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.

Complementary health approaches are increasingly being used by patients to augment traditional medicine. Integrative medicine (IM) incorporates these nontraditional techniques into traditional patient care.[2] IM is frequently defined as medical modalities and products with a history of use or origins outside

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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.[4] 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]

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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

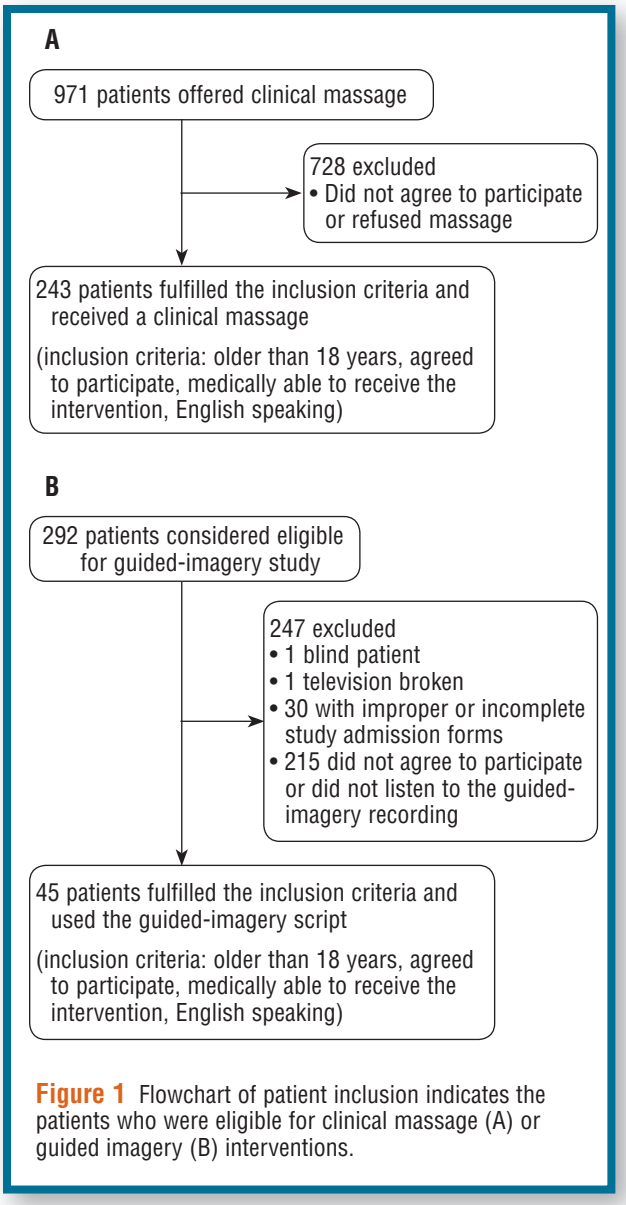

Figure 1 Flowchart of patient inclusion indicates the patients who were eligible for clinical massage (A) or guided imagery (B) interventions.

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

Table Selected elements of the script used for the guided imagery intervention

Phase	Description
Introduction	Prepares and instructs the listener on how to use the recording. Sample script: "Gently invite your eyes to close and take a few moments to settle in and to slowly switch gears. You are just switching from whatever you were doing or thinking about to simply giving yourself permission to relax…"
Relaxation	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."
Guided imagery	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 . . ."
Conclusion	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 . . ."

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 χ^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

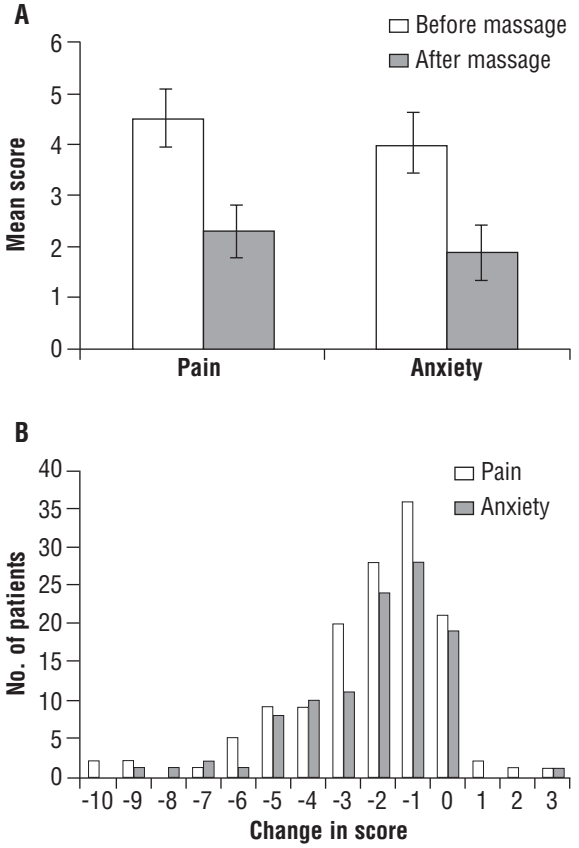

Figure 2 Self-reported patient pain and anxiety scores improved immediately after a clinical massage intervention. A, Immediately after a 15-minute massage, patients' mean pain score decreased from 4.5 to 2.3 ($P<.001$), and patients' mean anxiety scores decreased from 4.0 to 1.9. B, Of the patients who indicated some level of pain before the intervention, 112 patients (81.8%) indicated a decrease in pain of at least 1 point. Of the patients who indicated some level of anxiety before the intervention, 86 patients (81.1%) indicated a decrease in anxiety of at least 1 point.

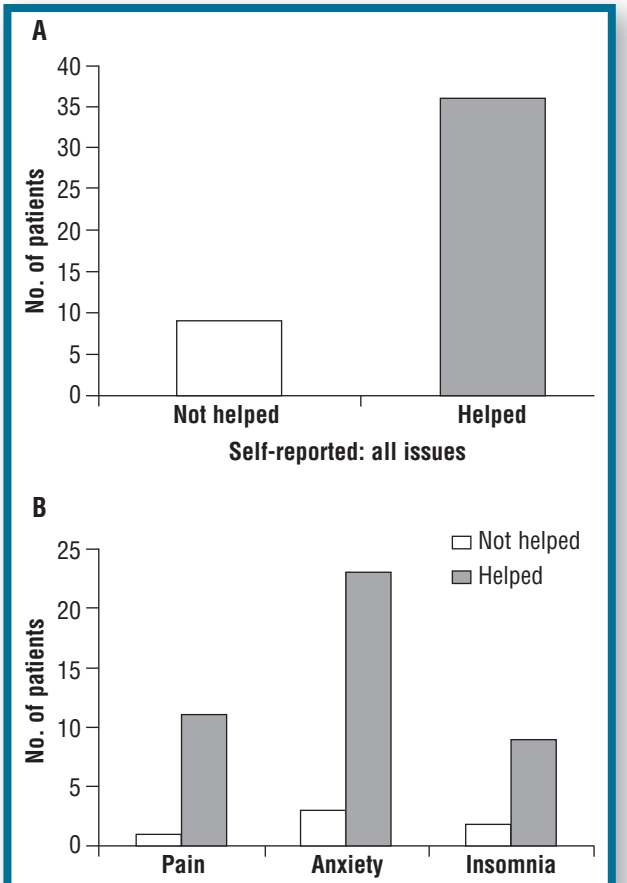

Figure 3 Patients who listened to the guided-imagery recording reported improvement in pain, anxiety, and insomnia. A, Thirty-six patients (80%) stated that the guided imagery recording intervention helped them in some way ($P<.001$). B, Eleven patients (91.7%) stated that the recording helped reduce pain, 23 patients (88.5%) stated that the sessions helped reduce anxiety, and 9 patients (81.8%) stated that the sessions helped with insomnia.

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,[10-12] anxiety,[13-15] and insomnia.[16-23]

Substantial evidence supports the positive effects of clinical massage on various types of pain, including pain from labor,[10] neck and back pain,[11,27] and, in particular, cancer pain.[28-31] 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.[32] Clinical massage can also improve the flow of blood and oxygen to an area of the body, reduce the production of inflammatory cytokines,[33] and effectively reduce various types of pain.[28,29]

Although guided imagery is also part of the mind-body area of IM, this technique differs from clinical massage in that it involves no physical contact. Guided imagery is based on the understanding that the body and mind are connected, and the mind can influence the body. For example, stress and anxiety directly influence the brain and affect the immune system.[34] The mechanisms of how guided imagery reduces pain are not well understood but may involve changing how the mind perceives pain.[8] For example, anxiety and stress can increase the perception of pain,[35] and guided-imagery scripts that focus on relaxation can reduce anxiety, stress, and the associated pain. However, guided imagery can also promote patient empowerment and well-being, which may also contribute to the reduction in anxiety and pain.

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[36] reported that a 60-minute massage reduced systemic blood pressure of patients in the ICU, and Nerbass et al[37] 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,[15] 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.

Costs

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.

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.

Clinical massage and guided imagery are relatively low-cost interventions that can have a large impact on improving patients' comfort.

Massage therapists must be trained in performing hospital-based massage on frail patients to avoid harm and recognize any contraindications.[24] 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% said 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. CCN

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None reported.

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References

1. Stacy KM. Progressive care units: different but the same. *Crit Care Nurs.* 2011;31(3):77-83.
2. Kiefer D, Pitluk J, Klunk K. An overview of CAM: components and clinical uses. *Nutr Clin Pract.* 2009;24(5):549-559.
3. Clarke TC, Black LI, Stussman BJ, Barnes PM, Nahin RL. Trends in the use of complementary health approaches among adults: United States, 2002-2012. *Natl Health Stat Report.* 2015(79):1-16.
4. National Center for Complementary and Integrative Health. https://nccih.nih.gov/health/integrative-health#types. October 2008. Updated June 2016. Accessed November 1, 2016.
5. Ferrell-Torry AT, Glick OJ. The use of therapeutic massage as a nursing intervention to modify anxiety and the perception of cancer pain. *Cancer Nurs.* 1993;16(2):93-101.
6. Sarris J, Byrne GJ. A systematic review of insomnia and complementary medicine. *Sleep Med Rev.* 2011;15(2):99-106.
7. Snyder M, Wieland J. Complementary and alternative therapies: what is their place in the management of chronic pain? *Nurs Clin North Am.* 2003;38(3):495-508.
8. Dillard JN, Knapp S. Complementary and alternative pain therapy in the emergency department. *Emerg Med Clin North Am.* 2005;23(2):529-549.
9. Wood D, Patricolo GE. Using guided imagery in a hospital setting. *Altern Complement Ther.* 2013;19(6):301-305.
10. Janssen P, Shroff F, Jaspar P. Massage therapy and labor outcomes: a randomized controlled trial. *Int J Ther Massage Bodywork.* 2012;5(4):15-20.
11. Furlan AD, Yazdi F, Tsertsvadze A, et al. Complementary and alternative therapies for back pain II. *Evid Rep Technol Assess (Full Rep).* 2010(194):1-764.
12. Kline WH, Turnbull A, Labruna VE, Haufler L, DeVivio S, Ciminera P. Enhancing pain management in the PICU by teaching guided mental imagery: a quality-improvement project. *J Pediatr Psychol.* 2010;35(1):25-31.
13. Armstrong K, Dixon S, May S, Patricolo GE. Anxiety reduction in patients undergoing cardiac catheterization following massage and guided imagery. *Complement Ther Clin Pract.* 2014;20(4):334-338.
14. McPherson F, McGraw L. Treating generalized anxiety disorder using complementary and alternative medicine. *Altern Ther Health Med.* 2013;19(5):45-50.
15. Untas A, Chauveau P, Dupre-Goudable C, Kolko A, Lakdja F, Cazenave N. The effects of hypnosis on anxiety, depression, fatigue, and sleepiness in people undergoing hemodialysis: a clinical report. *Int J Clin Exp Hypn.* 2013;61(4):475-483.
16. Kashani F, Kashani P. The effect of massage therapy on the quality of sleep in breast cancer patients. *Iranian J Nurs Midwifery Res.* 2014;19(2):113-118.

17. Hollenbach D, Broker R, Herlehy S, Stuber K. Non-pharmacological interventions for sleep quality and insomnia during pregnancy: a systematic review. *J Can Chiropr Assoc.* 2013;57(3):260-270.
18. Ko YL, Lee HJ. Randomised controlled trial of the effectiveness of using back massage to improve sleep quality among Taiwanese insomnia postpartum women. *Midwifery.* 2014;30(1):60-64.
19. Richards KC. Effect of a back massage and relaxation intervention on sleep in critically ill patients. *Am J Crit Care.* 1998;7(4):288-299.
20. Richardson S. Effects of relaxation and imagery on the sleep of critically ill adults. *Dimens Crit Care Nurs.* 2003;22(4):182-190.
21. Loft MH, Cameron LD. Using mental imagery to deliver self-regulation techniques to improve sleep behaviors. *Ann Behav Med.* 2013;46(3):260-272.
22. Astin JA, Shapiro SL, Eisenberg DM, Forys KL. Mind-body medicine: state of the science, implications for practice. *J Am Board Fam Pract.* 2003;16(2):131-147.
23. Wolsko PM, Eisenberg DM, Davis RB, Phillips RS. Use of mind-body medical therapies. *J Gen Intern Med.* 2004;19(1):43-50.
24. Armstrong K. Medical massage. *Massage Magazine.* 2013;October:52-56.
25. Alliance for Massage Therapy Education. http://www.afmte.org. Accessed October 24, 2016.
26. American Massage Therapy Association. https://www.amtamassage.org/index.html. Accessed October 24, 2016.
27. Furlan AD, Yazdi F, Tsertsvadze A, et al. A systematic review and meta-analysis of efficacy, cost-effectiveness, and safety of selected complementary and alternative medicine for neck and low-back pain. *Evid Based Complement Alternat Med.* 2012;2012:953139.
28. Bardia A, Barton DL, Prokop LJ, Bauer BA, Moynihan TJ. Efficacy of complementary and alternative medicine therapies in relieving cancer pain: a systematic review. *J Clin Oncol.* 2006;24(34):5457-5464.
29. Cherkin DC, Sherman KJ, Deyo RA, Shekelle PG. A review of the evidence for the effectiveness, safety, and cost of acupuncture, massage therapy, and spinal manipulation for back pain. *Ann Intern Med.* 2003;138(11):898-906.
30. Gecsedi RA. Massage therapy for patients with cancer. *Clin J Oncol Nurs.* 2002;6(1):52-54.
31. Running A, Seright T. Integrative oncology: managing cancer pain with complementary and alternative therapies. *Curr Pain Headache Rep.* 2012;16(4):325-331.
32. Diego MA, Field T. Moderate pressure massage elicits a parasympathetic nervous system response. *Int J Neurosci.* 2009;119(5):630-638.
33. Crane JD, Ogborn DI, Cupido C, et al. Massage therapy attenuates inflammatory signaling after exercise-induced muscle damage. *Sci Transl Med.* 2012;4(119):119ra113.
34. Mahbub ES, Haque N, Salma U, Ahmed A. Immune modulation in response to stress and relaxation. *Pak J Biol Sci.* 2011;14(6):363-374.
35. Tusek DL, Church JM, Strong SA, Grass JA, Fazio VW. Guided imagery: a significant advance in the care of patients undergoing elective colorectal surgery. *Dis Colon Rectum.* 1997;40(2):172-178.
36. Vahedian-Azimi A, Ebadi A, Asghari Jafarabadi M, Saadat S, Ahmadi F. Effect of massage therapy on vital signs and GCS scores of ICU patients: a randomized controlled clinical trial. *Trauma Mon.* 2014;19(3):e17031.
37. Nerbass FB, Feltrim MI, Souza SA, Ykeda DS, Lorenzi-Filho G. Effects of massage therapy on sleep quality after coronary artery bypass graft surgery. *Clinics (Sao Paulo).* 2010;65(11):1105-1110.

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