ORIGINAL ARTICLE

Effectiveness of Interactive Health Games on Knowledge, Attitude, Compliance with Immunization Officers and Family Planning

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ABSTRACT

Background: Immunization in various countries has not been maximized because it is still hampered by various internal factors.
Aim: To introduce a new method, interactive health games to improve immunization knowledge and attitudes, compliance with immunization officers and the desire to carry out family planning.
Methods: A randomized controlled trial design was utilized in this study. 40 mother were randomly selected from public health clinics in Sorong, West Papua. Interactive game and video with content about immunization and family planning. Immunization history of each child was collected retrospectively from their immunization record/card.
Results: There was significant difference between the groups concerning knowledge (p=0.010), attitudes (p=0.001) and desire to implement a family planning (p=0.000). However, there is no significant differences between group concerning compliance with immunization officers (p=0.484). There was a significant change in knowledge, attitudes, desire to implement a family planning (p=0.000) but there were no differences in terms compliance with immunization officers
Conclusion: Future efforts can be made by providing scientific and up-to-date information in an interesting and innovative way about immunization, and really want to serve so that parents' knowledge increases, attitude and confidence in behavior arise.
Keywords: Immunization, knowledge, family planning

INTRODUCTION

The prevention of child mortality through immunization is one of the most cost-effective and widely applied public health interventions. The Expanded Program on Immunization (EPI) aims at delivering the primary immunization series to at least 90% of infants. However, the goal is still not achieved by many developing countries. Globally, approximately 21.8 million eligible children did not receive three doses of diphtheria-tetanus-pertussis vaccine (DTP3); among them, 9.6 million (44%) started, but did not complete, DPT 3-dose series (CDC, 1989). The implementation of immunization in Indonesia, reached 92.04%, exceeding the target set at 92%. Diphtheria and hepatitis immunization in infants under two years reached 63.7%, also exceeding the target of 45% in 2018. Until the January to March 2019 period, the implementation of complete basic immunization reached 13.9% ("Kementerian Kesehatan Republik Indonesia," 2018)

However, it should be noted that the achievement of complete basic immunization in children under two years from the results of basic health research in 2018 showed a decrease of 2% compared to the results of basic health research in 2013 ("Kementerian Kesehatan Republik Indonesia," 2018). The success of basic immunization in Papua and West Papua is below 80% whereas the total population is only 8.2 million people ("Kementerian Kesehatan Republik Indonesia," 2018)

There are several factors that cause the lack of parental participation in implementing basic immunizations for their children. These factors are knowledge, family support, attitudes, mistrust towards health workers and far reach to health facilities. Besides there are other factors, namely the large number of children in the family. Increasing parental participation in implementing immunizations for children is very important. Participation can be formed if parents have adequate knowledge about immunization. Therefore, health workers and academics are required to have innovative techniques in leaving behind the impression of learning for parents to increase knowledge.

In the 21st century, increased knowledge can be presented in an interesting way supported by technological equipment such as computers and software. Interactive Health Games (IHG) is one tool that can help this because it can leave a pleasant, experimental, challenging, and strong impression that has the potential to change behavior, attitudes, and improve patient health. IHG is well-designed and follows the role so that cognitive can move towards desired goals (Aziz, 2018). In the past decade, various IHGs have been developed. The classification of these games am based on the subject of the game, the subject of health, and the subject of the player. Along with the potential utilization of IHG in the future, there are limits to wider applications such as differences in the cognitive abilities of players, and the need to identify the type of learning and training (Bigdeli & Kaufman, 2017).

The results of the study (Hughes et al., 2014) found that Interactive Health Games & Audiovisual was appropriate for clients who experienced mild, moderate cognitive impairment and were able to increase cognitive impairment. Therefore, this game can be played by all ages and has a very good effect on health and not for mere entertainment. This review study only focuses on the benefits of IHG on knowledge about immunization, compliance with immunization officers, attitudes towards immunization and family planning. While other disciplines

related to knowledge and attitudes of health education is not the focus of attention.

METHODS

Study design: Study designs A randomized controlled trial design was utilized, in which the patients were assigned to two groups by simple block randomization, using blocks of 10. Randomization was carried out by use of a computerized random number generator After obtaining informed consent from the patient

Sample and Setting: Parents who deliver their children who are less than Two years old to carry out routine checks at the health care center. These babies must have an immunization notebook. Parents must be able to read and be willing to follow the intervention to completion. The sample size was calculated to compare differences in mean scores in immunization knowledge and attitudes, compliance with immunization officers, and the desire to implement a family planning program with a strength of 90%. With a type I error of 0.05, the study would require 40 respondents per group. In the current study it was decided, recruiting 20 for each group: a total of 40 respondents.

Instrument : Materials and tools used in this study is interactive game and video with content about immunization and family planning. The questionnaire was made in the form of an electronic form as well as KMS / immunization cards which will be recorded on the form

Ethical consideration: This study was approved by the Ethics Commission of the Ministry of Health of Sorong Health Polytechnic number DM.03.05/6/101/2019.

Data analysis: On the analysis the baseline immunization knowledge, attitudes, and the desire to implement a family planning program are compared for the two treatment groups using t-tests. To analyze compliance with immunization officers for two treatment group used Mann Whitney U test. To investigate the effect, for each patient after intervention are compared to their baseline scores (pre-treatment). The mean difference in change in knowledge, attitudes, and the desire to implement a family planning program scores for the two treatment groups is compared using a Two sample t-test. While analyzing change in compliance with immunization officers using Wilcoxon test. Statistical significance was set at the 5% level. The data were analyzed using SPSS version 16

RESULTS

The majority of participants in this study were mothers aged 26-35 years (55 %). Most respondents have a high schools education (45%) and were Muslim (60%). (Table 1).There was significant difference between the groups concerning knowledge (p=0.010), attitudes (p=0.001) and desire to implement a family planning (p=0.000). However, there is no significant differences between group concerning compliance with immunization officers (p=0.484) (Table 2). There was a significant change in knowledge, attitudes, desire to implement a family planning (p=0.000) (Table 3) but there were no differences in terms compliance with immunization officers (Table 4).

Table 1: Summary of participant characteristics

Characteristics	N	%
Age (years)		
12-16	1	2.5
17-25	9	22.5
26-35	22	55.0
36-45	7	17.5
46-55	1	2.5
Education		
Elementary school	2	5
Junior high school	11	27
Senior high school	18	45
University	9	22
Religion		
Muslim	24	60
Christian	11	27.5
Chatholic	5	12.5

Table 2: Baseline comparison of knowledge, attitudes about immunization and family planning of the study respondents at baseline

Characteristics	Intervention n : 20	Control n = 20	Test type	p-value
Knowledge,				
Mean, SD	11.0500±1.39454	9.0500±2.99956	t-test	0.010
95% CI	3.49737±0.50263	3.51807±0.48193		
Attitudes				
Mean, SD	32.6000±3.76130	27.0000±6.10436	t-test	0.001
95% CI	8.84568± 2.35432	8.86737±2.33263		
Compliance with immunization officers				
Mean, SD	0.5000±050637	0.1250±0.68641	Mann-whitney test	0.484
95% CI	0.00±1.00	-1.00±1.00		
Desire to implement a family planning program				
Mean, SD	43.9000±4.55262	36.0500±7.54966	t-test	0.000
95% CI	11.84077±3.85923	11.86951±3.83049		

Table 3 Comparison of knowledge, attitudes about immunization and desire to implement a family planning pre-training and post-training.

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Knowledge score pre and post intervention	2.80000	3.17199	0.50154	1.78555	3.81445	5.583	39	0.000
Attitudes score pre and postintervention	5.12500	7.08985	1.12100	2.85755	7.39245	4.572	39	0.000
desire to implement a Family planning score pre and post intervention	5.70000	8.43740	1.33407	3.00159	8.39841	4.273	39	0.000

Table 4: Comparison of compliance with immunization officers pre-training and post-training.

Compliance pre & post	N	Mean Rank	Sum of Ranks	Wilcoxon Signed Ranks Test	Asymp. Sig. (2-tailed)
Negative Ranks	12	10.00	120.00	-1.147	
Positive Ranks	7	10.00	70.00		0.251
Ties	21				
Total	40				

DISCUSSION

There is no exaggeration to state that vaccination is one of great scientific discoveries ever made. Protecting many children who are sick and die of terrible diseases, thereby reducing the suffering of many parents. So there is a need for parents to develop knowledge and perceptions about vaccinations. Because firm knowledge and practice help develop a positive attitude towards vaccination and thus its contribution to vaccination.

It helps reduce the burden of infectious diseases that are terrible, the best controlled by vaccination purpose of this study was to compare knowledge scores and attitudes about immunization, the desire to implement family planning and compliance with immunization officers from mothers who participated in educational interventions using interactive health games with mothers who did not attend interactive health games. These results confirm the research hypothesis, those mothers who participate in educational interventions using interactive health games have a higher knowledge and attitudes about immunization, the desire to implement family planning. However, we found there were no differences in compliance scores with immunization workers.

Mother's knowledge, attitudes, and practices regarding child vaccination has been considered as one of the most important determinants for increasing immunization rates (Qutaiba B Al-lela et al., 2014). Parental knowledge and practice regarding immunization are the main factors that contribute to their vaccination decisions (Gellin, Maibach, & Marcuse, 2000). Deficiencies in parental knowledge about the adverse effects and contraindications of vaccines often cause many immunization errors, so that, they do not complete immunizations and are evened reluctant to immunize their children. Positive correlations between parental knowledge, practice and vaccination rates of children have been reported by many studies (Borràs et al., 2009).

The results of this study was similar to other findings in an Italian study (Angelillo et al., 1999) where 57.8% of parents have adequate knowledge-attitude-practice (KAP), and are supported by research in India that found parental knowledge about adequate vaccination (Vinodkumar Mugada, 2017). To increase parental awareness, good knowledge about vaccination is needed. In research (Handy et al., 2017) it was found that although support for immunization is increasing in some countries, there is still a need for increased access to accurate and reliable information about vaccines. The number of children has its own challenges in implementing immunizations in children. Parents may experience stress because they have to care for children in large quantities.

Therefore, the Indonesian government has a family planning program to limit the number of children. Parents can take good care of their children, including carrying out complete immunizations. Therefore, doctors, nurses and other health care providers must provide scientific information about the risks and benefits of vaccine to parents in an interesting and innovative way considering that everyone's education level is different. Information is not only focused on the benefits and risks of immunization, but also on other determinants that influence such as the number of children. When parents know about the risks, and benefits, and ways to overcome other inhibiting factors such as family planning in implementing immunizations, it will form attitudes and intentions to carry out immunizations.

In addition, if the immunization provider provides scientific and up-to-date information with innovative methods and shows care when providing information, parents will trust and be obedient to them because they build communication and mutual trust. The most important factor influencing parental practice is communication between parents and information sources or immunization providers. Immunization providers must provide accurate and up-to-date information because health developments occur very quickly.

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