Behavioral Changes of Vegetables and Fruit Consumption of Pre School Children through Educative Snake and Ladder Game at RA Baiturrahman Village of Cipedes Subdistrict of Tasikmalaya City

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Abstract

Vegetables and fruit consumption on children is still low, the national average, behavior of less vegetables and fruit consumption of pre-school children is 93,5%. This is followed by the pattern of infectious disease to degenerative and metabolic disease. The effort to improve the consumption of vegetables and fruits is a snake and ladder game. This study aim to determine the behavior (Psychomotor Aspect) of vegetables and fruits consumption in pre – school children through educative snake and ladder game. Research design was *quasi-experimental* with *pre-post test control group design*. Samples are preschool children with stratified random sampling technique, the number of sample are 40 children. The instrument used is the observation format. Data analysis used *wilcoxon test, paired sample t test* and *independent sample t test.* The result shows there is difference in behavior of pre-school children before and after intervention with p value 0,001, and there is difference of behavior after given intervention in intervention group and control group with p value 0,001. It is expected that health service institutions can improve children`s behavior in consuming vegetables and fruit through health education to every pre- school age children that oriented on behavior change with the concept playing by learning.

Keyword: the vegetables and fruit consumption, snake and ladder game.

Introduction

Successful development of nations cannot be separated by the qualified Human Resources (HR), so that nutrition and health have a very big role in shaping healthy, intelligent and productive human. Healthy children are children who can grow and develop well and regularly. Nutrition and health status of children is affected by infectious disease, parenting, economy, mother`s knowledge, food presentation, food availability and child`s diet in which one of them includes consumption of vegetables and fruits (Adisasmito, 2013).

The phenomenon of vegetables and fruits in Indonesia is still low the situation is followed by a shifting pattern of infectious diseases into degenerative and metabolic diseases. Individual food consumption survey conducted in 2014 shows that only about 15% of Indonesians consume more than five serving of vegetables and fruits every day. Thus about 85% of Indonesians consume less vegetables and fruit or in other words that has been no compliance in fiber sufficiency in the population of Indonesia. This very ironic, because as a tropical country Indonesia is source of vegetables and fruits is unfortunate, because the two commodities are a source a various vitamins, minerals, dietary fiber, and various compounds fitokimia (Indonesia ministry of health, 2014).

There has been a lot of research done to see the consumption of vegetables and fruits in pre-school children. The results of Made research (2013) showed that from184 children, only 7.1% of children who consumed fiber > 10gr / day. Average fiber consumption is 58.7% of the recommended. The sources of fiber that is often consumed are, kale, jelly, corn, and cabbage with an average consumption 3-5 times per week.

Lack of consuming vegetables and fruits in children can cause various diseases in the future. The low consumption of vegetables and fruits is associated with an increased risk of chronic diseases such as heart diseases and diabetes. Lack of consuming vegetables can adversely affect the eyes, besides, it causes anemia with symptoms such as weakness, fatigue, lethargy, lack of concentration and laziness in children. Children will be constipated if they consume less vegetables and fruits (Yuliarti, 2008).

Pre-school aged children are the first period when children begin to interact with the wider environment and children begin to recognize snacks, so they often choose food. In this case vegetables and fruits are less favored by children, so parents have difficulty in providing a meal of vegetables and fruits. Generally pre school children do not consume vegetables because they do not like and more than half of toddlers are not accustomed to consume vegetables, besides mother has not given vegetables and fruits to their children before the age of 1—2 years old. Thus,to improve the behavior and familiarize to the children in consuming vegetables and fruits it is necessary to be given stimulus through various media to make children feel interested and do not feel forced (Gunanti, 2000).

Giving of information to children can be done by media assistance for example through educative games, because the world of children is a world of play. This is a strategy for pre-school children to know about the importance of consuming vegetables and fruits. According to Yuwanisa (2010), educative games can increase the curiosity of pre-school age children. The educative game is packed in a fun way so that nutritional messages about vegetables and fruits can be more absorbed and applied by children.

New ideas of children`s educational games through traditional methods without a computer device has its own advantage. Easy, useful, and fun games are the most important key in designing children`s games. The chosen media that easy to apply to pre-school age children is using a snake and ladder, because pre-school age children are still interested in the game. This concept refers to the concept of ―Playing by Learning.‖ Educative snake and ladder game has advantages. Information obtained by pre-school age children is the result of a structured learning process.

Selection of the use of snake and ladder media has many advantages compared with other media because the snake and ladder game bring the interesting image and colorful media to children, snake and ladder game can be done repeatedly, so it is not only educated but also fun for children. Snake and ladder game media can be used in teaching and learning activities because this activity is fun, so the children are interested to play while learning.

The results of preliminary studies of early childhood education (PAUD) is RA Baiturrahman. Interviews conducted on 10 children about the behavior of vegetables and fruits consumption obtained information that in general, children do not like to consume vegetables because the taste is not delicious, from the results of the interview also obtained a description of children consuming carrot vegetables in the diet such as soup or mixed with food others, children say rarely consume nuts, cabbage, spinach and others.

According to interviews with parents the children were informed that during the time at home, parents have provided vegetables and fruits menu but children still rarely consume a variety of vegetables, the respondents mentioned in one week is not stabilized consuming vegetables. As for the consumption of fruits, children generally like a variety of fruits, children generally like a variety of fruits because it tastes good. Fruits commonly consumed by majority children are watermelon, melon, apple, mango, star fruit and orange.

The role of nurse as a health educator in accordance to the role of nurse in the theory of Health Promotion Model (HPM) developed by Nola J. Pender. In this model it is mentioned that the goal of HPM is the existence of behavioral guidance, including social cognitive theory based on the model of human motivation expectation value. According to the theory of hope, healthy behavior is rational and economical. Thus, the application of HPM theory is based on the theory that Individuals will not do anything useless and unworthy of action. Individuals will not engage in activities even the activity is attractive to him if it is not possible to do to the activity.

Method

The research design used was *Quasi-Experimental* with pre-post test control group design. The population in this study were students of RA Baiturrahman Cipedes Sub-district, Tasikmalaya City, which were 60 people spread in 2 classes consisting of 38 students of RA B 1 and RA B 2 22 students. Sampling technique in this study using stratified random sampling. Meaning that each population has the same opportunity to be sampled the sample size in this study were 20 sample of intervention, and 20 control sample so that the total sample was 40 people. Instrument of data collection of this research us to use observation in the form of filling sheet to reconcile the consumption behavior of vegetables and fruits before and after treatment. In addition, the data collection tool used is the game media snake ladder as a medium for intervention.

In this study researchers observed the behavior in consuming the amount of vegetables and fruits in pre-school age children that have been provided. Test to analyze the results of paired observations of two data whether different or unusable. T test for normally distributed data and Wilcoxon test for abnormally distributed data.

Results

Table 1. Behavioral (Psychomotor Aspects) of vegetables and fruits consumption in pre-school children before given educative snake and ladder games in the intervention and control group

	Min	**Max**	**Mean**	**SD**
Intervention Pre	1	7	2.3	1.5
Control Pre	1	4	2.1	0.8

Table.2 Behavioral (Psychomotor Aspect) of vegetables and fruits consumption in pre-school children after being given educative snake ladder game on intervention and control group

Variable	**Min**	**Max**	**Mean**	**SD**
Intervention Pre	3	8	5.1	1.3
Control Post	1	5	3	1.0

Table. 3 Behavioral differences (Psychomotor Aspects) of vegetables and fruits consumption in pre-school children before and after given educative snake ladder game on the intervention and control group

Variable	**Mean**	**SD**	Interpretation	**Sum**	***p Value***
Pre Intervention	2.30	1.525	Decrease	0	
Pos Intervention	5.10	1.373	Increase	20	0,001
			Stabil	0	

Table 4. Differences in Control group

Control Group	Mean	SD	n	*P Value*
Pre Test	2.15	0.813	20	0,001
Pos Test	3.00	1.076	20	

Table 5. Behavior differences (Psychomotor Aspects) of vegetables and fruits consumption in pre-school children after being given educative snake ladder games in the intervention and control group

Group	**Mean**	**SD**	**n**	***p Value***
Intervention	5.10	1.373	20	0,001
Control	3.00	1.075	20	

Discussion

Based on the results of the research, it was found that respondent behavior in the intervention group consumed at least 1 type of fruits and vegetables, consuming the most of 7 kinds of fruits and vegetables. The average consumption in the intervention group was 2.3 and the standard deviation 1.5. In the control group, at least consume 1 type of fruit and vegetables, consuming the most 4 types of fruits and vegetables. The average consumption in the intervention group was 2.1 and the standard deviation 0.8.

The low consumption of vegetables and fruits can not be separated from the role of a complex learning process. With the socialization of vegetables and fruits, preschool children are able to get stimulation to behave. Social media can be sourced from family, peers, school environment and mass media,

Based on the field discovery, the children's behavior of vegetables and fruit consumption is still low. This can be seen from the observation that generally children in the intervention and control group are still hesitant in consuming vegetables. Children taste vegetables and do not eat up 1 cup of vegetables that provided. Consumption of vegetables and fruits in the intervention and control group is still low. This can be due to internal and external factors, internal factors consisting of factors that have a positive and negative effect on the consumption of vegetables and fruits derived from knowledge and attitude. External factors represent opportunities and obstacles that affect the consumption of vegetables and fruits that come from outside or the environment.

The results showed that respondents' behavior in the intervention group after being given the ladder snake game consumed at least 3 types of fruits and vegetables, consuming the most of 8 kinds of fruits and vegetables. Looking at the data, the behavior of respondents of pre-school age children shows the frequency distribution of respondents' actions in the control group and the intervention during pre test of each group has increased. This can be seen from the final evaluation of the average consumption in the intervention group is 5.1 types of vegetables and fruits. Then in the control group consumed at least 1 type of fruit and vegetables, consuming the most 5 types of fruits and vegetables. The average consumption in the intervention group was 3.

The results of Mohammad's research (2015) found an increase in vegetable and fruit intake after one week of intervention in which vegetables and fruits were frequently consumed, that is carrots (6.4 ± 5.4 times / week), kale (5.7 ± 5 , 6 times / week), tomatoes (4.9 ± 5.0 times / week), long beans (4.0 ± 4.7 times / ming-gu), and cucumbers (4 ± 4.5 times / week) , while at SDN Papandayan is spinach (5.7 ± 4.7 times / week), carrots (5.3 ± 4.8 times / week), kale (4.2 ± 4.6 times / week), bean sprouts (3.5 ± 4.2 times / week), and long beans (3.1 ± 4 times / ming-gu).

Children who were given intervention were restored the menu of vegetables and fruit as before. From the results of the analysis, an increase in the number of vegetables and fruits consumed by children. For example there are children who before the intervention consume 1 piece of mango, but after intervention children can consume beans, spinach, mango and watermelon. Then the children who only consume bananas, but after intervention children can consume cabbage, spinach, oranges and bananas. Likewise in other children given intervention there is a significant increase in the amount of vegetables and fruits.

Another case with children in the control group, from the findings in the field of children before the intervention to consume 2 types of fruits, after a week later when the post test still consume similar fruit types. But there are children who experience increased amount of consumption, for example when the pre test of children consuming spinach and when evaluated in the post test children consume spinach and mango. Likewise in other children who are not given intervention there is an increase but not significant in consuming the amount of vegetables and fruits.

The increase in the intervention group can not be separated from the social media as a complex learning process. With socialization coupled with media that attract children. Media socialization in this research is to involve teachers and colleagues as an intermediary and help researchers to socialize consumption of vegetables and fruit. Then the socialization is supported with environmental conditions respondents are given interventions with peers in the school environment.

There are no respondents experienced a decrease in consumption of vegetables and fruits, and all of them experienced an increase in consuming vegetables and fruits, and no respondents did not experience any changes in consuming vegetables and fruits either before or after the intervention. Then another data obtained showed that in the average control group that is 2.15 types of fruits and vegetables and increased to 3 types of fruits and vegetables after intervention.

Result of statistic test with wilcoxon obtained p Value 0,001 mean there are differences of behavior (Psychomotor Aspect) of vegetables and fruits consumption in pre-school children before and after given game of educative ladder snake in intervention group. While in the control group of stastistic test results obtained p Value 0.001 (<0.05) means there are differences in behavior (Psychomotor Aspects) consumption of vegetables and fruits in pre-school children before and after the game provided educational snake and ladder game in the intervention group. But the difference is very weak because the value of correlation is 0.722.

The results of this study did not differ from the research conducted by Linda Ryan (2005) in her study found out of 168 different respondents that place of 122 from Holyoke and 46 from Haxtun found that the average consumption of the amount of fruit and vegetables in Holyoke before the intervention was 2.46 servings a day. After the intervention showed 2.90 portions resulting in an increase of 0.44 fruits and vegetables per day. Control group at Haxtun, average amount of vegetables and fruit before intervention 2.05 and after intervention 2.07 so that there was an increase of 0.02 servings per day. Increasing the number of servings in school intervention and school control did not show a significant difference of 0.05 at the level with chi-square of 1.6.

Although there are differences before and after intervention in the control group but the difference is not significant, such condition is seen from correlation coefficient including very weak category. This is based on the fact that in the control group is not given any intervention so that children do not have information or motivation to consume vegetables and fruits.

Looking at the data, the difference of vegetable and fruit consumption in pre-school children before and after the game of educative snake and ladder game in the intervention and control group can be understood. This is based on a ladder snake game conducted in the intervention group that can inspire the children's motivation to follow what is presented by the researcher and teacher. Because the intervention can draw attention to the concept of playing by learning.

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Average consumption in the intervention group 5.1 types of vegetables and fruits, while in the control group is 3 types of vegetables and fruit. According to the authors, these data indicate that there is a significant difference in post-test behavior (Psychomotor) between the intervention group and the control group. After the result of behavioral value (psychomotor aspect) of preschool children at post test in intervention group and control group then done comparison of mean of both post test value.

The result of statistical test using independent sample t test obtained p Value 0,001 (<0.05) means there are difference of behavior (Psychomotor Aspect) of vegetables and fruits consumption in pre-school children after given educative snake and ladder game on intervention and control group in RA Baiturrahman Village of Cipedes Subdistrict of Cipedes Tasikmalaya City. This study is in line with the research of Hamdalah (2011), Siti (2014) which resulted in the influence of the action before and after the media given in the treatment group and concluded that the snake and

ladder game can be an appropriate alternative as a medium in conveying information because it has better resistance in improving the knowledge of the community and very suitable if delivered to the housewife. Before the intervention, many respondents did not know whether the portion of fruits and vegetables was 5 servings, eating fruit before meals, fruits and vegetables fills longer than rice because of its fiber content. After given intervention in the form of per-game respondents increased knowledge.

The existence of the change is not separated from children awareness that they have been given information about the benefits of vegetables and fruits. Then the children become interested further to know so that the children will follow the snake and ladder game. The next step to evaluate or assess, for example the ability to recognize the type of vegetables, fruit, or see others who consume them. Then the children begins to try to consume vegetables and fruits, and the last stage is the children can adopt where at this stage the children have received that the information in the form of consumption of vegetables and fruits provide benefits for themselves so they consume routinely.

Conclusion

There are difference of behavior (Psychomotor Aspect) of vegetables and fruits consumption in pre-school children before and after given educative snake ladder game on intervention and control group in RA Baiturrahman Cipedes Tasikmalaya with p Value 0,001. There are behavior differences (Psychomotor Aspect) of vegetables and fruits consumption in pre-school children after given educative snake and ladder game on intervention and control group in RA Baiturrahman Cipedes Tasikmalaya with p Value 0,001.

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