Educative game tool reduces the pre-operation of anxiety in school age children

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ABSTRACT

Educational game tools can be an appropriate educational method for children because it can create exciting play situations to reduce anxiety on pre-operative in school age children. The objective was to found out the effect of educational game tools on preoperative anxiety in school-age children. The type of study was quasy experimental study with pre-post-test with control group design. The sampling technique was consecutive sampling with 34 patients. The result of pre-test anxiety in intervention group was dominated by medium anxiety as many as 9 people (52.9%), severe anxiety were 6 people (35.3%), and mild anxiety were 2 people (11.8%). The post-test results showed a decrease in anxiety, mild anxiety by 10 people (58.8%) and moderate anxiety by 7 people (41.2%). The Man Whitney test was obtained that there was an influence of providing educational game to preoperative anxiety in school-age children (p-value=0.000). Educational game tool has decreased preoperative anxiety in school-age children.

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INTRODUCTION

Anxiety is known as the main complaint in most patients who refer to the hospital as well as an inhibiting factor and makes patients refuse surgery [1]. According to Li & Lopez, children are more prone to experience anxiety about surgery due to a child's lack of knowledge about surgery, children have not been able to control themselves and lack of appropriate explanations for children [2]. School-age children are children aged 6-12 years who are able to react to intellectual stimuli or carry out learning tasks that require intellectual or cognitive abilities [3]. Children can understand simple explanations and demonstrate them [4].

Educational game tools (APE) can be an appropriate method for children. The game is a fun activity and can also be used as a medium of learning for children [5]. This study uses cards as an educational game tool in providing preoperative preparation education to school-age children (6-12 years) who will undergo surgery. The contents include pictures of the operation preparations the child has to undergo, operating procedures, descriptions of the operating room situation/condition and the staff in the operating room.

Research on 20 children aged 6-12 years who will undergo surgery at PKU Muhammadiyah Yogyakarta Hospital showed a moderate anxiety response of 65%, severe

anxiety by 30% and mild anxiety by 5%. [14] Children who experience high levels of preoperative anxiety often exhibit dangerous behaviors such as crying and tantrums and have a higher risk of developing various negative postoperative consequences, namely an increased pain threshold [6].

Based on the above background, the researcher is interested in taking the title "The Effect of Educational Game Tools on Preoperative Anxiety in School-Age Patients at PKU Muhammadiyah Gamping Hospital."

METHOD

This type of research uses a *quasi-experimental* with *pre-test-post-test with control group design.* The intervention group will be given an APE card game and then given an explanation of the contents of the card, while the control group will only be given a card without playing and without explaining the contents of the card. Data collection was carried out 6 hours before the operation in the Naim ward on 5 February-25 March 2020.

The population of this study were school-aged children (6-12 years) who were going to undergo surgery at PKU Muhammadiyah Gamping Hospital. The sampling technique used *consecutive sampling* with inclusion criteria, namely: children aged 6-12 years, ASA I-II, using general anesthesia, elective surgery, willing to be respondents, conscious and cooperative children. The exclusion criteria were children with special needs.

The number of samples in this study was 34 children divided into two groups, namely 17 intervention groups and 17 control groups. Respondents' level of anxiety was measured using the *Chinese Version State Anxiety Scale for Children* (CSAS-C) (*pretest)* instrument . Then the respondents were given the APE card game and were given an explanation of the contents of the cards in the intervention group while the control group was only given cards without playing games and without an explanation of the contents of the cards for 10 minutes. After that, respondents were evaluated using CSAS-C (*posttest).*

The data was tested for normality with the Shapiro Wilk and the results were not normally distributed so that the analysis used non-parametric tests, namely the Wilcoxon test and Mann Whitney test.

RESULTS

A. Characteristics of Respondents

Table 1. Frequency Distribution of Respondents' Characteristics of Intervention and Control Groups at PKU Muhammadiyah Hospital Yogyakarta in 2020 (n:34)

Characteristics		Intervention Group		Control Group	
		f	%	*f*	%
1 Age (years)					
	a. 6-8	11	64.7	7	41.2
	b. 9-10	5	29.4	9	52.9
	c. 11-12	1	5.9	1	5.9
2 Gender					
	a. Man	7	41.2	6	35.3
	b. Woman	10	58.8	11	64.7
3 Treatment experience					
		8	47.1	4	23.5

		9	52.9	13	76.5
	a. Once				
	b. Never				
4	Operation Type				
		2	11.8	6	35.3
	a. Appendicitis	9	52.9	4	23.5
	b. Fracture	2	11.8	6	35.3
	c. Tonsillitis	3	17.6	1	5.9
	d. Abscess	1	5.9	0	0
	e. Inguinal Lymphadenopathy				
	Total	17	100	17	100

Table 1 shows that the majority of respondents in the intervention group by age were in the age group 6-8 years (64.7%). Gender is dominated by girls, which is 10 people (58.8%). Based on the experience of being treated at the hospital, most of the respondents in the intervention group had not been hospitalized as many as 9 people (52.9%) and the type of surgery mostly with fracture cases 9 people (52.9%). In the control group, most of the respondents were aged 9-10 years (52.9%). Gender is dominated by women, namely 11 people (64.7%). Most of the respondents in the control group had never been hospitalized, 13 people (76.5%) and the type of surgery mostly were appendicitis and tonsillitis, each 6 people (35.3%).

B. Anxiety Level Overview

Table 2. Pre-Test and Post-test Anxiety Levels in the intervention and control groups at PKU Muhammadiyah Gamping Hospital 2020 (n=34)

Group	Anxiety Level	Pre		Post		P *Value*
		f	%	*f*	%	
Intervention	Light	2	11.8	10	58.8	0.000
	Currently	9	52.9	7	41.2	
	Heavy	6	35.3	0	0	
	Panic	0	0	0	0	
Group	Anxiety Level	Pre		Post		P *Value*
		f	%	*f*	%	
Control	Light	1	5.9	1	5.9	0.000
	Currently	12	70.6	12	70.6	
	Heavy	4	23.5	4	23.5	
	Panic	0	0	0	0	

Table 2 shows the level of *pretest* anxiety in the intervention group, most of the respondents experienced moderate anxiety as many as 9 people (52.9%) and *posttest* anxiety experienced the most decrease in mild anxiety, namely 10 respondents (58.8%). *Wilcoxon* test results obtained p = 0.000 (p <0.05), meaning that there is a significant difference between the *pre-test* and *post-test* in the intervention group.

Table 2 shows the *pretest* anxiety level in the control group, most of the respondents experienced moderate anxiety, as many as 12 people (70.6%) and in the post test there was no change in the frequency of the anxiety level category, namely moderate anxiety with a percentage of 70.6%. Wilcoxon test results obtained p *value* = 0.004 (p <0.05) so it can be stated that there is a difference in the level of anxiety *pretest* and *posttest* in the comparison group.

C. Differences in Anxiety Reduction in the Intervention and Control Group

Table 3. Differences in Anxiety Reduction in the Intervention and Control Group at PKU Muhammadiyah Gamping Hospital 2020

No	Anxiety Reduction	N	*Mean Rank*	*Sum Of Ranks*	P *Value*
1	Intervention Group	17	26.00	442.00	0.000
2	Control Group	17	9.00	153.00	

Based on table 3 shows the statistical test with *Mann Whitney the* results obtained p = 0.000 (p <0.05). This shows that there is a significant difference between the intervention group who was given a card game and an explanation of the contents of the card and the control group who was only given a card without being given a card game and an explanation of the contents of the card in preoperative school-aged children at PKU Muhammadiyah Gamping Hospital.

Anxiety levels before and after being given an educational game tool (APE) in preoperative patients in the intervention group

Children are more prone to experience anxiety because of the child's lack of knowledge about surgery and the lack of appropriate explanations for the child [2]. The hospital environment is a new environment for children, so children often feel afraid and threatened with being hurt by the actions that will be taken [4].

Psychological responses in children to fear, discomfort, and emotional stress often create problems in the *preoperative, durante* , and *postoperative* processes [7]. Crying, agitation, urinary retention, deep breathing, and not wanting to talk are common responses for children. Therefore, it is necessary to approach children such as using certain toys or games [8].

Educational game tools can be an appropriate medium to provide explanations for children according to their abilities. (APE) cards not only help children to divert stress (distraction) through playing but also help health workers to provide explanations regarding appropriate preoperative preparation for children. One of the management of anxiety is psychoeducation. Health education is important in promoting the client's adaptive response to anxiety so that the client can have a good source of coping and improve adaptive responses in dealing with anxiety [9]. This is in line with the results of research that health education using media is more effective in reducing anxiety than health education that does

not use any media. Thus, this study uses APE as an appropriate medium to convey information on surgical preparation for children [15].

After giving the APE game with cards and also giving an explanation of the contents of the card, the response of the child who was initially just silent and moody became smiling and laughing. The child becomes more relaxed and is not worried about the surgery he will undergo. The game is a fun activity and can also be used as a medium of learning for children [5]. In addition, the game will release the tension and stress experienced by children. Kids can divert sense stress and relaxation through pleasure doing game [10].

The level of anxiety before and after in preoperative patients in the control group

Based on the results of data processing, it was found that the majority of respondents' anxiety in the control group for surgery experienced a moderate level of anxiety 12 people (70.6%) and the majority of post test anxiety levels in the control group were in moderate anxiety, namely 12 people (70%). Based on these results, there was no change in the category of anxiety from pre-test to post-test.

In the control group, respondents were only given cards to be seen without being played and without being given an explanation. Children do not understand how to play it and only observe one by one the cards are given. Based on the data in table 8 there are 10 children who experienced a decrease in anxiety scores and 7 children whose anxiety scores were the same. Although, the 10 children experienced a decrease in anxiety scores but the decrease in the score of the majority only decreased by 2 points. Children whose scores decrease are children who feel happy because they were given a card by the researcher. However, the child is still worried about the surgery that will be carried out so that the decrease in score is not much. The child also doesn't look happy because he can't play his cards.

Groups of school-age children require special psychological approaches that are different from adults. Children need a special approach such as playing games so that if the child is only given a card without playing it is also not enough to reduce the child's anxiety [7].

Management of preoperative anxiety resulting from inadequate physical and psychosocial outcomes of short-term and long-term post-operative negative as increased pain threshold, sleep disorders, and distrust of the medical practitioner [11]. Preoperative anxiety in children needs to be handled with appropriate interventions to reduce preoperative anxiety and avoid the impact of excessive preoperative anxiety [2].

Analysis of the difference in the average level of anxiety in the intervention group and the control group

The level of anxiety in preoperative patients in the intervention group who were given the APE game and the control group that was not given the APE game after statistical testing with *Maan Whithney* showed p = 0.000 (p <0.05) if the *p value* was less than 0.05 then H_0 was rejected and H_1 accepted means of sample data support the existence of significant difference in the level of preoperative anxiety in children of school age between the intervention and control groups at PKU Muhammadiyah Hospital Limestone.

In the intervention and control groups both experienced a decrease in anxiety. However, the mean rank of the intervention group was higher than the control group, which was 25.82, which indicated that the intervention group had a higher anxiety reduction value than the control group which was only 9.18. This shows that educational game tools in the form of cards can be used as a technique to overcome preoperative anxiety in school-aged children. Play can reduce pressure or stress from the environment. Playing can help children express their emotions and dissatisfaction with social situations and their fears that cannot be expressed in the real world [12]. Tools

educational games can be used as a suggestion or equipment to play that contains the value of education and can develop the ability of children [13].

CONCLUSION

Card educational game tools can reduce preoperative anxiety in school-age children at PKU Muhammadiyah Gamping Hospital.

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PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6