

The Effect of Combination Health Education: Snake Ladder Game and Sing-a-Song Methods to Improve Personal Hygiene Behavior in School-Age Children

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Abstract- Primary school-age children are the group of age prone to many kinds of diseases caused by poor personal hygiene. Most of the students who suffer from infectious diseases are caused by the lack of personal hygiene. One way to improve their behavior is by using health education. The purpose of this study was to analyze the effect of combination health education: snake ladder game and sing a song toward improving personal hygiene behavior in primary school-age children. This study design was quasi-experimental. The total number of respondents was 120 children. The respondents were recruited randomly based on G*Power. The independent variables in this study were combination of health education: snake ladder game and sing a song. The dependent variable was personal hygiene behavior. The instruments of the study were a ladder snake board and singing completeness as well as a questionnaire for personal hygiene. The data were collected used questionnaires and observation then it was analyzed using significance of $<0,05$ Wilcoxon sign rank test, Mann-Whitney U test and the Kruskal–Wallis H test. The result showed there were significant effects of health education with snake ladder game and sing-a-song methods to respondents' knowledge ($p=0.000$), attitudes ($p=0.000$) and action ($p=0.000$). The Kruskal–Wallis H test obtained the best mean value, knowledge of 86.65, attitude of 82.77, and skill of 89.87. Health education by using the Snake-and -Ladder Game and Sing-a-Song method could increase the behavior about personal hygiene for 7-10-year-old students in primary school. Nurses can apply this method to have an easier and more attractive way of giving health education and to achieve optimal results in the health education for children.

Keywords-- Health Education, Snake Ladders, Sing a Song, Personal Hygiene, Behavior, School-age children

I. INTRODUCTION

Health Problems in students in primary school, one of which is due to lack of personal hygiene. Many kinds of diseases are caused by poor personal hygiene. Most of the students who suffer from infectious diseases get them because of the lack of personal hygiene [1]. The incidence of diarrhea in children in Indonesia is 6.7% of the total number of children and toddlers in 34 provinces. The highest diarrhea incidence occurs in the group living in rural

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areas (5.3%), and the lowest in the quintile group (6.2%). The results of a preliminary study conducted on March 12, 2018 at the Paron Health Center as a level I health service in the local area.

Reports of illness 2 in children aged 5-14 years in 2017 are dominated by diseases due to lack of personal hygiene, such as acute otitis media with 18 incidents, diarrhea, 42, skin diseases (herpes, morbilli, dermatitis), 20 times. On April 3, 2018, researchers conducted a preliminary survey on elementary school Ngale 3 and as many as 20 students from various classes filled out questionnaires; from a total of 100% only 20% of children scored highest on the questionnaire of knowledge, attitudes and skill. About 50% can fill out a questionnaire of knowledge, attitudes and skill about personal hygiene with an average value. 30% of children score below the average. Snakes and ladders game is a traditional game. This game is not only valid in Indonesia, but also famous in the world. Technically this game is a group game, involving several people and cannot be used individually. Psychologically, snakes and ladders are proven to increase children's ability to interact socially. According to the study of [2] respondents' knowledge, attitudes, skills on tooth brushing increased after health education using the snake ladder.

Therefore, health education using the snake ladder and sing a song were very suitable. In addition to the snake ladder method, the singing method in learning has often been applied in overseas education systems, and has been proven to increase learning motivation of primary-school-age 3 students. Other studies state that every music is a child, and every child is music, meaning that children are part of music and one of the natural abilities of music is singing [3].

This is also reinforced by Camilleri's research that singing therapy is a method used to improve the emotional abilities of children's souls, while increasing their academic abilities. [4]. According to Rahmawati's research, the use of the singing method can increase students' motivation and willingness to learn, as evidenced by the value of students that increases dramatically before and after learning while singing. [5]. Yolageldili and Arikan also suggested that games and songs can be a good method to make students want to learn because they will be more easily attracted, can be entertaining and can intrinsically motivate children to learn [6].

The reason researchers conducted a combination of the snake ladder method and sing a song was because the former has several weaknesses including if there are students who tend to get bored quickly they will lose interest in playing. Children who do not master the material well will have difficulty in playing.[7]. The singing method Can arouse children's learning enthusiasm because the classroom atmosphere becomes lively and fun [8]. So, in this case, the combination of snakes and ladders and sing a song can complement the various deficiencies of existing games and give a new impression on children's personal hygiene learning. This is an interesting innovative method for further study. But unfortunately, there are still very few studies that link the method of combining snakes ladders and sing a song to improved personal hygiene behavior in elementary school children.

II. METHODS

This research uses a quasi-experimental method. The number of respondents, 120 children, was taken with the application of G * Power, SDN 2 (30 children in the treatment group), SDN Ngale 3 (30 children in the treatment group), SDN Ngale 4 (30 children in the treatment group), SDN Kebon (30 children in the control group). This study uses a simple random sampling technique, which is a technique to choose random samples in accordance with what is

needed by researchers. Random selection is made by numbering the total number of samples based on the student identification number (NIS) in each class, then 10 children from each representative class are taken. Then the numbers are chosen randomly by writing the entire NIS on a piece of paper then folding it. Then 30 papers will be taken to represent each group: singing intervention group, the snake ladder group, the combined group and the control group. The instrument of this research is the snake ladder board and the completeness of the song and the knowledge, attitude and skill questionnaire about personal hygiene adopted from Prasetyo. The independent variables in this study were a combination of health education: snake ladder game and sing a song. The dependent variable was personal hygiene behavior. The statistical tests used Wilcoxon sign rank test, Mann-Whitney U, and Kruskal–Wallis with significance <0.05 .

The questionnaire in this study was tested for validity by comparing it with r tables. From 10 respondents who took this test, the results of r table were 0.631. Each knowledge, attitude and action questionnaire containing 20 question items is valid. The reliability test carried out by the alpha Cronbach method was measured based on the alpha Cronbach scale 0 to 1. The reliability test conducted by (Prasetyo, 2016) was 0.81 for knowledge, 0.75 for attitude, 0.71 for action. Based on these statistical tests it can be concluded that all the questions have been reliable.

Before participating in this research the researcher gave informed consent to the respondents' parents. Researchers conducted health education intervention methods: Group A (Snakes Ladders game) for 4x50 minutes face to face by giving a snake ladder game the modification of personal hygiene material in groups; Group B (Singing) 2x50 minutes face to face taught to sing containing personal hygiene lyrics, then singing together with the facilitator; Group C (Combined: snake ladder game and singing) 4 x 60 minutes face to face given the game of snakes and ladders in which there are play rules and combined with singing is done in groups and active discussion. (Control) groups were given leaflets on personal hygiene for their own study. The evaluation in each group was carried out in the last week of the intervention.

III. RESULT

Table 1 shows that in the intervention group (I-A) the respondents' characteristics based on their father's last level of education were competitive or evenly similar, namely elementary, junior high, and high school, each with 10 children 33.33%. The mothers' last level of education is mostly elementary school, the father's occupation is mostly farmers. For the intervention group (I-B), the characteristics based on their father's most recent education were 12% junior high school graduates, 40% of respondents. The most recent education for mothers was elementary school graduates, 13 respondents, 43.33%. Most fathers were farmers, 73.33%. with 22 respondents For the intervention group (I-C), father's most recent education was that of the middle school graduates, as many as 15 respondents or 50%. The most recent education for mothers was elementary school graduates, with 10 respondents or 33.33%. Fathers' most common education was farmers, with 14 respondents or 46.66%. In the control group (K) the father's most recent education were elementary school graduates, 13 respondents or 43.33%. The most recent education for mothers was elementary school graduates, with 16 respondents or 53.33%. Fathers' most common education was farmers with 23 respondents or 76.66%.

Table 1 Parental Demographic Data (n=120)

No.	Parental Characteristic	I-A		I-B		I-C		I-K	
		n	(%)	n	(%)	n	(%)	n	(%)
1.	Father's education								
	Elementary school	10	33.33	9	30.00	5	16.66	13	43.33
	Junior high school	10	33.33	12	40.00	15	50.00	12	40.00
	Senior high school	10	33.33	9	30.00	7	23.33	5	16.66
2.	College	-	00.00	-	00.00	3	9.99	-	00.00
	Mother's education								
	Elementary school	14	46.66	13	43.33	10	33.33	16	53.33
	Junior high school	10	33.33	12	40.00	9	30.00	9	30.00
3.	Senior high school	5	16.66	4	13.33	9	30.00	4	13.33
	College	1	3.33	1	3.33	2	6.66	1	3.33
	Father's Occupation								
	Government employees	-	00.00	-	00.00	1	3.33	-	00.00
	Entrepreneur	14	46.66	5	16.66	10	33.33	7	23.33
	Farmer	16	53.33	22	73.33	14	46.66	23	76.66
	Trader	-	00.00	3	9.99	5	16.66	-	00.00

Table 2 Respondents' knowledge before and after the intervention - treatment and control groups (n=120)

Category	I-A				I-B				I-C				K			
	Pre		Post		Pre		Post		Pre		Post		Pre		Post	
	%	f	%	f	%	F	%	f	%	f	%	f	%	f	%	f
Less	11	36,66	1	3,33	14	46,66	3	9,99	13	43,33	0	0,00	15	50,00	16	53,33
Enough	14	46,66	14	46,66	12	40,00	18	59,99	14	46,66	7	23,33	15	50,00	14	46,66
Good	5	16,66	15	50,00	4	13,33	9	30,00	3	9,99	23	76,66	0	0,00	0	0,00
Total	30	100%	30	100%	30	100%	30	100%	30	100%	30	100%	30	100%	30	100%

Wilcoxon
Signed Rank
Test

p= 0,000

p= 0,000

p= 0,000

p= 0,458

Mann - Whitney U Test

(Post- Test)

p= 0,000
(I-A) with (K)

p= 0,001
(I-B) with (K)

(I-C) with (K)
P=0,000

Table 2 shows the results of the Wilcoxon analysis in all intervention groups (I-A, I-B, I-C) with a value of $p = 0,000$ so that $p < 0.05$ which means that there are significant differences in knowledge between the pre-test and post-test scores. While in the control group (K), the value of $p = 0.458$, so that $p > 0.05$, which means there is no significant difference in attitude between the test score and the post-test value.

The results of Mann - Whitney analysis during the post-test in the intervention group (IA, IB, IC) with the control group (K) is $p = 0,000$, so $p < 0.05$ means that there are significant differences in knowledge between the intervention group and the control group after giving the intervention/treatment.

Table 3 The attitude of the respondent before and after the intervention was given (n=120)

Category	I-A				I-B				I-C				K			
	Pre		Post		Pre		Post		Pre		Post		Pre		Post	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Negative	20	66,66	1	3,33	18	59,99	3	9,99	18	59,99	2	6,66	22	73,33	22	73,33
Positive	10	33,33	29	96,66	12	40,00	27	89,99	12	40,00	28	93,33	8	26,66	8	26,66
Total	30	100%	30	100%	30	100%	30	100%	30	100%	30	100%	30	100%	30	100%

Wilcoxon

<i>Signed Rank Test</i>	p= 0,000	p= 0,000	p= 0,000	0.317
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Table 3 shows the results of Wilcoxon analysis in all intervention groups (I-A, I-B, I-C) with a value of $p = 0,000$, so $p < 0.05$ which means that there are significant differences in attitude between the pre-test and post-test scores. While in the control group (K), the value of $p = 0.317$ so $p > 0.05$, which means there is no significant difference in attitude between the test score and the post-test value. The results of the Mann - Whitney analysis during the post-test in the intervention group (IA, IB, IC) with the control group (K) is $p = 0,000$, so $p < 0.05$ means that there are significant differences in attitude between the intervention group and the control group after giving the intervention/treatment.

Table 4 Respondent behavior before and after the intervention (n=120).

Category	I-A				I-B				I-C				K			
	Pre		Post		Pre		Post		Pre		Post		Pre		Post	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
less	9	30,00	0	0,00	10	33,33	0	0,00	10	33,33	0	0,00	12	40,00	13	43,33
enough	18	59,99	0	0,00	18	59,99	0	0,00	20	66,66	0	0,00	17	56,66	17	56,66
good	3	9,99	30	100	2	6,66	30	100	0	0,00	30	100	1	3,33	0	0,00
Total	30	100%	30	100%	30	100%	30	100%	30	100%	30	100%	30	100%	30	100%

Wilcoxon Signed Rank Test

Pre/post	p= 0,000	p= 0,000	p= 0,000	P= 0,18
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<i>Mann - Whitney U Test</i>	P= 0,000	P= 0,000	P= 0,000
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Table 4 shows the results of the Wilcoxon analysis in all intervention groups (I-A, I-B, I-C) with a value of $p = 0,000$; $p < 0.05$ so there are significant differences in actions between the pre-test and post-test values. While in the control group (K), the value of $p = 0.180$; $p > 0.05$, which means that there was no significant difference in the action between the pre-test and post-test values. The results of the Mann - Whitney analysis during the post-test in the intervention group (IA, IB, IC) with the control group (K) is $p = 0,000$; $p < 0.05$ so there are significant differences in actions between the intervention group and the control group after administration of the intervention/treatment.

Table 5 The Statistical test result: Kruskal Wallis H.

Category	(I-A)	(I-B)	(I-C)	(K)
average value of knowledge	71,93	54,80	86,65	28,62
average value of attitude	72,16	61,17	82,77	25,90
average value of behavior	72,57	64,07	89,87	15,50
Different test Kruskal Wallis H (Post-test)		p=0,000 (in all group)		

Table 5 explains the mean values in all groups with all types of behavioral aspects: knowledge, attitudes, and actions based on the analysis of the Kruskal Wallis H test; the highest mean is in the IC group, the snake ladder group and singing, with the mean values: knowledge 86.65, attitude 82.77, and actions 89.87 compared to the mean value of the snakes and ladders group, singing, and control. The significant value in all groups is $p = 0,000$; $<p = 0.005$ which means there is a significant difference in value after the treatment/control group that was not given treatment.

IV. DISCUSSION

The results showed that the intervention of snakes and ladders, singing, and combined (snakes and ladders and singing) can improve knowledge, attitudes and skill about personal hygiene in elementary school-age children.

Statistical test results: the different test data obtained that the average values or mean in all groups with all types of behavioral aspects were: knowledge, attitudes, and actions based on the analysis of the Kruskal Wallis H test. So, the IC group, that is a combination group of ladder snakes and singing, had the highest mean value. which means that this intervention is the most effective one compared to the snakes ladders method, sing a song method or the control group. It is more effective for improving personal hygiene behavior of elementary school-age children. This change is because in the combined method of snakes and ladders by singing there is a challenge in every number on the snake ladder box that contains rules or commands to demonstrate personal hygiene movements or sing a song composed about personal hygiene both individually and in groups. This makes it easier for children to remember. These results are in line with previous research which states that the snakes and ladders game has many advantages, one of which is its being a simple game and easy to carry anywhere [9]. Singing methods also have advantages including being easy to attract attention and can improve children's emotional states [10]. The significant increases in knowledge, attitudes and behavior about personal hygiene were also influenced by students' enthusiasm and interest because of their simple, interesting, collaborative play with singing which made them feel more joy in receiving the material.

The respondent's attitude in this matter is increasing because of the information received during the lesson. This is consistent with Prasetyo's research that a card game can influence students' attitudes in new learning [11]. The snake and ladder method is a play method that invites students to participate directly so that it can affect the child's personal hygiene behavior [12]. The singing method in learning can improve children's memory, express expression, be pleasant, foster self-confidence, improve thinking and motor skills [10]. This is a strong basis for school-age children to be better.

The combined intervention of snakes ladders and sing a song can improve the actions of elementary school children in personal hygiene. The former is a game that contains information elements that have a good impact on student learning [13]. This is shown in the demonstration/performance of respondents' skills to the maximum effort to demonstrate how to brush teeth properly, wash hands right, and maintain other personal hygiene rules. The singing method used by researchers has a good impact on children's actions, especially 7-8 years old because children at that age are still happy to listen and imitate something together accompanied by songs. The singing method is suitable for improving children's motor development [14]. As a preliminary survey, this study has several limitations. The number of the sample used is too small to generalize the result.

IV. CONCLUSION

Health education using the snake and ladder methods, singing, and the combination can improve the personal hygiene behavior of elementary school-aged children. The combined method snakes and ladders and singing is the most effective in increasing elementary school-age children's knowledge, attitudes and personal hygiene actions. Nurses can use this combined method to provide health information to school-age children. For future researchers, this study can be used as a reference/material for further research related to health education methods for primary school-age children.

CONFLICT OF INTEREST

The authors declare no potential conflicts of interest.

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