



The Origami Games Enhance Fine Motor Development In Stunted Children (3-5 Years Old)

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Abstract

Stunting is still a problem for children in Indonesia, including in Lampung Province. Cases in Lampung Province are above the national average, namely 42.64% and the highest cases of stunting are in Central Lampung Regency with a prevalence rate of 52.68%. The purpose of this study was to analyze the effect of origami games on the fine motor development of children with a diagnosis of stunting (3-5 years) in Central Lampung Regency. The research design was a quasi-experimental design with a non-randomized control group pretest-posttest design. The research subjects were stunted children aged 3-5 years, divided into a control group and an experimental group. Each group consisted of 30 respondents and was selected based on inclusion and exclusion criteria. The results of bivariate analysis of the ability to squeeze with 5 fingers between the intervention group and the control group before and after the origami game intervention p-value 0.016, cutting ability p-value 0.018, line ability p-value 0.034. This study can be concluded that origami games can improve fine motor development in children with a diagnosis of stunting. It is hoped that parents can stimulate the fine motoric development of children by using the origami game method.

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Introduction

Stunting commonly called short toddlers is an indication of poor nutritional status which is used as a long-term indicator for undernutrition in children. Stunted toddlers are toddlers with nutritional status based on length or height according to their age when compared to the WHO-MGRS (Multicentre Growth Reference Study) standard, a z-score value of less than -2SD is categorized as short and very short if the z-score value is less from -3SD (Indonesian Ministry of Health, 2018). The prevalence of stunting in Lampung Province is above the national average, namely 42.64% for very short and short toddlers. The highest cases of stunting occurred in Central Lampung Regency with a prevalence rate of 52.68%. The Bandar Agung Health Center had the highest cases of stunting under five compared to other Puskesmas with a prevalence rate of 41.67%. The highest cases were in the working area of the Bandar Agung Health Center, namely in Gunung Batin Udik Village, with a total of 133 children in 2018, and there was a decrease in 2019 with a total of 84 children (Profile of the Central Lampung Health, 2018).

Malnutrition can lead to impaired brain function, so this will be related to children's motor development. Motoric is all the movements that are obtained by the whole body, while motor development can be referred to as the development of elements of maturity and control of body movements. Motoric development itself is one of the processes of child growth and development where every child will go through this development, both fine motoric and gross motoric. (F. Kurnia Dewi, 2014)

Parents or health workers sometimes focus more on gross motor development, so that less attention is given to fine motor development. Fine motor skills are influenced by motor function in the form of posture, good coordination of muscle nerves, accurate visual function, and intelligence. Fine motor development is an indication of a better level of intelligence than gross motor. Fine motor movements cannot be carried out perfectly if the muscle mechanism has not yet been developed, this occurs in children who experience growth disorders such as stunted, where the striped muscles or striated muscles that control movement develop at a somewhat slower rate than children. under normal conditions, so that in this condition it results in obstacles to the child's fine motor movements (Soetjningsih, 2014)

Based on preliminary studies that have been carried out, the number of children aged 3-5 years who suffer from stunting is 63 children, and measurements of fine motor skills have been carried out, with the results of children who develop according to expectations as many as 18 children (29%), while for the condition of children who have not yet developed as many as 36 children (57%) and began to develop as many as 9 children (14%). One of the efforts that can be made to improve motor development in children is by providing interventions using origami games.

Origami itself is the art of folding paper with concentration and accuracy between the eyes and finger muscle coordination so that origami games can develop children's fine motor skills. By using origami games children can express their fine motor skills naturally and can develop optimally, so that origami can develop all children's abilities in a natural and fun way. Research on the use of origami games to improve children's fine motor development has been done, but research using origami games on stunted children who have motor disorders aged 3-5 years has never been done, so research is needed on the effect of using origami games on motor development. fine stunting children (3-5 years) in Gunung Batin Udik Village, Terusan Nunyai District, Central Lampung Regency.

Methods

This study uses a quasi-experimental research type (Quasi Experiment Design) with a nonrandomized control group pretest post-test design. The independent variable in this study was an origami game, while the dependent variable was the stunting children's fine motor scores (3-5 years). This research was conducted in two groups: the group that was given intervention in the form of giving origami games for 1 hour/day for 14 days (2 weeks), and the control group that was not given origami games. Fine motor development will be measured before and after the intervention. This study used a purposive sampling method with a total sample of 30 intervention groups and 30 control groups. The independent variable in this research is origami games in the form of folding, squeezing, cutting, and drawing. The dependent variable is the fine motor score of stunting children. Data collection techniques used questionnaires and observation, then analyzed using the Paired T-test to determine differences in stunting children's fine motor scores in the treatment group and the control group.

Results

This study obtained data on toddlers who experienced stunting with fine motor disorders as many as 30 toddlers and 30 toddlers who did not experience motor disorders. The results of the characteristics of fine motor skills table.1

Tabel.1 Characteristics Of Fine Motor Skills In The Intervention Group And The Control Group Before and After Treatment (n=30)

Fine motor skills	Before treatment		After treatment	
	F	%	F	%
Intervention group				
BSB	1	3,3	2	6,6
BSH	3	10	9	30
MB	11	36,7	11	36,7
BB	15	50	8	26,7
Control group				
BSB	0	0	4	13,3
BSH	5	16,7	5	16,7
MB	12	40	10	33,3
BB	13	43,3	11	36,7

BSB= Developing very well BSH=Developed as expected MB= Started to develop BB= Undeveloped

In the intervention group, several respondents experienced an increase in fine motor skills after being given treatment. In the intervention group before treatment, it was found that the largest number of respondents were babies who had not yet developed (BB) as many as 15 respondents (50%) and at least very well developed (BSB) by 1 respondent (3.3%). After the treatment, there was an increase where the largest number of respondents were babies who were starting to develop (MB) with a total of 11 respondents (36.7%) and at least very well developed (BSB) of 2 respondents (6.6%). In the control group before treatment, it was found that the largest number of respondents were babies who had not yet developed (BB) as many as 13 respondents (43.3%), and the least well-developed (BSB) were 5 respondents (16.7%). After the treatment, there was an increase where the largest number of respondents were infants who had not yet developed (BB) with a total of 11 respondents (36.7%) and the least developed very well (BSB) of 4 respondents (13.3%).

Table 2. Results Of Univariate Analysis Of The Ability To Squeeze With 5 Fingers, Fold, Cut, And Line Before And After The Intervention

Variable	Pretest	Posttest	Range
	Mean±SD	Mean±SD	Mean±SD
Squeezing with 5 fingers			
Intervention group	1,67±0,884	2,23±1,006	0,57±0,568
Control group	1,63±0,765	1,87±0,9	0,23±0,43
Fold			
Intervention group	1,6±0,724	2,27±1,143	0,67±0,661
Control group	1,67±0,758	2,03±1,033	0,37±0,49
Cutting			
Intervention group	1,63±0,809	2,17±1,053	0,53±0,507
Control group	1,6±0,77	1,83±0,913	0,23±0,43
Line			
Intervention group	1,67±0,802	2,17±1,053	0,5±0,509
Control group	1,6±0,77	1,83±0,913	0,23±0,43

Based on the univariate analysis table when viewed from the respondent's ability to squeeze with 5 fingers, it is known that the mean difference between the pretest and posttest scores in the intervention group is around 0.57 with a variation of 0.568. It is known that the control group has an average difference of 0.23 with a score variation of around 0.43. Looking at the variable ability to fold origami paper, it is known that in the intervention group, there was an average difference in score before and after treatment of 0.67 with a variation level of 0.661. The difference in average scores in the control group is around 0.37. The level of variation in the control group's data is + 0.49. The variable ability to cut with origami paper stimulation showed an average difference in the pretest and posttest intervention groups of 0.53 with a variation level of 0.507. The control group has an average difference of 0.23 with a standard deviation of 0.43. The last variable is the ability to line with origami paper stimulation, showing that the mean difference

in scores in the pretest and posttest intervention groups ranged from 0.5 with a variation level of 0.509. Meanwhile, the control group had an average of 0.23 with a score variation of 0.43.

Table 3. Results Of Bivariate Analysis Of The Effect Of Origami Games On Fine Motor Skills In Intervention And Control Groups

Variable	Mean	Standard Deviation	P value
Squeezing with 5 fingers			
Intervention Group	0,57	0,568	0,016
Control Grop	0,23	0,43	
Fold			
Intervention Group	0,67	0,661	0,074
Control Grop	0,37	0,49	
Cutting			
Intervention Group	0,53	0,507	0,018
Control Grop	0,23	0,43	
Line			
Intervention Group	0,5	0,509	0,034
Control Grop	0,23	0,43	

Based on Table 3, the results of the bivariate analysis of the intervention and control groups showed that there was a significant difference in the ability to squeeze $P=0.016$ (p-value <0.05), cut $P=0.018$ (p-value <0.05) and outline $P=0.034$ (p-value <0.05). while the score that has no significant difference is 0.074 (p-value > 0.05).

Discussion

Efforts to improve fine motor skills in this study are to use games. Playing is an appropriate therapy method for improving motor skills because playing can be done anywhere, indoors or outdoors, and uses all kinds of toys that can be bought or made. The games that can be given are simple games that have a low level of difficulty and are easy to accept and understand. Playing has many benefits, ranging from increasing physical development, and imaginary development, to sensoromotor development. One game that can be applied to is playing origami.

In this study, there was an increase in development after being given treatment, namely 26 toddlers, whereas in the intervention group, there was an increase in the development of 16 toddlers, and in the control group 10 toddlers. 33 respondents did not experience an increase in development, consisting of 13 toddlers in the intervention group and 20 toddlers in the control group. However, there was 1 respondent who experienced a decrease in development after the intervention. This decrease was caused by the child having a concentration disorder during the assessment. When viewed from the results of the study, fine motor skills in the control group were better than the intervention group. However, after being given treatment, it can be seen that the increase in infant development turned out to be better in the intervention group compared to the control group.

Conclusion

The average age of the respondents in the study was 3.53 years and most of the respondents were male. There is an effect of using origami games on fine motor development (Squeezing with 5 fingers, Cutting, and lining) in stunted children in Gunung Batin Udik Village, Terusan Nunyai District, Central Lampung Regency. It is hoped that parents can stimulate children's fine motor development using game methods, for example by playing origami or folding paper. Relevant agencies can improve child health programs, especially in screening children with fine motor disorders in their working areas, and routinely hold training on detecting toddler development, especially monitoring children's fine motor development.

Author Contributions

Arfan Syahroni; Conceptualization, methodology, software, validation, Siti Nur Indah; writing review and editing. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest:

Declare conflicts of interest or state "The authors declare no conflict of interest." Authors must The authors declare no conflict of interest

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