Beneficial Effects of Guided Imagery or Clinical Massage on the Status of Patients in a Progressive Care Unit

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BACKGROUND  Patients in the progressive care unit typically experience high levels of pain and anxiety and exhibit difficulty sleeping.

OBJECTIVE  To determine whether either clinical massage or guided imagery could reduce pain and anxiety and improve sleep.

METHODS  This study included 288 inpatients on 2 floors of a progressive care unit. On 1 floor, each patient was offered daily a 15-minute complimentary clinical massage, whereas the patients on the other floor were provided access to a 30-minute guided-imagery recording. Patients were asked to rate their pain and anxiety levels immediately before and after the massage intervention or were asked whether the guided-imagery intervention was helpful for pain, anxiety, or insomnia.

RESULTS  The massage intervention showed an immediate and significant reduction in self-reported pain and anxiety (P < .001); likewise, a significant number of patients self-reported that guided imagery helped alleviate pain, anxiety, and insomnia (P < .001).

CONCLUSION  The results of this study indicate that clinical massage and guided imagery can benefit patients in the progressive care unit. (Critical Care Nurse. 2017;37[1]:62-69)

The progressive care unit (PCU) in a hospital typically manages patients who are more stable than those in the intensive care unit (ICU) but who require increased nursing care or more rigorous monitoring than those receiving care in a medical-surgical unit.¹ These units admit a wide variety of patients with different degrees of illness and morbidities. The patients in the PCU typically experience high levels of pain and anxiety and have difficulty sleeping (insomnia). Using nonpharmaceutical methods to alleviate these concerns would be highly beneficial.

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² Complementary health approaches are increasingly being used by patients to augment traditional medicine. Integrative medicine (IM) incorporates these nontraditional techniques into traditional patient care. IM is frequently defined as medical modalities and products with a history of use or origins outside
of conventional Western medicine.3 The National Center for Complementary and Integrative Health divides IM modalities into 2 subcategories: natural products, which include vitamins, minerals, herbs, and supplements; and mind/body practices, which include guided imagery, massage, yoga, and meditation, among others.3 The use of these approaches has increased dramatically in recent years in the United States, with 33% of Americans using at least 1 type of complementary health approach in 2012.3 Various IM modalities have demonstrated success in alleviating pain, anxiety, and insomnia,5-8 all of which can be difficult to manage in critically ill patients.

Guided imagery belongs to the mind-body area of IM. In guided imagery, the subject’s thoughts and imagination are focused and directed toward a specific goal by a facilitator, often through a recording. Guided imagery is an IM modality that can be readily integrated into traditional patient care.9 Massage therapy also belongs to the mind-body area of IM. Clinical massage involves the physical manipulation of muscles and soft tissues in the body by a massage therapist to achieve a clinical outcome. This technique has been used for centuries to alleviate pain and promote relaxation. These IM interventions, among others, have demonstrated clinical beneficial effects on pain,10-12 anxiety,13-15 and insomnia.16-23

The aim of this study was to evaluate whether clinical massage or guided imagery could improve pain, anxiety, and sleep in patients admitted to the PCU.

Materials and Methods

Study Site and Design

This pilot study aimed to evaluate pain, anxiety, and insomnia before and after intervention in a group of patients offered either clinical massage or access to a guided-imagery recording. This study had a pretest and posttest design for the clinical massage intervention and used surveys for the guided-imagery intervention. The study took place on 2 floors of the PCU at the Troy, Michigan, campus of the Beaumont Health System, which is a single, large (458 beds), tertiary care community hospital located in a suburban area. The institution has an Integrative Medicine Department, with approximately 33 massage therapists on staff. Clinical massage and guided imagery are routinely available to patients and are considered the standard of care. Staff on the PCU floors care for patients who are critically ill but do not require the specialized equipment or the intense monitoring of the ICU. At our institution, patients are assigned to different PCU floors solely on the basis of available space. This study was approved by the hospital ethics committee (Human Investigation Committee; approval number 2013-426) and was conducted in compliance with the Helsinki Declaration.

Patients

The patients considered eligible for this study included a convenience sample of 1263 inpatients on 2 PCU floors at our institution, of whom 288 fulfilled the following inclusion criteria (Figure 1): older than 18 years, agreed to participate, medically able to receive clinical massage or guided imagery, and English speaking. The exclusion criteria were the following: younger than 18 years, mentally disabled, unable to agree to the intervention, and non-English speaking. Written informed consent was not required for participation because the 2 interventions, massage and guided imagery, are considered the standard of care at our institution.

Interventions

For 3 months, patients on 1 floor of the PCU unit were offered clinical massage therapy, whereas patients on the other floor of the PCU unit were provided access...
to a guided-imagery recording. Patients admitted to the PCU are assigned to either unit, depending on available space. For the massage intervention, a massage therapist approached patients in their room to offer a free, 15-minute clinical massage. The massage therapist was on the PCU floor for 3 months, Monday through Friday, for 4 hours daily (1:00-5:00 PM) or until each patient had been visited. All massage therapists at our institution are licensed and trained in providing clinical massage to critically ill patients and in avoiding harm and recognizing contraindications in these patients.24-26 The massage therapists had received more than 600 hours of massage training and had a minimum of 4 years of experience. Swedish massage techniques were performed with the patient in bed, and typically involved hand or foot massage or scalp and neck massage to a patient’s comfort level. The diversity of situations of patients in the PCU means that massage therapists must be able to accurately assess each patient’s status and adjust the massage technique accordingly; however, for all patients, general relaxation was the focused outcome.

For guided imagery, a 30-minute guided-imagery script was recorded that focused on reducing pain and anxiety and promoting sleep (see Table). This script was unique in that it was written and recorded by the guided-imagery expert in the Integrative Medicine Department specifically for use in the PCU. The audio recording played on a hospital channel through the television, and headsets were provided to patients upon request. The television screen showed an image of a soothing beach scene continuously, although patients were encouraged to close their eyes while listening. The recording played continuously, starting every 30 minutes on the hour and half hour. The patients were free to choose when to listen and how many times to listen. The patients could use the provided headsets or listen to the recording from the television while in bed or sitting in a chair, if they were able.

**Measures**

The outcome measures were anxiety, pain, and insomnia. For the clinical massage intervention, patients were asked to rate their pain before and after the intervention on an 11-point scale (0-10), with 0 being “no pain at all” and 10 being “the worst possible pain.” Patients were also asked to rate their anxiety levels before and after clinical massage intervention on an 11-point scale, with 0 being “no anxiety” and 10 being “the worst possible.”

For the guided-imagery intervention, patients were asked by the discharging nurse if they had listened to the guided-imagery recording at any time during their stay and, if so, how many times they had listened. Patients were then asked why they had listened to the recording (ie, pain, anxiety, or insomnia) and if they had found it helpful for that issue. A pretest and posttest design could not be used for the guided-imagery intervention because patients listened to the recording as often as they wished.

**Statistical Analyses**

To analyze the effects of clinical massage, the differences in pain or anxiety from before to after the...
intervention were evaluated by using a Wilcoxon signed rank test. Patients indicating no pain or anxiety before an intervention were excluded from analysis. To analyze the effects of guided imagery, the number of patients helped by the intervention, of those who used it, was analyzed by $\chi^2$ test for equal proportions.

**Results**

Of the 971 patients in the PCU who were offered a free, 15-minute clinical massage, 243 (25.1%) agreed to receive a massage. On the other PCU floor, where patients were offered guided imagery, 292 patients were considered eligible for the study; of these, 1 was excluded because of blindness, 1 because the television was not functional (the patient was unable to hear the guided-imagery script), 30 patients had incomplete or improperly completed study admission forms, and 215 did not listen or refused to participate. Ultimately, 45 patients (17.3%) stated that they had listened to the guided-imagery script before discharge.

**Effects of Clinical Massage on Pain and Anxiety**

The patients in the PCU who were offered clinical massage were asked by the massage therapist to evaluate their pain and anxiety on an 11-point scale before the massage and immediately afterward. The patients who reported no pain before intervention were excluded from analysis. The pain scores of the 137 patients who indicated some level of pain before the intervention decreased from a mean of 4.5 before the massage to a mean of 2.3 afterward ($P < .001$; Figure 2A). In addition, a large majority (112 patients, 81.8%) indicated a decrease in pain of at least 1 point after the intervention, whereas 21 patients (15.3%) reported no change in pain levels, and 4 (2.9%) indicated that their pain levels had increased after massage (Figure 2B).

The patients who agreed to a clinical massage were also asked to rate their anxiety levels on the 11-point scale before and after massage. The patients who reported no anxiety before the intervention were excluded from analysis. Of the patients who indicated some level of anxiety before the intervention ($n = 106$), the anxiety scores decreased from a mean of 4.0 before the massage to a mean of 1.9 after ($P < .001$; Figure 2A). In addition, a large majority of patients ($n = 86$, 81.1%) indicated a decrease in anxiety of at least 1 point after the intervention, whereas 19 patients (17.9%) reported no change in anxiety levels and 1 patient (0.9%) indicated that the anxiety had increased after massage (Figure 2B).

**Effects of Guided Imagery on Pain, Anxiety, and Insomnia**

On the PCU floor where guided imagery was offered, 45 patients (17.3%) stated that they had listened to the

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<thead>
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<tbody>
<tr>
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<td>Relaxation</td>
<td>Relaxation with following the breath is used to bring the listener to a relaxed state. Sample script: “Now, I want you to turn your attention to your breathing. Just follow the air as it goes in . . . and out . . . in . . . at your own pace, your own gentle breathing rhythm. If your mind wanders, do not fight with it; just bring your mind back to your breath.”</td>
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<td>Guided imagery</td>
<td>This phase deals directly with the clinical conditions of interest. 1. Anxiety. Sample script: “You are becoming more and more calm, comfortable and relaxed. Knowing that you are in control of your fears and anxieties…” 2. Pain. Sample script: “Feel this warmth deep in any area of pain. Soothing, healing golden light, warming you, and let it wash away the pain. If you like let the healing sunshine send warmth deep within the area that you have discomfort or pain…” 3. Sleep. Sample script: “And in this beautiful, peaceful, healing place you tell yourself that you will be able to sleep peacefully tonight. . . . You feel safe and secure here. Feeling very very relaxed and sleepy. You fall asleep and have wonderful dreams. You sleep soundly without disruptions. If you wake up, you are able to fall right back to sleep…”</td>
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<td>Conclusion</td>
<td>This section brings the listener back to a normal awareness. Sample script: “In a moment, I am going to count from 1 to 5, and when I reach 5 you may open your eyes if you wish and you will feel refreshed and comfortable and this wonderful feeling of peace and contentment will stay with you…”</td>
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**Table**

Selected elements of the script used for the guided imagery intervention

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guided-imagery script before discharge. Overall, of those who used the guided-imagery sessions, 36 (80%) stated that the guided imagery helped them in some way ($P < .001$; Figure 3A). Specifically, 11 of 12 patients who listened to the recording for their pain stated that it helped reduce pain (91.7%; $P = .004$). Likewise, 23 of 26 patients who listened for their anxiety stated that the sessions helped reduce anxiety (88.5%; $P < .001$), and 9 of 11 patients who listened for insomnia felt that the sessions were helpful for that issue (81.8%; $P = .04$; Figure 3B).

**Discussion**

Guided imagery and massage are very different techniques, but both modalities belong to the mind/body area of IM. These interventions have demonstrated beneficial effects on pain, anxiety, and insomnia. Substantial evidence supports the positive effects of clinical massage on various types of pain, including pain from labor, neck and back pain, and, in particular, cancer pain. Although clinical massage has been demonstrated to reduce pain, the mechanisms of how this occurs are not well understood. However, clinical massage does stimulate the parasympathetic response, in turn reducing anxiety and promoting relaxation, and this effect may result in a reduced perception of pain. Clinical massage can also improve the flow of blood and oxygen to an area of the body, reduce the production of inflammatory cytokines, and effectively reduce various types of pain.
Clinical massage and guided imagery are relatively low-cost interventions that can have a large impact on improving patients’ comfort. The clinical massage intervention required a massage therapist for 4 hours a day, 5 days a week. Nurses have historically used massage therapy as part of their provided care, and massage is included in their scope of work. Therefore, it would be entirely possible for nurses to provide massage therapy to their critically ill patients; however, logistically and financially, this situation would be unrealistic. Nurses have an increasing burden of care, and a massage therapist would be a more cost-effective way of providing massages on a large scale. In contrast, the guided-imagery intervention required 1 guided imagery script to be recorded, although many commercially available recordings would be suitable for a patient population of interest. This recording could then be offered to all patients. Therefore, the cost per patient is extremely low, limited to the cost of the headset per patient, which is typically offered to patients for television use, and the burden on nurses is very low because they would need only to explain the program and provide access to the recording. The positive impact reported by the patients who used the guided-imagery recording indicates that this highly effective and highly cost-effective intervention is easily administered and has no contraindications for most patients.

Outcome Measures
In this study, the outcome measures were self-reported pain, anxiety, and, for those who received guided imagery, insomnia. Both clinical massage and guided imagery had immediate benefits for patients’ self-reported pain and anxiety, whereas guided imagery also benefited self-reported insomnia, which is in agreement with other reports. Vahedian-Azimi et al reported that a 60-minute massage reduced systemic blood pressure of patients in the ICU, and Nerbass et al found that a chair massage on 3 consecutive nights reduced pain and fatigue in patients who had undergone bypass surgery. Mental imagery has been used to reduce pain, anxiety, and sleepiness in hemodialysis patients, although its use has not been previously reported in the PCU or ICU, to our knowledge. Although only 45 patients used the guided-imagery intervention, those who did found it to be very helpful. Many patients listened to the recording multiple times; 1 patient listened more than 10 times.

The patients admitted to the PCU are usually very ill, with a wide range of conditions. These patients typically experience high levels of pain and anxiety, and often have difficulty sleeping. Therefore, the dramatic improvements in patient self-reported scores in these areas indicate that the interventions of clinical massage and guided imagery had a powerful, significantly positive impact on patients’ well-being.

Challenges
The main challenge for this study was the low rate of patient participation. Surprisingly, only 25% of patients agreed to accept a complimentary clinical massage. This was an unexpectedly low percentage that may reflect the patient population on a PCU floor; other units, such as an oncology unit, have shown participation rates approaching 75% when offered a complimentary massage (unpublished data). Although the reason for patients’ refusal was not recorded, it is possible that many patients were too ill to participate, and the language barrier may have been an issue.

Massage therapists must be trained in performing hospital-based massage on frail patients to avoid harm and recognize any contraindications. The patients in the PCU may have many different types of illnesses and different states of health, although all are considered very...
ill. The diverse nature of the PCU means that massage therapists must be able to accurately assess patients’ status and adjust the massage technique accordingly.

On the other hand, the guided-imagery intervention required the participation of the unit staff because the staff had to tell patients about the guided-imagery program, show them how to access the guided-imagery channel on the television, and provide the patient with a headset, if requested. Unfortunately, because of the demands of the unit, staff participation was imperfect during this study. Of the patients who stated that they did not listen to the guided-imagery recording, approximately 40% stated that they had not been informed that it was available. Therefore, although the patients in the PCU may have an inherently low participation rate due to their illness or condition, increasing staff participation is vital. To encourage staff participation, in-service training sessions were offered to explain the study and to explain guided imagery, specifically, in case the staff was unfamiliar with this modality. In addition, the nursing staff was offered free chair massages and monthly drawings in an effort to encourage participation. Further efforts will be required in the future to engage staff cooperation.

Limitations

The main limitations of this study are the small sample sizes. The low participation rate of patients offered clinical massage limited the sample size for that intervention, and only 45 patients stated that they had listened to the guided-imagery recording. However, the patients who used the interventions reported significant improvements in pain, anxiety, and insomnia. Future efforts should concentrate on improving participation, increasing sample size, and identifying patients who received an intervention and completed a patient satisfaction survey. In addition, patients’ demographic information was not collected and the interventions were offered on 2 different PCU floors, so the interventions could be directly compared with each other.

Conclusions

The costs and benefits associated with clinical massage and guided imagery indicate that these interventions can have a substantial, positive impact on patients’ comfort—specifically, pain, anxiety, and insomnia—with a very low cost. In particular, guided imagery is a very low-cost intervention with the potential to reach many patients. The challenges associated with implementing these types of interventions include patient participation and staff support. Both patients and staff need education regarding the interventions and the possible benefits to their use. If patients and staff can be enlisted, these interventions can be a practical, cost-effective way of improving patient care.

References


Acknowledgments

The authors thank Christine Billecke, PhD, for her assistance in the preparation of this manuscript.

Financial Disclosures

None reported.

Letters

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Crit Care Nurse 2017;37 62-69 10.4037/ccn2017282
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