data from the World Health Organization (WHO) in 2016 revealed that 43% of children in developing countries experienced developmental delays. Fine motor skills are movements that involve fine muscles or certain parts of the body. Fine motor skills influence opportunities to practice and learn, such as fine muscle development activities including drawing, writing, walking and running. The development process of each child is the same, however, each child generally has a different speed or understanding (Panzilion, 2020). The government program is to detect children's growth and development by conducting Early Growth and Development Intervention Detection Stimulation (SDIDTK), which is an activity to stimulate the basic abilities of children 0-6 years so that children develop optimally and find deviations early so that it is easier to intervene. This detection activity can determine children with the worst condition of growth deviation in children, namely malnutrition. This SDIDTK activity can prevent developmental deviations and emotional deviations from occurring (Latifah, Dina, & Mutirawati, 2017). Several factors influence the development of fine motor skills in children, such as genetic factors, including gender and ethnicity, biological factors, physical environmental factors, psychosocial and family factors which include parenting patterns, customs and parental education (Ulfa, 2021). The process of overcoming the problem of developmental delays in children is very important, one of which is by carrying out play activities (Ina, Yulifah, & Susmini, 2018).

Based on a preliminary study that was carried out at Posyandu Anggrek Bantarjaya Village by implementing early growth and development intervention detection stimulation (SDIDTK) for children aged 3 - 5 years, data obtained at Posyandu Anggrek Bantarjaya Village, Pebayuran District, obtained results from 185 children, 28 of them with assessment results. deviant, 47 children with doubtful results, and 110 children with normal results. Of the 28 children with deviant assessment results, 14 of them were due to low parental education, an unsupportive environment, low economic status, and never being introduced to puzzle games. Meanwhile, the doubtful assessment of 10 out of 47 children was due to the environment and economics. Based on this background, researchers were interested in researching the influence of puzzle games on the fine motor development of children aged 3-5 years at Posyandu, Bantarjaya Village, Pebayuran District, Bekasi Regency in 2023. Problem Formulation: Impact of fine motor skills in children carries the risk of affecting psychosocial maladaptation and academic achievement in the future. Of the 185 children at Posyandu who were carried out by SDIDTK, the results of the assessment were deviant for 28 children, 47 children were doubtful and 110 children were normal. Research Objective: To find out about puzzle games on the fine motor development of children aged 3-5 years at Posyandu, Bantarjaya Village, Pebayuran District, Bekasi Regency in 2023. Scope: The design of this research uses quantitative methods with a quasi-experimental approach. The variables studied consisted of the independent variable, namely the puzzle game, and the dependent variable was the fine

motor development of children aged 3-5 years. The research location is at the Bantarjaya Village Posyandu in the Pebayuran Community Health Center area from November 2023 to January 2024. The data processing system uses SPSS Version 25 software.

Research Methods

Research Design: The research design used was a quasi-experimental research design with a pretest & post test non-equivalent control group design. This research consisted of 2 groups, namely an intervention (experimental) group and a control group that was given different treatment. This research was carried out at Posyandu Anggrek, Bantarjaya village, the working area of the Pebayuran Community Health Center, Bekasi Regency, from November 2023 to January 2024. **Population:** The population of cases in this study were all children aged 3 - 5 years at Posyandu Anggrek, Bantarjaya village in 2023, totaling 185 children. **Sample:** The sample size in this research uses the Lemeshow theory formula in the source (Riyanto, 2019). To anticipate children who would drop out, the sample was increased by 10% so the total sample in this study was 17 children. So the total sample in this study was 17 children, who were divided into 17 children in the case group and 17 children in the intervention control group. **Inclusion criteria:** Children aged 3-5 years, Children with parental consent willing to be respondents, Participate until the end of the study.

Exclusion criteria: Children who are unable to attend or are sick, children aged 6 years, children with mental limitations. **Data Collection, Processing and Analysis:** Univariate, bivariate analysis (starting with a normality test which is useful for determining whether the data that has been collected has a normal or abnormal distribution. The data normality test uses Shapirowilk, with normal results if the condition is $p \geq 0.05$, followed by the T test - dependent (paired sample T-test) if the data is normally distributed to see the average difference within groups and use the Independent T-test to see the influence between groups. If the data is not normal, continue with the Wilcoxon test for average differences within groups and test Mann-Whitney to see the influence between groups).

Research Result

a. Respondent's Age

Table 1 Frequency distribution of respondents' ages in the fine motor development of children aged 3-5 years at Posyandu Anggrek, Bantarjaya Village, Pebayuran District, Bekasi Regency, 2023

No	Child Age	Group Intervention		Control Group		Qyt	%
		f	%	f	%		
1	3 years	3	17.6	3	17.6	6	17.6
2	4 years	5	29.4	5	29.4	10	29.4
3	5 years	9	52.9	9	52.9	18	52.9
	Total	17	100	17	100	34	100

Based on Table 1, it is found that of the 34 respondents, the majority were 5 years old, 18 people (52.95). while 4 years old numbered 10 people (29.4%) and 3 years old 6 people (17.6%).

b. Parental education

Table 2 Frequency Distribution of Parental Education in the Fine Motor Development of Children Aged 3-5 Years at Posyandu Anggrek, Bantarjaya Village, Pebayuran District, Bekasi Regency, 2023

No	School	Group Intervention		Control Group		Qyt	%
		f	%	f	%		
1	SD/SMP	6	35.5	8	47.1	14	41.2
2	SMA/PT	11	64.7	9	52.9	20	58.8
	Total	17	100	17	100	34	100

Based on Table 2, it was found that of the 34 respondents, the majority of parents' education had graduated from high school/PT, 20 people (58.8), consisting of 11 people in the intervention group and 9 people in the control group. Meanwhile, only 14 (41.2%) had elementary/middle school education, consisting of 6 people in the intervention group and 8 people in the control group.

c. Parents' job

Table 3 Frequency Distribution of Parental Work in the Fine Motor Development of Children Aged 3-5 Years at Posyandu Anggrek, Bantarjaya Village, Pebayuran District, Bekasi Regency, 2023

No	Education	Group Intervention		Control Group		Qyt	%
		f	%	f	%		
1	Not Working	6	35.3	7	41.2	13	38.2
2	Working	11	64.7	10	58.8	21	61.8
	Total	17	100	17	100	34	100

Based on Table 3, it was found that of the 34 respondents, most of the parents were working, 21 people (61.8), consisting of 11 people in the intervention group and 10 people in the control group. Meanwhile, only 13 (38.2%) did not work, consisting of 6 people in the intervention group and 7 people in the control group.

d. Fine motor development

Table 4 Frequency Distribution of Fine Motor Development of Children Aged 3-5 Years Intervention Group at Posyandu Anggrek Bantarjaya Village, Pebayuran District, Bekasi Regency, 2023

Fine Motor	Intervention Group									
	Pre test					Post Test				
	F	%	Mean	Min	SD	F	%	Mean	Mean	SD
			Med	Max				Med	Max	
Deviant	2	11.8	4.24	–		0	0	5.53	–	
doubtful	7	41.2	4.00		1.480	2	11.8	6.00		0.717
Normal	8	47.1				15	88.2			
Total	17	100				17	100			

Based on table 4, it is known that the average fine motor development in the intervention group before it was given was 4.24 - 4.00 with a minimum value of 2 and a maximum of 6 and a standard deviation value of 1,480. After being given intervention, it was found that the average value of fine motor development increased to 5.53 - 6.00 with a minimum value of 4 and a maximum value of 6 and a standard deviation value of 0.717

Table 5 Frequency Distribution of Fine Motor Development of Children Aged 3-5 Years Control Group at Posyandu Anggrek, Bantarjaya Village, Pebayuran District, Bekasi Regency, 2023

Fine Motor	Control group									
	Pre test					Post Test				
	F	%	Mean	Min	SD	F	%	Mean	Mean	SD
			- Med	- Max				- Med	- Max	
Deviant	0	0	4.76	–		0	0	5.76	–	
doubtful	7	41.2	5.00	3 - 6	1.147	0	0	6.00	5 - 6	0,437
Normal	10	58.8				17	100			
Total	17	100				17	100			

Based on table 5, it is known that the average fine motor development in the control group before administration was 4.76 - 5.00 with a minimum value of 3 and a maximum of 6 and a standard deviation value of 1.147. After being given intervention, it was found that the average value of fine motor development increased to 5.76 - 6.00 with a minimum value of 5 and a maximum of 6 and a standard deviation value of 0.437

Bivariate Analysis

Table 6 Kolmogorov-Smirnov Data Normality Test

Intervention group			Control group		
Statistik	df	Sig.	Statistik	df	Sig.
0.538	34	0.000	0.255	34	0.000

Table 6 shows the results of the data normality test using the Kolmogorov-Smirnov test in both intervention and control groups, showing significant results of $0.000 > 0.05$. It can be concluded that the data above is not normally distributed, therefore the researcher used the Mann-Whitney test.

Table 7 The influence of the puzzle playing method on the fine motor skills of children aged 3-5 years at Posyandu Anggrek, Bantarjaya Village, Pebayuran District, Bekasi Regency, 2023

	Group	N	Mean Rank	Sum of Ranks	P value
Motorik	Intervention	17	16.09	273.50	0.350
Halus	Control	17	18.91	321.50	
	Total	34			

Based on table 7, it was found that the mean rank of motor development in the intervention group was 16.09, while in the control group it was 18.91. The statistical test results obtained a value of $p = 0.350$, meaning the value is greater than the significant level, namely $\alpha = 0.05$, so it can be concluded that H_0 is accepted and H_a is rejected, which means there is no influence of the puzzle playing method on the fine motor development of children aged 3-5 years at Posyandu Anggrek Bantarjaya Village, Pebayuran District, Bekasi.

Research Discussion

Fine motor development of children aged 3 - 5 years before and after playing puzzles at Posyandu Anggrek

Fine motor development is limited movement of parts that include small muscles, especially movements of the fingers. Fine movement or fine motor skills are aspects related to a child's ability to carry out movements that involve certain parts of the body and are carried out by small muscles, but require careful coordination as well as observing things, pinching, writing. Fine motor skills focus on hand and eye coordination abilities. In general, children will show progress in fine motor control behavior, starting with simple ones and increasing, marked by a significant increase in fine motor skills in the wrist area (Sit, 2019). Puzzles are a form of game that challenges children's creativity and memory more deeply because the emergence of motivation to continue solving problems, but it is still fun because it can be repeated. (Fadillah, 2017): Research results from 34 children aged 3-5 years based on the characteristics of the respondents, the majority of whom were 18 years old (52.9%). Based on parental education, 20 people (58.8%) had higher education status, with 21 (61.8%) more parents working. The calculation results of the average fine motor development before intervention was given was 2.47-3.00 with a minimum value of 2 and a maximum of 6 and a standard deviation value of 0.615. After being given intervention, it was found that the average value of fine motor development increased to 2.94 -3.00 with a minimum value of 4 and a maximum value of 6 and a standard deviation value of 0.239. It can be concluded that the development of children's fine motor skills before and after being given puzzle-type educational games can result in a significant increase in fine motor development, but this cannot be separated from the role of parents and the environment.

The influence of playing puzzles on the fine motor development of children aged 3 - 5 years at Posyandu Anggrek

Fine movement or fine motor skills are aspects related to a child's ability to carry out movements that involve certain parts of the body and are carried out by small muscles, but require careful coordination as well as observing things, pinching, writing, and so on (RI, 2012). Denver Developmental Screening Test (DDST) is an assessment method that is widely used to assess the developmental progress of children aged 0-6 years. Denver II is the result of revision and standardization of DDST and DDSR-R (Revised Denver Developmental Screening Test). (Suwariyah, P. 2013) During the pre-test, the intervention group given the puzzle game was assessed, including making vertical lines, modeling circles in accordance with the DDST II assessment sheet for fine motor skills of children aged 3 - 5 years. The results of the data normality test using the Kolmogorov-Smirnov test showed significant results of $0.000 > 0.05$, it can be concluded that the data was not normally distributed, therefore the researcher used the Mann-Whitney Test. The statistical test results obtained a value of $p = 0.350$, meaning the value is greater than the significant level, namely $\alpha = 0.05$, so it can be concluded that H_0 is accepted and H_a is rejected, which means there is no influence of the puzzle playing method on the fine motor development of children aged 3-5 years at Posyandu Anggrek Bantarjaya Village, Pebayuran District, Bekasi. The results of this statistical test are not in line and cannot be found with other studies with the same results as the results of this study. There tends to be a similarity in the increase in fine motor development seen from the average value before and after playing the game. Namely, other researchers (Maghfuroh, 2018) found that there was a difference in the results before and after being given puzzle playing therapy and found a mean difference of 4.6. After carrying out the Pired samples t-test statistical test, the p-value was $0.002 < \alpha 0.05$. So there is an influence of the puzzle playing method on the fine motor development of children aged 3 - 5 years. The inappropriateness of this research could be influenced by other factors, including the small number of samples and the environmental atmosphere during the research. Apart from that, according to Rudiyanto 2016, several factors that speed up or slow down the development of children's fine motor skills include: Genetic factors Health and nutrition Premature Culture Stimulation or stimulation Family income, father's/mother's education

Conclusion

1. Based on the age of the respondents, most of them were 5 years old, 18 people (95.2%). while 4 years old numbered 10 people (29.4%) and 3 years old 6 people (17.6%).
2. Based on parental education, the majority of parents' education graduated from high school/PT, 20 people (58.8), consisting of 11 people in the intervention group and 9 people in the control group. Meanwhile, only 14 (41.2%) had elementary/middle school education, consisting of 6 people in the intervention group and 8 people in the control group.
3. Based on parental occupation, the majority of parents worked, 21 people (61.8), consisting of 11 people in the intervention group and 10 people in the control group. Meanwhile, only 13 (38.2%) did not work, consisting of 6 people in the intervention group and 7 people in the control group.
4. In the fine motor development intervention group, the average fine motor development before the intervention was given was 2.47-3.00 with a minimum value of 2 and a maximum of 6 and a standard deviation value of 0.615. After being given intervention, it was found that the average value of fine motor development increased to 2.94 -3.00 with a minimum value of 4 and a maximum value of 6 and a standard deviation value of 0.239.
5. In the control group before administration it was 4.76 - 5.00 with a minimum value of 3 and a maximum of 6 and a standard deviation value of 1.147. After being given the intervention, it was found that the average value of fine motor development increased to 5.76 - 6.00 with a minimum value of 5 and a maximum of 6 and a standard deviation value of 0.437.
6. The Mann-Whitney test obtained a value of $p = 0.350$, meaning the value is greater than the significance level, namely $\alpha = 0.05$, so it can be concluded that H_0 is accepted and H_a is rejected, which means there is no influence of the puzzle playing method on the fine motor development of children aged 3-5 years. at the Anggrek Posyandu, Bantarjaya Village, Pebayuran District, Bekasi.

Suggestion

1. For Anggrek Posyandu: It is hoped that Posyandu can utilize other media to improve the fine motor development of children at Posyandu
2. For Institutions: It is hoped that the results of this research can increase the knowledge and insight of midwifery students in developing other media besides puzzle playing methods to improve children's fine motor development.
3. For future researchers: It is hoped that they can develop this research further with different variables and can develop methods and media that have been innovated.

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