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Research Article

The effect of animation showing on children's pain relief after tonsillectomy surgery: A clinical trial study

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ABSTRACT

Background and Aim: To minimize the pain and anxiety of patients during painful procedures, health care professionals should consider specific actions. One of the groups that have more tangible pain experience is children.One of the most important factors of pain in children, is the surgical procedure such as tonsillectomy. After tonsillectomy, the most important complain for patients is pain.This study aimed to determine the effect of animation on children's pain relief after the tonsillectomy operation in Yasuj, Iran.

Methods: In this clinical trial, 64 children patients who hospitalized in the ears, nose and throat (ENT) unit of the EmamSajjad Hospital and had inclusion criteria were selected using a convenience sampling method and randomly allocated to experimental and control groups.Induction of anesthesia was similar in the all of patients. After the surgery, the patient was transferred to recovery and after stabilization of the patient's condition they were transferred to the ENT unit.In the control group the routine careswere done. In the experimental group, in addition to routine care, 30 minutes Animation displayed for patient queries.In both groups, pain intensity was measured in at the stages beginning of admission and 30 minutes after that using the Wong-Baker scale. The data were analyzed by SPSS 16 and using a paired t-test, student t-test, Mann-Whitney U test and Wilcoxon signed-rank test..

Results: The results of this study showed that the mean rank of pain intensity scores in the study group before and after the interventionwere 7.43 ± 2.6 and 2.68 ± 2.68 respectively, which was statistically significant according to Wilcoxon test. ($P \leq 0.001$). Also, in the control group, the mean rank of pain intensity scores before and after routine carewere 7.46 ± 2.75 and 7.18 ± 2.76 respectively, which was not statistically significant according to Wilcoxon test ($P = 0/525$). The results obtained by comparison of the mean rank of pain intensity scores after intervention in the two groups of study and control based on the Mann-Whitney U test showed that there is a statistically significant difference between the mean rank of pain intensity scores after animation display in the intervention group and the mean rank of pain intensity scores after routine care in the control group ($P \leq 0.001$).

Conclusion: The results this study showed that distraction using animation is effective in reducing pain caused by tonsillectomy surgery.

Key words: Animation, Post Operation Pain, Children, Tonsillectomy

INTRODUCTION

Pain is one of the most important protective mechanisms of the body that appears in abnormal conditions (1). The International Association of Pain considers pain as a hidden feeling and emotional experience associated with acute or potential tissue damage (2). Pain is an unpleasant sensory and emotional experience associated with a potential or active injury (3). Pain increases heart rate and respiration, increased blood pressure, sweating, redness of the skin, decreased

blood oxygen saturation, midriasis, agitation, incontinence, loss of appetite, insomnia, nutritional problems, hypoxia, delayed recovery, and prolongationof the patient's hospitalization (1). One of the groups that really perceive pain is children (4). Pain is defined as one of the health problems in children and its incidence under abnormal physiological conditions is regarded as the most important body`s defense mechanism. There is little data on the epidemiology of pain, but it is thought that the pain is taken seriously in adults for different reasons.In children, pain has no social reflection and this is why there is not enough motivation to carry out such studies (5). In recent years, attention has been paid to the pain of children. It has been previously assumed that children do not have enough neural evolution to understand pain, while nowadays it has been proven that if the child does not have adequate control of pain, it can cause disorderin adulthood. Children may also consider pain as a punishment for their actions (6). Surgical procedures such as tonsillectomy are the most important causes of pain in children. The most important complication of patients after tonsillectomy is pain, a pain that causes the child to suffer for a long time (4). Common complications of tonsillectomy include bleeding, nausea and vomiting, obstructive disorders, sleep disturbances, sore throat, earache, increased anxiety, respiratory depression, and reduction of food and fluid intake. Most of these complications are directly related to postoperative pain (7, 8).Because of the reduction of suffering and agitation in children undergoing tonsillectomy, control of pain is very important (9). Because in the absence of treatment, anxiety caused by treatment procedure can lead to negative experiences and increase anxiety and distress during the next stages of treatment. Lack of a proper management of pain and anxiety in children may lead to clinical complications such as acute vasovagal responses, changes in heart rate and stress hormones levels and health care resistance. Therefore, pain management is an essential effort. This approach can be in both pharmacological and non-pharmacological methods, which are often combined (10). The prevalence of postoperative pain in patients undergoing tonsillectomy is reported to be between 40% and 73%. One of the most important problems in these patients is postoperative pain, which can lead to fear and inhibition of eating, which can reduce the volume of fluid in the body. Therefore, one of the most important goals of preventing the reduction the volume of body fluids and improving oral nutrition is reducing the intensity of postoperative pain (6). One of the common pain relief methods after the Tonsillectomy is the administration of narcotic drugs (11).There are concerns about the complications of using narcotics for relieving postoperative pain in children and the ineffectiveness of pain assessment methods in children who are not able to express their pain. Despite improving the information of anesthesiologists about pain medication treatments, postoperative pain in children is not still adequatelycontrolled and many children, especially after major and invasive surgery, still feel very painful (12).

Health professionals need to associate painful procedures with intervening strategies that the patient can tolerate the least pain and anxiety. For children who are under painful procedures for therapeutic or diagnostic purposes, the use of pharmaceutical and non-pharmaceutical treatments is a multidimensional pain process. There are some pharmaceutical and non-pharmaceutical methods for preventing and reducing pain that the use of any of these methods has advantages and disadvantages (13). There are several non-pharmacological methods for reducing anxiety, one of which is the distraction (14). Distraction involves engaging the child in a wide range of activities that help him focus on something other than pain and anxiety (15). An example of distraction activities can be seen in listening to music, singing, playing, watching television, bubbling, and 3D image (16). Pain consists of two elements of pain and suffering, the latter being related to emotional and cognitive aspects. Hence, adding a distraction method to the standard care of painful processors may logically improve pain management (10). The results of

research by **Huang** et al. (2010) showed that listening to music reduced pain in cancer patients (17). The results of **Karakaya** et al. (2016) showed that distraction with a kaleidoscope is effective in reducing the pain children experience during venipuncture(18). Findings of the study by **Bagnasco** et al. (2012) showed that the display of a video in children aged 2 to 15 during angioplasty process would reduce the pain of children (19). The results of the study by **Nazemzadeh** et al. (2012) showed that distraction with bubble making increases the tolerance of pain in children (20). Despite the ongoing research on pain control after tonsillectomy surgery, almost all of the studies conducted to control pain after tonsillectomies were performed using pharmacological methods. Therefore, considering that so far little studies have been done to control the pain of children after Tonsillectomy surgery using non-pharmacological distraction, we aimed to investigate the effect of animation on children's pain relief after tonsillectomy surgery.

ANALYSIS METHOD

This is a clinical trial study. The research samples included all candidates for Tonsillectomy patients who had inclusion criteria. The study environment included the ENT unit of Imam Sajjad Hospital, Yasuj. According to the results of Vincent et al. (21), the probability of the first type I error was 0.05 and the test power factor was 0.80. The number of samples in this study was 32 in each group. Sampling was done at the beginning of the study by convenience sampling. Then, assignment was done in intervention and control groups by random allocation. For random assignment of the sample, two groups of intervention and control of the random number table were used. Given that the age of the samples was 6-12 years old, written informed consent was obtained from all participants' parents or guardians after fully informing of the details of the study. The inclusion criteria the study included the ability to establish verbal communication, lack of obesity, mental health patient, and lack of underlying illness. Exclusion criteria also included the refuse of the patient's parents from continuing the study and bleeding after the tonsillectomy. Data collection tools in this study included two parts. The first section included demographic and clinical data, and the second part included the Wong-BakerFACES® Pain Rating Scale.This tool is designed by Wong & Baker in 1998 and consists of two parts of the face and number.This pain assessment tool is intended to help patient care providers assess pain according to individual patient needs. Explain and use 0-10 scale for patient self-assessment. Use the faces or behavioral observation to interpret expressed pain when patient cannot communicate his/her pain intensity.The Persian version of this scale has been used in several studies (22, 23) and its reliability has been obtained in the study of **Nikfarid** (2010) with a correlation test of 82% (22). A room in the ENT ward provided for the study group before surgery and the room decorated in a commensurate with the age of the patients. The demographic and clinical data of patients evaluated in both groups the night before surgery and in the first part of the data collection tool recorded. Patients in the intervention group hospitalized inSpecial room at night before surgery, and information provided to the patient's parents about the treatment and procedure. The night before the surgery for the study group, an animation displayed to help the patient be acquainted with the conditions of the presentation after surgery and reduce the anxiety of the patient before surgery. The control group hospitalized based on the routine ENT unit and admitted to the operating room on the morning of surgery. Surgery did in the same way by a single surgical and anesthesia team.After surgery, patients transferred to post anesthesia care unit (PACU) and after being stable of their condition, they were transferred to the ENT ward and placed in a pre-prepared room. In the control group, all routine care regarding to the tonsillectomy patients were performed. In the intervention group, in addition to routine care, an animation was displayed for 30 minutes after full consciousness. The pain severity scores in the intervention group were recorded after full consciousness and after showing the animation and the pain severity scores of the

children in the control groupwere recorded after full consciousness and 30 minutes afterwards by Wong-Baker's pain scale.SPSS 16 analyzed the data and using a paired t-test, student t-test, Mann-Whitney U test and Wilcoxon signed-rank test.

FINDINGS

In this study, 64 children aged 6 to 12 years old were studied (32 in the intervention group and 32 in the control group). The mean age in the intervention group was 7.59 years and in the control group was 7.53 years. 37 were male (57.8%) and 27 were female (42.2%). Also, 8 (12.5%) of the patients had a history of hospitalization and 56 (87.5%) had no history of admission to the hospital. The results of the study showed that there is no statistically significant difference in age and sex between the intervention and control groups ($P < 0.05$, Table 1). The results of this study showed that the mean rank of pain intensity scores in the study group before and after the intervention were 7.43 ± 2.6 and 2.68 ± 2.68, respectively, which was statistically significant according to Wilcoxon signed-rank test ($P \leq 0.001$). Also, in the control group, the mean rank of pain intensity scores before and after routine carewere 7.46 ± 2.75 and 7.18 ± 2.76 respectively, which was not statistically significant according to Wilcoxon signed-rank test ($P = 0/525$). The results obtained by comparison of the mean rank of pain intensity scores after intervention in the two groups of study and control based on the Mann-Whitney U test showed that there is a statistically significant difference between the mean rank of pain intensity scores after animation display in the intervention group and the mean rank of pain intensity scores after routine care in the control group ($P \leq 0.001$).

DISCUSSION AND CONCLUSION

According to the findings of this study, animation has been able to reduce thepostoperative pain of children under tonsillectomy. The results of the study ofOzdemir et al. (2012) also showed that music playback through mobile was effective in reducing the pain of infants during vaccination (24). In addition, the results of study Yoo et al. (2011) showed that using animation plays an effective role in reducing the pain of preschool children duringveinpuncture (3). The effect of animation on reducing the pain of children undergoing tonsillectomy can be associated with distraction. The distraction involves engaging the child in activities that can focus on something other than pain and anxiety (25). An example of this activity is music, singing, playing, watching television, bubbling, and 3D image (26). Using different methods of distraction as one of the independent nursing functions can be effective in reducing the pain of children undergoing tonsillectomy with the least complication. The results of the study, Bagheriyan et al. (2011), also showed that using bubble making,as a thought distracting method can be effective in reducing children's anxiety (21). In addition, the results of the study, Kaheni et al. (2016), showed that distraction by using a computer video game during dressing is effective in reducing the pain of children (5). On the other hand, the results of the study by Landolt et al. (2002) showed that the cartoon show during dressing did not have a significant effect on children's pain (27). In the Landolt study, codeine phosphate was used in both intervention and control groups before any intervention. Therefore, it seems that the cause of the difference in the results of theLandolt et al. study and the current study is related to the difference in the method of the two studies. Also, the results of the study by Windich et al. (2007) showed that the use of various methods of distraction such as bubbling, exciting books, music and video games (by the choice of the child) had a significant effect on reducing the pain levels of veinpuncture children. However, in this study, there was no significant difference between the two intervention and control groups regarding intensity of pain before and after the intervention (28). The average age of the Windich et al. study was much higher than that of the current study (9.9 years versus 5.7 years). Distraction in older children is more effective in reducing their pain. Therefore, it seems that the difference between the results of the Windich et al. study and the current study is related to the mean age difference of the

two studies. The overall results of this study showed that the use of distraction by the animation show could be effective in reducing the pain of children with the least complication. Distraction is a non-invasive intervention, with no specific side effects. Therefore, the findings of this research can help nurses working in children's departments during and after painful procedures such as surgery, veinpuncture, drugs injection, etc., by using various methods of distraction, including animation to reduce pain And child resistance. There are two limitations in this study. Different children have different levels of pain tolerance. In this study, it was not possible to measure the tolerance of pain in children. In addition, the amount of surgical cutting and injury can affect thepainintensity in children that was not considered in this study. These limitations can have an impact on their outcomes, so, when using the results of this study, consider these limitations. It is suggested that in subsequent studies, the effect of animation on the pain intensity in children undergoing tonsillectomy with regard to the level of their pain tolerance and the size of the surgical incision. It is also suggested that the effect of the animation on the pain intensity in other painful procedures should be considered.

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Table 1: Comparison of demographic characteristics of patients in both intervention and control groups

group / Variable			Intervention	control		
			Mean±Standard Deviation	Mean±Standard Deviation		
Age			7.59±1.52	7.53±1.39	P=0.864	**Independent t-test**
Sex	Boy	Number (Percent)	16(%50)*	21(%66)*	P=0.212	**Chi square test**
	Girl	Number (Percent)	16(%50)*	11(%34)*		
History of admission	Yes	Number (Percent)	3(%0.9)*	5(%16)*	P=0.215	
	No	Number (Percent)	29(%91.1)*	27(%84)*		

*Number (Percent)

Table 2: Comparison of mean rank of pain severity scores in both intervention and control groups

variable / group	mean rank of pain intensity scores before±Standard deviation	mean rank of pain intensity scores after±Standard deviation	Wilcoxon signed-rank test
Intervention	7.43±2.6	2.68 ± 2.58*	**P≤0/001**
Control	7.46±2.75	7.18 ± 2.76**	**P=0/525**
Mann–Whitney U test	**P=0/851**	**P≤0/001**	

* mean rank of pain intensity scores after intervention ± Standard deviation

** mean rank of pain intensity scores after routine care ± Standard deviation