

## Conference Paper

# The Effect of Snakes and Ladders Media Intervention on Knowledge prevention of Diarrhea among Elementary Students in Bandung

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**Abstract**

Diarrhea is a leading cause of death among children in the world. Majority of affected children's were in the school age group. It causes 2 million of children die in the world, and 420 thousands of children in West Java. Data of SD Negeri 1 Kertajaya during July-August 2017, 7 students were affected by diarrhea and 4 of them were fifth grade students. Several action has been implemented as a prevention strategic to reduce the number of diarrhea cases with a recent approach is using an educative game. The purpose of this study was to determine the effectiveness of snakes and ladders game on the knowledge of diarrhea prevention. A pre-experimental one group pretest-posttest design was conducted with simple random sampling technique. We used 20 students, which divided in 5 group, for each group consist of 4 students. We used prevention knowledge questioner as an instruments. The knowledge of students were measure before and after intervention by using *t*-paired test. The results of the study show that *p value* < 0.05 that means snakes and ladders game is effective to increased knowledge of students about diarrhea prevention. It was concluded that the snakes and ladders media is effective to increase the knowledge of diarrhea prevention. Suggestion for the Community Health Centre to provide an educative game to give health education for the children population.

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## 1. Introduction

The suboptimal degree of public health is influenced by environmental condition, health services, genetics, and community behavior [1]. Knowledge and understanding of health are highly needed for healthy behavior. A good degree of health care can be achieved with a strong and correct foundation of health understanding. Therefore, the right basic concept of health is given to children in primary school [2].

Primary school children are children aged 6-12 years old, have stronger physical, and have individual character and active as well as not dependent on parents [3].

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Primary school-aged children for 5-6 days a week will go home and go to school by passing through various traffic conditions and polluted environments, disease sources, associating with friends who are all prone to illness [4].

Maintaining children's health is the responsibility of parents, but now, public schools and health departments have contributed significantly to improve children's health by providing healthy school environment as well as health service and education emphasizing on the health practices [5]. Health problems that mostly occur in children among others are diarrhea, smoking, pulmonary TB, worms infections, etc. Pratiwi [6] stated that many health problems are commonly found on primary school-aged children and the most common disease is diarrhea.

Diarrhea is one of the major health problems and counted as the top 10 of most diseases in Indonesia [6]. Diarrhea is a bowel movement that occurs in infants and children who previously appeared healthy, with frequencies three or more per day, accompanied by changes in stools to fluids, with or without mucus and blood, data from the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) showed that around 2 million children die every year globally because of diarrhea. In a similar year, the incidence of diarrhea among children in West Java Indonesia was 420 thousand (Badan Perencanaan Pembangunan Daerah/ Bappeda, 2013). According to Nur in Arbianingsih [7] one of the factors causing diarrhea in children is due to the lack of both children and parents' knowledge on the prevention of diarrhea.

Nowadays, many parties that contribute to providing education about diarrhea through various media according to the development of child age. Provision of knowledge to primary school children can be done by health counseling. Counseling is an effort of assistance given to the learners so that they obtain self-concept and self-confidence, to be utilized by them in improving their behavior in the future [8].

According to Rahmawati, one of the media that can be used in the process of learning activities is the game media, is an educative game. The requirements of the educative game are durable, have an educative purpose, not endangering children, and encouraging children to play together, made of cheap and easily available materials [9]. Snakes and ladders qualify as an educative game tool that is durable, does not endanger children, encourage children to play together, can use tools made of cheap and easily available materials. Snakes and ladders game have advantages for health workers to fill the existing box with knowledge about diarrhea (the causes of diarrhea, prevention method, managing diarrhea, and others). Snake and Ladders Game was develop in India for the first time at second century BC [9]. Nowadays, many people use this game as learning activity [9–11, 18]. The researcher modified this game to provide information



about diarrhea. Twenty students received this game once a week. In general the result of this pilot study that this game was feasible to be implemented for elementary students. The utilization of game media makes the learning atmosphere more fun so that optimal results are obtained [11].

## 2. Theoretical Concept

Knowledge is the result of knowing, and this occurs after people have sensed a particular object (Notoatmodjo[12]). Knowledge is included in a cognitive domain that has six levels, namely know, understand, application, analysis, synthesis and evaluation. According to Notoatmodjo[12], one's knowledge can be influenced by several factors, namely experience, educational level, confidence, facilities, income and socio-culture.

Primary school children are children aged 6-12 years, have a stronger physical, have individual nature and active and not dependent on parents. In this age range, primary students are in the stage of cognitive, affective, psychomotoric and social development. Each child has characteristics of growth and development.

Game is any context between players who interact with each other by following the rules to achieve certain goals. According to Suyatno [14], there are several reasons to learn by using games, children learn through doing, children learn through the five senses and children learn through language. According to [13], educative game is a series of tools used by children, parents and teachers in improving the intelligence, emotional and spiritual function of children, so that intelligence will arise with which all the potential of children can skyrocket and the requirements are durable, suit to the needs, not endangering children, encouraging children to play together.

The snakes and ladders is a game that uses dice to determine how many steps a pawn should take. This game falls into the category of "board game" or similar to other board game such as monopoly, halma, ludo and so forth. The board is a plot of 10 rows and 10 columns with numbers 1-100, as well as a pictures of a snakes and ladders [15]. Snakes and ladders game components are namely two players or more, the environment for players to interact, the rules of the game and certain goals to be achieved.

## 3. Methods

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### 3.1. Design and sample

This study used pre-experimental design. A pre-experimental one group pretest-posttest design was conducted with simple random sampling technique. The design is not true experiment because confounding variable contribute to dependent variable [16]. The researcher used 20 students in this study according state Roscoe in Research Method for Business that experiment study use sample in a group 10-20 people.

### 3.2. Measurement of outcomes

Knowledge questioner have 20 question about diarrhea prevention which used Gutman scale. The researcher used minimum point =0 and maximal point 20.

### 3.3. Data collection procedure and intervention

The researcher divided intervention on the 3 step, consists pretest, treatment and post test. Firstly the researcher measured knowledge the students about diarrhea before used games by asking them answer the questioner. If the students can answer 1 question will get 1 point, if the students can not answer the question will get point 0. This participant have 30 minute to finish the pretest. Secondly, the researcher divided the participants into 5 group which group consist of 4 people. In this study each participant received the intervention once a week. They played games Snake and Ladders game for 30 minute each session. Lastly, the researcher asked to students answer the question about diarrhea. The aim post test to measure knowledge the students about diarrhea. If the students can answer 1 question will get 1 point, if the students cannot answer the question will get point 0. This participant have 30 minute to finish the pretest.

### 3.4. Data analysis

Univariate analysis was use mean and standard deviation. The bivariate analysis used was paired *t*-test.

## 4. Result

### 4.1. Respondents Characteristics

TABLE 1: Demographic Characteristic (Description of Grade V Students of SD Negeri 1 Kertajaya Based on Age and Gender).

No	Demographic Characteristic	n	%
	Age (m/SD)	10.60 (0.503)	
Gender			
1	Male	7	35
2	Female	13	65

## 4.2. Analyze Univariate

### 4.2.1. Pre-test

TABLE 2: Descriptive Statistic for Knowledge of Diarrhea Before used Snake and Ladders Game.

Outcome	Pretest		n
	M	SD	
	69.25	10.548	20

### 4.2.2. Post-test

TABLE 3: Descriptive Statistic for Knowledge of Diarrhea After used Snake and Ladders Game.

Outcome	Post Test		n
	M	SD	
	85	9.177	20

## 4.3. Analyze Bivariate

TABLE 4: Result of t-test and Descriptive Statistic for Knowledge of Diarrhea used Snake and Ladders Game.

Outcome	Pretest		Post Test		n	95% CI for Mean Difference	r	t	df	
	M	SD	M	SD						
	69.25	10.548	85	9.177	20	-20.744	-10.756	0.000	-6.600	19

Result show a statistically significant difference in mean knowledge before and after Snake and Ladders game usage. Knowledge appears to up an average of about 15.75 points following the usage of Snake and Ladders Game. Results of the paired-samples t-test show that mean knowledge before Snake and Ladders game usage ( $M=69.25$ ,  $SD=10.548$ ) and knowledge after Snake and Ladders Game usage ( $M=85$ ,  $SD=9.177$ ) at

the 0.5 level of significance ( $t=-6.600$ ,  $df=19$ ,  $n=20$ ,  $p<0.5$ , 95% CI for mean difference -20.744 to -10.756,  $r=0.000$ ). On average knowledge was about 15.75 points after Snake and Ladders Game usage.

## 5. Discussion

The result showed that significant difference pretest and post test. It showed that the use of snakes and ladders game media can increase the knowledge about prevention of diarrhea in grade V students of SD Negeri 1 Kertajaya, this is seen from the increasing average score of total knowledge of respondents before and after games, where the average score before given counseling was 69.25 and increased to 85.00 after given health education. The use of snakes and ladders media in health education will stimulate the senses of vision more, in addition the students will experience more direct learning (Dale, 1969). Direct experience will give the most intact and most meaningful impression of the information and ideas contained in the experience, so that the senses involved will have a direct impact on the acquisition and growth of knowledge, skills and attitudes [17].

Health education activities involving respondents will directly shape the respondents in digging the material learned. Learning by using media involving students will stimulate the students' cognitive, psychomotor and affective aspects so that students feel happy in the learning activities and impact on the learning outcomes achieved [10].

The snakes and ladders is one of the game stimulation tools that can be chosen in gaming activities. Gaming activities using a snakes and ladders game can also be a medium of health education for children [18]. Health education is a form of self-directed nursing action to assist individuals, groups and communities in overcoming health problems through learning activities, in which nurses act as educator nurses [18].

## 6. Conclusion

In pre-test showed that mean = 69.25 with deviation standard (SD) = 10.548. In the post-test, showed mean= 85 with deviation standard (SD)= 9.177. The results of the study showed that the snakes and ladder is an effective media to the knowledge of prevention of diarrhea in students of SD Negeri 1 Kertajaya. Limitation my study was used a pre-experimental one group pretest-posttest design. The design is not true experiment because confounding variable contribute to dependent variable.

## 7. Suggestions

Providing health education related to diarrhea could be done in the community and institutional basic such as school which has the health care unit. An educative game method can be one of intervention strategic that should be consider among providers in community targeting children population.

## References

- [1] Peraturan Menteri Kesehatan (Permenkes). 2011. Peraturan Menteri Kesehatan Nomor 2269/Menkes/PER/XI/2011 Tentang Pedoman Pembinaan Perilaku Hidup Bersih dan Sehat. [diakses tanggal 2 Agustus 2017]. <http://www.peraturan.go.id>
- [2] Suhartini. (2008). Pemahaman Konsep Sehat Anak Terhadap Kepatuhan Berobat. [diakses pada 11 Agustus 2017]. <http://staff.uny.ac.id>
- [3] Gunarsa, D. S. (2006). Psikologi Praktis: Dari Anak Sampai Lanjut Usia. Jakarta: PT. BPK Gunung Mulia.
- [4] Zaviera, Ferdinand. (2008). Mengenali dan Memahami Tumbuh kembang Anak. Yogyakarta: Katahati
- [5] Wong, D.L, Hockenberry, M, et al. (2009). Buku Ajar Keperawatan Pediatrik. Alih Bahasa, Monica Ester, (4th.ed). Jakarta: EGC.
- [6] Depertemen Kesehatan Republik Indonesia (DepKes, RI). (2011). Buku Saku Petugas Kesehatan. Jakarta: Depertemen Kesehatan RI.
- [7] Arbianingsih, R. (2016). Pengaruh Pendidikan Kesehatan Dengan Media Video Terhadap Pengetahuan Anak Pra Sekolah Tentang Pencegahan Penyakit Diare Di TK Minasaupa. [diakses tanggal 3 Agustus 2017]. [nhttp://journal.uin-alauddin.ac.id](http://journal.uin-alauddin.ac.id)
- [8] Pratiwi, D.A., Nani Yuniar., dkk. (2015). Pengaruh Penyuluhan Metode Permainan Edukatif dan Metode Ceramah Terhadap Pengetahuan, Sikap dan Tindakan Tentang Pencegahan Diare Pada Murid SD Di Kecamatan Poasia Kota Kendari Tahun 2015. [diakses tanggal 3 Agustus2017]. <http://ojs.uho.ac.id>
- [9] Ratnaningsih, Nafiah Nurul.(2014). Penggunaan Permainan Ular Tangga Untuk Meningkatkan Motivasi Belajar IPS Kelas IIIA SDN Nogopuro, Sleman. [diakses tanggal 30 Agustus 2019].
- [10] Giniung L. Hermawati. (2016). Keefektifan Media Ular Tangga Terhadap Hasil Belajar IPS Materi Koperasi Siswa Kelas IV Di SDN Gugus Diponegoro Semarang. Skripsi, UNNES. [diakses tanggal 16 Februari 2018]. <http://lib.unnes.ac.id>

- [11] Labibah, A, Nurhapsari A., dkk. (2015). Pengaruh Permainan Ular Tangga Modifikasi Terhadap Pengetahuan Kesehatan Gigi dan Mulut Pada Anak (Studi Terhadap Siswa SDN 4 Tanggungharjo, Kecamatan Grobogan). [diakses tanggal 2 Oktober 2017]. <http://http://jurnal.unissula.ac.id/>
- [12] Notoadmodjo, S. (2010). Pendidikan dan Perilaku Kesehatan. Jakarta: Rineka Cipta.
- [13] Ismail, A. (2009). Education Games. Yogyakarta: Pro-U Media.
- [14] Suyatno. (2009). Menjelajah Pembelajaran Inovatif. Sidoarjo: Masmedia Buana Pustaka.
- [15] M. Husna, A. (2009). 100+ Permainan Tradisional Indonesia Untuk Kreativitas, Ketangkasan, dan Keakraban. Yogyakarta: Andi.
- [16] Sugiyono. (2014). Cara Mudah Menyusun Skripsi, Tesis dan Disertasi. Bandung: Alfabeta.
- [17] Dale, Edgar. (1969). Audio-Visual Methods in Teaching. 3rd ed., Holt, Rinehart & Winston, New York. p. 108
- [18] Handi. (2012). Perbedaan Pengetahuan dan Sikap Tentang Kesehatan Lingkungan di Sekolah dengan Permainan Ular Tangga pada Siswa SD Negeri 02 Wonoketingal Kabupaten Demak. [diakses tanggal 22 Januari 2018]. <http://es.scribd.com>