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The Efficacy of Yoga on the Amelioration of Non Specific Chronic Low Back Pain in Registered Nurses: A Literature Review and Study Proposal

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The Efficacy Of Yoga On The Amelioration Of Non Specific Chronic Low Back Pain In Registered Nurses: A Literature Review And Study Proposal

By

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A Thesis submitted to the College of Nursing in partial fulfillment of the requirements for graduation with Honors in the Major

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Abstract:

This thesis explores the literature for information about the prevalence of Non Specific Chronic Low Back Pain (NSCLBP) among Registered Nurses and the effectiveness of yoga on reducing the pain in order to develop a study proposal that would serve to assess the impact of yoga on reducing NSCLBP in nurses. The aims of this paper are: (1) to conduct a literature review, (2) identify gaps in knowledge about NSCLBP in nurses and the effectiveness of specific complementary alternative therapies to alleviate NSCLBP, (3) propose a research study to measure the effectiveness of yoga on NSCLBP using mixed methodologies. This paper will be presented at the Florida State University Honors Symposium and will meet the necessary requirements to complete the first Honors in the Major thesis at the Florida State University College of Nursing.

*Keywords:* Low back pain (LBP), Chronic Low Back Pain (CLBP), Non Specific Chronic Low Back Pain (NSCLBP), Complementary and Alternative Medicine (CAM), Yoga, Registered Nurses

**Introduction: A Description of Low Back Pain and Yoga**

**Definition of Low Back Pain**

Low back pain can be divided into three broad categories: nonspecific low back pain, back pain potentially associated with radiculopathy (disease of nerves) or spinal stenosis, or back pain potentially associated with another specific spinal cause (Chou, 2007). Non Specific Chronic Low Back Pain (NSCLBP) is pain in the lumbar region of the back lasting for more than 4 weeks which has not been diagnosed as either a specific disease or spinal abnormality (Chou 2007).
**Impact of Low Back Pain**

NSCLBP is often the result of obesity, incorrect posture, weakened abdominal and back muscles, strained muscles from incorrect body mechanics and ergonomics, and tight or poorly stretched muscles. (Tekur, 2008)

NSCLBP causes approximately 149 million work days lost and costs the U.S. more than 50 billion dollars per year in health care costs. (Chaung, 2012) It is said to be the fifth most common reason for physician visits in the United States (Chou, 2007). The Centers for Disease Control (CDC) reports that individuals in the healthcare field are more likely to complain of this pain than those working in construction, mining or manufacturing (Back Injury in Nursing, 2012). In the nursing profession specifically, the American Nurses Association (ANA) reported that 52% of nurses complained of chronic back pain in 2012 (Back Injury in Nursing, 2007). The incidence was so severe that 38% reported having to leave work due to the pain. Among 12% of nurses who leave the profession, back pain was cited as the most common reason for doing so.

**Treatment of Low Back Pain: Traditional Therapy**

**Therapies**

Primary Care Clinicians treat NSCLBP in a number of ways. Many begin with the medical advice to remain active and apply superficial heat, along with providing their patients with books and handouts about low back pain. The front line medication recommendations for back pain are acetaminophen or nonsteroidal anti-inflammatory drugs (NSAIDS). If these medications are not sufficient, Tricyclic Antidepressants (TCA), Benzodiazepines, Tramadol and opioids are then recommended for prescription. (Chou, 2007)

**Side Effects of Traditional Therapies.**
Unfortunately, the use of such medications for extended periods of time can lead to great harm to the body. NSAIDs erode the stomach. Acetaminophen affects the liver and kidneys. Opioids can suppress respiratory rate, impair cognition and driving as well as become addictive. Benzodiazepines can cause drowsiness, dizziness, decreased concentration, and may have paradoxical effects that can increase seizures in epileptics, cause irritability and increase suicidal behavior. Tricyclic Anti-Depressants (TCA) can cause dry mucus membranes, drowsiness, and lead to urinary retention which is a risk for urinary tract infections (UTI).

Registered Nurses along with other medical professionals and child care workers are specifically at great risk for developing NSCLBP due to the long hours standing and lifting of heavy objects and patients. It is common to want a quick fix for a problem. Many working people understand the phrase “time is money,” and a quick fix may be found for many problems faced in a day. However, when this attitude is turned inward towards the body and how it functions or may dysfunction, the result is to turn to over-the-counter medicines or seek prescriptions as a first line treatment instead of learning about how a body functions and what the pain may mean. If one can turn away from the want of a quick fix and seek better alternatives for pain, the negative side effects of these medications can be avoided. These alternative treatments for pain are commonly grouped together in a category called Complementary and Alternative Medicine or CAM.

**Complementary and Alternative Medicine**

Complementary and Alternative Medicine (CAM) therapies like Yoga, Massage, Acupuncture, and Progressive Muscle Relaxation are all recommended for back pain with other nonpharmacological therapies; such as spinal manipulation, exercise therapy, and cognitive-behavioral therapy. These therapies focus on understanding the body and its functions, and using natural treatments to help the body cure itself. (Chou, 2007)
Pain is not a disease. It is a symptom or sign that something is wrong or happening to the body (Matteliano, 2012). Pain is the body’s way of informing a person where harm is coming from and to what extent the damage is being done. To cover up pain does not fix the initial problem. If a bone is broken, taking excessive amounts of NSAIDs does not reduce and set the broken limb, yet masks the pain of a broken limb as it heals incorrectly. Even though this may be an extreme example, the same idea can be applied to Non Specific Lower Back Pain. If a patient’s pain is truly nonspecific, meaning there is not disease process that needs to be treated (such as sciatica, radiculopathy, cancer, or a herniated nucleus pulposus (slipped disk)], then something is wrong with the body and how it functions that needs to be changed.

Taking over-the-counter medication may be necessary for the acute phase of low back pain, but what the body needs most and explains through low back pain is that the muscles need to be stretched and strengthened along with the correction of posture and body mechanics (Tekur, 2008).

This stretch and strengthening the body needs is met with the CAM practice called Yoga.

**Yoga**

Yoga, meaning “union with the divine” in Sanskrit, originated in India and is a type of spiritual exercise that is comprised of three main themes: “physical postures (asanas), voluntarily regulated breathing (pranayama), and meditation (dhyana). Frequently used asanas (poses) in yoga are; the Uttanasana (standing forward bend), Adho Mukha Svanasana (Downward-facing dog), Chaturanga Dandasana (Four-limbed staff pose), Bhujangasana (Cobra pose), Bidalasana (Cat pose), and Balasana(Child’s pose), (Sakuma, 2012) all of which stretch and strengthen the lower back. Picture 1 in the appendix of this paper provides pictures of many yoga poses including those mentioned formerly. It is estimated that about 14 million Americans practiced yoga in 2006. Yoga is most commonly practiced at a yoga studio in classes, however, yoga can also be practiced in the comfort of one’s own home through the use of instructional DVDs.
Interview with Yogi G.

As part of this article, this researcher began taking yoga classes at a yoga studio from spring 2013 to spring 2014. The yogi who taught the classes, Yogi G or Garuda, also a Licensed Massage Therapist, agreed to sit down for an interview to talk about yoga and how he believes it can help.

The interview began with a simple question: What is yoga and how can it help those who have low back pain?

His response was as follows:

“Yoga is a broad subject, it doesn’t just have to do with stretching. Stretching is only one of 8 parts of the ashtanga yoga system. Ashta is 8 and anga means limbs. There are 8 rungs on the ladder of yoga. Another important part is the pranayama, the breathing. The other parts are a little more esoteric and a little out of grasp; like the yama and neama: The giving up of bad practices and the taking on of good practices that lead toward enlightenment.

Yoga awakens a sense of well-being and a sense of treating yourself better, especially in the form of one’s diet. Because of the inner satisfaction, people tend to turn their search lights from outward to inward, they tend to do less intoxications, less partying,… they’re more happy, so they’re not seeking it outside. It kind of calms the hankering for sense pleasure that burns the chest, that makes you go out and seek and seek. There is a quote that says “Happiness is seldom found where it is sought.” So a person who does even some basic stretches in a yoga class, is going to feel that “atman rama” which means “taking pleasure within the self.”

Since yoga is such an ancient system, when people do just the stretching at a commercial place, some people are automatically attracted to giving up bad things and adopting better practices.
The point of yoga is to treat the body so well that you float above the body and forget that you are the body, that you realize there is something higher inside of you, that that is what we are. Using your intelligence a lot more in dealing with the body, becoming aware of it more; becoming aware that this is my temple- I’ve got to treat it with respect.

People who go deep into the yoga system feel it in their heart- that this is ancient stuff, this is way beyond. There is something to be studied, even the simple stuff like the petunlali yoga sutras, which has something that the mortal mind can understand, yet leans towards and points to the higher stuff too. It’s general wisdom to live by if you’re going to practice yoga.

Practically a person who is doing yoga on a regular basis, say maybe 4 hours a week, doing a lot of peripheral type moves, they are going to be strengthening and toning muscles.

You’re challenging your muscles to lengthen as far as they can…challenging the range of motion to increase. A lot of spinal flexion is going on, which makes the rib heads and spinus processes have movement and become properly lubricated.

It really does nourish the joints, it very regenerative. With a good diet and a lot of stretching, you can really heal yourself. A lot of it, really, is just range of motion, keeping everything fluid and moving. Not carrying tension because you breathe. Doing a lot of breathing releases that tension.

The hips are one of the most uniquely engineered parts of the human body. You’ve got the sciatic nerve going through the middle of the obturator muscle, through the obturator internus and externus. The nerve that feeds the obturator muscle can get pinched, by its own muscle! In yoga, from the whole entire back to the pelvis, there is probably not a single angle, or single muscle, that is not isolated and stretched in some way. With some of the poses, you are strengthening and lengthening the lower back. There are very few things that humans do in a regular day that gives any kind of stretch motion or interaction with these muscle. Yoga is like
taking the whole pelvis apart and giving it the stretch that it needs. And because it frees up so much space down there, it helps woman with their menstrual cramps, it helps people with the blood flow. It helps with the lymphatic flow, which helps combat disease itself; but if the lymph are not moved enough, they become stagnant.” (interview, February, 28, 2014)

The Purpose of this Thesis

The purpose of this thesis is to look into the existing literature and identify previous studies that examined the effectiveness of yoga on low back pain. After the literature review is completed, a study will be proposed to address the existing gaps in the literature to add to the scientific knowledge of yoga and its ability to ameliorate non specific chronic low back pain.

2. Literature Review:

2A. Review of Existing Literature

A review of the literature was conducted on the electronic databases of CHINAHL and MEDLINE. The inclusion criteria were articles that addressed research on CAM Therapies, Yoga, Lower Back Pain, and Adults. The articles were peer-reviewed, in English with full text, and no older than 8 years (>2005). The review is as follows:

Of the 13 articles found, there were no articles that recommended or suggested that yoga specifically not be used to ameliorate low back pain. The articles fell into four broad categories: Diagnostic articles, Yoga versus Usual Care, Exercise and Yoga, and other benefits of Yoga.

Diagnostic Articles.
The first group was two articles by Chou and colleagues that looked more diagnostically at low back pain and treatment options.

The first was “Diagnosis and Treatment of Low Back Pain: A joint Clinical Practice Guideline from the American College of Physicians and the American Pain Society.” (Chou, 2007) This was a clinical guideline for physicians on how to diagnose and treat the different types of back pain. The article does state that their literature search was done from 1996 through November 2006, which does merit attention that their research is more than 5 years old. However, due to the articles use of helpful diagnostic flow charts, it was included in this review. In table 3, it can be seen that yoga is recommended for subacute or chronic (> 4 weeks) low back pain, along with other nonpharmacologic therapies, such as: spinal manipulation, exercise therapy, massage acupuncture, cognitive-behavioral therapy, and progressive muscle relaxation. In the article’s “Recommendation 7” it states “For patients who do not improve with self-care options, clinicians should consider the addition of nonpharmacologic therapies with proven benefits—..for chronic or subacute low back pain..yoga.” The recommendation ends with a weak recommendation and moderate-quality evidence. Specific statistical results could not be found in the article only that their recommendation was that yoga is moderately effective. This article is extremely helpful in its containing of flow charts and definitions, but its lack of statistics leaves the reader with having to either fully trust the authors or skeptically take the article and its recommendations as is.

The second was “Nonpharmacologic Therapies for Acute and Chronic Low Back Pain: A Review of the Evidence for an American Pain Society/American College of Physicians Clinical Guideline.” (Chou, 2007) This study reported that in their literature review they found no systematic reviews of yoga for low back pain. However, they did find one higher quality trial of 101 patients that showed 6 weeks of Viniyoga (a therapeutically oriented style of yoga) to be slightly superior to conventional exercise and moderately superior to a self-care education book in terms of RMDQ scores at 12 weeks. The authors
note that Yoga was associated with decreased medication use compared with exercise and the self-care book, but the rate of back pain-related clinic visits did not differ. The article also looked at two lower-quality smaller trials (one of 60 and the other of 22 patients), but they found the results to be inconclusive. The article concludes that therapies with good evidence of moderate efficacy for chronic or subacute low back pain are cognitive-behavioral therapy, exercise, spinal manipulation and interdisciplinary rehabilitation. This article did not place yoga with these recommended therapies whereas the previous Chou article did.

As one can see, before 2007 not much rigorous research was done on yoga for low back pain. The few articles that had been written could only offer moderate quality evidence and a weak recommendation. These two articles by Chou are extremely helpful by showing the diagnostic thinking a clinician will take to treat low back pain.

**Yoga Versus Usual Care.**

The second group of articles looked at Yoga versus usual care for the treatment of low back pain. There are three articles in this category: Williams (2005), Tillbrook (2011), and Chuang (2012). All three articles fail to define what usual or standard care means but it is reasonable to assume that they are the control groups for the different RCTs.

In Williams (2005), “Evaluation of the Effectiveness and Efficacy of Iyengar Yoga Therapy on Chronic Low Back Pain,” the RCT placed 43 participants in a yoga group with 47 participants placed in a standard medical care group. The participants were followed for 6 months. The yoga group participated in 24 weeks of bi-weekly yoga classes and outcomes were assessed at 12, 24, and 48 weeks. The results of the experiment showed significantly greater reductions in functional disability and pain intensity for the yoga group. The experiment also discovered that depression was also significantly lowered in yoga subjects. Williams and Colleagues found that while a reduction in pain medication did occur, it was comparable for the control and experimental group just as found in the Chou articles. The yoga group had
statistically significant reductions in functional disability, pain intensity, and depression at 6 months (48 weeks) compared to the control group of standard medical care. Williams and Colleagues concluded that yoga improves functional disability, pain intensity, and depression in adults with CLBP when done consistently.

Similar to the findings in Williams (2005) is Tillbrook (2011), “Yoga for Chronic Low Back Pain: A Randomized Trial.” This RCT took 313 adults with a history of low back pain and split them between two groups: 156 into a yoga group, and 157 into a “usual care” group. This article also fails to define what “usual care” means or entails, however, it is assumed that the “usual care” group is chosen to be the control group. The yoga group was offered 12 week sessions of yoga, and both groups were evaluated at weeks 3, 6, and 9. The results from the trial showed that the yoga group had better back function at every time point compared to the usual care group. This result concurs with the findings of the Williams (2005) article. In the article’s Statistical Analysis section, it showed that at 3 months and 12 months, yoga proved to be cost-effective because the United Kingdom BEAM (Back Pain Exercise and Manipulation) has found that a change in the Roland Morris Disability Questionnaire (RMDQ) score of 1.57 points was a cost effective difference. The article hypothesizes that the fact the scores go down over time indicates the need for additional classes to maintain the improvement in back function. The study suggest that “although there was no evidence of pain reduction at 12 months, confidence in performing normal activities despite pain improved more in the yoga group than the usual care group at 3 and 6 months.” This goes to show that yoga may change the way people view and are affected by pain. This article does state that 12 participants in the yoga group reported adverse events, however, only one of the adverse event was classified as serious and possibly or probably related to yoga (the participant experienced severe pain but had a history of severe pain after any physical activity); while the remaining 11 were classified as nonserious and mostly related to increased pain. This is one of only 2 studies reviewed that showed adverse events, and further information should be researched to see what caused the pain.
A year later in 2012, a study was performed to specifically look at the cost effectiveness of yoga compared to a “usual care” group, which was an added benefit found in Tilbrook’s article in 2011. This article, “A Pragmatic Multicentered Randomized Control Trial of Yoga for Chronic Low Back Pain: Economic Evaluation,(Chuang 2012),” found that a 12 week group yoga class of specialized yoga is likely to be a cost effective intervention for treating patients with CLBP in England under the NHS. Though this study’s intentions were not to evaluate pain, the information gleaned about the ability of yoga to be cost effectiveness shows it to be a more practical therapy for those on a tight budget compared to costly medications.

All three articles, on a whole, show a positive impact of yoga on its participants when compared to a “usual care” group for low back pain. Added to that, both Tilbrook and Chuang show that yoga is a cost effective therapy, and Williams provide insight on how depression can also being ameliorated by yoga.

Exercise and Yoga.

In the third group of articles, these authors looked at yoga or exercise to ameliorate back pain without a usual care group included.

The first was “Yoga for Veterans with Chronic Low-Back Pain.” (Groessl, 2008) This research study followed 33 VA (Veteran Affairs) patients for 10 weeks as they participated in a yoga program. The study found statistically significant improvements for pain. Using a correlation analysis, researchers found that actual attendance to the classes was associated with decreased pain. This means that the more participants attended the yoga classes, the more their pain went down. In the discussion, the study explains that their results showed that VA patients had a sizeable decrease in pain. Just as with mentioned in the Williams, this article also showed decreases in depression along with increases in energy levels and the mental health. However, the study gives a caveat that since the study utilized a single group pre-post study design, the results should be “interpreted cautiously.” Though this study may be small, the results
found are statistically significant and give a viable option for VA patients who suffer from chronic low back pain. The study, like many others, showed no adverse effects to those who practiced yoga.

The second article was “Are physiotherapy exercises effective in reducing chronic low back pain?” (Lewis, 2008) This systematic review only briefly talks about yoga, it comments that yoga is an effective treatment of LBP as it consistently reported improved outcomes compared to the exercise group. However, the article points of that none of these differences were both statistically and clinically significant. The article finds that people who embrace a self-management strategy for their low back pain and incorporated some type of exercise or increased activity levels into their daily routine that they are shown to have more successful outcomes for pain in the long term. Lewis also finds that exercising while in groups enhances compliance and motivates patients, which leads to behavioral changes toward increased activity levels. Lewis goes on to say that Fitness programs that are delivered in group format tend to improve confidence in individuals which encourages attendance to the program. As stated earlier by Groessl, attendance to classes is related to better pain outcomes. Lewis explains the effects of yoga on the body by saying that yoga places equal emphasis on mental focus and physical movement, which increasing body awareness and relaxes tense muscles. From this article, again the research done cannot prove yoga to be “statistically or clinically significant,” but it does lead to an encouraging idea that the act of doing yoga in groups leads to patients remaining active, which is recommended in general for patients with CLBP. Yoga may not be the best intervention statistically, but its encouragement to remain active, in the long run, may prove better than a more statistically and clinically proven method that a patient may end up stopping due to lack of encouragement or boredom.

The third article looking at exercises and yoga was “Unloaded Movement Facilitation Exercise Compared to No Exercise or Alternative Therapy on Outcomes for People with Nonspecific Chronic Low
Back Pain: A Systematic Review” (Slade, 2007) This systematic review was a great resource since it looked specifically at non specific low back pain which is the aim of this research paper. Slade begins with saying that exercise has been recommended and is common management strategy for people with NSCLBP. Slade goes one to explain exercise can be broken down into two categories: loaded and unloaded. Loaded exercise is used for strength acquisition and unloaded exercise is to gain range of movement. Types of unloaded exercise are passive strengthening exercises, such as: the McKenzie method, extension exercise, flexion exercises, tai chi, and passive forms of yoga. The systematic review evaluates two articles, both found in this review: Sherman et al and Williams et al. In their results section, the article finds that Yoga compared to trunk strengthening produced comparable effects for pain. Overall, this study found that effects of yoga were significant for medium term pain and function when compared to no exercise. The article does state, however, that these results for yoga were comparable to those of the McKenzie Method and truck strengthening with aerobics. This can be taken seen as yoga is no better or worse than these other two methods, but as mentioned earlier in Lewis, 2008, yoga may keep patients practicing due to the group setting where the McKenzie method and Trunk strengthening may not due to not inherently being group activities.

The fourth article was “Effect of Short-Term Intensive Yoga Program on Pain, Functional Disability, and Spinal Flexibility in Chronic Low Back Pain: A Randomized Control Study.” (Tekur, 2008) In this Randomized Control Trail 45 subjects participated in only a week long intensive yoga program while the control group of 46 subjects practiced physical exercises. Pain was assessed in this study by the Oswestry Disability Index (ODI) and the results of the study showed significant reduction in ODI scores in the yoga group compared to the control group. The total disability scores in the yoga group decreased, indicating a shift from moderate to mild disability. In this trail no adverse events or side effects were seen in either of the groups. The article provides a section on mechanisms that detail how yoga physiologically helps with low back pain. It explains that the origin of NSLBP is mechanical factors, such
as prolonged wrong postures during a sedentary lifestyle that lead to wasting and weakness of postural muscles. It goes on to explain that deep relaxation of these spinal muscles is achieved during safe body movements with mindful awareness of yoga. These stretches practiced while being mindfully aware is similar to that of intermittent spinal traction and can reduce spinal muscle spasm. Yoga breathing is also a unique method for balancing the autonomic nervous system. The article says that research done has shown that specific pranayama (breathing) practices can have a relaxing effect on the sympathetic nervous system. This relaxing effect not only helps with back pain, but also reduces stress. Overall, the study shows that a short intensive yoga session can reduce back pain, though for many patients taking a whole week off to do yoga may seem impractical. This may be a option clinicians can give to patients who are about to take a vacation or summer/winter break to help quickly lower back pain.

The last article in this group was “Comparing Yoga, Exercise and a Self-Care Book for Chronic Low Back Pain.” (Sherman, 2005) In this RCT, 101 participants were dispersed between a Yoga group (36), Self-care book group (30), and exercise group (35). The study followed the groups through a 12 week program of either yoga, exercise or self care book. Results we taken at 6 weeks, 12 weeks, and 26 weeks. The end result of this trial found yoga to be more effective than a self care book for improving function and reducing CLBP. However, as many of the other articles found, the results were not clinically more significant than the results of the exercise group.

From these five articles, a reader can gain that exercise routines may be just as clinically significant or comparable to yoga for reducing low back pain. However the research shows that yoga classes are more likely to help one’s chronic back pain due to one being more likely to attend a yoga class than exercise alone regularly.
From the 10 articles already reviewed it is hard to draw definite conclusions about Yoga due to inconsistent populations, independent variable, and sample sizes. One can see, however, that yoga is more cost effective and more likely to be attended than any other therapy offered. Therefore a reasonable question one may ask is, “If exercise and yoga are equally effective, could one not just go to an exercise class?” The answer for this was found within in the last group of articles: Added benefits of Yoga.

**Added Benefits of Yoga.**

The first article in this group is “Complementary and Alternative Medicine in the Treatment of Low Back Pain: A Systematic Review.” (Quinn) This systemic review looks at two RCTs, Williams et al (reviewed earlier), and Galantio et al (not reviewed). Only Williams et al found a statistically significant reduction in disability, pain, and use of pain medication, while the other article was dismissed due to being a pilot study. The review says both articles had “moderate methodological quality,” and in its discussion section states that the primary problem for LBP and CAM that there are few trials and the methodological quality of these trials is only moderate. This has been proven to be true even with the research done in this review; there is not enough high quality research done to prove or disprove the efficacy of CAM therapies (especially yoga) which leaves clinicians with little scientific and statistical evidence to base their treatments on for LBP. This review shows that due to a lack of quality research in CAM, it only leaves clinicians the option to “weakly” recommend CAM therapies for back pain until more research can be done.

Second was “Unanticipated Benefits of CAM Therapies for Back Pain: An Exploration of Patient Experiences.” (Hsu, 2010) This is the only qualitative research design found when reviewing the literature and its results we astounding. This article found that the positive outcome themes of CAM therapies included: increased options and hope, increased ability to relax, positive changes in emotional states, increased body awareness, changes in thinking that increased the ability to cope with back pain, increased
sense of well-being, improvement in physical conditions unrelated to back pain, increased energy, increased patient activation, and dramatic improvements in health or well-being. For yoga specifically, with an N of 36, the study asked “What effect, if any, has yoga had on you?” The responses showed that: 14% of patient responses had a theme of “options/hope,” 19% had “Relaxation”, 11% had “Emotional State”, 31% had “Body Awareness”, 6% had a “Change in Thinking”, 8% had “Well-being”, 8% for “other physical”, and 3% reported “Dramatic Improvement.” Though these responses are low percentages with none breaking the 40% of responses, the results still show that other than back pain relief, yoga has much to offer its participants. One specific thing that the study mentions is “increased ability to cope with back pain.” From that idea, one not only has the physical benefits of yoga with the stretching and the strengthening but also gets the mental stamina and strength to deal effectively with the pain. This qualitative study offers a very different and well-rounded view of the benefits of yoga that a quantitative study is unable to capture.

And lastly was “Effect of a Home-Based Simple Yoga Program in Child-Care Workers: A Randomized Controlled Trail.” (Sakuma, 2012) In this Randomized Controlled Trail, the study looks at 67 childcare workers and the effect yoga has on their pain. The first thing the study shows is that menstrual pain in reduced at 4 weeks along with an improvement of “sleep disturbance, anxiety and dysphoria.” For low back pain, the study shows that the pain gradually decreased in the good-adherence group after only 2 weeks and continued in four weeks. The study shows that “these benefits were accentuated after 4 week, and more frequent practice was directly associated with improvements in low back pain and menstrual pain.” Again no adverse effects were reported which indicates that a simple home-based yoga practice is likely to be safe as well as effective. Overall, this study supports that yoga helps lower back pain, though it does not show significant improvements in pain. However, the study proposed that home based yoga, and sessions only lasting 4 weeks can be beneficial. This result gives a good option for clinicians to offer their clients who do not want to go to a yoga studio or gym to take
classes. This qualitative article offered a different way to look at the benefits of yoga in a more phenomenological way. The study of the experience of yoga is just as important as the study of the reduction of pain in gaining a full and complete knowledge of the benefits of yoga.

**Knowledge Gaps**

Many knowledge gaps were found in the existing literature.

1. No articles could be found that related specifically to nursing which is the population chosen to be studied by this researcher. This led to a lack of generalizability of the results found.

2. There was an absence of rigorous research methods which led to the status of “weak recommendation, weak quality evidence.”

3. There was no universally accepted operational definition for Yoga Therapy, which was the primary independent variable. Without a consistent Yoga Therapy routine, the results cannot be generalizable.

4. There was not a consistency found with comparison groups which also affected the research’s generalizability.

5. And lastly, there was no consistency with participant population. This again affects the research’s generalizability.

**Problem Statement**

Yoga can be a legitimate treatment for low back pain that offers more than just pain relief for those who practice it. (Sherman 2005; Williams 2005) It is cost effective while also offering additional
benefits such as; reduction of depression and medication use, lessoning of menstrual cramps, increase in attendance to classes, and an overall change in well-being. Due to the prevalence of low back pain in adults, especially in registered nurses, and a lack of rigorous quantitative trials and only one qualitative study, there is a need for a study that utilizes mixed methodologies in the examination of the efficacy of yoga on the NSCLBP in registered nurses.

Proposed Research Study

Purpose:

The purpose of this proposed study is to examine the effectiveness of yoga on NSCLBP when compared to a control group and a conventional core exercise group among registered nurses in Florida.

Definition of Terms:

- Yoga – participation in a one-hour formal instruction class, 3-4 times a week.
- Registered Nurse – a male or female graduate of a baccalaureate degree in nursing who have passed the NCLEX-RN exam diagnosed with NSCLBP
- Control group – receive no intervention of yoga or conventional core exercises, may be permitted to take pain meds
- Conventional core exercises – participation in a one-hour low impact trunk and lower body strength training class, 3-4 times a week
- Non-specific chronic lower back pain - pain in the lumbar region of the back lasting for more than 4 weeks which has not been diagnosed as either a specific disease or spinal abnormality.
Methodology

Design: A longitudinal, randomized control trial utilizing mixed methodologies. The proposed study will consist of three arms.

Phase I (Quantitative): During Phase I, participants will be asked to complete questionnaires electronically. Upon completion of the first set of questionnaires, participants will be asked to complete the questionnaires every four weeks. The data collection points are as follows: Enrollment/Baseline (T0), Week 4 (T2), Week 8 (T3), Week 12 (T4).

Phase II (Qualitative): After completing Phase I, participants will be invited to participate in regional focus groups led by the PI. Participation is strictly voluntary. All participants in Phase I will have an opportunity to participate in Phase II.

Eligibility criteria. Inclusion criteria – BSN prepared nurse, 18 – 65 years of age, male or female, diagnosis of NSCLBP, score ≥ 4 on the Roland & Morris Disability Questionnaire (RMDQ), ability to give informed consent. Exclusion criteria – pregnancy, under the age of 18 years, over the age of 65 years, score of < 4 on RMDQ, diagnosis of spinal or neural pathologies/surgeries, history of psychosis or alcohol abuse.

Sample size. Phase 1: Minimum sample size of 400 participants. Sample size was calculated using G*Power 3 (v 3.1.5). A total of 134 participants needed each group. Phase II: Minimum sample size of 90 participants (30 participants from each group). For Phase II, data collection will stop when point of saturation is reached.

Sampling plan and recruitment. Participants will be recruited via publicly accessible email accounts provided by the Florida Department of Health/Florida Board of Nursing. Emails will be sent to over 300,000 registered nurses in the database. The emails will explain the study and provide a direct link to contact the Principle Investigator for participation. Random sampling will be used.

Instruments.

Roland & Morris Disability Questionnaire (RMDQ) is a 24 item questionnaire that will be administered electronically via Qualtrics online survey tool. The survey uses dichotomous responses (yes/no). The RMDQ should take approximately 30 minutes to complete (See Appendix).

Quality of Life Questionnaire (QoL) is a 16 item questionnaire utilizing a 0-10 scale on different aspects of life ending with an extended response question. (See Appendix)

Demographic Questionnaire (DQ) is a 13 item questionnaire that will be administered electronically via Qualtrics online survey tool. The survey uses multiple choice responses. The DQ should take approximately 15 minutes to complete
Pain Assessment Scale is a scale ranging from 0-10 with 0 being “pain” and 10 being the “worst pain imaginable.

**Threats to Validity.**

- Only collecting data from one regional location.
- Self-report
- Risk for attrition

**Data Analysis**

A statistician will be consulted for data analysis. Statistical Packages for the Social Sciences (SPSS) version 22 will be used to conduct an Analysis of Variance (ANOVA) for quantitative data. Qualitative data will be analyzed by transcribing focus groups and eliciting themes or common phrases from the transcripts.

**Ethical Issues.**

Institutional Review Board approval will be obtained prior to starting the study. Due to the fact that surveys will be administered electronically, the PI will request a waiver of consent to facilitate recruitment and data collection. All data will be on a password protected remote server for which only the PI has access. Transcripts and recordings will be stored in a locked filing cabinet when not in use by the PI.

**Study Limitations**

This thesis is only a proposal. The limitations of the proposed trial are: 1. The use of a specific population (Registered Nurses) may impact generalizability. 2. The reliance on participant self-report. 3. The utilization of a longitudinal design.
Future Directions

This proposal may take many directions. If given the opportunity, the author would execute the above study as a graduate thesis and dissertation for a graduate program.

Another direction, and the hope of this researcher, is that the added knowledge to the scientific community will aid in the acceptance of more CAM therapies, especially yoga, for the patients in our care.

Appendices

Picture 1:

The Roland-Morris Disability Questionnaire

When your back hurts, you may find it difficult to do some of the things you normally do.

This list contains sentences that people have used to describe themselves when they have back pain. When you read them, you may find that some stand out because they describe you today.

As you read the list, think of yourself today. When you read a sentence that describes you today, put a tick against it. If the sentence does not describe you, then leave the space blank and go on to the next one. Remember, only tick the sentence if you are sure it describes you today.
1. I stay at home most of the time because of my back.

2. I change position frequently to try and get my back comfortable.

3. I walk more slowly than usual because of my back.

4. Because of my back I am not doing any of the jobs that I usually do around the house.

5. Because of my back, I use a handrail to get upstairs.

6. Because of my back, I lie down to rest more often.

7. Because of my back, I have to hold on to something to get out of an easy chair.

8. Because of my back, I try to get other people to do things for me.

9. I get dressed more slowly then usual because of my back.

10. I only stand for short periods of time because of my back.

11. Because of my back, I try not to bend or kneel down.

12. I find it difficult to get out of a chair because of my back.

13. My back is painful almost all the time.
14. I find it difficult to turn over in bed because of my back.

15. My appetite is not very good because of my back pain.

16. I have trouble putting on my socks (or stockings) because of the pain in my back.

17. I only walk short distances because of my back.

18. I sleep less well because of my back.


20. I sit down for most of the day because of my back.

21. I avoid heavy jobs around the house because of my back.

22. Because of my back pain, I am more irritable and bad tempered with people than usual.

23. Because of my back, I go upstairs more slowly than usual.

24. I stay in bed most of the time because of my back.

Note to users:

The score of the RDQ is the total number of items checked – i.e. from a minimum of 0 to a maximum of 24.

It is acceptable to add boxes to indicate where patients should tick each item.

The questionnaire may be adapted for use on-line or by telephone.

**Quality of Life Questionnaire**

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**McGILL QUALITY OF LIFE QUESTIONNAIRE**

**STUDY IDENTIFICATION #:**

**DATE:**

Instructions
The questions in this questionnaire begin with a statement followed by two opposite answers. Numbers extend from one extreme answer to its opposite. Please circle the number between 0 and 10 which is most true for you. There are no right or wrong answers. Completely honest answers will be most helpful.

**EXAMPLE:**
I am hungry:
not at all
0 1 2 3 4 5 6 7 8 9 10
extremely
•
If you are not even a little bit hungry, you would circle 0.
•
If you are a little hungry (you just finished a meal but still have room for dessert),
you might circle a 1, 2, or 3.

• If you are feeling moderately hungry (because mealtime is approaching), you might circle a 4, 5, or 6.

• If you are very hungry (because you haven't eaten all day), you might circle a 7, 8, or 9.

• If you are extremely hungry, you would circle 10.

BEGIN HERE:
IT IS VERY IMPORTANT THAT YOU ANSWER ALL QUESTIONS FOR HOW YOU HAVE BEEN FEELING JUST IN THE PAST TWO (2) DAYS.

PART A
Considering all parts of my life - physical, emotional, social, spiritual, and financial - over the past two (2) days the quality of my life has been:
very bad
0 1 2 3 4 5 6 7 8 9 10
excellent
Please continue on the next page...
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PART B: Physical Symptoms or Physical Problems
(1)
For the questions in Part "B", please list the PHYSICAL SYMPTOMS OR PROBLEMS which have been the biggest problem for you over the past
two (2) days. (Some examples are: pain, tiredness, weakness, nausea, vomiting, constipation, diarrhea, trouble sleeping, shortness of breath, lack of appetite, sweating, immobility. Feel free to refer to others if necessary).
(2)
Circle the number which best shows how big a problem each one has been for you OVER THE PAST TWO (2) DAYS.
(3)
If, over the past two (2) days, you had NO physical symptoms or problems, or only one or two, answer for each of the ones you have had and write "none" for the extra questions in Part B, then continue with Part C.
1. Over the past two (2) days, one troublesome symptom has been: _________________________________.
   (write symptom)
   no problem 0 1 2 3 4 5 6 7 8 9 10
tremendous problem
2. Over the past two (2) days, another troublesome symptom has been: _________________________________.
   (write symptom)
   no problem 0 1 2 3 4 5 6 7 8 9 10
tremendous problem
3. Over the past two (2) days, a third troublesome symptom has been: _________________________________.
(write symptom)
no problem
0 1 2 3 4 5 6 7 8 9 10

physically
0 1 2 3 4 5 6 7 8 9 10
physically
terrible well

PART C
Please choose the number which best describes your feelings and thoughts
OVER THE PAST TWO (2) DAYS.
5. Over the past two (2) days, I have been depressed:
not at all
0 1 2 3 4 5 6 7 8 9 10
extremely
6. Over the past two (2) days, I have been nervous or worried:
not at all
0 1 2 3 4 5 6 7 8 9 10
extremely
7. Over the past two (2) days, how much of the time did you feel sad?
never
0 1 2 3 4 5 6 7 8 9 10
always
8. Over the past two (2) days, when I thought of the future, I was:
not afraid
0 1 2 3 4 5 6 7 8 9 10
terrified
9. Over the past two (2) days, my life has been:
utterly
0 1 2 3 4 5 6 7 8 9 10
very
meaningless purposeful
and without and purpose meaningful

10. Over the past two (2) days, when I thought about my whole life, I felt that in achieving life goals I have:
made no 0 1 2 3 4 5 6 7 8 9 10
gotten to complete whatever fulfillment

Please continue on the next page...

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11. Over the past two (2) days, when I thought about my life, I felt that my life to this point has been:
completely 0 1 2 3 4 5 6 7 8 9 10
very worthless worthwhile

12. Over the past two (2) days, I have felt that I have:
no control 0 1 2 3 4 5 6 7 8 9 10
complete over my control over my life

13. Over the past two (2) days, I felt good about myself as a person.
completely 0 1 2 3 4 5 6 7 8 9 10
completely disagree agree

14. To me, the past two (2) days were:
a burden 0 1 2 3 4 5 6 7 8 9 10
a gift

15. Over the past two (2) days, the world has been:
an 0 1 2 3 4 5 6 7 8 9 10
caring and
impersonal responsive
unfeeling place to my needs
16. Over the past two (2) days, I have felt supported:
not at all
0 1 2 3 4 5 6 7 8 9 10
completely
Please continue on the next page...
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References


