

Reiki as a Pain Management Adjunct in the Postoperative Total Knee Arthroplasty and Surgical

Obstetric Population: An Integrative Review

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The opioid epidemic has become a deadly numbers game claiming the lives of many Americans. Among the more than 64,000 drug overdose deaths estimated in 2016, one third of those deaths were a result of fentanyl and fentanyl analogs (National Institute on Drug Abuse, 2017). Furthermore, there are 11.8 million people misusing opioids in the United States and 97.4% of those are misusing with prescription pain relievers, such as hydrocodone and oxycodone that are commonly administered after surgeries (McCance-Katz, 2018). The opioid epidemic has grown so substantially in size that it was declared a national emergency by the White House (Shear & Goodnough, 2017).

Pain is an undesirable, but anticipated component of surgery. Opioids are routinely administered to manage pain for the millions of surgical procedures performed annually in the United States. Given the rising rate of opioid deaths, and undeniable fact that pain will be present with surgery, there is a need for adjunct alternative pain therapies to lessen the amount of opioids used in the surgical setting. There are many forms of alternative pain therapies such as acupuncture, massage, meditation, sound therapy, and reiki. Reiki, the focus of this integrative review, is an energetic healing technique that can promote relaxation, stress reduction, and pain relief (International Center for Reiki Training, 2018). The purpose of this integrative review was to explore the use of reiki as an alternative pain management adjunct in the total knee arthroplasty and surgical obstetric population.

Three guiding questions were used to review the impact reiki has on improving pain management in the total knee arthroplasty (TKA) and obstetric patient populations. These include:

1. What is the effect of reiki on postoperative pain scale ratings?
2. What is the effect of reiki on postoperative pain medication usage?
3. What is the effect of reiki on postoperative vital sign measurements?

Methods

The electronic databases CINAHL, Medline, Google Scholar, and PubMed were searched from January 1995 to February 2018. The keywords “reiki”, “healing touch”, “pain”, “surgical”, “adult”, and “postoperative” were used alone and in various combinations. Throughout this review, reiki and healing touch will be used interchangeably. Despite the differing names, reiki and healing touch have roots in the same energy practice, channeling the universe’s life force for healing (Vitale, 2007). The reference list of the articles discovered was examined to identify any additional relevant research related to this review. Studies that used reiki in conjunction with other forms of alternative healing, studies that did not utilize a control group, and studies with a pediatric population subject group were excluded from this integrative review.

Literature Review

Reiki Overview

Reiki is an ancient healing practice dating back thousands of years with origins in Tibet (Lee et al., 2008). Reiki was later reintroduced to Japan in the 19th century by a Japanese monk, Dr. Mikao Usui (Israel, 2014). It wasn’t until World War II that reiki was introduced to the United States as an economical and practical nursing intervention (Witte & Dundes, 2001).

The word reiki is made up of two parts, ‘rei’ which means “spirit” and ‘ki’ which means “universal life force” (Lee et al., 2008). According to the National Center of Complementary and Alternative Medicine, reiki is classified as an energy medicine or biofield therapy as cited by Vitale, 2007. A general experience of reiki involves the patient fully clothed in a comfortable

sitting or lying position. Gentle hovering or placing of a practitioner's hands over specified points on the body delivers reiki therapy (Israel, 2014). Reiki is a noninvasive method of healing that produces virtually no side effects (Israel, 2014; Witte & Dundes, 2001).

Despite the 1.5 million Americans currently practicing reiki, the exact mechanism of action is unknown (Barnes, Bloom & Nahin, 2008). It is believed by alternative healing providers that everything in the universe is made of energy. There is an energy system within the physical body, also known as chakras. This energy system, or chakras, can be enhanced, healed, and rebalanced through reiki (Israel, 2014; Vitale, 2007; Witte & Dundes, 2001). During a reiki treatment, healing energy flows from the universe, through the practitioner's hands, and then to the recipient's energy system. When disease, stress, pain, or fatigue is present in the body, areas of the energy field will be under or over-stimulated. Reiki strives to rebalance these areas of energy displacement. Regardless of the indescribable nature of reiki, there is evidence in the literature to suggest it can improve pain management (Israel, 2014; Vitale, 2007; Witte & Dundes, 2001).

Reiki's Effect on Postoperative Pain Scale Ratings

Visual Analog Scale. The studies discussed in this integrative review utilize a Visual Analog Scale (VAS) for the purpose of measuring pain. The VAS is a measurement tool that attempts to quantify a personal experience, such as pain, that cannot easily be measured and can range across a spectrum of values (Crichton, 2001). Typically, the VAS is a horizontal line with or without numbers. Word descriptors are plotted along the horizontal line, such as "no pain" on the extreme left side of the tool, and "very severe pain" on the extreme right side of the tool. The numerical range can vary from one VAS scale to another. For example, a scale of 1-10 or 1-100

may be utilized. Characteristically, a lower number indicates the patient is experiencing less pain and the level of pain increases proportionally with the number ranking (Crichton, 2001).

When rating pain, the patient would be asked to point to their pain level somewhere along the spectrum of the measurement tool. Pain is a subjective experience; therefore the VAS rating will be subjective too. However, the VAS takes a subjective field, such as pain, and makes it quantitative for the purposes of research comparison and communication amongst healthcare providers. The VAS is of most value when looking at changes within an individual, such as before and after an intervention (Crichton, 2001).

Total Knee Arthroscopy. An estimated 4.7 million Americans have undergone a TKA procedure (Maradit Kremers et al, 2014). In three similar studies, reiki practitioners administered 30 minutes of reiki in the postoperative setting following a TKA procedure. The three studies all utilized a VAS to measure pain. Findings from the three studies consistently revealed decreased pain scale ratings with reiki used in this specific combination (Baldwin, Vitale, Brownell, Kryak, & Rand, 2017; Hardwick, Pulido & Anderson, 2012; Notte, Fazinni & Mooney, 2016).

A Pennsylvania hospital provided the setting for one of the three studies (Notte, Fazinni & Mooney, 2016). The researchers here compared two groups of TKA patients. One group of patients received standard of care (SOC) and the other intervention group received reiki. The SOC in this specific study included patient controlled analgesia (PCA) and as needed opioids. The reiki intervention group in this study received reiki for 30 minutes during the first three postoperative days. The SOC and reiki intervention groups both were asked to rate their pain at two separate times; either before and after SOC or before and after reiki, respectively.

Statistically significant decreases ($p=0.00$) in pain intensity ratings were found between the reiki intervention and SOC groups for postoperative days one through three (Notte, Fazinni & Mooney, 2016). On postoperative day one, the reiki group had an average score of 5 on a VAS before reiki, and an average of 4 following reiki ($p=0.00$). The VAS in this study was a 1-10 scale. On postoperative day two, the scores were 4.8 before reiki and 2.8 after reiki ($p=0.00$) and on postoperative day three, the scores were 4.2 before reiki and 1.8 after reiki ($p=0.00$). The group receiving only SOC, which included a PCA, had an average pain rating of 5 on postoperative day one and two and an average pain rating of 3.8 on postoperative day three.

The Notte, Fazinni & Mooney study above was modeled after a study by Hardwick, Pulido & Anderson (2012). The same setup of SOC and reiki intervention groups were utilized measuring pain on a VAS before and after SOC or reiki treatment. The SOC in this study was defined as a PCA through postoperative day one and oral opioids after the discontinuation of the PCA. Notte, Fazinni, & Mooney's findings are consistent with those of Hardwick, Pulido & Anderson noting the pain ratings on a VAS after reiki to be diminished. Statistically significant differences were found on postoperative day one between the SOC group and the reiki intervention group ($p=0.13$). The SOC group had an average rating of 4.95 on a 1-10 VAS scale and the reiki intervention group had an average rating of 3.73 after receiving reiki. On postoperative day two, the average pain rating in the SOC group was 2.85 and the reiki intervention group was 2.39 after receiving reiki ($p<0.05$).

A year later in 2017, Baldwin, Vitale, Brownell, Kryak, & Rand completed a similar study. This study added the extra control of a sham reiki intervention group. Sham reiki involves an untrained individual pretending to deliver reiki healing. The sham reiki provider mimics the hand movements of a trained provider. Studies centered on the reduction of pain

have found that oftentimes just the sole presence of a visitor, regardless of their actions, might reduce pain. This sham reiki technique is often employed to control for the placebo effect that simply having a visitor present might induce on lowering pain scale ratings.

The results from Baldwin, Vitale, Brownell, Kryak, & Rand (2017) are consistent with the findings by Hardwick, Pulido & Anderson (2012) and Notte, Fazinni & Mooney (2016). After comparing pain levels on the VAS before surgery and 24 hours post intervention after surgery, there was a substantial trend of pain reduction in the reiki intervention group only (Baldwin, Vitale, Brownell, Kryak, & Rand, 2017). VAS scores by the reiki intervention group were 4.25 +/- 0.62 preoperatively versus 2.62 +/- 0.42, on postoperative day one following reiki intervention ($p=0.003$). The sham reiki group had an average VAS score of 3.21 +/- 0.61 preoperatively versus 3.54 +/- 0.58 postoperatively following sham reiki intervention. The SOC group had scores of 5.85 +/- 1.09 preoperatively versus 5.70 +/- 0.75 postoperatively following SOC administration. The sham reiki and SOC groups had smaller sample sizes. For that reason, valid intergroup comparisons could not be made. The SOC group in this study received PCA and scheduled OxyContin every 12 hours.

Surgical Obstetrics. Improvements in pain scale scores can also be seen in the surgical obstetrics population. The trialing of differing hand placements during the reiki intervention was found to be a presenting theme in the obstetrics literature. In some studies, researchers opt to structure the reiki intervention in order to deliver consistency in the study. This is done by developing a preemptive plan for the specific points on the body that the reiki intervention will be delivered, and the amount of time spent at each point.

Rather than utilize a structured method of delivering reiki to many points on the body, Sagkal Midilli & Ciray Gunduzoglu (2016) had reiki practitioners deliver reiki directly and only

to the surgical incision from a cesarean section. At the time of the study, no other experimental studies had employed this method. It was hypothesized by the researchers that improved pain relief could potentially be produced if reiki was directed towards the pain source. This study used three groups of patients; one group received SOC, one group received reiki, and one group received sham reiki. SOC in this study was defined as the patient simply resting in bed for the amount of time either reiki or sham reiki would be delivered (Sagkal Midilli & Ciray Gunduzoglu, 2016).

Prior to intervention, and upon completion of the reiki intervention being delivered, VAS values were gathered before and after for the reiki group. The group receiving reiki had lowered pain scores after receiving the intervention. On postoperative day 1, the mean pre-intervention VAS score on a 1-100 scale among the reiki intervention group was 42.7, following reiki it was 34.7 ($p<0.05$). On postoperative day 2, the mean pre-intervention VAS score among the reiki intervention group was 30.1, following reiki it was 23.1 ($p<0.05$)(Sagkal Midilli & Ciray Gunduzoglu, 2016).

Using a more traditional approach of a structured reiki intervention, two studies found consistent results to Sagkal Midilli & Ciray Gunduzoglu's (2016) findings (Sagkal Midilli & Eser, 2015; Vitale & O'Connor, 2006). Ten predetermined points on the body marked the locations that reiki would be administered in these studies; each location would receive three minutes of reiki. Two groups of patients were compared, one group received SOC, and one group received reiki. The SOC group was asked simply to rest for the same time period that the intervention group received reiki (Sagkal Midilli & Eser, 2015; Vitale & O'Connor, 2006).

Statistically significant difference in pain scores were found between the two groups, ($p=0.00$) (Sagkal Midilli & Eser, 2015). The group receiving reiki was noted to have less pain at

both 24 and 48 hours postoperatively as compared to the group simply resting (Sagkal Midilli & Eser, 2015). The group receiving reiki rated their pain at a mean of 3.73 on a 1-10 VAS scale before receiving reiki on postoperative day one, and a mean of 2.06 after receiving reiki on postoperative day one. The group receiving SOC, or simply resting, rated their pain at a 4.13 before SOC on postoperative day one and a 4.26 after SOC on postoperative day one. On postoperative day two the VAS scores were 2.75 before reiki and 1.24 after reiki for the intervention group, and 3.69 before resting and 3.76 after resting for the SOC group. Similarly, in the Vitale & O'Connor study, the mean pain score on a 10 point VAS at 24 hours following surgery was 3.8 for the group receiving reiki and 5.4 for the group that received SOC, or simply rested ($p=0.04$) (Vitale & O'Connor, 2006).

Reiki's Effect on Postoperative Pain Medication Usage

Total Knee Arthroscopy. There are inconsistent findings related to the TKA population in regards to reiki and pain medication usage. Firstly, it is important to note that varying pain medications were used across studies. The TKA studies that will be discussed in this integrative review reported pain medication usage by converting medication dosages to morphine equivalents when determining effectiveness.

Baldwin, Vitale, Brownell, Kryak, & Rand (2017) compared three groups; a group that received SOC, a group that received reiki, and a group that received sham reiki. The SOC in this study included a PCA and OxyContin scheduled every 12 hours. The researchers found a lower number of as-needed pain medication doses were required in the reiki group as compared to the other two groups (Baldwin, Vitale, Brownell, Kryak, & Rand, 2017). The reiki intervention group used 22 doses or 2.4 morphine equivalent doses per patient, as compared with the sham

reiki group that received 36 doses or 6 morphine equivalent doses per patient, and the SOC group that received 29 doses or 5.5 morphine equivalent doses per patient ($p=0.01$).

In contrast, Hardwick, Pulido & Adelson (2012) compared a group that received SOC, and a group that received reiki. The SOC in this study was defined as a PCA and as needed opioid medication. Although not statistically significant ($p>0.05$), the required amount of as-needed pain medication was lower in the group receiving SOC, compared to the group receiving reiki intervention. On postoperative day one, the SOC group used 2.68 morphine dose equivalents and the reiki intervention group received 2.78 morphine dose equivalents. On postoperative day two, the SOC group used 2.33 morphine dose equivalents and the reiki intervention group used 2.34 morphine dose equivalents.

Interestingly enough, at baseline, the reiki intervention group rated their starting pain levels higher than the SOC group. Twenty percent more patients in the reiki group rated their pre-intervention pain the highest level, which was the extreme right on the VAS indicating “worst possible pain”, as compared to the SOC group. The researchers discussed that higher starting pain scale ratings could potentially require more as-needed pain medication, and in turn, skew the results. It was hypothesized that in the absence of the highest level VAS outliers, the study would have produced results demonstrating lower as-needed pain medication usage in the reiki intervention group, consistent with the results of the Baldwin, Vitale, Brownell, Kryak, & Rand (2017) study (Hardwick, Pulido & Adelson, 2012).

There is continued inconsistency found in a study by Notte, Fazzini & Mooney (2016). The group receiving SOC in this study was given a PCA through postoperative day one, and oral opioids following PCA discontinuation. The PCA was discontinued at varying times throughout postoperative day one, and some patients were discharged on postoperative day three. Therefore,

only postoperative day two had adequate data to compare medication usage between the SOC and reiki groups. On postoperative day two, no statistically significant decreases in postoperative pain medication usage were found among a group receiving SOC and a group receiving reiki ($p=0.92$). The data identifying the exact amount of morphine equivalents for postoperative pain medication required between the two groups were not provided by the study.

Surgical Obstetrics. In contrast to the TKA population, the use of reiki has been shown to decrease both the frequency and amount of pain medications used following obstetric surgery, specifically cesarean sections. Sagkal Midilli & Eser (2015) compared two groups of patients; one group received SOC, and the other group received reiki. The group receiving SOC was asked to simply rest for the amount of time the reiki group received the reiki intervention. A statistically significant difference between the two groups of patients was noted in the time measured until as-needed pain medications were requested ($p=0.00$). The researchers measured the time immediately following reiki application, for both the reiki intervention group and the SOC group, until the next dose of as-needed medication was requested by the patient. The group receiving reiki in addition to SOC had a mean of six hours until pain medication was needed on postoperative day one and a mean of eight hours until pain medication was needed on postoperative day two. The SOC group had a mean of two and four hours respectively ($p=0.00$) (Sagkal Midilli & Eser, 2015).

The time to pain medication administration was also decreased in the reiki intervention group in a study by Sagkal Midilli & Ciray Gunduzoglu (2016). Three groups of patients were compared in this study; one received SOC, one received sham reiki, and one received reiki. The group receiving SOC was asked to simply rest while the reiki group received the reiki intervention. The length of time from the application of reiki until another analgesic was

administered was statistically significant in the reiki intervention group ($p=0.006$). The reiki intervention group had a longer amount of time between the reiki application and their request for as-needed pain medications. On postoperative day one, the reiki intervention group had a median of seven hours until pain medication was needed, and nine hours on postoperative day two. The sham reiki group had four and six hours on postoperative day one and two, and the SOC group had 3 and 5 hours respectively (Sagkal Midilli & Ciray Gunduzoglu, 2016).

Both of the studies found not only a decrease in frequency of as-needed pain medications, but also a decrease in amount. On postoperative day one, the group receiving reiki in addition to SOC had 0-2 as-needed pain medication requests, the group receiving sham reiki as well as the group receiving SOC had 2-3 requests (Sagkal Midilli & Ciray Gunduzoglu, 2016). This trend continued on postoperative day two and three. The difference among the three groups was statistically significant on postoperative day two ($p=0.005$) and on postoperative day three ($p=0.001$)(Sagkal Midilli & Ciray Gunduzoglu, 2016).

A statistically significant difference in the number of as-needed pain medications was found by Sagkal Midilli & Eser (2015) in the comparison among the SOC group and the group receiving reiki ($p<0.05$). On postoperative days one, two, and three the reiki intervention group required less as-needed pain medications than the SOC group. On postoperative day one the reiki intervention group required 1-2 as-needed pain medications and the SOC group required 1-5 ($p<0.05$). On postoperative day two the reiki intervention group required 0-2 as-needed pain medications and the SOC required 1-4 ($p<0.05$). Finally, on postoperative day three the reiki intervention group required 0-3 as-needed pain medications and the SOC group required 0-5 ($p<0.05$).

Vitale & O'Connor (2006) employed a slightly different approach when observing the amount of as-needed pain medications among two groups of patients. One group of patients received SOC, the other received reiki. The SOC group was asked to simply rest for the amount of time that reiki was delivered to the reiki intervention group. The researchers chose to combine the time of postoperative day one and two into a 48 hour grouping, and then divide that entire amount of time into six sections of eight hours each. This tactic was utilized by the researchers to more closely examine pain medication usage in eight hour increments rather than by an entire day.

Nursing staff in this study were given postoperative orders for Toradol and Dilaudid. Per the hospital orders, the nurses were to administer Toradol for milder pain of a 1-5 rating on a VAS, and Dilaudid for more severe pain of a 5-10 rating on a VAS. The study found the SOC group used more Toradol at the sixth time section than the experimental reiki group ($p=0.04$). At the second and third time sections, or hours 8-24 of the postoperative period, the reiki group did not use any Dilaudid while the SOC group did require Dilaudid (Vitale & O'Connor, 2006).

Reiki's Effect on Postoperative Vital Sign Measurements

Total Knee Arthroscopy. Thus far, there has only been one study examining the impact reiki has on vital sign readings in the TKA patient population. Baldwin, Vitale, Brownell, Kryak, & Rand (2017) compared a group that received SOC, a group that received sham reiki, and a group that received reiki. The SOC group in this study received a PCA and scheduled OxyContin every 12 hours after PCA discontinuation. Blood pressure (BP) and respiratory rate (RR) data were gathered at six separate times: before intervention prior to surgery, after intervention prior to surgery, before intervention on postoperative day one, after intervention on postoperative day one, before intervention on postoperative day two, and after intervention on

postoperative day two. The intervention could be reiki, sham reiki, or SOC depending on the group.

This study found only the group receiving reiki in addition to SOC to show a significant difference among the six BP readings taken ($p=0.01$) (Baldwin, Vitale, Brownell, Kryak, & Rand, 2017). The group receiving reiki had the lowest after intervention BP readings as compared to the sham reiki and SOC groups. Comparing measurements taken before intervention prior to surgery and after intervention on postoperative day two, only the group receiving reiki in addition to SOC had significantly reduced BP readings ($p=0.01$). The systolic blood pressure (SBP) before intervention prior to surgery was 143.1 ± 4.8 mmHg versus the SBP of 115.2 ± 5.9 mmHg after intervention on postoperative day two ($p=0.01$).

Among the group receiving reiki, there was a trend towards reduced respiratory rate (RR) when comparing measurements before intervention prior to surgery and after intervention on the postoperative days. This trend was found statistically significant among comparison of the measurements obtained before intervention prior to surgery and after intervention on postoperative day two ($p=0.00$). The measurements were an average respiratory rate of 20.1 ± 0.5 prior to surgery, and an average respiratory rate of 17.7 ± 0.5 after surgery ($p=0.00$) (Baldwin, Vitale, Brownell, Kryak, & Rand, 2017).

Surgical Obstetrics. Reiki has an inconsistent impact on the vital sign measurements of the obstetric patient population undergoing cesarean sections. Two studies that aimed to determine the effect reiki had on vital sign measurements examined heart rate (HR), RR, and BP. Neither study found any significant differences in HR measurements among groups of patients receiving SOC, sham reiki, or reiki (Sagkal Midilli & Ciray Gunduzoglu, 2016; Sagkal Midilli & Eser, 2015).

Despite unchanged HR measurements, the RR measurements were significantly different from each other according to groups in the Sagkal Midilli & Ciray Gunduzoglu (2016) study. When comparing a group that received SOC, a group that received sham reiki, and a group that received reiki, mean RR values were statistically different from each other ($p < 0.05$). While the reiki intervention group received reiki, the SOC group was asked to simply rest. The sham reiki group had the highest RR measurement after sham reiki was administered, followed by the SOC group, then the reiki in addition to SOC group had the lowest RR after reiki was administered (Sagkal Midilli & Ciray Gunduzoglu, 2016).

The study by Sagkal Midilli & Eser (2015) also found a reduction in RR following reiki administration. This study compared patients receiving SOC and patients receiving reiki. On the first postoperative day, the mean RR in the reiki intervention group decreased from 20.09 to 18.37 breaths per minute. On the second postoperative day, the mean RR decreased from 19.51 to 18.36 breaths per minute following reiki administration. The RR in the SOC group did not change. These results were not statistically significant ($p > 0.05$).

Sagkal Midilli & Ciray Gunduzoglu (2016) found comparable results. The researchers noted the sham reiki group to have the lowest mean SBP reading at 116 mmHg. The reiki intervention group to had the highest mean SBP reading at 121.8 mmHg ($p > 0.05$).

Discussion

The purpose of this integrative review was to explore the use of reiki as an alternative pain management adjunct in the total knee arthroplasty and surgical obstetric population. In order to structure the findings reiki has on improving pain management in the total knee arthroplasty and surgical obstetric patient populations, three guiding questions were used. Each of the guiding questions will be reviewed next.

What is the Effect of Reiki on Pain Scale Ratings?

Total Knee Arthroplasty. Evidence suggests that the combination of 30 minutes of reiki at 48 hours postoperatively will have the most impact on decreasing pain scale ratings on a VAS in the TKA population (Baldwin, Vitale, Brownell, Kryak, & Rand, 2017; Hardwick, Pulido & Adelson, 2012; Notte, Fazzini & Mooney, 2016). Despite 48 hours postoperatively being the most effective time for decreasing pain scale ratings, findings from this review support the use of reiki anytime during the first three postoperative days. This integrative review did not examine the use of reiki in the preoperative setting, and therefore cannot recommend administering reiki during this time.

Surgical Obstetrics. Findings from this integrative review support the use of postoperative reiki to decrease the pain scale ratings of patients undergoing surgical obstetric procedures. Based on the outcomes from the reviewed studies, reiki will be beneficial anytime during the first two postoperative days. There is not enough evidence to recommend an exact point in this two day time frame when reiki will be most beneficial for this population. Furthermore, evidence suggests that placement of the reiki provider's hands is irrelevant in the improvement of pain related to cesarean sections. The patient will have decreased pain scale ratings regardless of whether the hands are placed directly on the cesarean section incision, or throughout the body (Sagkal Midilli & Ciray Gunduzoglu, 2016; Sagkal Midilli & Eser, 2015 and Vitale & O'Connor, 2006).

What is the Effect of Reiki on Postoperative Pain Medication Usage?

Total Knee Arthroplasty. Based on the literature findings, there are inconsistent outcomes related to reiki when used as an adjunct to decrease postoperative pain medication usage (Baldwin, Vitale, Brownell, Kryak, & Rand, 2017; Hardwick, Pulido & Adelson, 2012;

Notte, Fazzini & Mooney, 2016). Only one study found TKA patients receiving reiki to require less postoperative pain medication. Therefore, findings cannot support the use of reiki in this capacity if the desired result is decreasing postoperative pain medication following a TKA. Future research is needed to control for routine administration of as-needed pain medications.

Surgical Obstetrics. Findings support the use of reiki as a postoperative pain management adjunct in the cesarean section population. Evidence suggests that reiki provided in the first three postoperative days following a cesarean section will decrease both the frequency and amount of pain medications administered (Sagkal Midilli & Ciray Gunduzoglu, 2016; Sagkal Midilli & Eser, 2015; Vitale & O'Connor, 2006). Further evidence suggests that 30 minutes of reiki intervention administered once daily on postoperative day one through three should be adequate to produce these findings.

What is the Effect of Reiki on Vital Sign Measurements?

Total Knee Arthroplasty. The limited amount of studies related to the impact reiki has on vital sign measurements in the TKA population leaves inadequate conclusions. Despite one study finding improved vital signs with reiki following a TKA, the lack of a sufficient evidence base leaves much to be desired (Baldwin, Vitale, Brownell, Kryak, & Rand, 2017). Even with the same study finding improved pain scale ratings, the correlation to patient's self-reported pain scale ratings and vital signs is not fully understood. Given the findings of this integrative review, reiki cannot be recommended for the improvement of a patient's vital signs following a TKA.

Surgical Obstetrics. Evidence suggests that only the RR is positively affected, slowed down, when reiki is administered following a cesarean section (Sagkal Midilli & Ciray Gunduzoglu, 2016; Sagkal Midilli & Eser, 2015). The differences noted in RR but not HR and BP could potentially be caused by the patient's subconscious manipulation of their breathing. If

the patient believes they are receiving a relaxing treatment, such a reiki, there is the potential placebo effect that could cause a patient to unintentionally slow their RR. Another theory is the possibility that the RR was manually counted by medical staff while the HR and BP were produced by a monitor. The manual counting of RR could potentially leave room for human error or human bias interfering with counting. For these reasons, reiki is not recommended for the improvement of a patient's vital signs following a cesarean section.

Limitations

A limitation of this literature review includes the subjectivity of pain that a patient experiences. All patients will experience and report their pain differently, which can make reliable data challenging to collect. Additionally, some studies found difficulty recruiting patients because of the alternative nature of reiki; small sample size was a common limitation. Studies with larger sample sizes are needed for more robust comparisons.

There was a noticeable degree of different reiki training across studies. The highest level of reiki training, master level, was used in two studies (Baldwin, Vitale, Brownell, Kryak, & Rand, 2017; Vitale & O'Connor, 2006). The other common occurrence was the utilization of a reiki trained nurse with an undisclosed amount of training (Notte, Fazzini, and Mooney, 2016; Hardwick, Pulido, and Adelson, 2012). One study used a member of the research team trained in reiki, and one study did not disclose specifically who the reiki provider was (Sagkal Midilli & Ciray Gunduzoglu, 2016; Sagkal Midilli & Eser, 2015). Overall, there was much ambiguity among the description of reiki training each study provider had. Moving forward, studies that clearly state the reiki provider's level of training are needed.

A limitation of this literature review includes inconsistent delivery of reiki therapy. Studies oftentimes utilize set hand placements during the reiki intervention in order to ensure

consistency. Baldwin, Vitale, Brownell, Kryak, & Rand (2017), Sagkal Midilli & Eser (2015), and Vitale & O'Connor (2006) all predetermined the hand placements that their reiki providers would use. Sagkal Midilli & Ciray Gunduzoglu (2016) chose to deliver reiki only to the incision. The remaining studies allowed the provider to determine where the reiki would be delivered on a patient by patient basis (Hardwick, Pulido & Anderson, 2012; Notte, Fazinni, Mooney, 2016). Allowing the provider to determine where reiki is delivered leads to problems with study reliability and validity. Future studies are needed that utilize set hand placements to dependably measure and compare the results.

Many studies acknowledge that just the presence of a visitor alone could skew the results of the reiki intervention groups. Despite this, not all studies controlled for the placebo effects a visitor might have. Sham reiki was instituted in some studies to rule out the visitor placebo effect. More studies are needed that consistently control for the presence of a visitor. Repeat studies including a reliable control will establish a knowledge base that could further future changes in practice (Baldwin, Vitale, Brownell, Kryak, & Rand, 2017; Sagkal Midilli & Ciray Gunduzoglu, 2016).

Recommendations for Practice

Based on this literature review, the author believes that reiki should be incorporated into the postoperative pain management plan following TKA and surgical obstetric procedures. The reiki provider should be master level trained and set hand placements should be utilized to deliver continuity of care among providers. It has been demonstrated through the research that 30 minutes of reiki daily on postoperative days one through three will be sufficient to positively impact the patient's pain experience.

While it is known from the evidence that delivering reiki to TKA and surgical obstetric patients won't necessarily improve the vital signs postoperatively, the improvement in pain scale ratings and postoperative pain medication usage gives the author reason to believe this practice is worthwhile. The author postulates a strong link between pain scale ratings postoperatively and the patient's satisfaction with their pain management plan following surgery. Theoretically, more satisfied patients would result in better outcomes, and in turn support the underlying purpose of surgery to leave the patient with a better health condition than their preoperative status.

Education with surgical staff and first line caregivers to bring awareness of reiki's effectiveness is important to the implementation of reiki as a postoperative pain management strategy. The absence of side effects makes reiki an innocuous choice for pain management in the postoperative setting. Offering reiki training sessions to surgical staff with direct patient care could pave the way for a safer and more effective pain management strategy as opposed to the use of sole opioids alone. Incorporation of reiki training into nursing curriculum could prove valuable as well.

The high costs of healthcare, uninsured individuals, and the increasingly ill American population puts significant strain on a hospital's budget. Reiki has the potential to be a low cost pain management adjunct. If a hospital were to provide reiki training for first line care providers such as nursing aids or nurses, reiki intervention could be incorporated into standard care. After the initial cost of training the providers, no additional supply or labor fees would be accrued. The nursing staff could utilize reiki at their own discretion while tailoring it for the patient's status.

If reiki is able to decrease pain in the TKA and obstetric population, there would be potential for the patient to be discharged sooner. It could prove advantageous to study the potential cost savings related to an average inpatient hospital stay of a group of patients receiving reiki and a group of patients receiving SOC. In addition, many hospitals are reimbursed based on patient satisfaction. A study delving further into the patient satisfaction regarding pain control during the hospital stay of a group receiving reiki and a group receiving SOC could be of further use as well.

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