



The Effect of Distraction Technique on Pain Intensity among Patients Undergoing Circumcision Anesthetic in Medan

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Abstract. Circumcision actions often cause pain complaints when the anesthetic injection and post-circumcision are given to patients. Distraction aims to reduce pain response. Distraction by seeing and holding a needle is referred to as *audiovisual* distraction, which is a combination of hearing distraction (*audio*) and visual distraction to distract the patient's attention from the pain. This study aims to determine the effect of distraction technique on pain intensity among patients undergoing circumcision anesthetic. This study was a quasi-experimental design by using Two groups, pre-test, and post-test with the non-equivalent control group. The research sample consisted of 98 respondents who were divided into two groups taken by *purposive sampling technique*. The instrument used was the *Wong-Baker Faces Pain Scale* (WBFPS). Data analysis used was Bivariate Analysis by using *Mann Whitney U Test*. The result showed that the application of distraction technique to see and to hold a needle in the intervention group was influential in reducing the intensity of injection pain/anesthetic injections on circumcision clients compared to the control group ($z = -8,881$; $p = 0,000$). Based on the result of the study, it can be concluded that the application of a distraction technique to see and to hold *needle* affects to reduce the intensity of injection pain/anesthetic injections on circumcision clients. It is expected that the distraction technique of viewing and holding needle becomes an independent nursing intervention for an invasive procedure such as undergoing circumcision anesthetic.

Keywords: nursing diagnosis, clinical pathway, infarction stroke



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INTRODUCTION

Circumcision or "khitan" is an action taken to dissect part of penis propidium, which done by many people due to religious doctrine and beliefs as well as being influenced by culture, mindset, and health. According to Pranata that several conditions require circumcision, including phimosis, paraphimosis, and balanitis (1).

Weiss et al. state that there are around 13.3 million boys and 2 million girls who are undergoing circumcision treatment each year. In western society, circumcision is usually done during infancy, while in other parts of the world, circumcision is carried out at different stages of human development (2). As many as 80% of babies in the United States are circumcised, and every year around 1.2 million boys are circumcised. In Canada, 48% of men are circumcised. In contrast, circumcision habits are not well known in Europe, Central America, and South America. According to AMA (American Medical Association) literature in 1999, parents in the United States decide to circumcise their children mainly due to social or cultural reasons rather than health reasons.

Motives to have circumcision include reasons for medical therapy, disease prevention, and cultural reasons. Many medical studies have suggested that there is a relationship between circumcision and HIV cases reduction, penis cancer, urinary tract infections, and sexually transmitted diseases. The Boyle & Hill study also states that circumcised men have a lower risk of HIV infection than those who are not circumcised (3).

Circumcision actions often cause pain when an anesthetic injection and post-circumcision are given to patients since this action is a necessary process that is only carried out once in men's lifetime. Therefore, as much as possible, this experience made as not a terrible experience for the patients. As paramedics, they should be responsible for providing anesthetic circumcision injection to reduce the pain. Also, comfortable during circumcision actions are needed. Therefore companionship of parents or for the person(s) is essential during circumcision actions (4). For increase the children's response to injection action acceptance, efforts are needed so that the children can respond well during the injection. One of them is by distraction or commonly called a distraction technique (5).

Bagheriyan states that various methods of distraction can have a significant effect on reducing pain on children. There are many kinds of distractions, including visual, verbal, auditory, tactile, kinesthetic, play, and many others. However, this injection takes a short time and needs to be fast; the distraction used is by diverting attention depends on the surrounding environmental conditions. As an example: using verbal distraction by being invited to have a pleasant talk, or using visual distraction when injecting clients by showing objects or pictures around them, so that the focus of the client's attention when injected move to the environment (6). Distraction therapy is already widely used to overcome health problems and has undergone various modifications. Wahyuni, Setyawati, and Inayah examined the distraction therapy by playing blades to the pain intensity on children who, given the circumcision anesthetic injection, showed that there were significant differences between the intervention group and control group with p-value was lower than 0.001 (<0.001) (7). Sarfika, Yanti, and Winda (2015) examined distraction therapy by watching animated cartoons on children who were going to have an infusion. The findings showed that there were significant differences in the mean value of pain scale ($P= 0.00$) between children who were given the distraction technique of watching animacy cards and children who were not given a distraction technique during infusion (8).

Distraction can overcome the pain based on the Gate Control theory, that pain impulses can be regulated or inhibited by defense mechanisms throughout the central nervous system. This theory states that pain impulses are delivered when a defense is opened, and an impulse is inhibited when a defense is closed (9). One way to close this defense mechanism is by

stimulating endorphins secretion, which will inhibit the release of P's substance. Distraction techniques, particularly hearing (audio) distraction, can increase endorphins, which are a type of morphine substance supplied by the body. Individuals with high endorphins feel less on pain, and individuals with less of endorphin feel high on pain. This is what causes differences in changes in pain intensity before and after applying the distraction techniques (10). In addition, a combination of audio and visual distraction by manipulating the patient's visual may reduce pain intensity. The experience of seeing and holding a *needle* has the potential to reduce more pain. Therefore, this action is potentially done by nurses in the health care services to reduce the pain among patients who are caring out the circumcision

OBJECTIVE

The study aimed to determine the effect of distraction technique on pain intensity among patients undergoing circumcision anesthetic.

METHOD

This study uses a quasi-experimental design by using Two groups, pre-test, and post-test with the non-equivalent control group. The population of this study was all of children who are in school ages (10-13 years) who want to circumcise in TanjungMuliaHilir Sub-District, Medan, the number of taken samples was 98 individuals in which 49 children classified to the intervention group and 49 children classified to control group.

This research was conducted in December 2018 to January 2019. The Procedures of data collection taken with a preparation phase and implementation phase. The implementation was carried out by giving distraction by seeing and holding *the needle* in the intervention group. Researchers measure the pain intensity by using *Wong-Baker Faces Pain Scale* (WBFPS) or facial pain intensity scale to identify the patients' pain scale when injecting the anesthesia (WBFPS have received permission). Scoring of this questionnaire is 1-10 with details 0 (No Pain), 2 (Mild Pain), 4 (Moderate Pain), 6 (Heavy Pain), 8 (Very Heavy Pain), and 10 (Extremely Heavy Pain). While in the control group, patients circumcised were asked to lay down. Then the operator approached them so that the patients could be cooperative when the action was taken. Then the researchers measured the patients' pain levels after giving anesthetic injections by using *Wong-Baker Faces Pain Scale* (WBFPS).

Hypothesis testing used in this study was *Independent T-Test*. Before conducting this test, the researchers are firstly testing the normality and homogeneity of the data. The normality test used was *Kolmogorov-Smirnov* and *kurtosis* and *skewness*. Furthermore, the assumption test conducted in this study was the homogeneity test from the intervention group and the control group. The homogeneity test used was the *Levene test*.

Based on the assumption test above, it was found that the data were not normally distributed and were not homogeneous. Thus, *the independent t-test* cannot use to determine differences in intervention and control group since the data were not normally distributed and were not homogeneous, so *non-parametric test* with *Mann Whitney U test* was taken. Ethical consideration of this study is *beneficence, respect for human dignity, and justice*.

RESULTS

Characteristics of Respondents

Table 1 showed the characteristic of respondents. More than half of respondents among the experimental group (69.4%) and control group (61.2%) were 10-11 years old. Most of the respondents in the experimental group (79.6%) and the control group (83.7%) from Javanese ethnicity. Regarding the level of education, more than half of the experimental group (63.3%) and control group (53.1%) were grade 5 of primary school.

Table 1 Characteristics of respondents

Variables	Control group		Intervention group	
	f	%	f	%
Age(s)				
10-11 years old	30	61.2	34	69.4
>12 years old	19	38.8	15	30.6
Ethnic group				
Bataknese	1	2.0	1	2.0
Malay	2	4.1	2	4.1
Mandailingnese	5	10.2	6	12.3
Javanese	41	83.7	39	79.6
Minangnese			1	2.0
Level of Education				
Grade 4 of primary school	1	2.0	3	6.1
Grade 5 of primary school	26	53.1	31	63.3
Grade 6 of primary school	22	44.9	15	30.6

Mean difference of pain intensity between the experimental group and the control group after receiving the intervention

Table 2 explained the mean difference of pain intensity between the experimental group and the control group after receiving the intervention. The mean pain intensity among the intervention group was 0.49 ± 0.87 , and the control group was 6.53 ± 1.41 . The significant finding was $p\text{-value}=0.000$, which indicated that there is a positive effect of the intervention on pain intensity for the experimental group compared to the control group.

Table 2. Mean difference of pain intensity between the experimental group and the control group after receiving the intervention

Group	N	Mean $\pm$ SD	Mean Rank	Sig
Control	49	6.53 ± 1.41	74.00	0.000
Intervention	49	0.49 ± 0.87	25.00	

DISCUSSION

The results of this study indicate that in the intervention group, less than three-quarters of respondents (75.5%) did not have the pain experienced with the average pain was 0.49 (SD = 0.87). The results of this study are supported by research conducted by Miguez-Navarro and Guerrero-Marquez (2016), which aims to analyze the relationship between anticipation of anxiety, real anxiety, level of pain felt and a history of previous venous puncture, and anxiety

between children and parents. The main result showed that the intervention group was more than a third of respondents (40%) experienced mild pain ($M = 3.18$; $SD = 1.72$).

The results of a study conducted by Wahyuni, Setyawati, and Inayah aimed to determine the distraction therapy by playing a propeller blowing on children's pain intensity who given circumcision anesthetic injection in which the mean pain value in the intervention group was 2.83 (7).

Meanwhile, research conducted by Kaur, Sarin, and Kumar showed that in the intervention group given cartoon distraction, it was found that less than two-thirds of respondents (63.3%) during intravenous stabbing on the second day with average pain was 0.87 ($SD = 1.85$) (11). Then, research conducted by Tufekci, Kucukoglu, Aytekin, Polat, and Bakan also showed that the average pain of respondents in the intervention group by using blue light to children who had venous injection was 2.58 ($SD = 2.48$) (12).

The results of a study conducted by Balanyuk, et al. found that in the group given distraction technique, the mean of peripheral venous catheter puncture pain was 0.69 ($SD = 1.26$) (13). The results of a study conducted by Cason and Grissom (1997) showed that the average pain of a patient who was undergoing phlebotomy in the group given the distraction technique was 1.41 ($SD = 0.91$) (14).

Seeing and holding a *needle* during a circumcision anesthetic injection is also part of the distraction technique. Distraction techniques are often used to reduce pain during short procedures (15). Distraction is often interpreted as a cognitive or behavioral strategy to divert a child's attention from stimulation pain (16). According to Nilsson et al. stated that children with distracted, their pain threshold will increase and directly increase tolerance to their pain (17). In addition, when other stimuli are given and dominate the brain's capacity to process stimuli, simultaneously, pain stimuli will also experience resistance (18).

Based on the results of the study also showed the z value between the control group and intervention group was -8,881. The mean rank of the intervention group (25.00) was lower than that in the control group (74.00), with a p-value was 0.00. It can be concluded that the application of distraction technique by seeing and holding a needle affects the intervention group to reduce the pain intensity of circumcision anesthetic injection compared to the control group.

The results of this study are in line with the results of the study conducted by Kaur, Sarin, and Kumar which showed that there was a decrease on children's pain and stress intensity after being given cartoon distraction technique during intravenous injection, in the five minutes and the last injection (11). Research conducted by Lestari, Wanda, and Hayati also explained that the administration of distraction technique by using *bubble-blowing* was effective in reducing pain and anxiety in venous injection ($p = 0.026$) (18).

Tufekci, Kucukoglu, Aytekin, Polat, and Bakan also found that pain intensity in the intervention group was lower than in the control group (12). The results of research by Vessey et al. and Carlson et al. also showed that distraction technique could reduce pain when intravenous injection is performed at the age of preschoolers, schools, and adolescents (19, 20). Research conducted by Canbulat, et al. in Turkey also found that distraction technique can reduce pain when performed procedures of action and anxiety in children and adolescents (20).

The results of research conducted by Balanyuk, et al. found that the application of distraction technique on adult patients can reduce the pain of peripheral venous catheter injection (13). Cason and Grissom also stated that patients undergoing phlebotomy in the group that given distraction technique decreased the pain intensity (14).

The *American Society for Pain Management Nursing* in Czarnecki et al. states that it is necessary to provide optimal control of pain before and during painful medical procedures (4). Pain during medical procedures can cause stress, fear, and anxiety to children (22, 23).

According to Schechter, et al. there are currently many interventions that can be done to reduce invasive actions, one of them which is the most common and the most effective is to provide distraction technique (24).

Seeing and holding a needle during an anesthetic injection during circumcision is also part of the distraction technique. According to Bronfenbrenner and Evans, the distraction technique is a technique of loading to reduce the pain of local analgesic injection (25). Distraction is one method to eliminate and to mitigate pain by diverting attention to other things so that the patient forgets or does not focus on the pain experienced. Distraction gives the best effect for a short period to deal with intense pain that only lasts a few minutes, for instance, during the implementation of invasive procedures such as injected or infused (26).

According to Nilsson, Enskar, Hallqvist, and Kokinsky, when clients get distracted, their pain threshold will increase and directly increase tolerance for their pain (17). In addition, when other stimuli are given and dominate the brain's capacity to process stimuli, simultaneously, pain stimuli will also experience resistance (18).

It supports the theory of gate control, where this theory explains the relationship between nerve fibers and the outer tissue of the spinal nerve fibers (27). Large diameter nerve fibers carry simulation of non-nociceptive and tactile information, while small nerve fibers carry nociceptive information. When large nerve fibers are stimulated, there will be a gate closure and hold other impulses in the order it is not delivered to the brain. It can also inhibit pain impulses, and since pain impulses are not provided.

CONCLUSION

The conclusion of this study is the application of distraction technique by seeing and holding needle was influential in reducing the pain of circumcision anesthetic injection, wherein the control group, more than half of respondents, experienced heavy pain in the action of circumcision anesthetic injection. In contrast, most patients in the intervention group did not experience any pain of anesthetic injection, and only a small percentage felt mild pain during circumcision anesthetic injection. Distraction technique by seeing and holding *a needle* can reduce pain since it can divert the focus of the patient's attention during the anesthetic injection. The focus is distracted by the stimulation of seeing and holding *needle* will increase the threshold and tolerance to pain which results in inhibited pain stimulation, and it is not perceived by the brain

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