Reiki's effect on patients with total knee arthroplasty: A pilot study

By Barbara Byrne Notte, BSN, RN, HN-BC; Carol Fazzini, RN,C; and Ruth A. Mooney, PhD, MN, RN-BC

Abstract

Background: In the immediate postoperative period, managing postsurgical pain with pain medication can contribute to complications. A more effective approach might include a combination of pharmacologic and nonpharmacologic measures, such as Reiki therapy. **Purpose:** The purpose of this pilot study was to determine the impact of Reiki therapy on the pain perception of patients undergoing total knee arthroplasty (TKA) following Reiki sessions, satisfaction with Reiki therapy, satisfaction with the hospital experience overall, and pain medication use following surgery. **What is Reiki?** Reiki is a technique for relaxation and stress reduction that also promotes healing. **Literature review:** Reiki has been studied in women undergoing abdominal hysterectomies and in patients with cancer who were receiving chemotherapy. A review of 66 biofield therapy studies, including Reiki, suggested, "strong evidence for the effects of biofield therapy in the reduction of pain intensity in pain populations and moderate evidence for decreased pain in hospitalized patients." **Theoretical framework:** Martha Rogers's Theory of Unitary Human Beings formed the framework for this study. **Methods:** The sample included 43 patients undergoing TKA, who were randomized into Reiki (N = 23) and non-Reiki (N = 20) groups. All subjects in this pilot study had unilateral TKA at the same hospital. Pain was assessed before and after Reiki therapy using the numeric rating scale in the preoperative area, postanesthesia care unit (PACU), and on each of 3 postoperative days. A questionnaire was distributed the day of discharge to measure satisfaction with Reiki and the hospital experience. **Results:** All Reiki therapy sessions resulted in statistically significant reductions in pain, except those sessions in the PACU. Subjects receiving Reiki responded positively to questionnaires completed on the day of discharge. No statistically significant differences were found in pain medication use. **Discussion:** Reiki may be an effective component in the management of surgical patients' postoperative pain. **Limitations and implications:** Subject numbers were limited due to the difficulty of meeting with the patients and obtaining informed consent. Due to the nature of Reiki therapy, the study was not blinded. Music played during Reiki therapy could have contributed to the effect experienced by the patients. Not all questionnaires were collected before patient discharge. **Recommendations for further studies:** Future studies should include more subjects, control for music use during the Reiki session, and measure the length of time pain is decreased following Reiki treatments. **Unanticipated outcomes:** As a result of positive feedback and decreased pain ratings following Reiki sessions, a Reiki program has been established at the hospital. Ten nurses became trained and certified in Reiki.

Background

Pain is an anticipated consequence of surgery, and managing pain in the immediate postoperative period is a major priority. Pain is an unpleasant sensory and emotional experience that can potentially cause both physical and psychological damage.[1] Although pain can be reduced with pharmacologic interventions, controlling pain with pain medication remains a problem that can contribute to complications including drowsiness, unsteady gait, and reluctance to ambulate, thus prolonging hospitalizations.[2]

Postoperative pain is often managed using opioids, which can cause adverse reactions such as confusion, hypoxemia, lethargy, and immobility. These can inhibit patients' ability to ambulate and heal. A more effective approach to managing postoperative pain might include a combination of pharmacologic and nonpharmacologic measures.

Using biofield therapies, such as Reiki, therapeutic touch, and healing touch, can improve patient outcomes and help nurses become more closely connected with their patients.[3,4]

Purpose

The purpose of this pilot study was to measure the effect of Reiki on perceived pain by patients undergoing total knee arthroplasty (TKA), its effect on postoperative analgesic use, satisfaction with the Reiki experience, and overall satisfaction with their hospital experience. (See *Glossary of research terms.*) No

previous studies were found measuring the impact of Reiki on these variables in patients undergoing TKA.

What is Reiki?

Reiki is a technique for relaxation and stress reduction that also promotes healing. This technique originated in Japan.[5]

Reiki is administered by a person who has been trained by a Reiki master teacher. Through a process called attunement, Reiki students are prepared to receive and channel universal life energy to themselves and others. Reiki can be performed with the recipient fully clothed, and either seated in a chair or in a reclining position. Practitioners place their hands lightly on or just above the receiver's body and head in specific positions. The length of the treatments varies from 20 minutes to 1 hour and may vary at the discretion of the practitioner.[5,6]

Individual responses to Reiki treatments vary, with some people reporting feeling a sensation of warmth, relaxation, and/or tranquility. Others who do not feel any changes still receive the energy transferred by the practitioner.[6] Before a Reiki treatment, the Reiki practitioner explains to the recipient that all levels of human experience are touched with Reiki: body, mind, spirit, and emotions.[7]

Literature review

A study to measure the effect of Reiki on pain and anxiety in women undergoing abdominal hysterectomies involved a control group of 12 women and an experimental group of 10 women. The experimental group received Reiki preoperatively, and at 24 and 48 hours postoperatively in the subject's private hospital room. All Reiki treatments were given for 30 minutes. The experimental group reported less anxiety immediately before surgery as measured using the State-Trait Anxiety Inventory and used less pain medication 24 hours postoperatively, but the effect was decreased at 48 and 72 hours. A secondary finding was that the surgery took longer for the control group even though all subjects received the same anesthesia protocol.[8] The authors speculated that perhaps the "profound state of relaxation" may have had an effect on the length of surgery.

In another study, volunteer Reiki practitioners administered Reiki therapy to 118 patients with cancer who were receiving chemotherapy.[9] Patients received one to four Reiki treatment sessions during chemotherapy infusions. Pain and anxiety were assessed using a numeric rating scale. Mean pain scores showed statistically significant differences for patients who received one, two, or three Reiki therapy sessions. For the 22 patients who received four Reiki therapy sessions, reductions in pain scores for the fourth session showed a decrease that was not statistically significant.

Jain and Mills reviewed 66 biofield therapy studies, which included Reiki, therapeutic touch, and healing touch.[10] Results suggested, "strong evidence for the effects of biofield therapy in the reduction of pain intensity in pain populations (that is, people who reported having pain) and moderate evidence for decreased pain in hospitalized patients."

Theoretical framework

The framework for this pilot study was Martha Rogers's Theory of Unitary Human Beings.[11,12] Rogers stated, "the uniqueness of nursing...lies in the phenomenon central to its purpose; people and their worlds in a pandimensional universe are nursing's phenomena of concern. The irreducible nature of individuals as energy fields, different from the sum of their parts and integral with their respective environmental fields, differentiates nursing from other sciences and identifies nursing's focus." Dossey refers to

Glossary of research terms[17,18]

Face validity	This is established when a test appears, on face value, to be well grounded and appropriate. It's based on the agreement of opinions of people familiar with the subject, without statistical testing.
Mean	Mathematical average
N	Sample size
Paired T-test	A T-test is used to compare the means of two groups. A paired T-test compares the means of two groups when subjects have completed both the pre- and posttests. This is considered a more powerful test.
Pilot study	A small study conducted to evaluate the methods and feasibility of carrying out a larger study using those methods
P value	Statistic indicating significance—$P < 0.05$ means the results are significant; the smaller the number, the less likely that the results occurred due to chance
Reliability	The consistency and dependability of a research instrument to measure a variable
Standard deviation (SD)	Variance or range—the larger the SD, the larger the range of responses

the holistic nurse as the *healing environment* and as an *instrument of healing*.[7] Rogers's theory opens possibilities for the use of complementary therapies that may enhance the patient's energy and environment.

Methods

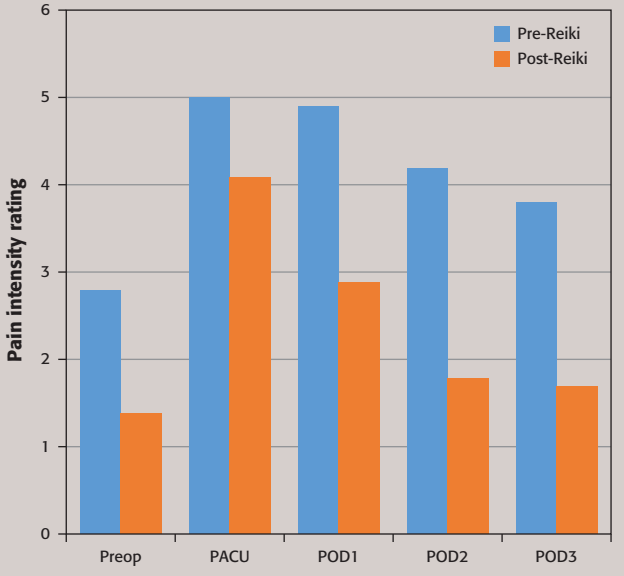
Study questions. Four questions were addressed in this pilot study.

1. Will subjects receiving Reiki treatments report less pain after Reiki treatments?
2. Will subjects receiving Reiki treatments experience less postoperative analgesic use?
3. Will subjects receiving Reiki treatments express satisfaction with the Reiki experience?
4. Will subjects receiving Reiki treatments express satisfaction with the hospital experience?

Setting. The setting was a 311-bed acute care hospital, part of a large hospital system located outside of Philadelphia. Reiki was familiar to employees because it had been offered at hospital employee health fairs, during national nurse and hospital weeks, and other activities for the 5 years preceding the study; it was very well received. Reiki has been promoted as a complementary therapy at this facility rather than as a substitute for conventional pain treatment and has been administered to patients upon request by the patient or nurse, or physician referral.

Research design. In this pilot study, subjects were randomized into Reiki and non-Reiki groups by drawing a number (1 to 100) and assigning every other number drawn to either the Reiki or non-Reiki group. The sample consisted of patients seen in one orthopedic surgeon's office who were scheduled for unilateral TKA. Of the 51 patients who consented to participate in the study, 7 had their surgery cancelled and one withdrew. The Reiki group had 23 subjects, and the non-Reiki group had 20 subjects.

Picturing pain intensity ratings before and after Reiki treatments



The independent variable for this study was the Reiki treatment. The dependent variables were pain scale scores, pain medication use, satisfaction with Reiki, and satisfaction with the hospital experience.

Inclusion and exclusion criteria. To be included in the study, subjects had to be ages 18 to 80, English-speaking, able to read and understand the subject pamphlet and consent form, and competent to give informed consent. Patients were excluded from the study if they had chronic pain disorders such as fibromyalgia, migraine headaches, rheumatoid arthritis, or neurologic impairment that precluded full participation in the study. Patients with a history of or current substance abuse and those recovering from recent surgery were also excluded.

Pain scale. The numeric rating scale (NRS), a 10-item pain rating scale with 0 representing no pain and 10 representing the worst pain ever experienced, is used to help patients rate pain intensity.[13] Paice and Cohen compared the NRS with the visual analog scale and found a correlation of 0.847 ($P = 0.001$).[14] The investigators also found that a 10-point pain rating scale provides sufficient sensitivity for pain measurement. A member of the research team reviewed patient medical records to obtain data on pain medication usage postoperatively and NRS scores. (See *Picturing pain intensity ratings before and after Reiki treatments*.)

Questionnaires. The researchers developed questionnaires to determine if Reiki was helpful to the subjects and to measure satisfaction with Reiki and the overall hospital stay. Face validity was determined for all questionnaires via a review by members of the nursing staff. Reliability was not established. The non-Reiki group received the same questionnaire.

Procedure. Reiki nurses educated the staff about Reiki therapy in the orthopedic, preoperative, telemetry, and postanesthesia care units (PACUs) to ensure understanding of the procedure and consistent implementation of the protocol. A "Reiki Study" label was affixed to the binder of each study participant's medical record and a handwritten note was placed on the nursing pathway.

After patients scheduled for TKA were seen by the orthopedic surgeon, a staff member introduced the study to patients to determine their interest. A research team member explained the study to the patient and obtained informed consent. Subjects were then informed of their group assignment. Those in the control group were told they would receive the standard of care for TKA. A subject number was assigned and all subsequent forms contained only the subject number. The date of surgery was determined during the surgeon office visit, and a Reiki nurse was scheduled to conduct Reiki on that day.

Reiki group. Subjects were given a pamphlet explaining Reiki treatments with a phone number of Reiki practitioners to call for additional information. All Reiki treatments were performed by certified Reiki nurses and included listening to relaxing music. The International Center for Reiki Training and The Reiki Alliance provided instructional material. Reiki master teachers are qualified to certify Reiki practitioners.[5]

On the morning of surgery, after the preoperative nurse completed the admission assessment, a Reiki nurse administered a 20-minute Reiki treatment. A 30-minute Reiki treatment was administered after admission to the PACU and initial assessment by the PACU staff.

On each of the 3 postoperative days, the subjects received Reiki at the bedside for 20 minutes while listening to relaxing music via headphones. The NRS was used to assess the subject's pain before and after each Reiki treatment. Subject satisfaction with Reiki and the overall hospital stay were measured using questionnaires completed before discharge.

Both groups. Subjects in both groups had access to the same pain medication. Only subjects in the Reiki group were offered relaxing music. Because several different pain medications were employed postoperatively on the recommendation of the pain management and palliative care team, all opioids were translated into morphine equivalents.

All subjects had patient-controlled analgesia (PCA) from the PACU through early morning on postoperative day (POD) 1. To provide targeted pain relief, all subjects also had a nonopioid elastomeric pump inserted during surgery. It automatically and continuously delivered a regulated flow of local anesthetic to a patient's surgical site or in close proximity to nerves.[15] Two different opioid concentrations were used in the PCA and removal time varied, but it was generally removed in the morning of POD1. The use of PCA and the pain relief elastomeric pump, which was also usually discontinued sometime on POD1, made it even more difficult to calculate pain medication received on POD1.

On POD2, all subjects received Reiki treatments while listening to relaxing music and scored their pain pre- and post-Reiki. POD3 was the day of discharge for many subjects. Some subjects' pain scores were not documented and some were not assessed due to sleep or interruptions for toileting. One subject stated that the pain felt "like someone punching me." Pre-Reiki and post-Reiki, he said, "It never really changes." Only those subjects who rated their pain intensity both pre- and post-Reiki were included in data analysis.

Clinical nurses in the orthopedic unit were asked to distribute and collect the discharge questionnaires on the day of discharge and place them in the file. The researchers wrote a reminder on the pathway, a document reflecting the plan of care. These are kept in a binder at the nurse's station and reviewed throughout the day by clinical nurses caring for patients.

Non-Reiki group. Subjects in the non-Reiki group were asked to rate their pain using the NRS at each subject/nurse encounter and when pain medication was requested. Pain medication was recorded in the electronic medical record. Subject satisfaction with the overall hospital stay was measured by evaluating questionnaires completed before discharge.

Statistical analysis. Data were analyzed using SPSS version 17. Data for the discharge questionnaires were analyzed using descriptive statistics consisting of the percentage of responses in each category. Pain intensity ratings on the NRS were analyzed using matched pairs T-tests. Data from each session were compared using pre- and post-Reiki treatment pain intensity ratings. Pain medication on POD2 was converted to morphine equivalents and then analyzed using matched pairs T-tests.

Results

Questionnaire results. Pain relief was an important area of concern for the researchers. Questionnaires were used to ask subjects in both groups if their expectations for pain relief were met. Twenty-one subjects in the Reiki group and 13 in the non-Reiki

group answered this question. In the Reiki group, 12 (55%) answered yes, 2 (9%) answered no, and 7 (24%) were unsure. In the non-Reiki group, 10 (77%) answered yes, 2 (15%) answered no, and 1 (8%) was unsure.

One subject in the Reiki group said, "I didn't know how much pain to expect," and a second subject who was unsure that her expectations for pain relief had been met stated, "The calming, relaxing effect of Reiki definitely helps with the stress of surgery." Another subject who received Reiki replied that expectations for pain relief were not met on the first postoperative day; however, "The whole experience was very relaxing and helped with the pain and made me very calm and accepted pain better."

Subjects who received Reiki were asked if Reiki helped decrease their pain after surgery and if they would recommend Reiki to others.

Pain ratings on NRS. Subjects in the Reiki group were asked to rate their pain using the NRS before and after Reiki treatments. The number of subjects in each treatment group differed for various reasons, such as patients arriving late for surgery, being asleep, not being able to rate their pain intensity, or having to return to the OR. Three said Reiki helped them feel relaxed.

On POD1, one subject was unable to score her pain pre- or post-Reiki. On POD2, all subjects received Reiki treatments and scored their pain pre- and post-Reiki. POD3 was the day of discharge for many subjects and not all subjects had their pain scores recorded. Only those subjects who rated their pain intensity both pre- and post-Reiki were included in data analysis.

Statistically significant decreases in pain intensity ratings were found between pre- and post-Reiki treatments in all but the PACU treatment: Preoperative treatment, N = 16, $P = 0.031$; postoperative (PACU) treatment, N = 17, $P = 0.529$; POD1, N = 21; POD2, N = 22; POD3, N = 17, $P = 0.000$.

Use of pain medication. Subjects had their PCA and pump discontinued at different times on POD1 and were discharged at various times on POD3, which made pain medication use difficult to interpret. Researchers determined that POD2 was the best day to compare pain medication use in the Reiki and non-Reiki groups. Data about pain medication use were available for 20 subjects in the non-Reiki group and for 23 subjects in the Reiki group. Analysis of total pain medication received showed no significant differences ($P = 0.92$).

Subjects in both the Reiki and non-Reiki groups were asked to rate their overall hospital experience. All subjects rated their experience as excellent, very good, or good. No subjects selected the options poor or very poor.

Discussion

Vitale and O'Connor reported less pain medication use at 24 hours in the group receiving Reiki, but in this study, no differences in pain medication use were found.[8]

The researchers found a significant decrease in reported pain intensity ratings immediately following a Reiki treatment using the NRS on all days, except in the PACU. Mean pain intensity rating scores were significantly lower post-Reiki than pre-Reiki. This is similar to results obtained by Birocco et al., in the patients' experience following Reiki therapy.[9] The researchers in this study were puzzled that when subjects in the study were asked at discharge if they felt Reiki helped decrease pain after surgery, five were unsure. Likewise, when asked if their expectations for pain relief were met, seven were unsure, and two replied no. These responses seem inconsistent with the decreased pain ratings post-Reiki. In the IOM Report on Pain, the authors indicated that of the 80% of patients who experience postoperative pain, fewer than half report adequate pain relief.[16]

Many clinicians believe that expectations about pain play a very important part in the individual experience of pain. Subjects in the Reiki group may have thought that they would not have any pain because of the Reiki treatments and for that reason responded inconsistently about pain relief.

The most significant finding in this study was that subjects reported improvement in pain scores immediately post-Reiki treatment in all but the PACU. Subjects in the PACU were still drowsy and often unable to articulate a number to represent their level of pain. These subjects were more likely to fall asleep post-Reiki treatment and were unable to complete the post-Reiki NRS, eliminating their scores from the final analysis.

Limitations and implications

Ultimately, the informed-consent process proved to be the main challenge and the reason for the limited sample size. One member of the research staff assisted in obtaining informed consent in the surgeon's offices 2 days a week for the first 5 months of the study. The researchers could not foresee which days in the office would provide the most success in finding subjects.

This consent process was very labor intensive and after much deliberation, the researchers decided to place a formatted letter in the patient's preoperative packet

from the surgeon's office. The letter described the study and provided a telephone number to call for additional information. One of the researchers then followed up by phoning potential subjects with the details of the study. One additional subject was enrolled using this method, and he provided informed consent in his home.

Despite these additional measures, consent opportunities proved futile. After much consideration and consultation with a biostatistician, the researchers decided to stop enrollment in the study, resulting in a small sample size. Reiki sessions were limited to 20 minutes in the preoperative area and postoperatively while on the orthopedic surgery unit. Subjects received 30 minutes of Reiki in the PACU. Session length was determined by the busy nature of the areas with many other procedures vying for time.

Several subjects were unable to assign a numeric rating to their level of pain. This made it difficult to compare pre- and post-Reiki scores.

The research team did not want to influence the results of the questionnaires. For that reason, the nursing staff was asked to distribute the questionnaires about hospitalization to subjects on the day of discharge. Due to the rapid turnover of patients on the orthopedic unit, efforts to remind the staff to distribute the questionnaires were not always successful. Only 13 of 20 (65%) subjects in the non-Reiki group and 21 of 23 (91%) subjects in the Reiki group completed the questionnaires. An alternate plan for distributing discharge questionnaires would be needed for future research.

The use of music therapy for subjects in the Reiki group may have contributed to the outcomes of this group. A group who receives only music and a third group who receives Reiki with no music should be included in future studies. Due to the hands-on nature of this study, subjects were not blinded to the group to which they were assigned. All Reiki practitioners were not at the same level. In addition, standardized hand positions were not used in the study. These are additional limitations of this pilot study.

Care was taken to control the environment in the postoperative area, but the preoperative and PACU areas were often noisy and filled with distractions.

Recommendations for further studies

Larger clinical trials are needed to further evaluate the efficacy of Reiki therapy. The results of this study concur with recommendations of Jain and Mille, which called for more high-quality studies of biofield therapies.[10] Subjects rated their pain intensity ratings as decreased following Reiki treatments but did not rate their pain experience significantly less than subjects in the control group; the researchers would like to determine the length of time pain reduction lasts post-Reiki treatments.

Several strategies might improve further research. Measuring only "as needed" pain medication use may lead to greater understanding of analgesic use. In this study, Reiki sessions were 20 and 30 minutes long. Because a typical Reiki treatment can be 50 to 60 minutes long, would administering longer Reiki treatments yield more impressive results? We further recommend that the level of Reiki practitioner and hand positions be standardized. Ideally, the preoperative area would be free from distractions and noise in future studies.

Unanticipated outcomes

Several members of the nursing staff inquired about learning Reiki. One of the researchers is a Reiki master teacher (trained by an International Center for Reiki Training nurse instructor). She taught and certified 10 nurses as Reiki practitioners. Early on, one investigator of this study also became certified in Reiki and has since progressed to the master teacher level.

The institutional review board, administrators, managers, nursing staff, Reiki practitioners, physicians, the funding foundation, and the surgeon's office staff have shown incredible interest and support from the inception of this study. As a result of the positive feedback from the subjects, nurses, and physicians, and decreased pain ratings following Reiki sessions, a Reiki program has been established at the hospital. This could ultimately affect our patients' care and outcomes in a holistic environment alongside traditional medicine.

The campus CNO secured funding to compensate clinical nurses who are certified in Reiki to provide treatments to patients outside of their regular job responsibilities. Reiki is now available to all patients undergoing orthopedic surgery, patients with pain management and palliative care consults, and other patients by referral to the newly established Reiki service. In addition, a separate room is now dedicated to use by patients who receive Reiki preoperatively. ■

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At Bryn Mawr Hospital in Bryn Mawr, Pa., Barbara Notte is a clinical nurse in preadmission testing and practices and teaches Reiki, and Carol Fazzini was a cardiovascular clinical nurse and has since retired. She is now a Reiki practitioner at Bryn Mawr Hospital. Ruth A. Mooney is the nursing research facilitator at Christiana Care Health System in Newark, Del.

Dr. Mooney coordinates the *Research Corner* department for *Nursing2016.*

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