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Anxiety Relief Effects of Non-Pharmacological Intervention on Patients under Local Anesthesia

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Abstract

The objective of this study is to verify the effects of diversional therapy targeting the patients who underwent orthopedic operations on the patients' anxiety and vital signs. The experimental group watched the video that a patient selected wearing screen glasses during an operation under local anesthesia. The control group received midazolam 0.5mg/kg (usual handling) through operation surgeon's prescription, and intravenous infusion was conducted during an operation. The State Trait Anxiety Inventory, visual analog scale of anxiety, and vital signs were measured before and after the operation. The state anxiety score of the experimental group decreased, and there was no significant difference. And the anxiety (VAS) score, the experimental group's score decreased. The control group's score decreased, and there was no significant difference. No significant difference in vital signs was found between two groups. This means that the non-pharmacological therapy wearing screen glasses is not inferior to the pharmacological therapy using midazolam in terms of the effects of intervening in anxiety. The diversional therapy using screen glasses is safe, cost-effective, and is a pleasant alternative therapy for patients, and is expected to be an independent nursing intervention.

Keywords*: Screen glasses, Diversional Therapy, Local Anesthesia, Surgery, Anxiety*

1. Introduction

1.1. Need for Study

An operation is a very negative incident, and it causes quite an anxiety to a patient [1]. The unfamiliar environment and noise in an operating room makes an operation a more unpleasant and uncomfortable experience. 77% of the patients who received an operation under local and spinal anesthesia felt anxiety, and 10% of them are reported to feel extreme anxiety [2]. Anxiety that most patients experience during an operation increases the activity of vegetative nervous system, and thus physiological change is caused, which affects the progress, recovery and prognosis of the operation. Therefore, anxiety should be dealt with gravely [3-4].

If relaxation is induced by drug, there is such a merit that a patient becomes comfortable, anxiety decreases, and unpleasant memory can be deleted [5]. If a drug is used improperly or excessively, there is a possibility of apnea according to respiratory system control, and central body temperature is reduced. Also, cardiovascular system control and breathing control may be caused, due to severe blood pressure decline [6]. In this regard, the retention of proper relaxation level is important upon local anesthesia

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[7]. To intervene in the anxiety of a patient during an operation, a non-pharmacological nursing intervention is urgently required [8].

Diversional therapy has been researched with such a non-pharmacological nursing intervention. It refers to increase attention concentration on stimulus using a goal-oriented attention concentration system, which decreases attention concentration on anxiety caused from a hazardous situation. In this way anxiety is intervened [9].

The studies on a non-pharmacological nursing intervention targeting patients under local anesthesia include music therapy[10-13], visual information offering [14], therapeutic suggestion (relaxed and positive image) [15], and hand massage and holding hands [16].

Recently, there is an innovative diversional therapy using screen glasses [17]. Screen glasses are a display device as simple type as glasses, and a user can watch videos as if he/she saw a screen. With the attached earphone, a user can listen to music [18]. The screen glasses more effectively separate

a patient from the anxious situation by simultaneously offering a visual stimulus through image and an auditory stimulus through sound [19].

As a previous study using the screen glasses, there is a study offering attention conversion therapy using screen glasses from the entrance of an operating room to anesthesia inducement targeting pediatric patients [18]. As a result, anxiety became eased significantly more in the group to which screen glasses and midazolam were used together than in the group to which the screen glasses and midazolam were used separately. In a diversional therapy using screen glasses targeting molar tooth extracted patients under local anesthesia [20], anxiety was more significantly eased in the group where nitrous oxide absorption and the screen glasses were used together than in the group where nitrous oxide absorption and the screen glasses were used separately. However, there was no study on checking the effects after implementing a diversional therapy using screen glasses under local anesthesia, and an intervention using pharmacological therapy using midazolam.

This study applied attention conversion therapy using screen glasses during local anesthesia targeting orthopedic patients having the most sever noise during an operation. This study aims to present an independent nursing intervention with a non-pharmacological intervention method for the anxiety relief of patients receiving operation under local anesthesia.

1.2. Objective

The objective of this study is to verify the effects of diversional therapy using scree glasses targeting the patients who underwent orthopedic operations under local anesthesia on the patients' anxiety and vital signs. The specific objectives are as follows:

1) Identify the effects of attention conversion therapy using screen glasses during an operation under local anesthesia on anxiety.

2) Grasp the effects of attention conversion therapy using screen glasses during an operation under local anesthesia on vital signs.

2. Method

2.1. Design

This study is nonequivalent control group pretest-posttest non-synchronized design to verify the effects of the attention conversion therapy using screen glasses during an operation targeting patients under local anesthesia on anxiety and vital signs (Figure 1).

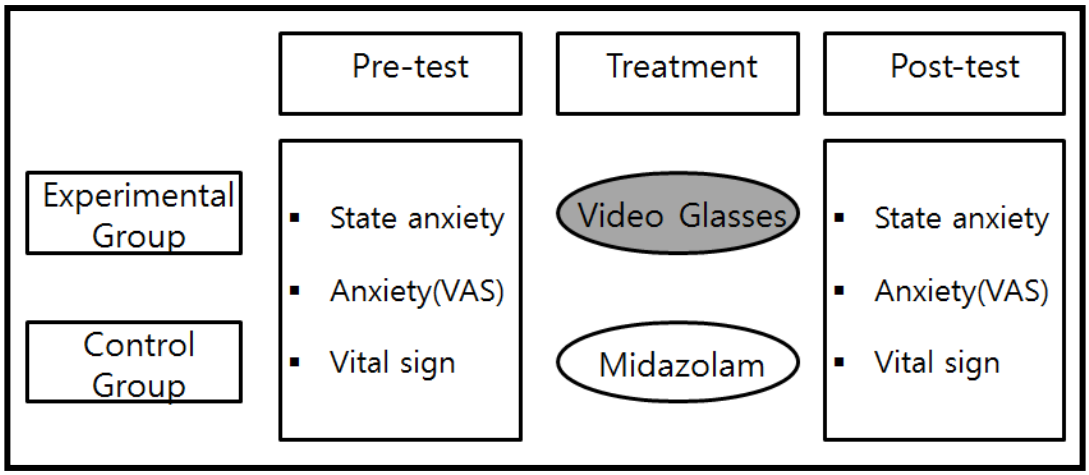

Figure 1. Research Design

2.2. Subjects and Data Collection

This study targeted the patients who received operations under local anesthesia through hospitalization in the orthopedics from July to September 2014 at E General Hospital located in S city.

As for the sample size, significance level was set up as 0.05, statistical power as 0.8 using G Power 3.1 program, and the effect size was set up as 0.8 by drawing from a previous study [21]. As a result, this study targeted 60 people in total by randomly extracting 30 people in consideration of 26 people, the minimally demanded sample size per group, and 15% in elimination rate.

2.3. Tool

2.3.1. Anxiety: Based on STAI-Y [22], the revised edition of STAI-X, developed by Spielberger, this study measured using STAI-KYZ self-report questionnaire [23] that was re-standardized in line with Korean culture. The questionnaire consisted of 20 questions, and the score range was 20 to 80 points. Each question used 4 rating point. As the score is higher, the levels of trait anxiety and state anxiety are higher.

The reliability of the tool of trait anxiety and state anxiety, Cronbach's α=.92 [23]. In this study, trait anxiety's Cronbach's α= .83, and state anxiety Cronbach's α=.94 before an operation, and the state anxiety Cronbach's α= .93, after the operation.

As the scale of anxiety (VAS), it was measured using VAS (visual analog scale). This tool indicates anxiety level that a subject feels from the 10cm horizontal line where zero (not anxious at all) to ten (very anxious) are written. As the score is higher, it means anxiety level is higher.

2.3.1. Vital Sign: Concerning high blood pressure, Philips' patient monitor (IntelliVeuMP50) was used. In the brachial artery, the systolic and diastolic blood

pressures (mmHg) were measured automatically using a non-invasive blood pressure gauge, and pulse rate/min was measured.

Pulse rate/min was measured using the patient monitor (IntelliV4euMP50) of Philips.

2.4. Experiment Handling: Diversional Therapy using Screen Glasses

The experimental group watched the video that a patient selected wearing screen glasses during an operation under local anesthesia. The control group received midazolam 0.5mg/kg (usual handling) through operation surgeon's prescription, and intravenous infusion was conducted, and nasal prong O_2 2L/min was applied during an operation.

Diversional therapy refers to the ease of anxiety by increasing attention concentration on stimulus, and decreasing attention concentration on anxiety caused by hazardous situation [9]. This study increased attention concentration on audio-visual stimuli using screen glasses to intervene in anxiety during an operation, and decreasing attention concentration on anxiety caused by hazardous situation. In this way, diversional therapy refers to easing anxiety.

2.4.1. Video Selection: Listening to music, which is an auditory factor, affects blood pressure, pulse, breathing, skin, brainwave and muscle through affecting the limbic system [24]. This was proved through previous studies [10-13]. On the basis of such study results, the video was selected to give more effective auditory stimuli. Among mass media, four episodes, two episodes of male and female ballad singers, respectively, in a famous mimic singer program, "Hidden Singer" were composed as basic list. One day before an operation, the researcher visited the subjects, and let them select the video they wanted to watch. It was explained that watching could be suspended anytime, when a subject wants to stop watching the video.

2.4.2. Experimental Group's Video Watching Procedure: First, a subject enters the waiting room. After the researcher measures subject's blood pressure and pulse rate, the researcher measures state anxiety using self-report questionnaire, and anxiety using VAS. The video that the subject selected before the operation day is checked again. The medical resident implements local anesthesia, checks the status of anesthesia success by inducing nervous stimulus, after 20~40 minutes. And then, the subject is transferred to the operating room. Second, when the subject enters the operating room, the researcher attaches a patient monitoring device again, and measures blood pressure and pulse rate with 15-min interval. When the operation starts, the researcher explains how to use volume control of the remote control connected with the screen glasses to the subject, and the video is played. The researcher lets the subject wear the screen glasses. The subject can control volume anytime he/she wants. The content will be aired until the operation is finished, and all the monitoring devices and screen glasses are removed upon the end of the operation. Third, immediately after the subject enters the recovery room, the researcher measures blood pressure and pulse rate, and then measures state anxiety and anxiety using self-report questionnaire and VAS. Again, the blood pressure and pulse rate are measured immediately before the subject goes out of the waiting room.

2.4.3. Control Group's Video Watching Procedure: First, a subject enter the waiting room. After the researcher measures subject's blood pressure and pulse rate, the research measures state anxiety using self-report questionnaire, and anxiety using VAS. The local anesthesia process is the same as the experimental group. Second, when the subject enters the operating room, the researcher measures blood pressure and pulse rate with 15-min interval by attaching patient monitoring device. The medical resident of foot orthopedics prescribes midazolam 0.3~0.5mg/kg, which is usual handling. The

researcher gives midazolam, and lets the subject inhale O_2 2L/min through nasal prong. Third, the subject enters the recovery room. The researcher measures blood pressure and pulse rate immediately after the subjects enters the recovery room, and immediately before the subject goes out of the recovery room. Regarding the control group to which midazolam was administered, state anxiety using self-report questionnaire, and anxiety using VAS are measured after two hours through advice of an anesthetist in consideration of the pharmacological metabolism time.

2.5. Data Collection Procedure

This study carried out research after gaining the approval from the E Hospital IRB (EMCS 2014-05-006-002). The objective of this study is explained to the targeted hospital's nursing department, operating room's head nurse, a nurse in charge, and foot orthopedic doctor, and their consents are gained. After the researcher visits on the previous day of the operation, and the researchers explains the need, objective, the guarantee of participant's anonymity, and personal ethical aspect protection sufficiently. And then, the subjects draw up the consent of participation, and participate in the study voluntarily. The researcher explains to the subjects that they can belong to an experimental group receiving screen glasses, or a control group receiving usual handling by a random extraction method, and that the result can be known in the operation waiting room. Before the operation, a questionnaire survey on state anxiety and anxiety is carried out. The researcher lets the experimental group select their desired video, and explains that they can stop watching the video anytime in the middle of watching the video. To the control group, the same questionnaire survey and study process are explained.

2.6. Data Analysis

The data collected in this study were analyzed using SPSS 21.0 program. The general characteristics of the study subjects were analyzed with frequency, mistake and percentage. Concerning the homogeneity test on the general characteristics of the experimental and control groups, it was analyzed with t-test and χ^2 test. T-test was carried out to test the differences of anxiety, blood pressure and pulse rate between the experimental group and control group.

3. Result

3.1. Homogeneity Test on General Characteristics of the Subjects

The homogeneity test results of the general characteristics of the experimental and control groups are shown in <Table 1>. As a result, homogeneity was ensured, due to no significant difference between the two groups in terms of gender, age, education level, marital status, religion and operation duration.

<Table 1> shows the homogeneity test results between the experimental group and control group on operation-related characteristics. As a result of the test, homogeneity was ensured due to no significant difference between the two groups in terms of operation experience, operation experience under local anesthesia, and screen glasses wearing experience.

<Table 1> shows the homogeneity test results on anxiety and vital signs of the experimental and control groups. As a result of the homogeneity test on anxiety and vital signs between the experimental group and control group, homogeneity was ensured between the two groups in terms of trait anxiety, state anxiety, visual rating scale on anxiety, systolic blood pressure, diastolic blood pressure and pulse rate, due to no significant difference between the two groups.

3.2. Effects of Wearing Screen Glasses during Operation on Anxiety

3.2.1. Hypothesis 1: There will be no difference in state anxiety between the experimental group receiving screen glasses during the operation under local anesthesia and the control group**.**

Table 1. Homogeneity of General Characteristics between Experimental and Control Group

Characteristics	Category	Exp. G (n=30) n(%)/Mean± SD	Cont. G (n=30) n(%)/Mean± SD	χ^2 / t	p
Gender	Male	11(36.7)	7(23.3)	1.270	.260
	Female	19(63.3)	23(76.7)		
Age (years)	20-29	7(23.3)	7(23.3)	2.618	.454
	30-39	1(3.3)	4(13.3)		
	40-49	7(23.3)	4(13.3)		
	50-60	15(50.0)	15(50.0)		
Education	Elementary	4(13.3)	2(6.7)	2.918	.404
	Middle	3(10.0)	3(10.0)		
	High	15(50.0)	11(36.7)		
	College	8(26.7)	14(46.7)		
Marital status	Single	9(30.0)	10(33.3)	0.078	.962
	Married	20(66.7)	19(63.3)		
	Divorced	1(3.3)	1(3.3)		
Previous surgery	Not have	10(33.3)	9(30.0)	0.077	.781
	Have	20(66.7)	21(70.0)		
Previous surgery under local anesthesia	Not have	16(53.3)	21(70.0)	1.763	.184
	Have	14(46.7)	9(30.0)		
Experience of wearing screen glasses	Not have	16(53.3)	16(53.3)	0.000	1.000
	Have	14(46.7)	14(46.7)		
Operation time(min)		33.00 ± 15.350	33.67 ± 10.500	0.196	.845
Trait anxiety		37.10 ± 9.345	36.67 ± 8.083	-0.192	.848
State anxiety		41.33 ± 11.538	46.73 ± 12.473	1.741	.087
Anxiety (VAS)		4.52 ± 2.249	5.40 ± 2.951	1.304	.198
Systolic BP (mmHg)		139.73 ± 19.169	139.63 ± 20.954	-0.019	.985
Diastolic BP (mmHg)		79.77 ± 11.575	80.20 ± 10.237	0.154	.878
Heart rate (beats/min)		68.57 ± 11.016	69.63 ± 11.226	0.371	.712

Before an operation, the state anxiety of the experimental group and control group was 41.33±11.538 points and 46.73±12.473 points, respectively. After the operation, it was 29.70±7.804 points and 34.13±9.705 points, respectively. As for the difference of state anxiety before and after the operation, experimental group showed -11.63±10.012 points and the control group showed -12.60± 9.751 points, and there was no significant difference.

Therefore, hypothesis 1 was supported <Table 2>.

3.2.2. Hypothesis 2: There will be no difference in VAS between the experimental group receiving screen glasses during the operation under local anesthesia and the control group.

Before an operation, VAS of the experimental group and the control group was 4.52±2.249 points and 5.40±2.951 points, respectively. After the operation, VAS of the two groups were 0.63±1.024 points and 1.30±1.704 points, respectively. There was no significant difference before and after the operation: Experimental group showed -3.88±1.923 points and the control group showed -4.10±2.520 points.

Therefore, the hypothesis 2 was supported <Table 2>.

Table 2. Comparison of State Anxiety and Anxiety (VAS) between Two Group

Variable	Category	Pre-operative	Post-operative	Difference (Post-Pre)
		Mean±SD	Mean±SD	Mean±SD
State Anxiety	Exp. G (n=30)	41.33 ± 11.538	29.70 ± 7.804	-11.63 ± 10.012
	Cont. G (n=30)	46.73 ± 12.473	34.13 ± 9.705	-12.60 ± 9.751
	t	1.741	1.950	-0.379
	p	.087	.056	.706
VAS Anxiety	Exp. G (n=30)	4.52 ± 2.249	0.63 ± 1.024	-3.88 ± 1.923
	Cont. G (n=30)	5.40 ± 2.951	1.30 ± 1.704	-4.10 ± 2.520
	t	1.304	1.836	-0.374
	p	.198	.073	.710

3.3. Effects of Wearing Screen Glasses during Operation on Vital Signs

3.3.1. Hypothesis 3-1: There will be no difference on systolic blood pressure between the experimental group receiving screen glasses during an operation under local anesthesia and the control group.

Table 3-1. Comparison of Systolic Blood Pressure between Two Group

	Systolic Blood Pressure(mmHg) Mean±SD		t	p
	Exp. G(n=30)	Cont. G(n=30)		
In the waiting room	139.73±19.169	139.63±20.954	-0.019	.985
Just entrance the operating room	138.10±16.855	136.60±20.365	-0.311	.757
Op 15 min	128.73±14.987	128.23±22.409	-0.102	.919
Op 30 min	127.60±16.298	123.58±18.495	-0.757	.448
Op 45 min	134.00±20.290	120.20±22.895	-1.103	.312
Just entrance the recovery room	127.00±15.065	122.87±17.461	-0.982	.330
Leaving the recovery room	127.13±15.170	121.97±17.464	-1.223	.226

The systolic blood pressure was repeatedly measured from the waiting room till immediately before going out of the recovery room. There was no significant difference between the experimental group and control group in terms of systolic blood pressure in the waiting room showing 139.73±19.169 mmHg and 139.63±20.954 mmHg on average, respectively.

Immediately after entering the operating room, the experimental group and control group showed 138.10±16.855 mmHg and 136.60±20.365 mmHg on average, respectively, in terms of systolic blood pressure. After 15 minutes of entering the operating room, the mean systolic blood pressure of the experimental group and control group was 128.73±14.987mmHg and 128.23±22.409 mmHg, respectively. After 30 minutes of entering the operating room, the mean systolic blood pressure of the experimental group and control group was 127.60±16.298 mmHg and 123.58±18.495 mmHg, respectively. Immediately after entering the recovery room, the mean systolic blood pressure of the experimental group and control group was 127.00±15.065mmHg and 122.87±17.461 mmHg, respectively. Immediately before going out of the recovery room, the mean systolic blood pressure of the experimental group and control group was 127.13±15.170 mmHg and 121.97±17.464 mmHg, respectively. From all these, there was no significant difference between the two groups.

Therefore, the hypothesis 3-1 was supported <Table 3-1>.

3.3.2. Hypothesis 3-2: There will be no difference in diastolic blood pressure between the experimental group receiving screen glasses during the operation under local anesthesia and the control group.

Table 3-2. Comparison of Diastolic Blood Pressure between Two Group

	Diastolic Blood Pressure(mmHg) Mean ± SD		t	p
	Exp. G(n=30)	Cont. G(n=30)		
In the waiting room	79.77±11.575	80.20±10.237	0.154	.878
Just entrance the operating room	80.53±13.594	77.60±10.900	-0.922	.360
Op 15 min	74.77± 9.354	74.37±14.260	-0.128	.898
Op 30 min	73.85± 9.970	71.96±11.574	-0.574	.569
Op 45 min	78.43±11.530	71.80±13.122	-0.928	.375
Just entrance the recovery room	73.37± 9.379	71.63±10.203	-0.685	.496
Leaving the recovery room	73.50± 9.587	72.07±10.808	-0.543	.589

The diastolic blood pressure was repeatedly measured from the waiting room till immediately before going out of the recovery room. In the waiting room, the mean diastolic blood pressure of the experimental group and control group was 79.77±11.575mmHg and 80.20±10.237 mmHg, respectively. Immediately after entering the operating room, the mean diastolic blood pressure of the experimental group and control group was 80.53±13.594mmHg and 77.60±10.900mmHg, respectively. After 15 minutes of entering the operating room, the mean diastolic blood pressure of the experimental group and control group was 74.77±9.354mmHg and 74.37±14.260mmHg, respectively. After 30 minutes of entering the operating room, the mean diastolic blood pressure of the experimental group and control group was 73.85±9.970mmHg and 71.96±11.574 mmHg, respectively. After 45 minutes of entering the operating room, the mean diastolic blood pressure of the experimental group and control group was 78.43±11.530mmHg and 71.80±13.122 mmHg, respectively. Upon entering the recovery room, the mean diastolic blood pressure of the experimental group and control group was 73.37±9.379mmHg and 71.63±10.203mmHg, respectively. Immediately after going out of the recovery room, the mean diastolic blood pressure of the experimental group and control group was 73.50±9.587mmHg and 72.07±10.808mmHg, respectively.

Therefore, hypothesis 3-2 was supported <Table 3-2>.

3.3.3. Hypothesis 3-3: There will be no difference in pulse rate between the experimental group receiving screen glasses during the operation under local anesthesia and the control group: Pulse rate was repeatedly measured from the waiting room till immediately going out of the recovery room. In the waiting room, the mean pulse rate of the experimental group and the control group was 68.57±11.016/min and 69.63±11.226/min, respectively. Upon immediately entering the operating room,

the mean pulse rate of the experimental group and the control group was 69.03±10.804/min and 70.70±12.772/min, respectively. After 15 minutes of entering the operating room, the mean pulse rate of the experimental group and the control group was 64.37±9.626/min and 67.33±10.965/min, respectively. After 30 minutes of entering the operating room, the mean pulse rate of the experimental group and the control group was 62.10±9.781/min and 61.92±9.637/min, respectively. After 45 minutes of entering the operating room, the mean pulse rate of the experimental group and the control group was 64.86±11.246/min and 57.80±4.970/min, respectively. Immediately after entering the recovery room, the mean pulse rate of the experimental group and the control group was 63.90±9.732/min and 63.50±11.119/min, respectively. Immediately before going out of the recovery room, the mean pulse rate of the experimental group and the control group was 63.67±9.817/min and 65.00±12.043/min, respectively: From all these, there was no significant difference.

Therefore, hypothesis 3-3 was supported <Table 3-3>.

Table 3-3. Comparison of Pulse Rate between Two Group

	Pulse Rate(beats/min) Mean ± SD		t	p
	Exp. G(n=30)	Cont. G(n=30)		
In the waiting room	68.57±11.016	69.63±11.226	-0.019	.985
Just entrance the operating room	69.03±10.804	70.70±12.772	-0.311	.757
Op 15 min	64.37± 9.626	67.33±10.965	-0.102	.919
Op 30 min	62.10± 9.781	61.92± 9.637	-0.757	.448
Op 45 min	64.86±11.246	57.80± 4.970	-1.103	.312
Just entrance the recovery room	63.90± 9.732	63.50±11.119	-0.982	.330
Leaving the recovery room	63.67± 9.817	65.00±12.043	-1.223	.226

4. Discussion

This study was undertaken to find out the effects of wearing screen glasses during an operation targeting the patients receiving an operation under local anesthesia.

There was no statistically significant difference in state anxiety between the experimental group wearing screen glasses and the control group using midazolam. Regarding the anxiety decrease level, the state anxiety score of the experimental group, measured using self-report questionnaire (STAI-KYZ), decreased from 41.33 before the operation to 29.70, namely by 11.63 points. The state anxiety score of the control group decreased from 46.73 before the operation to 43.13, namely by 12.60 points. As for the anxiety score using VAS, the experimental group's score decreased from 4.52 to 0.63, namely by 3.88 points. The control group showed a decrease of 4.10 points from 5.40 to 1.30 points. This means that the non-pharmacological therapy wearing screen glasses is not inferior to the pharmacological therapy using midazolam in terms of the effects of intervening in anxiety.

Direct comparison was difficult, since there was no previous study that compared with the control group using pharmacological therapy to intervene in anxiety using screen glasses targeting the patients undergoing an operation. However, anxiety of the

experimental group significantly dropped, compared to the anxiety of the control group in a study identifying the anxiety intervening effect by applying a video therapy using a DVD player and headphone to the patients undergoing an operation under spinal anesthesia [25]. As such, audio-visual stimuli had a significant effect on anxiety intervention, and is considered to be in line with the result of this study. This study is very meaningful in that this study applied intervention for anxiety relief targeting the patients undergoing an operation under local anesthesia, which can be hardly found in the study in Korea [26], and in that this study applied diversional therapy using screen glasses that was seldom attempted in Korea.

There was no statistically significant difference in the systolic blood pressure and diastolic blood pressure between the experimental group wearing screen glasses and the control group using midazolam. The blood pressure and pulse rate of the control group to which anxiety intervention was applied by using midazolam showed a downtrend continuously from immediately after an operation until after 45 minutes of the operation. However, the experimental group wearing screen glasses showed a downtrend from immediately after an operation until 30 minutes of the operation, but they rose again from after 45 minutes of the operation. In conclusion, the intervention effect of diversional therapy using screen glasses on patient's anxiety during an operation is considered to be found within 45 minutes. This may be derived from a possibility that the video, "Hidden Singer," played in this study did not induce subject's attention concentration after 30 minutes of the play of the video in terms of the video construct. This is judged to be required to be confirmed through repetitive studies.

There was no significant difference in the pulse rate between the experimental group wearing screen glasses and the control group using midazolam. This result is in line with the previous study results in the comparative study of pulse rate measured in the operating room entrance, during inducing anesthesia, and immediately after entering the operating room, respectively, by offering attention conversion therapy using screen glasses before an operation for pediatric patients[18]. There was no significant difference in pulse rate in all the groups, namely a group wearing only screen glasses, a group using only midazolam and a group using screen glasses and midazolam together.

As a result of a previous study that relieved the anxiety of patients during an operation using music therapy, auditory stimuli [11], there was no statistically significant difference before the operation, during the operation and after the operation. Namely, there was no significant difference in pulse rate in this study that implemented diversional therapy through audio-visual stimuli using screen glasses, and in the previous study that intervened in anxiety using auditory stimuli.

As a result [27], there was no significant difference in vitality symptom between the experimental group wearing screen glasses, a non-pharmacological therapy, and the control group to which midazolam, a pharmacological therapy, was applied. Therefore, it was confirmed that non-pharmacological therapy was not inferior to pharmacological therapy. In this regard, the non-pharmacological diversional therapy using screen glasses to reduce anxiety targeting patients receiving an operation under local anesthesia is expected to be utilized as an independent nursing intervention in clinical practice.

5. Conclusion

This study is on the nonequivalent control group pretest-posttest non-synchronized design to identify the effects of wearing screen glasses during an operation on patients' anxiety relief targeting the patients receiving an operation under local anesthesia. According to the study result, there was no significant difference in anxiety and vital signs between the experimental group and the control group. Therefore, this study confirmed that the non-pharmacological therapy wearing screen glasses is not inferior

to the pharmacological therapy using midazolam. The diversional therapy using screen glasses is safe, cost-effective, and is a pleasant alternative therapy for patients, and is expected to be an independent nursing intervention.

Based on the study results above, this study suggests to verify the effects of anxiety relief and the retention of proper relaxation state by expanding the wearing of screen glasses during an operation under local anesthesia, and to check the effect duration in order to generalize the study results.

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