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Effectiveness of Sitz Bath Massage on Postoperative Pain, Anxiety and Mood Stated in Patients with Hemorrhoidectomy

Eun Ja Yeun¹, Misoon Jeon² and Young Mi Lee^{3*}

¹Department of Nursing, Konkuk University, 120 Neungdong-ro, Gwangjin-gu, Seoul - 05029, Republic of Korea; jms@bu.ac.kr

²Department of Nursing, Baekseok University, 76 Munam-ro, Dongnam-gu, Cheonan-si, Chungcheongnam-do - 31065, Republic of Korea; eunice@kku.ac.kr ³College of Nursing, Catholic University of Pusan, 57 Oryundae-ro, Geumjeong-gu, Busan - 46252, Republic of Korea; ymlee@cup.ac.kr

Abstract

Objectives: This study was designed to evaluate the effects of sitz bath massage on postoperative pain, anxiety, and mood states in patients with hemorrhoidectomy as a nonequivalent control group pre-post test design. **Methods/Statistical Analysis**: Forty-four patients with hemorrhoidectomy were followed post-operatively: 23 subjects in the experimental group who received sitz bath massage, and 21 in the control group who taken only sitz bath. A Visual Analogue Scale (VAS) was used to measure pain and anxiety, while the Korean Profile of Mood States-Brief (K-POMS-B) was used utilized to evaluate mood states. The data were analyzed by χ 2-test, t-test, and repeated measure ANOVA. **Findings:** While the experimental group showed no significant difference in pain, there was significant difference in the experimental group in terms of anxiety. The experimental group showed significant difference in mood states compared to the control group. Sitz bath massage could be regarded as an effective nursing intervention for decreasing and relieving post-operative anxiety and mood status. **Improvements/Applications:** Sitz bath massage has been shown to be an effective intervention for hemorrhoidectomy. These findings could be used in nursing and midwifery practices and future relevant research.

Keywords: Anxiety, Hemorrhoidectomy, Mood State, Pain, Sitz Bath Massage

1. Introduction

It is well known that hospitalization and surgery cause stressful pain to patients. Regardless of the types of operation, patients experience stressful states of pain and anxiety, resulting in slower recovery and dysfunction of the physiological system¹. Post-operative patients may become more mentally dependent due to post-operative pain and anxiety, may be hopeless, and may experience emotional changes such as depression. This kind of post-operative pain and anxiety has not been appropriately relieved in clinical practice and the need for better nursing intervention, therefore, is of interest for the increase of patient relief². As the modern Korean diet has become

increasingly westernized, surgical interventions for anal disease have increased. Thus interest in anal surgery is increasing as well. Painful defecation and wound pain are often found in patients who have had hemorrhoidectomies. In addition, wound pain after ligature removal lasts 24 hours, which could be improved by either the use of medication or analgesic injections. This pain could also be relieved by sitz bath and warm-water washes to clean and relieve pain in the wounds on the anal sphincter^{3,4}. Detailed education and instruction in sitz bath and anal washing are important in nursing intervention. Massage is also an important nursing intervention with the aim of managing the pain and anxiety of hemorrhoidectomy patients in clinical practice. Massage reduces anxiety and

^{*}Author for correspondence

negative hormones released by stress, relieve both physical and psychological tension, and are typically performed on the feet, the hands, the back, and the whole body, resulting in emotional improvement in, for instance, anxiety and depression^{5.6}. Recently, nursing research has focused on the effectiveness of nursing intervention which is applied to clinical nursing practice. Massage, which has been historically used, has recently drawn interest, and has been studied for its effectiveness on pre- and post-operative patients, heart disease, critical illness, cancer, dementia, and senile diseases⁶⁻⁹. Studies of sitz bath massage as a nursing intervention have, however, been very limited. The effectiveness of sitz bath massage, thus, should be verified through scientific and clinical-experience based studies.

2. Aim

This study was to verify the impact of sitz bath massage on post-operative pain, anxiety, and mood states in patients with hemorrhoidectomy.

3. Hypothesis

The hypothesis from which this study proceeded was as follows:

- There will be statistically significant differences in pain relief between the patient group receiving sitz bath massage and the patient group receiving sitz bath
- There will be statistically significant differences in anxiety relief between the patient group receiving sitz bath massage and the patient group receiving sitz bath alone.
- There will be statistically significant differences in mood state between the patient group receiving sitz bath massage and the patient group receiving sitz bath alone.

4. Methods

4.1 Design

This was a quasi-experimental research of nonequivalent control group design with repeated measures

4.2 Subjects

The data for both the experimental and the control groups were recruited from June to August, 2013 at a hospital in Seoul, Korea. All subjects had taken hemorrhoidectomy. The inclusion criteria were as follows:

- Above 20 years of age and underwent a hemorrhoidectomy with spinal anesthesia
- An able to communicate and are healthy apart from the disease related to this study
- Understood and voluntarily agreed to participate in this study.

For the purpose of this study, the sample size -25 subjects for both the experimental and the control groups-was determined utilizing the Power Analysis method suggested10. A raw sample size of 20 was determined upon when considering p=0.05, the number of groups 2 (u=1), the effect size 0.4 (large), and power efficiency 0.8, but 5 subjects were additionally included due to a potential attrition. However, two in the experimental group and four in the control group were not included because either the subjects did not follow the suggested instructions or were inconsistent in the survey.

4.3 Instruments

4.3.1 Questionnaire form

The form consists of 4 parts, which was the questions related to the socio-demographic Characteristics, the scale of pain, anxiety, and mood states.

4.3.2 Visual Analog Scale

VAS was the main assessment instrument of pain and anxiety relief efficacy by means of a scale with a range from 0-10, where 0 represented no pain and 10 the most pain. Although VAS is a subjective tool, it is widely applied and is a valid instrument for the assessment of pain and anxiety11.

4.3.3 Korean Profile of Mood States-Brief (K-POMS-B)

K-POMS-B was utilized in this study to measure the mood states of subjects. The original Profile Of Mood States (POMS) was developed by McNair and colleagues¹² and was updated for use in the Korean language and Korean clinical practice environments¹³. The higher the K-POMS-B score is, the worse the mood states are and vice versa. While K-POMS-B had a Cronbach's value of 0.91 in the literature¹³, a Cronbach's value of 0.93 was used in this study.

4.4 Interventions

The nursing intervention that utilized sitz bath massage in experimental group and sitz bath in control group were as follows. Sitz bath massage was performed based upon the instruction of a colorectal physician who had experience in clinically applying sitz bath massage as a nursing intervention in clinical practice in Japan. The procedures were as follows: fills a plastic bathtub for sitz bath with warm, 40°C water. Next, place sitz bath over a toilet, and sit on the sitz bath ensuring that the warm water fully covers the anal area. And then, softly massage the muscle tissue surrounding the anus for 10 seconds in an inferior to superior direction. Perform the massage on the anal area using only the index and middle finger linked together with soft pressure. Above mentioned procedure perform for 5 minutes in each sitz bath massage. Sitz Bath in control group was as follows: First, fills a plastic bathtub for sitz bath with warm, 40°C water. Next, sits on the sitz bath ensuring that the warm water fully covers anal area, and then, sit in the sitz bath for 5 minutes.

4.5 Research Process

The process of this study is shown in the diagram of Figure 1.

Pre-survey

Pre-survey information was gathered right before sitz bath massage and sitz bath for the experimental and control group, respectively, on the day following hemorrhoidectomy. In this pre-survey, levels of pain, anxiety, and mood states were measured.

• The first nursing intervention

Patients were educated in instructions for either sitz bath massage or sitz bath around 7 AM on the day following the hemorrhoidectomy. Sitz bath massage and sitz bath were performed in both the experimental and the control group. As described in the two nursing intervention

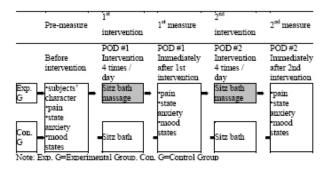


Figure 1. The flow chart of research process.

methods section, both procedures took 5 minutes. Four rounds of these interventions were carried out at approximately 7 AM, 11 AM, 4 PM, and 9 PM in the presence of nursing staff. For the procedures at 11 AM, 4 PM, and 9 PM, both a researcher from this study and a nursing staff member were present.

• The first measurement

The first measurements on the levels of pain, anxiety, and mood were recorded when the last procedure of the first nursing intervention (i.e., the fourth round at 9 PM on the day following hemorrhoidectomy) was completed.

• The second nursing intervention

On the second day following hemorrhoidectomy, each nursing intervention for each patient group was again repeated four times per day in the same manner of the day before.

The second measurement

The levels of pain, anxiety, and mood states were again recorded for each patient group when the last nursing intervention at 9 PM was completed.

4.6 Data Collection

The sitz bath massage procedure was constructed based upon instructions from a colorectal physician in Japan (Personal Communication, 2014). It was subsequently reviewed by a committee formed of a colorectal physician, a head nurse, and a nursing professor. During the procedures of each sitz bath massage and sitz bath for the experimental and the control groups, respectively, the researcher who also had educated each group on their procedure was usually present. To improve the quality of data, the data collected in this study were controlled as follows: To avoid a contamination of data from the two groups, data were collected from the experimental group first. After confirming their discharge, data of the control group were collected, and to avoid contamination of subject data from different patients, data of patients who were initially inpatients but changed to outpatients were excluded.

4.7 Data Analysis

The statistics software of SPSS win 19.0 was utilized for data analysis as follows: the data from the experimental and the control groups was tested using a χ^2 -test and t-test, along with a Levene test for homogeneity of variance test. Before and after the intervention, the scores of pain, anxiety, and mood states, which were represented

with mean ± standard deviation, was determined using descriptive statistics. Repeated measure ANOVA was used to verify each hypothesis of pain, anxiety, and mood states.

4.8 Ethical Considerations

The study was approved by Institutional Review Board at Konkuk University Hospital. Before the data collection, all participants received information about the purpose and method of the study. All participants were informed that their participation was voluntary that they could refuse to participate and could withdraw during the study without penalty. All information gathered was treated anonymously. Written informed consent was obtained in accordance with the Declaration of Helsinki.

5. Results

5.1 Demographic and Clinical Characteristics

Subjects ages ranged from 20 to 85 years (mean = 48.8). Nine subjects younger than 40 years (42.9%), and 6 subjects each of 40 ~ 50 years old, and older than 51 years (each 28.6%) were found in the control group. Male patients accounted for 15 (65.2%) of the patients in the experimental group, which was a higher ration than the 13 males (61.9%) in the control group with no statistical significance. Most patients had an education higher than high school level with no significant difference between the two groups. Thus, the homogeneity of data from both groups was statistically verified, since neither group showed any significant differences in demographical characteristics such as age, gender, and education level. In both subject groups, all 44 subjects (100%) were diagnosed with hemorrhoids, and underwent a hemorrhoidectomy. No subject had experienced massage to the anal regions before this study. Three subjects (13.3%) in the experimental group had had previous unrelated operations while two patients (9.5%) in the control group had had prior operations with no significance. Therefore, the homogeneity was verified in terms of clinical characteristics.

5.2 The homogeneity test for study variables

When the pre-scores of pain, anxiety, and mood states were measured prior to the first nursing intervention but after the hemorrhoidectomy, no statistical differences were noticed for any of the three cases but the scores from the experimental groups showed a tendency of having a higher score than that of the control group as shown in Table 1. The pain was 2.84 ± 2.82 and 2.44 ± 2.74 for the experimental and the control groups respectively, with no statistical differences. For anxiety scores, 3.06±2.81 and 2.21 \pm 2.02 were found for the experimental and the control groups respectively, again with no statistical differences. The mood state was 46.48 ± 19.30 and 40.24 ± 10.86 for the experimental and the control groups respectively, with no statistical differences. It was concluded that the data from two groups before each nursing intervention following the hemorrhoidectomy had homogeneity in study variables.

5.3 Hypothesis verification

• The first hypothesis was that there would be statistically significant differences in pain between the two patient groups.

In Table 2 described the analysis of pain at three different times: immediately following hemorrhoidectomy, after the first intervention, and after the second intervention. The pain levels in the experimental group improved from 2.84 to 1.24 after the first intervention and increased to 1.37 after the second intervention. In the control group, the pain levels consistently decreased from 2.44 to 1.98 after the first intervention and to 1.51 after the second intervention. Based upon the results of pain score, it was found that the pain levels in both groups displayed statistical differences among the scores of the three measurements (F = 6.187, p = 0.003), implying that the first and the second intervention caused statistical differences for both groups regardless of

Table 1. Homogeneity test for study variables (N=44)

Variable	Exp. G (n=23) Mean(SD)	Con. G (n=21) Mean(SD)	Levene's test for equality of variances		t-test	
			F	p	t	р
Pain	2.84(2.820)	2.44(2.747)	0.002	0.963	0.466	0.643
Anxiety	3.06(2.806)	2.21(2.024)	3.183	0.082	1.139	0.261
Mood	46.48(19.301)	40.24(10.862)	2.303	0.137	1.304	0.199

Dependent variables		Mean(SD)			F(p)	
	Pre-test	Time 1	Time 2	Group	Time	Group * Time
Pain						
Exp G	2.84(2.806)	1.24(1.956)	1.37(1.591)	0.062(0.805)	6.187(0.003)	1.111(0.334)
Con G	2.44(2.024)	1.98(2.011)	1.51(2.181)	0.002(0.803)	0.167(0.003)	1.111(0.334)
Anxiety						
Exp G	3.06(2.806)	1.17(1.956)	0.68(1.591)	0.418(0.521)	9.704(0.000)	4.965(0.009)
Con G	2.21(2.024)	1.87(2.011)	1.82(2.181)			4.965(0.009)
Mood						
Exp G	46.48(19.301)	27.96(17.219)	21.57(12.940)	0.000(0.000)	50 141(0 000)	4 770(0 011)
Con G	40.24(10.862)	28.29(12.519)	27.62(12.722)	0.000(0.990)	50.141(0.000)	4.770(0.011)

Table 2. Comparison of dependent variables between the experimental and control group

whether they had a sitz bath massage or a sitz bath alone. No statistical differences in pain levels were identified between the two groups (F=1.111, p=0.334), implying that sitz bath massage did not make a significant difference in pain levels when compared to the sitz bath itself. Hence, the first hypothesis was not supported.

 The second hypothesis was that there would be statistically significant differences in anxiety relief between the two patient groups.

It was found that the experimental group displayed significant differences in anxiety levels when compared to those of the control group based upon the data measured during the three main times: immediately following the hemorrhoidectomy, after the first intervention, and after the second intervention. As shown in Table 2, the subjects using sitz bath massage displayed anxiety scores of 3.06, 1.17, and 0.68 when measured post-operatively, after the first intervention, and the second intervention, respectively. Namely, sitz bath massage consistently improved anxiety levels. The anxiety levels in the control group also consistently improved with values of 2.21, 1.87, and 1.82 post-operatively, after the first intervention, and after the second intervention, respectively. More importantly, statistical differences were found between the two groups in overall anxiety levels after each intervention. Experimental group using sitz bath massage had statistically significant differences in anxiety levels from the control group using sitz bath alone (F = 4.965, p = 0.009). In addition, both patients showed significant differences in anxiety levels as measured after the first and the second interventions (F = 9.704, p = 0.000). Hence, the second hypothesis was supported.

 The third hypothesis was that there would be -statistically significant differences in mood states between the two patient groups. It was found that the experimental group showed significant improvements in mood states when compared to those in the control group (F = 4.770, p = 0.011). As shown in Table 2, the mood state values of the experimental group improved at 46.48 after hemorrhoidectomy, 27.96 after the first intervention, and 21.57 after the second intervention, while those of the control group were 40.24, 28.29, and 27.62 during the same measurements. Both groups showed significant improvements in anxiety levels after the first and the second interventions (F = 50.141, p = 0.000). Thus, the third hypothesis was also supported.

6. Discussion

In this study, it was found that improvements in pain levels were not significantly different between the two groups. In the experimental group, no statistically consistent improvements were found in pain levels as measured after the first and the second sitz bath massages. The scores taken post-operative, after the first intervention, and after the second intervention were only found to be significantly different depending on when measured regardless of sitz bath massage or sitz bath alone. Therefore, the pains levels caused by hemorrhoidectomy were unchanged by the method of nursing intervention, in this case sitz bath massage or sitz bath only, but changed by when they were measured. These findings implied that post-operative pain mainly improved as a function of time. Namely, sitz bath massage does not make statistically significant differences from the use of conventional sitz bath only. The results found are consistent with the data reported by in which hand massages in patients who had undergone hysterectomy did not significantly improvement pain. In contrast,

some researchs have shown the positive effects of massage in pain relief 14-16. found whole body massage was effective to relieve pain. However, the kinds of massage that have been shown to be effective in the literatures 14-16 are different from the nursing intervention of sitz bath massage. In this study, no significant improvements from sitz bath massage were found as warm water sitz bath by itself relieved post-operative pains along with the effect of using analgesic medication. In addition, the post-operative pain that were measured after the second intervention could have been affected by the fact that patients typically are able to void their bowels on the second day after surgery. Therefore, it is suggested that research should follow to verify the impact of sitz bath massage as a function of its frequency per day, its period of performance, and the pain from defecation. Based upon the results in this study, post-operative anxiety levels in the experimental group considerably improved after both the first sitz bath massage and after the second. In contrast, in the control group, the improvements, which were found as 15% after the first sitz bath and 18% after the second one, were not as significant as they were in the experimental group. These results were consistent with previous published researches¹⁷. Anxiety states due to operations in general were found to be relieved after hand massage¹⁷. Performing hand massage and holding patients' hands have been recognized to improve patient anxiety levels. It is noted that in found the effects of hand massage on male and female patients differed as a function of the subject's gender and its duration of performance 18. Therefore, further studies on the impact of sitz bath massage on postoperative anxiety levels and tension relief in hemorrhoidectomy patients should be undertaken in terms of subject's gender and sitz bath massage periods (e.g. for 1 day, 2 days, ... etc), since in this study how those factors affected anxiety levels was not investigated. In contrast to the results of this study, Groer reported that back massage in elderly patients was not found to be significantly effective in anxiety level 19. However, most studies have reported massage as a nursing intervention for relieving anxiety, supporting the results found in this study. Reference found that foot massage with aromatherapy improved the reduction of anxiety. Previous published studies reported a massage effectively reduced stressful anxiety levels in cancer patients before and after operations and in dementia patients, who showed emotional and psychological improvements in anxiety. Hence, it concluded that sitz bath massage is an effective nursing intervention for

post-operative hemorrhoidectomy patients, improving the post-operative anxiety levels and increasing relief. The findings in this study showed mood states significantly improved as the days increased after hemorrhoidectomy. However, the ways of decreasing mood states were found to differ between the two subject groups. The experimental group had a 40% reduction in anxiety level after the first sitz bath massage and a 54% reduction (i.e. another 14% reductions) after the second one when compared to the initial anxiety level. In contrast to this, in the control group, 30% and 31% reductions were determined after the first sitz bath and the second one, respectively, when the anxiety levels were again compared to the initial level. Namely, another -1% reduction was determined after the second sitz bath in the control group. These findings are also supported by a series of studies. In showed that back massage improved mood states in gastrectomy patients when compared to those in patients without back massage. Back massage improved the emotional states in critically ill patients with acute myocardial infarction. Foot massage was also reported to positively change the mood states of elderly patients in a hospitalized institution. It has been concluded, based upon these findings, that sitz bath massage improves post-operative mood states in patients with hemorrhoidectomy. In addition, positive feedback was obtained from the experimental sitz bath massage group even though they were not educated about the benefits of sitz bath massage over sitz bath. Here, the instances of their feedback were 'the sitz bath massage I am taking makes me physically relax, 'this sitz bath massage, I feel, is way better than just a sitz bath, and 'I appreciated knowing how to perform sitz bath massage rather sitz bath'. When considering that nursing interventions could be uncomfortable and unwelcomed procedures to post-operative hemorrhoidectomy patients, the attitude and response of patients could be indicators to evaluate the quality of nursing interventions. In this regard, more patients reacted positively in the experimental group when compared to the responses and the attitude in the control group. In addition, the patients who had sitz bath only, interestingly, seemed to become easily bored and impatient during the 5 minute procedure as they frequently checked the time. In contrast to this, patients utilizing sitz bath massage did not seem to get bored during the 5 minute procedure, since they were focusing on following the instructions of massage. This active participation in nursing interventions is thought to be linked with the more positive responses in the experimental group when compared to the control group. In this study, it was found that sitz bath massage failed to make statistically significant differences in post-operative pain levels in hemorrhoidectomy patients when compared to those patients receiving only a sitz bath. Further study is recommended to investigate the benefits of sitz bath massage over sitz bath itself in terms of post-operative pain levels in hemorrhoidectomy patients.

6.1 Strength and Limitation

Sitz bath massage in this study is the first trial as a self-performed nursing intervention. Hence, this study is expected to provide useful data on behalf of evidence-based nursing practice and education. The data in this study were collected in a single hospital and the generalization of the findings from this study to all patients with hemorrhoidectomy could be limited.

7. Conclusion

It is noted that this study is different from the previous published researches in terms of the following: in this study, sitz bath massage was performed by the patient through educational instructions while massage in the literature has been performed by a researcher or a clinician, not by the patient, even in intervention regions such as the hands and the feet, which are easily accessible. Sitz bath massage, which is instructed and supported by a nursing staff, is a self-treatment nursing intervention which enables the patient to utilize a nursing intervention free from the limitation of nursing staff presence. Future research is suggested that a random, controlled trial on the impact of sitz bath massage be designed and investigated on a multi-institution basis with an expanded sample size to determine the impact of sitz bath massage on patients with hemorrhoidectomy over an extended period and the frequency of intervention.

7.1 Relevance to Clinical Practice

This study may be useful in improving clinical practice and future relevant research in aspects: First, sitz bath massage improves the nursing care in patients with hemorrhoidectomy as an effective nursing intervention in clinical practice; and second, the findings in this study provide a fundamental basis to develop novel nursing interventions and to be utilized as a resource on behalf of evidence-based intervention in nursing education.

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