Educating Primary Care Providers on the Evidence Supporting the Use of Yoga in Treating Anxiety, Depression and Lower Back Pain

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DEDICATION

To my wife, Lydia, who has stood by me during my long nights and weekends, through my periods of frustration. She has been my guiding light.

To my parents, who believed in the challenging child that God had given them.

Thank you everyone.

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Abstract

Purpose. Utilizing lessons taken from the Iowa Model revised, the purpose of this evidence-based practice project is to educate primary care providers (PCPs) on the beneficial effects of yoga therapy on anxiety, depression, and chronic lower back pain.

Background. Anxiety, depression, and chronic lower back pain contribute to significant morbidity in the United States, with an economic cost estimated at over $665 million per year. Current medical modalities have proven only marginally effective in combating the lasting effects of these conditions. Complementary therapies such as yoga have been proven highly effective in decreasing anxiety, depression, and pain.

Methods. Participants were Family and Internal Medicine Primary Care Providers at a local University hospital and a local community hospital. The investigator recruited participants through department managers and 29 News community calendar.

Pre- and Post-module questionnaires via Qualtrics to gather demographics and attitudes on alternative therapies and the effectiveness of this educational module on recommending yoga as a treatment modality. Qualtrics, Microsoft Word & Excel were used to perform all data analysis.

Results. The project was implemented via an online platform over a 4-week timeframe. A new educational online module was emailed to each participant once each week. Upon completion of the project, participants showed a statistically significant increase in willingness to prescribe yoga therapy for anxiety, depression, and low back pain.

Conclusion. Evidence-based information may help influence PCPs to recommend yoga therapy for the treatment of certain medical and mental health conditions. Future studies will need to be done to demonstrate the validity of this online yoga modality.

Keywords: evidence-based practice, yoga, anxiety, depression, low back pain

Educating Primary Care providers on the Evidence Supporting the Use of Yoga in Treating Anxiety, Depression and Lower back Pain

Depression, anxiety, and lower back pain contribute to both morbidity and mortality in the United States. United States statistics indicate that Depression affects 16 million adults, approx. 6.7% adults (NIH,2016) with a reduced work productivity of 80% and is associated with an increase in loss of 8 days per worker per year (Jha et.al., 2016). According to 2013 statistics, (Anestis & Anestis, 2016), suicide rates related to depression in the U.S. were 13.02 per 100,000 people. Anxiety impacts, one in five adults in the U.S (McLean et. al., 2011). Anxiety prevalence in the U.S. is 3.1% with an average of 4.6 workdays lost per month, and productivity loss of more than $31 billion per year (Fan et.al., 2015; Harder et. al., 2014). One of the goals in Healthy People 2020, is to improve mental health through prevention and by ensuring access to appropriate, quality mental health services (USDHHS, 2021).

Lower back pain's prevalence in the U.S. is estimated at 25% with economic effect including both medical expenses and lost productivity, costs the Unites States over $635 billion per year (Yang, 2016). In one study by Bener et.al., (2013), the percentage of anxiety and depression among people with lower back pain was significantly higher than people without back pain. For those with anxiety and back pain vs no anxiety and lower back pain, the prevalence was 9.5% vs 6.2%, for depression, the prevalence was 13.7% vs 8.5%. Lower back pain causes significant psychological strain on the patient with 51.4% contemplating suicide. (Bener et.al., 2013). The gross national income of the United States, in 2016, was almost $19 trillion (Fred, 2018). The expense of depression, anxiety, and lower back pain amounts to 3.5% of gross national income, approximately $665 billion.

Yoga has been shown in many studies to be a safe and effective modality for treating pain, anxiety and depression related to chronic lumbar disease. For example, Hatha yoga is a form of gentle exercise that develops strength, flexibility, body relaxation and mental concentration. Further, Non-medication modalities, such as yoga, have been shown to improve functionality and return patients to normal life patterns, better than other standard treatment modalities such as physical therapy and medication. Interactive, video-based Yoga programs can offer a safe, convenient, and comfortable opportunity to improve health and return our patients to normal function.

Purpose of this evidence-based practice project is to present the current facts and educate primary care providers (PCPs), which includes Medical Doctors (MDs) doctors of Osteopathy (Dos), Nurse Practitioners (NPs), and Physician Assistants (PAs), on the scientifically proven, positive benefit of yoga therapy in treating anxiety, depression, and chronic lower back pain in adults, in hopes of educating PCPs. Secondary benefit, PCPs will relay this evidence to patients in their care and encourage the use of this non-medication-base modality. A tertiary purpose is to advance the use of yoga as a primary or adjunct treatment modality in the treatment of these conditions using diffusion of innovation theory, where the idea will gain momentum and diffuse or spread through a specific population (primary care providers) and patients, as part of a social system will adopt this new idea of treatment know as yoga (LaMorte, 2019). This study will be performed via email, requires few minutes of time per week to complete, and maintains social distancing required during the coronavirus pandemic.

This evidence-based clinical application of yoga to treat anxiety, depression, and lower back pain is a 4-week pilot study. Our specific research question is, can a weekly evidence-based information program influence the prescribing habits in PCPs, with regards to anxiety,

depression, and lower back pain. Current evidence has proven that yoga therapy can successfully treat anxiety, depression, and lower back pain in adult patients.

PICOT: Does an on-line yoga education module, encourage health care professionals to prescribe yoga therapy for the treatment of depression, anxiety, and chronic lower back pain**.**

Theoretical framework

The gap between current evidence and practice includes the lack of power, unable to blind participants to yoga treatment and limited extended follow-up for study participants. Evidence-based practice has been shown to save money, improve quality of care, and protect patients. Using Iowa model for evidenced-based practice, the problems identified in this review are the extent of anxiety, depression, and lower back pain in the United States population with limited effective options for treatment that are safe and encourage the patient's active participation in their own care. Yoga provides patients with a way to change unhealthy behavior and promote health. Using social cognitive therapy, such as Pender's health promotion model (Appendix E), we can use social-cognitive theory to engage patients, through cognitive and perceptual factors, that can influence health-promoting behaviors.

According to the current evidence presented above and non-invasive treatment guidelines (2016), presented by the Agency for Healthcare Research and Quality (AHRQ) in their "Effective Health Care program" indicate that ineffective medicinal therapies include acetaminophen and tricyclic antidepressants. Nonsteroidal anti-inflammatories (NSAIDs) and Cymbalta help some to reduce pain. Tramadol reduces pain if used short term up to 4 months. Current research shows that opioids help little in the short term (less than 4 months) but shows that, after 4 months, use of long-term opioid use is neither safe nor effective. Long term use of medications has also been shown to have significant side effects.

The AHRQ lists the following effective treatments for lower back pain, that return people to function and decrease pain, these include heat, massage, muscle relaxers, acupuncture, physical therapy, chiropractic/osteopathic care, yoga, tai chi, relaxation, electromyography biofeedback and cognitive behavior therapy. Modalities that do not appear effective. has the potential to significantly reduce the impact of mental health and pain in our patients. These combined conditions cost the U.S. over $5 trillion dollars and affect over 20% of U.S. adults, in their lifetime. There are limited studies involving yoga, anxiety, depression, and lower back pain and no studies combining these with life satisfaction scores.

Using the Iowa Model of Evidence-based practice (EBP), the problem, and knowledge-focused triggers, including anxiety, depression, and low back pain, have been identified and because of their prevalence and cost in the U.S., these conditions should be a priority for developing low cost, patient-oriented, effective therapies. The primary investigator (PI) proposes that by educating primary care providers, in Family and Internal Medicine, on the benefits of yoga therapy in the treatment of these conditions, we can decrease the severity of these conditions and assist our patients in self-improvement and self-care.

Steve Fetcho is the principal investigator, Advisor: Kathryn Reid, Librarian: Daniel Wilson, Qualtrics administrator: Charles Huffman. The PI has attached a list of yoga instructors at UVa's Contemplative Science Center, UVa's Compassionate Care Initiative, UVa's School of Nursing, Hoos Well Program, and the Jefferson School in Charlottesville, Virginia, who were instrumental in encouraging the use of yoga at UVa and giving impetus to this idea.

The purpose of this evidence-based practice project is to educate health care professionals on the benefits and effects of yoga therapy on anxiety, depression, and lower back pain. Secondary goal is to advance the use of yoga as a primary or adjunct treatment modality in the

treatment of lower back pain, depression, and anxiety. Current evidence indicates that yoga has the potential to reduce the psychological impact of these mental health disorders and the physical impact that lower back pain has on the health of adults in the United States. Although not the scope of this project, we propose that yoga has the potential impact on life satisfaction due to decrease in mental health stress and pain. Using this pilot study, we have demonstrated that a small pilot study can educate healthcare providers and foster a willingness to prescribe yoga for the treatment of anxiety, depression, and low back pain. This pilot study proved that online programs can be effective in the dissemination of the information to colleagues and may encourage a change in prescribing habits. The PI believes that with increased education and the reinforcement of current evidence, through ongoing programs and education, we can change prescribing habits. Future goals would be to apply for grants that could be used to educate a wider range of individuals including nursing and medical students who would encourage patients to use yoga, but this educational format may also help colleagues to use yoga as a self-treatment for the daily stressors we all face. The goal of this pilot study is to bring awareness, to primary care providers, of the current evidence regarding the effectiveness of yoga therapy and encourage yoga's use in the treatment of anxiety, depression, and low back pain. This evidenced-based modality would offer patients an additional option to improve their overall health and well-being using a non-medication base technique to treat their illness.

Literature Review

Yoga Evaluation: Effect on anxiety, depression, and low back pain

The primary purpose of this literature review is to determine if yoga can be a successful modality for the treatment of lower back pain, anxiety, and depression. Depression and anxiety cost the U.S. over $1 trillion in lost productivity (WHO, 2019). Labor costs for lower back pain

is estimated at $66-102 billion per year. (Fickler & Keemink, 2015; Schmagel et.al., 2016). These three medical conditions contribute to significant morbidity in the United States affecting depression affecting an estimated 260 million people with many suffering from anxiety (WHO, 2019). Traditional and non-traditional treatments for these conditions have included medication, physical therapy, massage, acupuncture, and surgery.

The literature review was performed using Pub Med©, Ebsco (CINAHL©, PsychInfo©), and Proquest Global © Databases with the following search terms: “yoga”, “hatha yoga”, “anxiety”. “depression”, “lower back pain”, “meta-analysis” and “randomized controlled trial”. Duplicates were removed, titles and abstracts screened to remove articles that do not pertain to this study content. 36 articles were screened, and 20 articles included in the review. Only level 1 and 2 studies were used for this analysis. The articles indicated that yoga was either better than or non-inferior to the other treatment modality for anxiety and depression. Yoga was superior for relieving back pain and decreasing use of pain medication (Saper et.al., 2009). Gray literature also showed that yoga was effective for a variety of conditions, including depression, anxiety, pain, high blood pressure and stress reduction but did not show difference in quality-of-life scores in breast cancer patients with arm pain.

Methods

The Preferred Reporting Items for Systemic Reviews and Meta-Analysis (PRISMA) criteria, nursing, health, behavioral, and psychological databases were reviewed, using PubMed, CINAHL, PsycInfo and Proquest Global (for gray literature). With the assistance of a UVa research librarian, this search strategy was implemented to ensure a comprehensive investigation and to maintain current, relevant information. Publication years were limited from 2000 to present.

For this study, the inclusion criteria consist of adults, defined as participants over 18 years of age. Studies include an evaluation of yoga and its effect on anxiety, depression, and chronic lower back pain, either separately or together. The Literature search included all countries though most studies were in the U.S. The other countries demonstrated similar findings and outcomes. The exclusion criteria were hospitalized, suicidal, homicidal, and other mental health disorders such as schizophrenia or psychosis, and subjects under 18 years old.

Literature search results

The initial literature search led to the identification of over 10,000 articles in PubMed, Ebsco (CINAHL, PsycInfo) and 10,000 results in Proquest Global, related to yoga, anxiety, depression, and chronic lower back pain. Limitations were that most of the studies had level 2 or less evidence, with several systematic reviews providing Level 1 data. A weakness of the all the studies was the inability to blind the participants leading to possible bias for both the participants and investigators. The studies were small with sample sizes less than 100, the exception were two studies (Uebelacker et.al., 2018 and Saper, et.al., 2016) which had larger sample sizes. These small studies lacked the statistical power needed to detect an effect between the use of yoga, mental health, and back pain. Adequate power analysis is required to minimize type 2 (beta error) to detect if an effect exists in the study. There was a female predominance of participants, some studies having 100% (Uebelacker, 2017). This may be significant, where difference in mental health and pain ratings may differ among genders, the effect of yoga therapy may not extend equally to both sexes.

Although, in one study by Konietzny, et al., (2018), men and women did not differ in stress and the tendency to suppress thoughts, but women reported significantly more depressive symptoms and higher pain intensity compared to men. Only one article by Lorenc, et.al. 2018, was located

discussing the effects of complementary medicine, including yoga on mental and physical health conditions. This review also included moderate and good quality evidence that yoga and tai chi may improve both mental health and musculoskeletal conditions

Summary of Randomized controlled trials (RCT)

The quality of most yoga studies is variable with levels ranging from 1 to 5. There is a predominance of level 1 and 2 evidence. One of the difficulties for researchers is that studies participants cannot be blinded to yoga therapy. Nascimento and colleagues indicated that complementary health approaches, including yoga, had weak evidence and were not effective in producing a clinical reduction in pain and disability compared to usual care and risk of bias was moderate. Another systematic review, indicated the positive effects of relaxation interventions, including yoga on anxiety and depression in older adults (Klaubub-Yobas et.al., 2014).

Quality with each RCT trial varied between researchers. This problem of trial or research variability in quality is common in alternative medicine trials (Langweiler, McCarthy & Leight, 2015). Safety is often not reported, though little injury has been demonstrated with these modalities. In a survey of Australian yoga practitioners, 79% reported had never been injured and 11% reported minor injuries, 4.6% had reported they had been injured once in past twelve months and 3.4% were injured while under supervision. Some participants reported postures too difficult but did not report injury (Cramer et.al., 2013). Another limitation, some non-English trials had to be excluded due to incomplete translations.

Uebelacker's study (2018), illustrated that participant expectation and treatment credibility had a significant impact on improvement in depression. There were few limitations on this study, including the fact that some participants may have had pre-conceived ideas that

yoga would be helpful, and this may have influenced the outcome findings. The author pointed out that this is a problem in studies that cannot be blinded.

Uebelacker's second study (2017) was qualitative, as participants pointed out aspects of acceptability of their depression and how mindfulness, breathing exercises and personal guidance were helpful in developing a successful program for individuals with depression. One concern, posted by the participants, was that yoga classes were too difficult for their physical abilities. In this last and larger study, Uebelacker, Tremont, et.al. (2017), focused on difficult-to-treat depression, using yoga. Initial results demonstrated that yoga did not have any effect on depression at the time of the study but depressive symptoms, improved health perception, social, work and role functioning were demonstrated in the follow-up period for the yoga group when reassessed at 3- and 6-month periods. The authors felt that there may be an accumulated benefit for yoga with time. Instructor recommending home practice was also felt to be a reinforcing factor in this study and postulated that this may have a similar lasting effect to cognitive behavioral therapy, which teaches people a way to relate to negative stimuli, even when no longer in therapy.

Next, a pilot study by Prathikanti, (2017), compared yoga therapy vs an attention control group to treat mild-moderate major depression. The study demonstrated a statistically significant difference ($p=0.014$) between yoga therapy and an attention control group with the primary outcome of decrease in depression scores. Limitations included small sample size, inability to estimate a minimally effective yoga duration or dose, 4-week mark seems to indicate a divergence in therapeutic mood benefit and lastly, study was not blinded. Authors concluded that more studies are needed before offering yoga as a first line treatment.

Sarubin, et.al. (2014), demonstrated significant reductions in cortisol levels in yoga therapy group compared to medication treatment group with depression. One of the main findings was that adding yoga therapy did not influence the hypothalamic pituitary axis and that medication produced an initial reduction in cortisol levels, contributing to overall clinical improvement in depression. There was no statistically significant clinical improvement in cortisol levels (p=0.862) with the addition of yoga to medication treatment, but the authors concluded that due to the small sample size, further larger clinical studies are needed, especially with the growing interest in yoga therapy.

The next articles, by Saper (2014 & 2017), utilized an initial pilot or feasibility trial then implemented the larger study protocol. For the full study, authors set a 75% or greater participation rate to be included in this trial. The final study, in 2017, the primary outcome after a 12-week trial was that yoga was non-inferior to physical therapy with a 95% confidence limits for disability scores of 0.83 and for pain scores of 0.97, indicating that yoga was non-inferior to physical therapy and both improved lower back pain and were superior to education alone. Both yoga and PT modalities demonstrated a reduction or cessation in the use of pain medication. Secondary analysis demonstrated that yoga and physical therapy showed improvement in function, pain and treatment satisfaction compared to education, and both were more likely than education go produce clinically meaningful responses to the disability scale. The trial had a 20% attrition rate and was powered at 81and 90%. The reported adverse events were mild self-limited joint and back pain, which was reported in 9 yoga, 14 PT, and 1 education participant. Yoga and PT did not differ significantly in frequency or severity of adverse events. Adverse reactions for yoga (N=127) 9 events, one serious (diagnosed with cellulitis which may have contributed to the event), PT (N=129) 14 nonserious events. Adverse reactions included joint pain, increased back

pain, sciatica, neck pain, abdominal pain, and dizziness. Education only arm (N=64), had one possible adverse reaction of increased back pain.

In Kinser (2013) article on yoga, women and major depression demonstrated that by 2 weeks, the women in the yoga group had decreased rumination vs participants in the attention control group, but depression scores decreased in both arms of the study from moderately severe to minimal, which the authors attributed to other recommendations in the study to activate social support systems and encouraged self-care. The authors feel the acts of volunteering for the study and bringing women together suggested that the social environment may play a key role in mental health. Authors feel if the study, continued the decrease in rumination would lead to decrease in depression scores compared to attention control group and called for a larger longer study. Yoga therapy had significant positive reports for the women in the study, leading to the presumption that a longer study would be feasible. There was no statistical significance between groups with depression but group differences in rumination over time had a p-value = 0.083).

In a study on sedentary adults, Taspinar (2014) demonstrated significant improvements in mental health and wellbeing in yoga and exercise group. Yoga has greater improvements in fatigue, self-esteem and quality of life and exercise had improvements in body image. Both interventions had similar decreases in depression and may be options for the treatment of depression. (used 25-median-75% quartiles for analysis)

DeGiorgio, Padulo and Kuvacic study (2018) demonstrated level 1 evidence, by using yoga treatment for the treatment of chronic lower back pain. There was a statistically significant improvement in anxiety, kinesiophobia, back pain disability and quality of life using yoga, with $p<0.001$, there was a similar improvement in general physical and mental health with p-values=0.011 and 0.008, respectively.

Nascimento et.al. (2019) evaluated the effectiveness of several treatment interventions, including yoga, for lower back pain on older adults. Systematic review demonstrated a moderate risk for bias with limited evidence of benefit for these interventions in older adults**.**

Park et al., (2018), demonstrated that yoga, tai chi, and qigong were safe and effective treatments for patients with lower back pain. These treatments had mild adverse effects.

Kuvacic (2018) showed a significant decrease in anxiety, depression and pain but not in disability. Yoga also was more effective than education alone.

Kizhakkeveettil, Whedon, Schmalzl, and Hurwitz (2019) looked the use of yoga to assess quality of life in individuals with chronic disease. The team found 7 articles that met inclusion criteria with five studies showing a statistical advantage ($p<0.05$ to 0.001) over usual care with regards to quality of life. While all studies showed benefit, only one study, involving asthma patients, presented clear evidence of statistical improvement in quality of life.

Chong, et.al., systematic review (2011) used a combination of 5 randomized controlled trials and three clinical controlled trials to evaluate the effects of yoga on stress management in healthy adults. The review found that yoga was as helpful in reducing stress, as relaxation, cognitive behavioral therapy, and African dance, but due to the limited number of studies. Unfortunately, all studies were either weak or moderate in strength. Five out of seven studies showed clinical significance with p-values for the studies range from 0.001 to 0.05, two studies had p values 0.44 and 0.74 and not clinically significant. The authors agreed that due to the small number of studies and limited participants the data has to be considered with caution.

Second to last, in McCall, Ward, Roberts and Heneghan's systematic review of 26 articles (2013) for the evaluation of 13 chronic conditions, 11 reviews showed the positive effects of yoga while 15 had unclear results. However, the review demonstrated the positive

effects of yoga in reducing anxiety, depression, and pain with a p-value of 0.01 for fibromyalgia and 0.002 for psychiatric disorders.

The effect of relaxation interventions, including yoga by Klainin-Yobas, et. al. (2015) supported use of relaxation interventions for the treatment of anxiety and depression in older adults. The interventions studied were statistically significant with p-values of 0.000 for all treatment groups and <0.01 for yoga, using a 95% CI, and demonstrated reductions in both anxiety and depression in older adults, and the authors recommended the use of these interventions in community and hospital settings.

Summary of meta-analysis

Detailed analysis focused on 10 studies that reinforced the effectiveness of yoga as an adjunct treatment in chronic disease.

In Uebelacker and Tremont (2017) presented level 2 evidence in their study, the purpose of this study was to determine whether hatha yoga was an efficacious adjunctive intervention in patients with persistent depression currently receiving medical treatment. Uebelacker's literature review indicated that yoga was better than usual care, including relaxations and aerobic exercise in decreasing depressive symptoms. Inclusion criteria were major depression prior 2 years, no bipolar, schizophrenia or psychotic symptoms, no alcohol or other drug use, no suicidal ideations, currently on stable antidepression medication, including psychotherapy, medically cleared for moderate physical activity, no more than 4 yoga classes in past year, fluent in English and over 18 years old. The intervention was 50-minute yoga classes up to twice a week for 10 weeks, the control group was given a health education workshop called, Healthy Living workshop (HLW), using a manual adapted from previous work with psychiatric patients and smokers. Classes were held twice a week for 60 minutes and covered 20 different topics

including alcohol, nicotine, brain disease, cancer prevention and diabetes. Patients were assessed for primary outcome of depression severity using QIDs and PHQ-9. Physical functioning, pain and health perceptions were evaluated using Short-form Survey. Statistical analysis of descriptive statistics used Chi-square (A chi-square (χ^2) statistic is used to compare the portion of participants having a given characteristic among different groups and t-tests (a t-test is a parametric test for comparing the means of two independent groups). While there was no difference in the groups at 10 weeks, Yoga appears superior to the control group at 3- and 6-months post intervention with p=0.04 and odds ratio of 2.31 in favor of the yoga group (The odds ratio (OR) is a measure of association between an exposure and an outcome. The OR represents the odds that an outcome will occur given a exposure, compared to the odds of the outcome occurring in the absence of that exposure), suggesting that yoga impact may endure over time. There was a small to medium effec**t** size (impact of the independent (Hatha yoga) on the dependent variables) favoring the yoga arm with lower depression scores, improved social, work, and general health perceptions across the intervention and in the follow-up period. Limitations of the study was predominantly female, white, non-Latino and non-blinded.

Prathikanti and colleagues (2017), evaluated the effects of yoga on major depression, with mild to moderate severity, by comparing the effect of yoga against attention control education. This pilot study used twice weekly, 90-minute hatha yoga practice groups and compared them to twice weekly, 90-minute attention control education groups. Depression scores were measured at baseline then at 2-week intervals for 8 weeks. Secondary outcomes were also measured to include self-esteem and self-efficacy. Using an intent-to-treat analysis, which is recommended by the Consolidated Standards of Reporting Trials (CONSORT) guidelines (Gupta, 2011), yoga participants showed a greater decline in depression scores after 8

weeks than the control group (p=0.034), more likely to achieve remission (p=0.018) and the effect size was large with Cohen-d = -0.96 at 95% CI (is an effect size for the comparison between two means, large effect size indicates the difference is important). Individuals were excluded who participated in psychotherapy, antidepressant medication, herbal or nutraceutical mood remedies. Participants were randomized to each group. The attention control group attended a 90-minute education module on yoga history and philosophy given by the yoga instructor. The yoga intervention was a 90-minute session comprised of yoga breathing, meures, and relaxation techniques. Measurements included neuropsychiatric interview, mini mental status exam, Beck's depression inventory, General Self-efficacy scale and Rosenberg self-esteem scale. Statistical analysis was blinded with de-identified data. Some caveats for this study was the small sample size, 8-week period, and this was a pilot study, which may limit the generalizability of the data, despite showing statistical significance. Despite these limitations, the data indicates that there may be a potential benefit from Hatha yoga in reducing depression severity.

Patricia Kinser, working with the University of Virginia, (2013) conducted a community-based randomized mixed methods trial comparing an 8-week yoga intervention with an attention control group in 27 women with major depression. Participants continued their usual lifestyle and depression care. Inclusion criteria was adult women with major depressive disorder (MDD) or dysthymia confirmed with MINI depression model and moderate to severe depression defined by score of 10 or more on Patient Health Questionnaire (PHQ-9). Exclusion criteria included suicidality, psychosis, mania, physical condition making yoga difficult, hospitalization or surgery in past month, recent changes in antidepression medication in past month, regular yoga or medication practice longer than one month within past 5 years and non-English speaking. The

yoga group met once weekly and had daily home practice with DVD and handouts, safe for yoga-naïve individuals. A 75-minute gentle hatha yoga class was taught by certified instructors who focused on yoga movement, breathing exercises and relaxation practices. Home exercises were provided on DVD and class handouts. The attention control group were involved in a "health and wellness program" involving lectures, videos in a 75-minute weekly group class, taught by registered nurses. Depression severity was monitored at baseline, 2 weeks, 4 weeks, 6 weeks, and 8 weeks. Other factors that were monitored included Stress (using the Perceived Stress Scale- 10 (PSS-10)), Anxiety (using S-anxiety portion of the Form Y), rumination or repetitive thinking using the Rumination Responses Scale (RSS) and Interpersonal Sensitivity and Hostility were evaluated using the Brief Symptom Inventory.

Results showed that both groups had decrease in depression scores, but there were no difference in depression scores between the yoga and control group and the yoga group had decreases in rumination scores compared to the control group with $p=0.083$. Study limitations included a pilot study with a small sample size, which limits the ability to generalize this study. Secondary, the study was voluntary which may tend toward bias due to convenience sampling. Next, attrition rates were higher in attention control group compared to yoga sample. Lastly, there was no long-term follow-up which may have provided additional data. In conclusion, the study suggests that yoga may be a feasible method for treatment in women with MDD and the decrease in rumination may provide the possible mechanism for this effect.

DeGiorgio et al., (2018) demonstrated level 1b evidence, by using yoga treatment for the treatment of chronic lower back pain. This study investigated the use of yoga combined with a back school program and compared it to yoga therapy alone. The program was 8 weeks long. The yoga therapy group was led by a certified Hatha yoga instructor. The yoga sessions were

60-90 minutes and used combination of postures, breathing, concentration and meditation twice a week. Each session was 10 minutes breathing exercise, 45 minutes of yoga pose practice and 15 minutes of supine meditation/relaxation. The yoga combined with Back school (the intervention group), participated in twice week sessions, first meeting at the back school and second was yoga, and this pattern was maintained for 8 weeks, the back school consisted of physical exercise and education. Anxiety was measured using the Hamilton anxiety scale, kinesiophobia was evaluated using the Tampa scale kinesiophobia questionnaire, Roland Morris Disability questionnaire was used to assess disability, and the health-related Quality of Life questionnaire was used to evaluate QOL. Statistical analysis relied on 80% power for a small effect size using two-way repeated measures Anova with a 5% significance. The Anova was run at three time points: before intervention, at 8 weeks and at 12 weeks. Initially, the control group had lower anxiety and mental health scores than the intervention group, but other variables showed no significant differences.

Using a two-way mixed design ANOVA, a significant Time × Group interaction in seven variables: Anxiety ($F_{2,136}=11.160$; $p<0.001$), Kinesiophobia ($F_{2,136}=17.254$; $p<0.001$), Disability ($F_{2,136}=33.669$; $p<0.001$), Physical functioning ($F_{1,68}=6.513$; $p=0.013$), Bodily pain ($F_{1,68}= 6.020$; $p=0.017$), General mental health ($F_{1,68}= 4.289$; $p=0.042$) and General health perceptions ($F_{1,68}= 6.652$; $p=0.012$).

Additional analysis showed the effect of time on treatment in each group. The Intervention group found a significant decrease in mean scores of all psychological (Anxiety $F_{2,68}=53.504$, $p<0.001$). Kinesiophobia ($F_{2,68}=52.244$, $p<0.001$). Disability ($F_{2,68}=128.343$, $p<0.001$) and increase in health-related quality of life sub-scales (Bodily pain $F_{1,34}=20.907$, $p<0.001$).

General mental health (F1,34=7.319, p=0.011); General health perceptions (F1,34=7.879, p=0.008), while in Control group there was significant decrease in mean scores only in Anxiety (F2,68=5.137, p=0.013) and Disability (F2,68=49.386, p<0.001).

The results indicated that yoga and back school training were more effective compared to yoga alone in improving quality of life and psychological variables at the end of weeks 8 and 12. The intervention group of yoga and back school, benefited more after the intervention, where mean scores were lower than the control group and there were significant differences in quality of life, physical functioning, body pain and general health perception but no difference in general mental health. The main weakness of this study was no true control group and that the intervention group was also followed by a professional in motor science, which may have impacted the results of this study. the PI has included this study to illustrate not only the impact of yoga by itself but that use of combination therapy, such as physical therapy, medication or education is more effective that one modality alone.

In the systematic review by Nascimento et al., (2019), the study evaluated 18 studies on the effectiveness of treatment interventions, including yoga, for lower back pain on older adults. The authors chose older adults, because they felt that this group was underrepresented in Randomized Controlled Trials (RCTs), and as a result, this group of individuals seek alternative treatments such as acupuncture, cryotherapy, spine manipulation, massage, yoga, Qigong, laser therapy, back school, body exercise, chronic disease management program, acetaminophen, and mindfulness. The systematic review found few studies in this group of older adults and the authors felt that the studies were of low to medium quality with a moderate risk for bias and limited evidence of benefit for these interventions in older adults**.** Studies excluded problems beyond the lumbar spine such as AAA, epidural abscess, compression fracture, spondylopathy,

radicular pain or spinal stenosis. Inclusion criteria were older adult (>=60 years old, acute, subacute, and chronic lower back pain (LBP) > 12 weeks, randomized controlled trials, reported at least one clinical outcome such as pain intensity, functional status, or perceived recovery. Quality of evidence, pain and disability scores was evaluated in these studies. Outcomes were evaluated using pain analogue scale, McGille pain questionnaire, pain functional rating index, disability was evaluated using Roland Morris Disability Questionnaire, Oswestry Disability Index, modified Von Korff Scale, Hanover Functional Ability Questionnaire or Pain Disability Assessment Scale. The studies were considered moderate quality and 8 had a low risk of bias. Rationale for choosing the intervention was only explained in 4 studies out of 18 studies. Outcomes were measured for pain intensity and disability. When interventions were pooled under heading complementary health approach, 8 trials have low risk for bias. For pain intensity outcome, there was low quality of evidence with a small but not clinically important effect at the short term follow up, compared to control with mean difference (MD)= -2.96, p=0.05. for intermediate follow-up, the MD=-4.12, p=0.002. Breakdown of the various modalities: Manual therapy (short/intermediate pain control) : MD = -2.62/-5.20, Acupuncture: MD = 1.05/1.54, mindfulness: MD = -0.50/-5.50, Yoga had MD = -4.75/-3.65, For disability outcome, 6 trials had low bias with moderate quality, there was no clinical importance difference on improving disability in short-term (MD=-2.00, p=0.06) and moderate quality with small but not clinically important difference in intermediate term (MD = -2.55, p=0.02).

For percutaneous neurostimulation (PENS), low quality evidence of a moderate but not clinically significant effect on reducing pain MD -12.91with PENS plus PT, and MD -8.90 compared to standard of care. For disability impact, there was low quality of evidence, with large

but not clinically important effect on disability favoring PENS (MD -23.59). other treatments including PENS with exercise, physical therapy showed low quality and no significant impact. For education, at short term there was low quality evidence and no difference between back school and hydrotherapy and no intervention. (MD = 4.45 and -3.00 respectively).

For pharmaceuticals, pain outcome was low quality for acetaminophen compared to loxoprofen with no statistical difference other than non-inferior (MD = -0.51). For disability, again low quality, and difference between acetaminophen and loxoprofen for older adults (MD = -4.14 for acetaminophen and MD = -7.11 for loxoprofen, p=0.621).

Other treatments included laser therapy, cryotherapy, and exercise. Laser therapy for pain intensity showed a low quality of evidence, with Odds Ratio 4.53 at short term follow up. Cryotherapy for pain intensity showed low-quality evidence but large effect when used 5 times/week compared to twice a week (MD 21.02). Exercise demonstrated low quality of evidence at short term follow up compared to lumbar extension exercise with moderate but not clinically significant effect (MD = -25.83). compared to standard of care, there was a small but not clinically significant effect (MD = -5.41. Pilate's exercise resulted in small but not clinically important reduction in pain (MD = 1.97) compared to PT alone. The results focusing on complementary health approaches including yoga, showed a small but not significant beneficial effect. Authors recommended additional studies and admitted that the results cannot be extrapolated to older adults. Weakness of the study were low study numbers, high heterogeneity, weak evidence, and small sample sizes. Publication bias was another potential risk.

Park (2020)., this narrative level 5 review demonstrated that yoga, tai chi, and qigong were safe and effective treatments for patients with lower back pain. This study was included for

its mention of side effects and other alternative treatment that involved the practice or movement or motion. These treatments had mild adverse effects. The authors estimated that about 80% of U.S. adults will experience lower back pain at some point in their life. People with chronic lower back pain have increased risk for functional limitations, job-related disability and potential long-term disability which contributes to emotional distress, medications use, hospitalization, surgical treatment, and work-related absence. Evidence-based practice guidelines recommend that patients with chronic lower back pain manage their symptoms with nonpharmacologic pain interventions such as exercise and mind-body interventions. Exercise, including aerobic, flexion-extension and stretching are the most frequently used modalities. Mind-body interventions engage both mind and body to reduce stress, improved psychological well-being by changing the way individuals respond to stressors. The movement-based mind-body interventions (yoga, tai chi and qigong have been shown to reduce pain intensity, improve physical function and emotional well-being.

Inclusion and exclusion criteria for this study, the following selection criteria were applied: (*a*) participants with back pain, including chronic or acute pain; (*b*) MMBI (yoga, tai chi, and qigong) to manage back pain; (*c*) intervention study testing the effect of yoga, tai chi, or (and) qigong in participants diagnosed with back pain; and (*d*) experimental design (RCT) or a quasi-experimental, pretest-posttest repeated-measures design. Articles were excluded if they (*a*) did not study back pain, (*b*) were not written in English, (*b*) published a single case report, (*c*) were not intervention trials, or (*d*) were conference abstracts or dissertations.

this study used Hatha and Iyengar yoga for 20-minute home practice and 75 minute in-class session for 12 weeks. Participants were randomly assigned to yoga vs self-care group. The small trials suggested that yoga may have benefit for relieving lower back pain. The yoga group was

significantly less bothered by symptoms than the self-care group. The authors point out the significant adverse effects from pharmacological treatment, such as effects on kidney, liver, and stomach. The authors suggested that the mind-based treatments may be preferred to manage lower back pain and that mind-based interventions, such as yoga, are considered safe and relatively few published side effects. Common reported side effects include joint or back pain, muscle soreness, dizziness, and headache. Longer treatment (10 week) duration is more effective than shorter treatment (2-week therapy).

Kuvacic et al., (2018) evaluated the effect of yoga on disability, anxiety, depression, and pain in people with chronic lower back pain. In this randomized study, yoga appeared to show statistically significant differences in reducing anxiety, depression and pain but did not affect disability scores. This was a small study with 15 participants in the yoga and control groups, mean ages 33 and 34 respectively. Inclusion criteria were chronic lower back pain, adult >18 years old with diagnosis of depression and anxiety. Exclusion criteria including acute lower back pain, anatomic causes of lower back pain including spinal stenosis, spinal deformity, fracture, and herniated disc, preexisting neurologic, oncologic, or psychiatric (dementia, schizophrenia) conditions, prior experience with yoga, mindfulness, or meditation and lastly obesity. Yoga group was given educational instruction combined with yoga sessions. The sessions were based on asasna (postures), pranayama (breathing), yoga nidra (relaxation), vipassana (mindfulness) and lasted 75 minutes. The control group was given a pamphlet that explained the ergonomic use of spine, correct posture, and gait. Breathing exercise was also explained in the pamphlet and twice a week, participants received a 2-3-page newsletter.

Before and after the intervention, Zung anxiety and depression scores were measured, lower back pain disability and pain scale was assessed. One week post psychological assessments were also performed though an online survey.

Analysis of the data using a two-way ANOVA, showed that the groups were not statistically different with $p>0.05$). For depression, ($F=18.004$, $p<0.001$), there was a significant decrease in depression with post testing. For anxiety, there was no significant difference, regarding main effect but with time ($F=35.939$, $p<0.001$) there was a significant difference seen between the two groups. Yet for disability, there was not difference in post-hoc testing $p<0.001$). In conclusion, yoga plus education proved more effective compared to education alone in reducing depression and anxiety in individuals with chronic lower back pain but had no effect on overall disability.

Kizhakkeveettil (2019) looked the use of yoga to assess quality of life (QoL) in individuals with chronic disease. In this systematic review, 7 studies were evaluated. Inclusion criteria were randomized controlled trials that evaluated quality of life for individuals with chronic disease compared to a control intervention or standard of care and movement-based (asana) and breath-based (pranayama) practices. Excluded were those programs that included yoga as part of a larger intervention program or studies that did not provide findings specific for yoga. Bias varied in studies from high to low. Study quality was low affecting the ability to adequately assess bias. Critique of the studies demonstrated that the trials had a lack of generalizability, training and experience of yoga instructors not reported, variability in statistical reporting including not distinguishing primary from other outcomes and 4 trials reported more than one type of QoL outcome, only one trial differentiated between clinical and statistical

significance. The authors recommend development of high-quality research to determine the value of yoga as an adjunctive treatment in improving QoL in patients with chronic disease.

Armijo-Olivio (2018) explained the importance of differentiating between Clinical and Statistical significance. Statistical significance is based on hypothesis testing (i.e., null hypothesis vs. alternative hypothesis). The decision to accept or reject the null hypothesis is based on predetermined levels of probability (i.e., $p < 0.05$ or 0.01) used to test the strength of the evidence against the null hypothesis. The author further explains that statistical significance does not assure that the results are clinically relevant to patients or clinicians. Clinical significance or relevance indicates whether the results of a study are meaningful to patients or clinicians. A clinically relevant intervention is the one whose effects are large enough to make the associated costs, inconveniences, and harms worthwhile and the results facilitate understanding of the results for clinicians. *While statistical significance is important for studies, the clinical significance is important in treating the patient. This is my goal for this study to show the clinical significance of yoga and change prescribing habits in primary care.

McCall et al., (2013), in their systematic review of 26 articles and 13 chronic conditions, 11 reviews showed the positive effects of yoga while 15 had unclear results. The review demonstrated the positive effects of yoga in reducing anxiety, depression, and pain with a p-value of 0.01 for fibromyalgia and 0.002 for psychiatric disorders with no articles reported any adverse effects of yoga. Inclusion criteria were adults (age 18 to 77), using yoga as a primary intervention to treat any health conditions with at least one randomized control trial and published after June 1, 2012. Articles with martial arts or alternative modalities such as tai chi, qigong, massage Pilates and acupuncture, as well as studies that included multiple health conditions were excluded from this review. The authors analyzed all-cause mortality, disease

progression, clinic or hospital visits, changes in medication, self-reported measures of health, psychosocial outcomes, and cost-effectiveness. Quality of studies were moderate to low. Twelve reviews investigated yoga as only intervention, four studies focused on anxiety, one on depression, one on lower back pain and 2 for pain management. Box 2 (McCall, 2013) below showed types of yoga interventions. Sample sizes were less than 50 in each study and 3-6 months in duration. Results. All-cause mortality was not studied and the authors attribute this to population sample of mostly middle-aged adults, receiving treatment for chronic conditions. Disease progression was evaluated in two studies for anxiety, one for depression and one for major psychiatric disorders. One study indicated a decrease in medication use in pain conditions, but results were not statistically significant. One RCT, showed that Iyengar yoga can reduce lower back pain intensity (64%) and improve function disability (77%) and decrease pain usage (88%) vs control group with usual care. There was a moderate effect size between yoga and various pain conditions (headache, lower back pain, muscle soreness, labor, and arthritis) with $p<0.0001$. In this review, another study by Slade and Keeting, demonstrated large effect size (SMD 0.92) in favor or yoga in the treatment of chronic lower back pain. Quality of life (QoL) outcomes for anxiety, depression, distress, and stress showed large effect size of -0.95 with $p=0.006$, with a moderate effect size of -0.54 for lower back pain vs education, self-care, and no exercise. Another study by Cabral et.al, concluded that yoga improves treatment of depression, anxiety, post-traumatic stress disorder (PTSD), and schizophrenia with a pooled effect size of standard mean difference (SMD) of -3.25 and $p=0.002$. Pranayama techniques were most important for treating anxiety and stress related conditions. Effect size is the effect of the independent variable (yoga) on the dependent variable (lower back pain) (Keller & Kelvin, 2013). Larger effect size is subject to greater bias, but larger effect sizes mean the difference

between the two measures is important (Madsen et.al., 2016). Adverse effects of yoga, authors report that yoga is safe and no adverse effects. Hatha yoga and restorative yoga have the highest correlation with positive outcomes in managing pain symptoms, anxiety and depression with home study and instructor led yoga (practiced 60 minutes 3times/week) appear to have similar positive effects which may correlate with the proposed Zoom-based program.

The last example regarding the effects of yoga focused on older adults. Klainin-Yobas, et. al. (2015) supported use of relaxation interventions for the treatment of anxiety and depression in older adults. Inclusion criteria: published and unpublished research using randomized and non-randomized control trials from 1994-2014, reported in English involving people over 60 years old. Studies were excluded if they contained mixed age groups without a separate finding for the elderly sample and conducted online relaxation interventions without a procedure to ensure attendance. Fifteen studies were analyzed, 12 RCT and 3 non-randomized, 11 were journal publications and 4 were dissertations. The relaxations interventions were yoga, music, combined relaxation, progressive muscle relaxation training (PMRT), massage therapy, and stress management. Results, on anxiety, indicated that music intervention had the largest effect size ($g=2.36$ and was statistically significant ($z=5.05$, $p<0.01$). Yoga ($g=0.45$, z 3.15, $p<0.01$) combined relaxation training ($g=0.30$, $z=0.61$, $p=.54$) and PMRT ($g=0.20$, $z=1.57$, p0=0.12), all had medium effects sizes. The effect of music intervention was sustained at the 24-week posttreatment assessment (g D 1.64, z D 3.97, $p < 0.01$). The positive effects of yoga (g D 0.87, z D 3.28, $p < 0.01$) and PMRT (g D 0.38, z D 2.10, p D 0.04) maintained at one month and 14-week follow-up sessions, respectively.

Regarding depression, 12 studies provided sufficient statistics to calculate effect size. PMRT had the largest effect size (g D 1.21, z D 8.73, $p < 0.01$) followed by music intervention

(g D 0.84, z D 5.21, p < 0.01). Two interventions produced medium effect sizes: yoga (g D 0.49, z D 4.08, p < 0.01) and combined relaxation training programs (g D 0.38, z D 0.77, p D 0.44). Follow-up assessments, four studies had follow-up assessments on the relaxation interventions but only two studies showed positive effects. The PMRT was beneficial at the 14-week follow-up assessment (g D 1.24, z D 6.31, p < 0.001). Yoga remained efficacious at six-month post intervention (g D 1.23, z D 3.53, p < 0.01). Biases for these studies, included convenience sampling which would lead to selection bias. Only 7 studies provided sample size calculations, making power analysis in the other studies, insufficient to determine significant findings. 3 studies did not use randomization to allocate participants, none of the studies assessed the undesirable effects of relaxation interventions on older adults, most studies did not record concomitant treatments. Lastly the authors indicated that most studies did not use intent to treat analysis to minimize type II errors.

The findings of this systematic review indicated that older adults who received relaxation interventions, including yoga, received greater improvements in depression and anxiety than compared to controls. PMRT, music intervention and yoga have strongest effect on depression. Music and yoga were best in reducing anxiety. With sustained effects for music intervention, yoga and PMRT for 14 to 24 weeks. The authors propose that older adults living in communities benefited from practicing yoga as they reported less depression and anxiety following the intervention. Yoga involved various activities such as breathing exercises, stretching exercises, physical activity, meditation, and yoga-based guided relaxation. Yoga is perceived to be a holistic approach, incorporating mind, body, and spirit. It could help counterbalance the negative effects of aging, improve physical functioning, postpone disability, decrease morbidity and mortality, stimulate the mind, and increase hope, reducing the risk of

anxiety and depression. Strengths using published and non-published research which may minimize publication bias but only 4 studies were unpublished. Effects sizes were calculated from similar studies. Limitations, most studies were limited to the United States. The clinical implication is that relaxation interventions, such as yoga, music and PMRT may be beneficial for an older population and could be used as a primary or adjunctive therapy for the treatment of anxiety and depression. Relaxation interventions could be used in nursing homes, community, and hospital settings.

Summary of the Strengths and Weaknesses of the Evidence

The main findings for this review illustrated the positive effects of yoga on decreasing lower back pain and improving mental health scores for anxiety and depression. These findings are mirrored in several other countries, as detailed in this review. Yoga interventions via e-health platforms have been shown to improve stress management (Mussman, 2016). The current literature supports the use of yoga for the treatment of anxiety, depression, and lower back pain. The goal of my evidenced-based, online project is twofold: 1. to provide PCPs with current evidence-based data that supports the use of yoga in these medical and psychiatric conditions and change prescribing habits and 2. to provide our patients with an effective complementary treatment option for these life-affecting, significant diseases. In the future, we may be able to deliver healthcare via on-line systems will offer patients a new and convenient option for the treatment of these and other heath related conditions. The gaps in the literature include only a few studies combining all three disorders, utilizing yoga as a therapeutic modality.

There are several consistent limitations to these studies. The studies included predominantly white females, small sample sizes, short study periods typically 8-12 weeks, although follow-up surveys still support the beneficial effects of yoga even 3-6 months post

treatment. participants were voluntary which may contribute to convenience sampling bias. Most studies have weak to moderate evidence, small sample sizes, high heterogeneity, and younger population age. One study, Klainin-Yobas (2015) did show that older adults may benefit from yoga therapy. Small sample sizes may limit generalizability and voluntary participants contribute to sampling bias. Several authors recommended the development of longer duration, higher-quality studies to help demonstrate clinical relevance and provide meaningful data for patients and clinicians. Despite individual study weaknesses and the inability to blind participants to yoga therapy, and lack of follow-up, there is a growing body of evidence that supports yoga improving health outcomes.

Methods

Using the Iowa Model for evidence-based practice, as the theoretical framework to facilitate a change in practice and improve patient care, current evidence indicates yoga to be a potentially effective adjunctive therapy for the treatment of anxiety, depression, and lower back pain. The goal of this evidence-based practice project is to present the current evidence regarding yoga's effectiveness for the treatment of chronic problems such as anxiety, depression, and lower back pain, to primary care providers in Family and Internal medicine, and encourage more providers to use yoga as an effective, non-drug treatment option. This project builds on Social-ecological model of health: as a framework for disease prevention, which includes, Nola Pender's Health Promotion Model (HPM). This model describes the multi-dimensional nature of patients and their interactions to pursue improved health. The key concepts of this model are the individual, environment, nursing, health, and illness. (Miller, 2011). Pender's model focuses on three areas: individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes. HPM states that each patient has a unique set of characteristics,

experiences and motivation that dictate actions. Nursing and other allied health professionals can help influence these health decisions and by giving specific information, knowledge, or direction to help motivate a person toward a specific health promoting behavior. This change in behavior would result in improved patient health, enhanced functional ability and better quality of life. There are competing life demands and expectations that can affect both health decisions and behavior. These life demands can derail intended actions for promoting health (Petiprin, 2016). The HPM is detailed in Appendix E in relation to this Evidence-based DNP project.

Planning and recruitment.

Planning required initial IRB approval and designation of the project as an Evidence-based educational module. After IRB approval, the project planning proceeded with the identification of potential candidates, primary care providers, at an academic health center and Community health center, and family and internal medicine departments, contacting the department heads to seek permission to contact primary care providers at each institution. Once permission was granted, the investigator sent out a letter of introduction via email to each healthcare provider.

Recruitment Procedures

The procedures for this study include advertising, participant recruitment, participant consent and study enrollment, follow-up data collection and data analysis**.** Advertising was accomplished with joint permission from both academic and community health centers, recruitment was accomplished through phone calls, departmental meetings, emails directed toward both an academic and regional health system's department of Family and Internal Medicine, word of mouth, and local new agency's community calendar. Institutional Review Board (IRB) Approval for this nursing project, was a collaborative effort from nursing

administrators and advisors from the UVa School of Nursing assisted this nurse doctoral student in applying for and obtaining IRB approval. Before recruitment was attempted, IRB approval was needed from the doctoral student's university, UVa. The university's academic nursing advisor assisted the nurse researcher to navigate the structural, formal and policy challenges. To begin research at the academic health system, IRB approval from the university is required for any project**.** The process for IRB approval was completed in 3 weeks.

Once IRB approval was obtained, written permission was obtained from each participant in the study. After initial IRB approval, emails were sent, and the project was proposed at a monthly Family Medicine meeting. The UVa advisor assisted this nurse researcher to navigate the structural and policy challenges. Processes included approval of the project by UVa department of nursing prior to the nurse researcher presentation of the proposed research at the IRB meeting. After IRB approval, the researcher had ongoing contact with the nursing advisor, the nursing research advisory board and the IRB staff.

For regulation and recruitment, this nursing researcher contacted the individual primary care practitioners in family and internal medicine, via institutional email. After this initial contact, the doctoral student either met with or discussed online or via telephone, the proposed study with potential participants, to answer any other questions. Secondary recruitment was initiated through online intraoffice advertisement, flyers (Appendix S), and television ads. Before the first educational module was emailed, the DNP student reached out via email, and received signed consent forms. At the first class, the researcher again introduced himself and the project. Potential participants could withdraw at any time from the study. The consent forms were obtained and verified by the researcher. Consent form was adapted from the university form distributed by UVa IRB staff.

Participant Recruitment

Recruitment of participants who met the inclusion criteria was challenging. In this evidence-based study the doctoral student recruited all the participants for the study. Nursing administration assisted the researcher in accessing participant's email by verifying the researcher's student status and credibility with participants. Specific challenges resulted in the study due to working with several institutions. Permission to contact the regional community hospital participants was obtained through regional hospital Physician Liaison, Pat Robertson. No written permission from MJH was required to contact the participants. Participants included Nurse Practitioners (NPs), Physicians ((Medical Doctors (MDs)) and (Doctors of Osteopathy (DOs)). Recruitment was accomplished through internal emails and external request of the academic and regional health systems.

Recruitment was assisted by a variety of strategies. Collegial relationship, institutional e-mail, intra-facility advertising, 29News community postings. The introductions included personal meetings, e-mail, and intra-office communication. All recruiters received verbal and written information about the study, including a copy of the study and outlined of the research protocol.

The time limitations and work demand of doctoral student and participant time constraints affected the information gathered for this nursing research. A major barrier in recruitment was variation in daily routines, researcher work schedule, and participant availability. The research protocol required the researcher to contact each participant prior to class for personal introduction and brief explanation of the study, since all participants were informed of the study before class began.

The researcher received notification about a potential participant, a narrow window of time existed to establish that the participant met the study criteria and obtain participant consent. The researcher checked email daily to assess problems, gather data and answer questions or send reminders about completing the questionnaires. Office managers, site administrators and UVa Information Technology (IT) personnel assisted the researcher by providing information about potential problems, conflicts, and concerns at each educational session. Completion of pretest demographics and posttest questionnaire was verified by the doctoral student.

The IRB-approved protocol for this educational module did not require the doctoral student to observe the reading of each educational by the participant but did require acknowledgement of receiving and opening the module, using a Qualtrics attribute which acknowledge receipt and reading of the module. The one problem with this attribute was that some participants did not open the module initially and would save if for review later in the day or week. This action would come across as unread, which on interview with the participant, was found to be a delay in reading rather than a non-reading action. The doctoral student chose to monitor each weekly module for problems related to study design and logistics. The doctoral student needed to be available on any day when the yoga instructors or facility administrators had questions or concerns. There was one time, the audio clip did not function for one provider.

Approval of specific research protocols were completed by the UVa School of Nursing. Strategies for recruitment included personal contact with participants and UVa nursing researchers. During recruitment, the doctoral student was available for questions. Study facts were distributed through email and on-line letters discussing the prevalence of anxiety, depression, and lower back pain in the U.S. population, plus the published benefits of yoga therapy. The researcher was available by phone & email and could be questioned after class by

the potential participant as soon as possible after they agreed to hear more about the study. Potential strategies for the nurse researcher that extend beyond forming personal relationships with professional staff. This study did not include financial incentives for the participants to complete the study. Informed consent through approved UVa consent form (see appendix C).

Translation of the project

The purpose for this evidence-based project is that by presenting health care professionals with the evidence that yoga therapy improves the health status in people with anxiety, depression, and lower back pain, we hope to change prescribing habits whereby prescribers will present yoga therapy to their patients as an effective option for treatment of these conditions. The hypothesis is that by providing health professionals with the evidence on the benefits of yoga, these professionals take the authoritative lead in recommending a proven evidenced-based modality, such as yoga, earlier in the treatment process, to improve patient outcomes. Patients would then benefit directly from this provider directed education project. The belief is that some patients would follow the directions of the healthcare provider and through the use of yoga, patients would take the initiative in their own self-care and utilize the practice of yoga to improve their own health status. Research has shown that patient's report more beneficial health behaviors, less symptoms, a higher quality of life and care satisfaction when they had a higher trust in their health care provider (Birkhauer et al., 2017). By using Pender's Health Promotion Model, as a guide, specifically, by utilizing yoga's principles and movements, the individuals will take an active part in their own care which has been shown to demonstrate improvement in pain, mental health, and functionality. Secondary, benefit is that some providers may participate in yoga therapy for their own physical and mental well-being. In one study, forty-two percent (42%) of family physicians report burnout from their work once a week or more (Weidner et al.,

2018). Another study of nearly 1800 nurses from various health care systems, found that over 50% reported suboptimal physical and mental health, 255 reported depression which was the leading cause of medical errors, which is the third leading cause of death in America (Melnyk et al., 2020). Any evidence-proven modality, that can improve health and reduce the mental and physical challenges on the members of our profession, should be utilized to keep our members well. Yoga is one of these evidence-based modalities that has ancient roots and proven effectiveness. There are many different terms for this project. the full list of definitions is in appendix K.

Project Design

This pilot study is an evidenced-based, quantitative, translational practice project to advance the mainstreaming of yoga in personal health improvement. This project is a quasi-experimental descriptive study, using a pretest and posttest (paired T) design to assess the impact of an educational module on health care providers willingness to prescribe yoga for the treatment of mental health and pain. A paired-sample t-test was conducted to compare the effect of an education module on the prescribing habits of primary care providers. Can an education module (IV) on the benefits of yoga encourage PCPs to prescribe yoga (DV) to their patients as a treatment for anxiety, depression, and low back pain?

Description of the Sample

This pilot study involves convenience sample of primary care providers delivering an online educational module to adult health care providers, that include NPs, PAs, MDs, and Dos. Participants will be 21 years or older, currently working in either family medicine or internal medicine practices. Inclusion criteria was English speaking primary care providers in family and internal medicine, adults over 18, people who can use email and zoom and complete on-line

questionnaires are eligible to participants. Exclusion criteria was non-healthcare professionals or those individuals who do not have access to email or internet are eligible to participate in this project. Stakeholders include patients, PCPs, Office and Hospital Administration.

This pilot program/project is a quantitative, quasi-experimental design that uses convenience sampling that is designed to answer the question: Can a short 4-week educational module provide enough evidence-based information to initiate a change in practice by persuading healthcare providers to prescribe a yoga for the treatment of mental health (anxiety and depression) and pain (chronic lower back pain). *Inclusion criteria* will be English speaking healthcare practitioners, who can use email and zoom and complete a 4-week educational module with initial demographics and final questionnaire. The participants can include experienced practitioners or those with minimal or irregular practice. *Exclusion criteria* includes all individuals below 21 years of age, non-English speaking, non-health care practitioner who do not have access to email, zoom capabilities and cannot complete the on-line questionnaires.

Setting and Stakeholders

This EBP project was held completely online, with weekly emails connected to Qualtrics survey and data base. The participants in the study could access the email attachment any time in that week. Stakeholders included primary care providers, patients, practice administrators, yoga instructors, and insurance companies.

Planning the Intervention

On-line educational module administered in health care provider office or home. The online education is a short one-page information interventions listing the benefit of yoga with evidential reference attached to the one-page educational module. Information regarding typical yoga sessions is included in this paper and will be made available to interested providers seeking

more information on yoga methodology. Typical yoga session is 30-60 minutes long, following a typical class sequence and involve a series of yoga poses. (See appendix H). Description of each typical yoga session is detailed under program description, on the next page.

Participation

Once IRB approval was obtained, participants agree to complete initial demographics and questionnaire (Appendix A), sign consent form (Appendix C) view the four (4) one-page weekly email/data sheet (Appendix B) and complete the post-test questionnaire (Appendix D). The study will last 4 weeks only. There was a follow-up e-mail delivered to study participants with the results of this study and further positive points including the estimated financial benefits for a practice that includes yoga therapy as a modality.

Program Description

Basic information sheet explaining the study, estimated time required by the primary care provider. Demographic form (Appendix A) including type of practice, participant initials, practice initials (in case of duplicate name initials), email, yoga experience, age, and gender. Consent form (Appendix C) was obtained prior to start of educational module. Weekly one-page information sheet (Appendix B) was forwarded via email to each primary care providers email account. Each information sheet had an illustrated yoga pose and evidence-based fact with reference.

Approval of setting

Approval of program and setting was approved by the UVA School of Nursing Doctoral program and IRB.

Data Collection.

Using Qualtrex, with the supervisory help from IT professional, Charles Huffman, participants will be asked to complete on-line the consent form, demographics and pre-program questionnaire and post-program questionnaire.

Process procedure.

The participants agree to the study via emails or written consent. After project approval by the UVa School of Nursing and IRB, each participant is contacted either on phone or email. After a brief introduction from the chief investigator (Steve Fetcho), a description of the project is discussed with each participant and verbal consent obtained. Copy of the consent form is then e-mailed to each participant. Each participant will be assigned a unique identifier to collect baseline and subsequent data. The project is explained in detail in the Consent (Appendix C) and Demographic forms (Appendix A). Consent was also discussed before or at the first session, giving permission to be in the project. Demographic form is completed. Each participant will receive a weekly email showing a yoga pose, an evidence-based fact, and short scenario illustrating the type of patient represented by this fact.

Questionnaires.

Are administered using Qualtrex and recorded using a unique participant identifier.

Data Management

Data was entered through Qualtrex, and data entered using SPSS version 2020. Data was cleaned and audited and ready for analysis. Data includes frequency and distribution of variables, description of the data, pretest, and posttest analysis for the measures under investigation. Chi square analysis of final data.

Protection of Human Subjects

Study approved by Internal Review Board (IRB).

1. All participants were consented, and information kept confidential.

2. Information was de-identified using participant number only.

3. Program coordinator, Steve Fetcho, will maintain list of participants contact information for purposes of supporting and coaching participants for continued participation.

4. Finding from this study will be presented in aggregate form only without any identifiable information.

Consents and Ethical considerations

Consents were all voluntary without coercion, monetary gain, or other incentive. The study addressed whether an evidenced-based educational module could influence recommendations for yoga therapy, specifically if an education module on yoga could convince primary care providers to prescribe this modality to their patients with anxiety, depression, and low back pain. This study used a convenience sampling, confidentiality was maintained using initials and email addresses. This study was approved by the IRB as evidence-based research, with little potential harm to the participants. The research aims were clear and methodology appropriate for the study. Lastly, there were no conflicts of interests in this study.

Results

Initial enrollment (table 1) in the study was 34, with 7 withdrawing, and 4 not interested in participating. There were 23 participants at the start of the study. Most participants were providers at from an academic center (table 2), approximately 95% with only one from the regional health system. Although not part of the initial questionnaire, post module analysis, indicated that there were fourteen physicians and three nurse practitioners. Years of clinical

experience was widespread with a mode of 20+ years. Gender percentages favored women with over 79% of the module participation. Age ranges had a mode of 40-59 years. 76% of participations had some yoga experience with only 23.5% with no yoga experience. 70% of participants use some type of alternative treatment in their practice (table 7), which is above current national statistics of 53.1% of U.S. physicians (Stussman et al, 2020). Only about 50% of participants in this study refer for yoga therapy, which is above the average of 25.6% of U.S. physicians. About one-third of adults in the US report using alternative medicine but few (42%) report it to their health care providers for fear of disapproval, especially those using yoga or medication, about 60% (Jou & Johnson, 2016, Halpin et al, 2020). Post intervention analysis (table 11) indicated 100% agreement in the use of yoga as a potential treatment for anxiety, depression, and low back pain but the study had lost 4 participants in the final tabulation. The number of providers who would consider using yoga as a therapeutic option, if a yoga instructor was in the office, was 85% (table 12). Fisher Exact Test had a p-value of 0.05245393 and was not statistically significant at p-value of 0.05. For this study, the educational module demonstrated an increase in primary provider willingness to recommend yoga to their patients with anxiety, depression, and low back pain but the results were not statistically significant ($p=0.0525$ by Fisher's Exact test). However, the dropout rate of 23.5% introduced an attrition bias into the study. This attrition bias affects the way the study can be applied to the general population. Attrition bias is a type of selection bias due to systematic differences between study groups in the number and way participants are lost from a study. This attrition calls in to question, the differences between people who leave the study and those who continue, particularly between study groups. These differences between study groups can be the reason for

any observed effect and not due to the intervention itself. Due to this fact and the low numbers in this pilot, more studies are needed to verify this pilot study's effects.

Participant comments

There were both positive and neutral comments regarding this study. Typical positive comments include the desire to "use yoga as a therapy if there was an instructor in the office"; "yoga is an effective adjunctive therapy and reasonably inexpensive for patients"; "I utilize non-pharmacologic treatment when possible"; "morbidity from anxiety, depression and low back pain is so significant that the more treatment tools we have the better"; and "I would give the patient a chance to discuss yoga therapy first". The last comment was deemed more neutral the study participant felt that "I would not use (yoga as a treatment), because I am not a yoga instructor".

Information for study participants

1. 84.6% would utilize yoga therapy if they had an instructor in the office, 2. Medical Yoga practitioner can bill at 1 hour level 5, and 3. Medicare cost for a level 5 office visit $183.19 and it is worth 2.8 work RVUs.

Chi-square Analysis and Fisher's Exact Test

Pearson Chi-square test of association was not included in the results section because of its inability to meet the required cell counts for valid test but was felt to give some insight for future testing. The Chi-square analysis test showed that there may be a significant association between viewing the education module and willingness to prescribe yoga. $\chi^2(1, N=17) = 5.08$, $p= .0242$. with a critical value of 3.84. We reject the null hypothesis that there is no association between the educational module and the willingness to prescribe yoga. The chi-square analysis was flawed because there were not enough participants to satisfy the rules for using this type of statistical analysis. The Fisher Exact test had a p-value close to statistical significance and this

investigator believes that if this module could be applied on a larger scale and these results may indicate a positive relationship that is statistically valid.

Discussion

In this study, participants were primarily female, which is a similar finding to other yoga studies. In this study, there was a greater larger number of men who participated in this study compared to prior yoga studies. Research studies involving yoga, tai chi and qigong have shown an increase in male participation. One study comparing men and women in the United States, measuring participation in these therapies from 2002 to 2017, female participation increased from 8.15 to 19.6% and male participation increased from 3.35 to 9.1%, (Wang et al., 2019). Wang (2019) also indicated that yoga practice is predominantly female which is consistent with other studies on the use of yoga. For this study, there was a higher percentage of male (25%) participants compared to the usual female to male ratios for typical yoga studies. Most yoga studies have female participation at 90% or more (Wiles et al., 2021). ttribute this result of increased male participation to a combination of factors: 1. recommendation from the head of Family Medicine, Dr. Li, 2. familiarity with the primary investigator, 3. Primary care providers with an interest in finding alternative treatments to health problems that encourage patient activity and that are not medication-based therapies, 4. The percentage of female and male providers at the academic institution, in both FM and IM, is 53.2% and 46.8%, respectively. The study participation was 29.4% for male and 70.6% female providers. The equal amounts of male to female providers, at the academic institution, may have influenced a higher study percentage of male participants. My study correlates with observations in prior studies that yoga participation is predominantly female.

This evidence-based practice study demonstrated that we could increase knowledge in primary care provider in Family and Internal Medicine departments by utilizing a weekly online program. This program took no longer than 3-5 minutes once a week. Module of this type could be used to educate other health care providers, using short weekly instructions on the benefits of yoga.

Readiness to recommend yoga increased from 52.9 to 100%. this is a 47.1% increase in a consideration on prescribing based on this posttest analysis. While several participants dropped out of the study, and this drop out number may have affected the final tally, two providers altered their impression of yoga as a therapeutic modality and would now utilize this treatment option. Provider's knowledge that yoga can be reimbursed improved, would now prescribe yoga as a treatment. One provider would refer only if the patient requested.

Participant hesitancy to prescribe yoga decreased from 29.4 to 5.9% of participants after the intervention. One participant would consider using yoga in the future. Utilizing yoga as an alternative treatment, the initial percent of health care providers who use or recommend alternative treatment such as yoga increased from 70.6 to 84.6%. The percent providers who would recommend yoga therapy and use a yoga instructor in the office if available increased from 52.9 to 84.6%, after the intervention.

Summary

Interpretation

This evidenced-based educational module has the potential to educate primary care providers on the benefits of yoga using short instructional modules. This clinical information can be passed on to patients who could participate in improving their own healthcare. As the provider passes the information, obtained from the educational module, and passes this on to patients and colleagues, this is an example of Diffusion Theory. Diffusion Theory was proposed

by Rogers in 1960 and examines how ideas spread. I believe that this theory can be applied to the education of Health Care providers and how the popularity of yoga has increased : the basic ideas of this theory, is that health care providers may find yoga (or some idea): 1. better than existing options 2. compatible to the needs of the people who need to adopt the idea, 3. complexity of the idea (IS IT DIFFICULT FOR THE ADOPTER TO UNDERSTAND OR INITIATE). 4. Trialability: can the idea be tried first before fully adopted (online programs at no cost). 5. observability: the extent to which the innovation provides results. There is evidence that yoga use has increased 2-3-fold in both men and women since 1990. The Diffusion of Innovation, rely on patient's believing the modality will work. Espinosa and Maglajlic (2019), indicated that when there is provider belief in treatment, there is a 28% higher medication adherence and improved health awareness. In short, if we can convince primary care providers that yoga therapy is effective using EBP, primary care providers can make recommendations that may influence a patient's choice of therapy. Research has shown that if a provider believes in a treatment, the patient is more willing to try this modality.

Once the information and benefits of yoga therapy are passed to either patient or healthcare colleague, individuals may seek to actively change their behavior, participate in their own care, individuals interact with their environment and in the process are transformed over time. The healthcare provider exerts an influence on their patient, encouraging change and this complex interaction between healthcare provider, health status, environment and the patient is essential to eliciting a positive change in behavior. As mentioned earlier in this paper, the health care provider's opinion is respected by the patient on medical issues. Healthcare provider recommendation for therapy is the first step in initiating a change in our patients and as more success occurs with a certain treatment, such as yoga, this information with diffuse to other

patients and practitioners as a viable option for treatment. This evidence-based educational modality on the effectiveness of yoga can initiated a conversation between healthcare provider and patient, that may lead to improved patient care. Despite the initial promising results of this study, this study did not have the statistical power needed to prove it effectiveness.

Strengths of the Study

The primary strengths of this project are the significant body of knowledge supporting yoga, the ability to translate this evidence into practice, this activity engages primary care providers in an online educational module that expands the knowledge and perceptions on yoga therapy and benefits, this scholarly project builds on several health promotion models and links into Diffusion of Innovation theory, which explains how ideas can spread. One person's new idea may affect another, in this case primary care providers, who in turn may recommend yoga to one or more of their patients and colleagues. Lastly, this education module helps support health care professionals by addressing three critical disease states that affect a significant portion of those patients, that we are contractually and ethically obligated to direct them to an improved state of health.

Limitations of the Study

The Primary weaknesses of this project are this is a quasi-experimental, non-randomized, limited, self-reported study. The power of this study is weak, and therefore limited in its ability to project benefit to the general populations. other limitations, include, that the use of virtual technology and an on-line survey, may not have the same influence to use this new information, then an in-person, educational seminar, in-person yoga class was not demonstrated, and this program was administered during a global epidemic, and the lack of individual communication,

may interfere with a personal connection to discuss the benefits and questions regarding yoga therapy.

Implications

This evidence-based educational module has the potential to educate primary care practitioners on the options available to their patients for the treatment of certain mental health and pain disorders. The investigator believes that if we could utilize yoga instructors in our practice then we could improve our patient's lives by decreasing pain, depression and anxiety and potentially decrease the need for medication. This action could have a significant impact on patient health and decrease health care spending by using yoga as both an active treatment and preventive therapy for our patients. We can help our patient's achieve self-reliance and improved health outcomes through the use of self-care, improvement and health promotion. By using health care providers as a catalyst to get the conversation moving on a non-medication-based treatment for these medical conditions. We, as health care providers, can help our patient with decisions to choose yoga, massage, meditation, tai chi, or some other movement-based therapy. We should be able to comfortably recommend these treatments to all ages, sexes, and stages of disability. We, as providers, should emphasize that yoga can be done by all ages. Utilization of chair yoga programs for those patients with significant orthopedic and developmental problems. We need to re-enforce the benefits of yoga to our patients, including overall cost benefit for both the patient and health care in general.

DNP Essentials and Core Competencies

Essentials. The essentials for Doctor of Nursing Practice have been renamed Core Competencies. These new essentials "build a strong foundation for nursing as a discipline, the foundation of a liberal education and principles of competency-based education" (AACN, 2021).

This project has been created using both the past DNP essentials (2006) and the 10 new domains (2021).

My DNP education taught me the value and technical expertise to engage in evidence-based research, and my faculty advisors helped me mold the final version of my DNP project. Using the Evidence-based information and guidelines put forth by the academic institution and the IOWA evidence-based curriculum, this investigatory was able to develop the final version of this project.

Current evidence obtained through DNP education has help incorporate both the old essentials and new DNP domains into this project by providing primary care providers with evidence-based information on the effectiveness of alternative therapies, such as Yoga, to treat and improve a patient's current state of health. Yoga has been proven to improve health compared to traditional medical therapy. Information on insurance coverage was provided to participants in the study to minimize hesitancy in prescribing yoga as a adjunct or primary treatment for these health care problems. Other benefits of this educational module, will be to improve patient care, form a more collegial relationship with other healthcare team members, change prescribing habits to include non-medication-based therapy, and to assist our patients in finding effective treatments, that are evidence-based, for health conditions that include anxiety, depression, and low back pain. The PI has found it difficult to isolate just one DNP essential, domain or concept that has had a single significant impact in this study. Many of these elements are intimately tied to one another to form a more complete picture of what it takes to help patients and healthcare provider reach their potential in managing their health or the health of their patients.

Essential 1: Scientific Underpinnings for Practice. My DNP education helped me incorporate the use of scientific data to show benefits of yoga and uses an educational program to create a process where improvements in health can be achieved with a non-drug modality to benefit patients from all socio-economic levels.

Essential 2: Organizational and Systems Leadership for Quality Improvement and Systems Thinking. My DNP education and taught me the necessity of incorporating quality, safety and excellence in practice. This DNP project promotes safety and excellence in practice by delivery a new type of treatment modality that can by used by all patient, regardless of disability or socio-economic status.

Essential 3: Clinical Scholarship and Analytical Methods for Evidence-Based Practice. My DNP education has shown me the importance of scholarship in research and taught me the necessary analytical skills to develop and incorporate into my project. This project uses evidence-based practice by providing information in a concise, evidence base format to demonstrate the effectiveness of yoga compared to other current modalities including physical therapy, medication, and surgical interventions.

Essential 4: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care. This DNP program has shown me the value of technology to use and information systems to gather data and improved patient care. This project uses information systems/technology for the improvement and transformation of health care by providing evidenced based information to healthcare providers using email and Qualtrics technology, with the goal of improving health care to patients.

Essential 5: Health Care Policy for Advocacy in Health Care. This UVa DNP program has helped mold my understanding of health care policy and advocacy for the improvement of

care. This project used health policy and administrative permissions to initiate this project. Also, through this project, a leadership role was achieved by advocating change in current thought with regards to the treatment of certain disease states.

Essential 6: Interprofessional Collaboration to improve patient health. My DNP education has helped me understand the roles that collaboration among colleagues has in improving health care for our patients and ourselves. By using the experience and expertise of our colleagues we can broaden our knowledge base and provide more effective care to our patients. This project involved an educational program for both family and internal medicine practices at an academic and regional health system, and included MDs, DOs and NPs. This program was designed to improve patient health by offering providers another modality to treat their patients.

Essential 7: Clinical Prevention and Population Health for Improving the Nation's Health. Though the this DNP educational experience, this investigatory has learned the importance of prevention and how to incorporate health promotion and prevention to improve population health. This project also can be used as a prevention-based tool to help with preventing problem with mental health and certain physical ailments, thereby decreasing reliance on medications and other health care resources.

Essential 8: Advanced Nursing Practice. This project demonstrates how a DNP graduate can use the tools that his education program has given the student to analyze evidence-based information, develop a short program to educate colleagues with the goal of improving the health of family and internal medicine patients, of all socio-economic classes.

The project and the New Essentials: core competencies

Four Spheres of Care: 1. disease prevention/promotion of health and well-being, 2. chronic disease care, 3. regenerative or restorative care, and 4. hospice/palliative/supportive care (for patients with complex, chronic disease states, or those requiring rehabilitative care). This doctoral program has helped me understand disease processes and the benefits of health promotion in preventing and treating disease. this information helped me develop an informative and concise project. the goal of this project is to educate primary care provides on the benefits of yoga and encourage its use to promotes both physical and mental health in patients.

Systems-Based Practice. Integrated healthcare systems that require coordination across settings as well as across the lifespan of diverse individuals and populations are emerging. Healthcare systems are revising strategic goals and reorganizing services to move more care from the most expensive venues – inpatient facilities and emergency departments – to primary care and community settings. UVa's DNP program has shown me how to design and coordinate the components of this project, using a systems-based approach. This project can help to initiate yoga care in primary care offices and community venues to help prevent use of more expensive medical services including ER, inpatient, imaging, and medication (including narcotics) for the treatment of urgent and chronic conditions.

Informatics and Technology Informatics. has increasingly been a focus in nursing education, correlating with the advancement in sophistication and reach of information technologies; the use of technology to support healthcare processes and clinical thinking; and the ability of informatics and technology to positively impact patient outcomes. My education has shown how to use current informatic technology to gather information and use this information to educate patient and health care providers. This project uses this new health information

technology to deliver evidenced-based information in a convenient format to family and internal medicine providers.

Engagement and Experience. The future consumers of health care are changing. They are transitioning from passive participants in medically focused acute care environments to engaged participants of healthcare services. They actively participate in managing not only their chronic illnesses but also acute care exacerbations with an increasing focus on prevention and wellness. My DNP education has increased my awareness of the changing attitudes of consumer health and helped me design a project on yoga therapy than can help consumers choose a traditional proven modality to improve various health conditions, including mental health and pain.

Academic-Practice Partnerships. Partnerships and collaborative team-based care are the cornerstones of safe, effective care whether it be for individuals, families, communities, or populations. Through professional contacts, that have been developed through the faculty at UVa's School of Nursing and the education regarding population health, this PI was able to develop a project that would incorporate partnerships across both family and internal medicine and the school of nursing. The goal of this project would be to partner with healthcare providers who have training in yoga therapy and involve both family and internal medicine in recruiting providers and colleagues to help treat patients. This project could be extended to help nursing and medical students, as well as faculty and clinical provider with educational and vocational stress. This intervention would likely decrease illness and missed days at work.

Career-Long Learning. Current trends in higher education focus on supplemental methods of awarding credit and recognition for additional learning which has implications for career-long learning. This doctoral program and **DNP project** has helped me grow as a nurse

and person, with hopes of taking a more leadership position through advocating for my patient and providing evidenced-based information to patient and colleagues.

Domains and Concepts

Domains for Nursing. Domains are broad distinguishable areas of competence that, when considered in the aggregate, constitute a descriptive framework for the practice of nursing. These Essentials include 10 domains that were adapted from the interprofessional work initiated by Englander (2013) and tailored to reflect the discipline of nursing.

- ***Domain 1.*** Knowledge for Nursing Practice Descriptor: Integration, translation, and application of established and evolving disciplinary nursing knowledge and ways of knowing, as well as knowledge from other disciplines, including a foundation in liberal arts and natural and social sciences. This distinguishes the practice of professional nursing and forms the basis for clinical judgment and innovation in nursing practice. This project helped me incorporate the use evidence-based information discovered through the lessons and instruction obtained though this DNP program.
- ***Domain 2.*** Person-Centered Care Descriptor: Person-centered care focuses on the individual within multiple complicated contexts, including family and/or important others. Person-centered care is holistic, individualized, just, respectful, compassionate, coordinated, evidence-based, and developmentally appropriate. Person-centered care builds on a scientific body of knowledge that guides nursing practice regardless of specialty or functional area. UVa's doctoral program has helped me expand my knowledge base and has given me the ability to incorporate a more person-centered care. This project helps to incorporate current evidence and apply it to our patients in person-centered model.

- ***Domain 3.*** Population Health Descriptor: Population health spans the healthcare delivery continuum from public health prevention to disease management of populations and describes collaborative activities with both traditional and non-traditional partnerships from affected communities, public health, industry, academia, health care, local government entities, and others for the improvement of equitable population health outcomes. Through my UVa education, we have been taught to identify gaps in health care and come up with non-traditional option for the treatment of disease that would benefit all populations, including the disabled. This project incorporated different population examples to help promote health and wellbeing in our patients and treat both chronic and acute conditions.
- ***Domain 4.*** Scholarship for Nursing Practice Descriptor: The generation, synthesis, translation, application, and dissemination of nursing knowledge to improve health and transform health care. The UVa nursing program has helped me develop the ability to generate an idea, synthesis a solution, translate it into a project, disseminated knowledge and improve health care using a non-traditional modality. **This project** utilized current evidence-based information to develop an on-line program to teach health care providers and improve health in family and internal medicine patients.
- ***Domain 5.*** Quality and Safety Descriptor: Employment of established and emerging principles of safety and improvement science. Quality and safety, as core values of nursing practice, enhance quality and minimize risk of harm to patients and providers through both 12-system effectiveness and individual performance. This UVa program has emphasized the need for safety and the importance of quality improvement in Nursing science. This project addresses quality of care and patient safety factors in the body of the paper. Overall, minimal adverse effects noted in all the evidence provided in current literature.

- ***Domain 6.*** Interprofessional Partnerships Descriptor: Intentional collaboration across professions and with care team members, patients, families, communities, and other stakeholders to optimize care, enhance the healthcare experience, and strengthen outcomes. The UVa school of Nursing has allowed me the opportunity to grow, develop collaborative relationships with both professors and colleagues in with the goal of advancing science and solidify nursing as a knowledgeable partner in healthcare. This project was a collaboration with both UVa family and internal medicine practices and included those from MJH (only two providers signed up and both dropped out of study).
- ***Domain 7.*** Systems-Based Practice Descriptor: Responding to and leading within complex systems of health care. Nurses effectively and proactively coordinate resources to provide safe, quality, equitable care to diverse populations. The DNP program has taught me to look at a variety of complex systems, including IRB, Nursing Faculty and then coordinate the resources that were necessary for this project. This project was a coordination between the study organizer and members of both academic and regional healthcare institutions for family and internal medicine practices. this project ensured inclusion and equitability.
- ***Domain 8.*** Information and Healthcare Technologies Descriptor: Information and communication technologies and informatics processes are used to provide care, gather data, form information to drive decision making, and support professionals as they expand knowledge and wisdom for practice. This DNP program has provided me with necessary skills and tools needed to navigate the information divide and develop my DNP project. This project incorporated current technology, emails, Qualtrics and Excel to deliver information, record responses and tabulate data.

- ***Domain 9.*** Professionalism Descriptor: Formation and cultivation of a sustainable professional nursing identity, accountability, perspective, collaborative disposition, and comportment that reflects nursing's characteristics and values. UVa has instilled in its students the drive and necessary skills to improve the nursing profession, succeed as a provider and contribute to the improvement in patient health. This project was screen using IRB protocol and Nursing Faculty oversight to ensure professionalism and accountability that reflects current UVa Nursing values.
- ***Domain 10.*** Personal, Professional, and Leadership Development Descriptor: Participation in activities and self-reflection that foster personal health, resilience, and well-being, lifelong learning, and support the acquisition of nursing expertise and assertion of leadership. Many of the UVa classes provide a forum to work through problems, develop leadership skills for the workplace though classroom education and both individual and collaborative projects. This project: helped foster a personal growth and is part of my lifelong learning process.

Conclusion

The implications of this EBP project show that yoga is beneficial for the treatment of anxiety, depression, and low back pain. now we need to implement. Wiles, et.al., (2021) in their investigation on the use of yoga in recreational therapy practice, indicated that all patients benefit from yoga, including specific populations with physical and mental disabilities. The investigators also found that the use of chair yoga, is suitable for use in older and trauma sensitive individuals. This evidence-based, educational module demonstrated a moderate improvement in the willingness of primary care providers, from 53% to 100%, to recommend yoga as a treatment for mental health disorders such as anxiety and depression and for physical

ailments such as low back pain. This improvement in a PCPs willingness to recommend any treatment is important in the adoption of any new treatment by the patient. Research has shown that a PCPs belief in a treatment contributes to a 28% higher medical adherence and a patient's willingness to change a behavior to improve their health (Espinosa & Kadic-Maglajlic, 2019). While there were 4 participants who dropped out by the end of the month-long study, of the four participants who dropped out of this study, three (3) participants on the initial demographic did not refer for yoga and one (1) was in favor of using yoga as a treatment. The dropout rate likely affected the validity of this study.

With the high prevalence of mental health disorders and chronic pain in the U.S., it is imperative that we, as health care advocates, find effective, evidence-based treatments for our patients with various health conditions. Many of our patients, about one-third of U.S. adults, use alternative therapies, we, as healthcare advocates, must be aware of our patient's desire to use these modalities. We must lead by example and educate other health care members on the safe use of these modalities. We must educate ourselves on which complementary alternative medications are safe and effective, even if these modalities are outside the normal practice protocols. Yoga is a safe and effective alternative for its use in certain mental health and chronic pain conditions. As a health care provider, we need to use the all the weapons in our armamentarium to help improve the health our patients. We are also responsible for the education of other healthcare practitioners. If we can use health promotion modalities that require active participation by our patients, these activities will have a longer lasting and more effective impact on our patients' lives.

Plan for Sustainability

The mission of this DNP Evidence-Based Practice Project is to educated primary care providers on the benefits of yoga therapy in the treatment of mental health and chronic pain conditions. Armed with this information, through the suggestion that a modality is safe and effective for their patients combined with the process of knowledge diffusion, providers will be able to confidently provide their patients with evidenced-based information that would allow a patient to start the process of self-care. This process is adaptable to all body types and levels of disability. Staff in the office can help promote suggestions of a changing paradigm by putting up flyers in the office, interoffice monitors can display yoga therapy benefits and available classes online, zoom or in person at little to no cost in many cases.

Grants can be obtained to finance a hospital wide initiative to help patient and staff with job stress, anxiety, depression, and various pain syndromes. Information can be tabulated from patient and staff records, documenting decreased use of medical services, which in turn may influence decrease in medical insurance for the hospital, in the case of staff improvement. This change could be started on a small office by office scale. Pre- and post- implementation documentation of stress improvement, absentee rates, and employee satisfaction on the job, can lend a statistical validation of program success. Program success can be directed toward department chairs and hospital administration to implement a broader educational program with options on where to seek local yoga therapy. Improvement within the hospital system could be made public, and with political support other institutions may develop similar program that utilize nondrug therapies such as yoga, tai chi, chi gong, meditation, or massage therapies.

Plan for Dissemination

Dissemination of this project has been planned in several stages. 1. Local presentation during the defense of this project to my instructors and peers, 2. Follow-up emails to Family and

Internal Medicine department, to reinforce the benefits of yoga therapy and locations to participate in yoga therapy with price estimates. 3. Abstract presentation through the Iowa Evidence-Based Practice Conference, 4. Journal publications either through the Journal of Nurse Practitioners or the Journal of Alternative and Complementary Medicine. 5. Presentation at the state-wide Virginia Counsel of Nurse Practitioner Conference.

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List of Tables

***Table* 1**

Participant consent and enrollment. Consent form. The consent form approved by IRB was distributed to all potential participants as question 1 on the survey. Table 1 shows the number of participants who initiate the survey and consented to participate. The final participant number was 23.

Agreement	Participants	Percentage
YES	23	67.6
NO	4	11.8
WITHDRAWN	7	20.6
Total	34	100.0

Table 2

Question 3: Employer. FM and IM at the academic and regional health centers were asked to participate in Study. This represents number of individuals consenting from each hospital system. 11 from Family Medicine, 5 from Internal Medicine and 1 from Regional Internal Medicine.

Employer	Participants	Percentage
Academic FAMILY Medicine (A-FM)	11	64.7
Academic INTERNAL Medicine (A-IM)	5	29.4
Regional Internal Medicine (R-FM)	1	5.9
TOTAL	17	100.0

Table 3

Years of experience as health care provider. Table represents years of experience as a healthcare provider. Participant age ranges were mostly evenly spread, with a mode of over 20 years

Years	Participants	Percent	Female	Male	FM	IM
0-5	4	23.5	4	0	2	2
6-10	3	17.6	1	2	2	1
11-20	4	23.5	4	0	3	1
>20	6	35.3	3	3	4	2
Total	17	99.9	12	5	11	6

Table 4

Gender and profession of participants. Gender and profession breakdown of the study participants. Majority of participants (71%) were female, which is consistent with past studies on yoga

Gender	Participants	Percentage	Profession	Participants	Percentage
Female	12	70.6	NP	3	17.6
			MD	9	52.9
Male	5	29.4	MD	5	29.4
Total	17	100.0			99.9

Table 5

Age Ranges of participants. Age breakdown of participants in decades of life. The age ranges of participants were spread evenly over the 30-59 age range, with one over 60 years old.

Age	Participants	Percentage
30-39	4	23.5
40-49	6	35.3
50-59	6	35.3
60-69	1	5.9
total	17	100.0

Table 6

Years of yoga experience of each participant. Table represents current yoga experience of the participants broken down into interval ranges. The table indicates that the majority of participants had a 1-5 years of yoga knowledge, 24% had no prior yoga experience.

Years	Participants	Percent	Female	Percent Female	Male	Percent Male
0	4	23.5	1	8.3	3	60.0
1-5	10	58.8	9	75.0	1	20.0
6-10	1	5.9	1	8.3	0	0.0
11-20	1	5.9	0	0.0	1	20.0
>20	1	5.9	1	8.3	0	0.0
Total	17	100.0	12	99.9	5	100.0

Table 7

Recommend alternative treatments in your practice (including yoga). This question asked if the participant recommends alternative treatments in their practice. More female providers recommend alternative treatment then male providers. this is almost an invert proportion

Use of Altern. Tx	Participants	FM	IM	Female	Percent Female	Male	Percent Male	Percent Total
Yes	12	8	4	11	64.7	1	5.9	70.6
No	5	4	1	1	5.9	4	23.5	29.4
Total	17	12	5	12	70.6	5	29.4	100.0

Table 8

Do you refer to yoga? This question asked if the provider ever referred for yoga therapy. About 50% of providers refer to yoga, most are female, and the same percentage of male and female providers do not refer for yoga therapy.

Refer	Participants	FM	IM	Female	% Female	Male	% Male	% Total
Yes	9	7	2	8	47.1	1	5.9	52.9
No	8	5	3	4	23.5	4	23.5	47.1
Total	17	12	5	12	70.6	5	29.4	100.0

Table 9:

Would you recommend yoga if proven to be effective and Question 13: if you had a yoga provider in office would you use them. Most health care providers (94%) would refer to yoga if this was proven to be an effective therapy.

Response	FM	IM	Female	Male	Total	% Total
Yes	11	5	12	4	16	94.1
No	1	0	0	1	1	5.9
Total	12	5	12	5	17	100.0

Table 10:

Did you know some insurances will pay for yoga therapy? 75% of health care provider were aware that some insurance would cover yoga therapy. The percentage for male and female provider and between FM and IM was essentially equal.

Response	#	FM	% FM	IM	% IM	Female	% Female	Male	% Male
Yes	12	8	72.7	4	80.0	9	75.0	3	75.0
No	5	3	27.3	1	20.0	3	25.0	1	25.0
Total	17	11	100.0	5	100.0	12	100.0	4	100.0

Table 11:

Post intervention survey. After viewing the educational emails, would you consider using yoga therapy for your patients with Anxiety, Depression and Lower back pain? After the on-line educational intervention, all providers who responded to this final questionnaire showed support for the use of yoga as an intervention for anxiety, depression, and low back pain. 100% of respondents would prescribe yoga as treatment. Only 13 of 17 replied (76.5%) response rate. The study lost 4 participants. The four participants missing are: 4 family medicine (1 male and 3 female) of the 4 missing: 2 female participants did not refer to yoga, 1 male did not refer, 1 female did refer.

Response	#	FM	% FM	IM	% IM	Female	Male	% Total
Yes	13	7	53.8	6	46.2	10	3	100
No	0	0	0	0	0	0	0	0
total	13	7	53.8	6	46.2	10	3	100

Table 12:
If you had a provider in the office who was a Yoga instructor, would you take advantage of the insurance reimbursement for Yoga therapy? The willingness to prescribe yoga increased from 47 to 84%. One provider would not use yoga since he is a sole provider and not an instructor.

Response	#	FM	% FM	IM	% IM	Female	Male	% Total
yes	11	7	63.6	4	36.4	8	3	84.6
No	1	1	100.0	0	0.0	1	0	7.7
Maybe	1	0	0.0	1	9.1	1	0	7.7
Total	13	8	61.5	5	38.5	10	3	100.0

List of Appendices

***Appendix A*:**

SITE APPROVAL/IRB AUTHORIZATION LETTER

OFFICE OF THE VICE PRESIDENT FOR RESEARCH

HUMAN RESEARCH PROTECTION PROGRAM

INSTITUTIONAL REVIEW BOARD FOR THE SOCIAL AND BEHAVIORAL SCIENCES

IRB-SBS Chair: Moon, Tonya

IRB-SBS Director: Blackwood, Bronwyn

PROTOCOL NUMBER (4070) APPROVAL CERTIFICATE

The UVA IRB-SBS reviewed "Educating Primary Care providers on the Evidence Supporting the Use of Yoga in Treating Anxiety, Depression and Low Back Pain " and determined that the protocol met the qualifications for approval as described in 45 CFR 46.

Principal Investigator: Fetcho, Steve

Faculty Sponsor: Reid, Kathryn

Protocol Number: 4070

Protocol Title: Educating Primary Care providers on the Evidence Supporting the Use of Yoga in Treating Anxiety, Depression and Low Back Pain

Is this research funded? No

Review category: Exempt Review

- 3B. Benign behavioral interventions: no risk to criminal/civil liability, financial standing, employability, education advancement, reputation

Review Type:

- **Modifications**: No
- **Continuation**: No
- **Unexpected Adverse Events**: No

Approval Date: 2021-01-13

As indicated in the Principal Investigator, Faculty Sponsor, and Department Chair Assurances as part of the IRB requirements for approval, the PI has ultimate responsibility for the conduct of the study, the ethical performance of the project, the protection of the rights and welfare of human subjects, and strict adherence to any stipulations imposed by the IRB-SBS.

The PI and research team will comply with all UVA policies and procedures, as well as with all applicable Federal, State, and local laws regarding the protection of human subjects in research, including, but not limited to, the following:

1. That no participants will be recruited or data accessed under the protocol until the Investigator has received this approval certificate.
2. That no participants will be recruited or entered under the protocol until all researchers for the project including the Faculty Sponsor have completed their human investigation research ethics educational requirement (CITI training is required every 3 years for UVA researchers). The PI ensures that all personnel performing the project are qualified, appropriately trained, and will adhere to the provisions of the approved protocol.
3. That any modifications of the protocol or consent form will not be implemented without prior written approval from the IRB-SBS Chair or designee except when necessary to eliminate immediate hazards to the participants.
4. That any deviation from the protocol and/or consent form that is serious, unexpected and related to the study or a death occurring during the study will be reported promptly to the SBS Review Board in writing.
5. That all protocol forms for continuations of this protocol will be completed and returned within the time limit stated on the renewal notification letter.
6. That all participants will be recruited and consented as stated in the protocol approved or exempted by the IRB-SBS board. If written consent is required, all participants will be consented by signing a copy of the consent form unless this requirement is waived by the board.
7. That the IRB-SBS office will be notified within 30 days of a change in the Principal Investigator for the study.
8. That the IRB-SBS office will be notified when the active study is complete.
9. The SBS Review Board reserves the right to suspend and/or terminate this study at any time if, in its opinion, (1) the risks of further research are prohibitive, or (2) the above agreement is breached.

Date this Protocol Approval Certificate was generated: 2021-10-23

Appendix A:

CONSENT DOCUMENT

CONSENT TO PARTICIPATE IN Nursing Research

Study: Educating Primary Care providers on the Evidence Supporting the Use of Yoga in Treating Anxiety, Depression and Lower back Pain

You are asked to participate in a research study conducted by Steve Fetcho (primary investigator for this Doctor of Nursing Degree) and *faculty sponsor (Kathryn Reid),* from the School of Nursing at the University of Virginia. Your participation in this study is entirely voluntary. Please read the information below and ask questions about anything you do not understand, before deciding whether to participate.

OPTIONAL: You have been asked to participate in this study because you are interested in Yoga and are over 18 years of age. If you have any conditions that prohibit your participation or you wish to not participate then do not sign the form. You may withdraw at any time.

- **PURPOSE OF THE STUDY**

To educate primary care providers on the beneficial effect of yoga on anxiety, depression, and lower back pain using evidence-based information

- **PROCEDURES**

If you volunteer to participate in this study, you will be asked to do the following things:

Project information, consent and questionnaires will be emailed to Primary Care Providers in both Internal and Family Medicine at Sentara Martha Jefferson Hospital and the University of Virginia. These forms will be emailed, and you will be requested to fill out demographic form. Demographic form will take less than 6 minutes to complete. As part of the study, you will be asked to view a weekly one-page information sheet (example included in consent and demographic packet). These one- page evidenced-based information sheets will be sent via email once a week for 4 weeks.

- **POTENTIAL RISKS AND DISCOMFORTS**

There are no restrictions. Completing the forms will help me with my doctorate studies but you are not obligated to complete the forms.
There are no dangers other than the time to answer the demographic form and view the weekly educational modules. There are no financial obligations or charges for this study. If the forms are too

distressing or confusing to fill out, then please let me know (434)-985-4012. I will send you a reminder to complete the forms each week.

Study will be terminated at end of four weeks or if there are no participants or the researcher is unable to physically complete study.

In the event of physical and/or mental injury resulting from participation in this research project, The University of Virginia does not provide any medical, hospitalization or other insurance for participants in this research study, nor will University of Virginia provide any medical treatment or compensation for any injury sustained as a result of participation in this research study, except as required by law.

- **POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY**

Benefits: Participation in nursing research, demonstrating the positive benefits of yoga on the treatment of anxiety, depression, and pain. Providing our patients with another evidence-based modality to improve their mental and physical health.

Note: There is NO Payment or other compensation for participation.

- **COMPENSATION FOR PARTICIPATION**

No compensation for this study, just the knowledge that you are helping a nursing student with his thesis and may be furthering the study of yoga in the United States.

- **CONFIDENTIALITY**

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of initial and last 4 of social security number on demographic forms .

This information will be available for review by UVa Department of Nursing. No personal information will be made available to any outside parties.

There is no audio or video recordings. All data will be used for educational purposes, and when they will be erased or destroyed.

In case of an emergency, injury, or illness that occurs during this study, I hereby authorize the release of all health information to allow for medical care and treatment of my condition."

- **PARTICIPATION AND WITHDRAWAL**

You can choose whether to be in this study. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind or loss of benefits to which you are otherwise entitled. You may also refuse to answer any questions you do not want to answer. There is no penalty if you withdraw from the study and you will not lose any benefits to which you are otherwise entitled.

- **IDENTIFICATION OF INVESTIGATORS**

If you have any questions or concerns about this research, please contact Steve Fetcho, Dr. Kathryn Reid, or the UVa School of Nursing. 434-985-4012.

- **RIGHTS OF RESEARCH SUBJECTS**

The University of Virginia Institutional Review Board has reviewed my request to conduct this project. If you have any concerns about your rights in this study, please contact

Steve Fetcho, RN, FNP 434-985-4012 email: sf9a@virginia.edu
Kathryn Reid at University of Virginia at 434-924-0000 or email sf9a@virginia.edu.

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

_____
Printed Name of Subject

_____ _____
Signature of Subject Date

_____ _____
Signature of Witness Date

Appendix A:

RECRUITMENT LETTER

Dear Family and Internal Medicine Providers.

My name is Steve Fetcho. I am a nurse practitioner at UVa Family Medicine and a Doctoral Student at UVa. I am recruiting participants to view a short (1-minute or less) weekly email on the benefits of yoga in the treatment of anxiety, depression, and low back pain. The whole program will take less than 15 minutes from start to finish.

You will find attached, information on this study and copy of the consent form. This consent will be repeated on the Qualtrics site to complete the demographics and initial survey. If you consent, then starting Monday, May 3rd, 2021. I will start sending weekly one-page emails that have an evidence-based study, showing the benefit of yoga for certain common medical problems. There are 4 emails in all. The project starts 5/3/21 and ends the week of 5/24/21. There will be a post-survey email sent out one time on 5/31/21. I hope that you will participate. The total time for this study is approximately 15 minutes from start to finish. Thank you for considering my study.

Steve Fetcho

npyogaproject@gmail.com

Study: Educating Primary Care Providers on the Benefits of Yoga in treating anxiety, depression, and low back pain
Steve Fetcho (npyogaproject@gmail.com)

Explanation of Study: There is a significant body of Level 1 and Level 2 evidence indicating that Yoga is as effective as counseling for anxiety and depression and comparable to the benefits of physical therapy in treating chronic low back pain.

The goal of the educational module: Using a weekly email, I plan to introduce family and internal medicine providers to the potential benefits of adding yoga therapy to current practice for the treatment anxiety, depression, and low back pain. UVa already offers free Zoom yoga classes through the Contemplative

Science Center (CSC) and Compassionate Care Initiative at UVa. These programs can help professionals and students alike with their mental and physical health struggles.
My hope is making providers aware of the options in the community for Yoga therapy, to offer venues to help our professional staff and future health care providers prevent burnout. Our patients can also be directed toward these effective programs.

This educational module is assisting me with the completion of my Doctoral work at the University of Virginia's School of Nursing.

- Participation is voluntary and at no cost.
- **Total participant time for the study is 15 minutes.**
- The initial survey requires (average) 3 minutes or less to complete.

The entire program includes a consent form, an initial 13 question survey, and a post-program survey that has 4 questions. (See attached copies)

- The participant will be sent a one-page information sheet with an example of the benefit of yoga therapy and the level 1 or 2 study that supports the claim. This will take less than 30 seconds to review. These information sheets will be sent once a week for 4 weeks only. The responses are confidential and will be used to determine basic knowledge and attitude of Family and Internal Medicine providers on the use of yoga in the treatment of certain medical conditions.
- The information sheets will be sent to each of the consenting providers personal email and will not affect clinic flow or time. (see attached example)
- The estimated time for the study, from start to finish, is less than 15 minutes.

I am requesting your help with completing my study and my degree.
Thank you for your consideration.
Steve Fetcho

Follow this link to the Survey:
Yoga Study

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

Follow the link to opt out of future emails:
${l://OptOutLink?d=Click here to unsubscribe}

***Appendix B*:**

Initial Primary Care Provider Survey

Current Evidence-Based Data on Yoga
for the treatment of Anxiety, Depression and Chronic Lower back pain.

Several Level 1 Systematic Reviews/meta-analysis and Level 2 Randomized controlled studies have indicated that yoga is more effective than medication, standard care, and education for the treatment of anxiety and depression.

Yoga is more effective than medication and surgery for the relief of lower back pain. Yoga is just as effective as physical therapy.

Did you know: If a practice has a physician, nurse practitioner or physician assistant who is also a certified yoga instructor, can charge and be reimbursed for yoga therapy.

Provider Demographic Profile

1. Provider Initials:
2. Office Initials:
3. Email:
4. Type of practice:
    a. internal medicine
    b. family medicine
    c. other
5. Years in practice:
    a. 0-5
    b. 6-10
    c. 11-20
    d. More than 20 years
6. Sex:
    a. Female
    b. Male

c. Other

d. Prefer not to answer

7. Responder Age:

A: 20-29
B: 30-39
C: 40-49
D: 50-59
E: 60-69
F: 70 or greater

8. Years of yoga experience:

a. 0 (no experience)
b. 1-5 years
c. 6-10 years
d. 11-20 years
e. 20 or more years

9. Do you use alternative treatments in your practice, such as herbs, acupuncture, yoga, massage, or any other treatments not considered typical medical care? Why?

a. Yes

b. No

c. Why?

i. I don't believe these are effective

ii. I use them if the patient wants to try

iii. I prescribe these modalities often for my patients

iv. Other reason

10. Have you ever referred a patient to yoga for anxiety, depression, or chronic lower back pain?

a. Yes

b. No

11. Would you consider referring a patient to yoga therapy if scientific evidence indicated that yoga was effective in treating anxiety, depression, and lower back pain?

a. Yes

b. No

c. If no why?

i. I do not believe in yoga's therapeutic benefit.

ii. There are reimbursement issues for the patient.

iii. Yoga is not supported by the patient's insurance.

iv. My patients would not go to yoga if I prescribed it.

v. Other reason

12. If you had a provider in the office who was a yoga instructor, would you take advantage of the insurance reimbursement for yoga therapy?

a. Yes

b. No

13. Did you know some insurance companies reimburse for alternative treatments such as yoga and acupuncture?

a. Yes

b. No

Insurances that cover alternative treatments:

Anthem BCBC federal policies "R"
Aetna UVa
Aetna
Workers comp. must prioritize in epic
Veteran's Affair: must have prior auth in Virginia
Medicare A/B

Appendix B:

Post Implementation Survey

Thank you for participating in this Project.

1. Provider Initials:
2. Email:
3. After viewing the educational emails, would you consider using yoga therapy for your patient's with anxiety, depression, and lower back pain.
    a. Yes
    b. No
    c. Why?
        i. I still do not believe yoga is effective
        ii. I would use them if the patient requests
        iii. I prescribe these modalities already for my patients
        iv. Other reason
4. If you had a provider in the office who was a yoga instructor, would you take advantage of the insurance reimbursement for yoga therapy?
    a. Yes
    b. No
    c. Why or Why not?

Insurances that cover alternative treatments:

Anthem BCBC federal policies "R"
Aetna UVa
Aetna
Workers comp. must prioritize in epic
Veteran's Affair: must have prior auth in Virginia

Medicare A/B

Yoga is covered under Health savings accounts if prescribed by health care provider.

Current Evidence-Based Data on Yoga for the treatment of Anxiety, Depression and Chronic Lower back pain.

Level 1 Systematic Reviews/meta-analysis and
Level 2 Randomized controlled studies have indicated that yoga is more effective than medication, standard care, and education for the treatment of anxiety and depression.

Conclusion

Yoga is more effective than medication and surgery for the relief of lower back pain. Yoga is more effective than medication, standard medical care and education in treating anxiety and depression. Yoga is just as effective as physical therapy in treating low back pain.

Appendix B:

Participant Material Program Slides

Educating Primary Care Providers on the Effectiveness of Yoga

Steve Fetcho

Week 1

Evidence-Based Medicine supports including Yoga as part of your treatment plan for Anxiety

- To start the program simply click on the slide to progress to the next slide
- There are a total of three slides per week
- Thank you for participating

Yoga is effective for treating Anxiety

- Fact1: Yoga provides higher expectations for improvement than education alone for depression and anxiety.
- Example: a 20 y/o mother of 2 children would expect more improvement from yoga than education

- Images compliments of yoga pose outlines
- https://www.pinterest.de/pin/103723597655459199/?d=t&mt=login

Yoga is effective in treating patients with Anxiety

Level 1 evidence.

- Reference: (Uebelacker, L.A., Weinstock, L.M., Battle, C.L., Abrantes, A.M., Miller, I.W. (2018). Treatment credibility, expectancy, and preference: Prediction of treatment engagement and outcome in a randomized clinical trial of hatha yoga vs. health education as adjunct treatments for depression*J Affect Disord,. 238*:111-117).

Week 2

Evidence-based Medicine indicates that

Yoga is an effective adjunctive treatment in controlling Depression

Thank you for participating in this doctoral study.

- Yoga is comparable to medication in decreasing depression scores Medication has earlier on set of action but combining treatments may offer greater overall remission.

- Example: A 30 y/o man and 30 y/o woman with h/o depression would benefit from both yoga therapy and medication but would have to rely on medication to sustain the benefit. Combining both medication and yoga, may offer a greater overall remission .

Yoga offers effectiveness similar to medication,

combining yoga and medication,

may offer greater expectation for remission .

- Level 1 evidence
- Reference: Sarubin, N., Nothdurfter, C., Schüle, C., Lieb, M., Uhr, M., Born, C., Zimmermann, R., Rüther, M., Konopka, K., Rupprecht, R., Baghai, T. C. (2014). The influence of Hatha yoga as an add-on treatment in major depression on hypothalamic-pituitary-adrenal-axis activity: a randomized trial. *J Psychiatr Res*. *53*:76-83.

Week 3

Warrior (right)

Yoga improves clinical outcomes, patient satisfaction and mental health scores in the treatment of low back pain.

Warrior (right)

- Yoga is comparable to physical therapy in improving clinical outcomes, patient satisfaction and mental health scores in the treatment of low back pain.

- A 40 y/o Hispanic father of 3 with low back pain, would achieve relief of his low back pain similar to physical therapy but would have added benefit of decrease in anxiety and depression scores related to his back pain. The mental health benefit is no achieved with physical therapy alone.

Warrior (right)

- Yoga improves physical function and reduces pain clinical outcomes, patient satisfaction and mental health scores in the treatment of low back pain.

Yoga was non-inferior to physical therapy. Yoga and physical therapy participants used less pain medication and improvements were maintained in one year follow-up.

- Level 2 evidence
- Reference: Saper, R.B., Lemaster, C., Delitto, A., Sherman, K.J., Herman, P.M., Sadikova, E., Stevan, J., Keosalian, J.E., Cerrada. C.J., Femia, A.L., Roseen, E.J., Gardiner, P., Gergen, K., Faulkner, C., Weinberg, J. (2017). Yoga, Physical Therapy, or Education for Chronic Low Back Pain: A Randomized Noninferiority Trial. Annals of internal Medicine, 167: 85 -94

Week 4

Triangle (left)

Yoga improves mental and physical health scores in patients with chronic pain.

Triangle (left)

Yoga improves mental and physical health scores in patients with anxiety, depression, and chronic pain at 8- and 12-week follow-up.

- A 40 y/o man who works construction with h/o anxiety and low back pain and a 40 y/o woman who is a computer programmer with h/o anxiety and fibromyalgia will show decrease pain scores and improvement in mental health with yoga therapy .

Triangle (left)

Yoga improves mental and physical health scores
in patients with
anxiety, depression, and chronic pain

Level 1 evidence

Reference: DeGiorgio, A., Padulo, J. & Kuvacic, G. (2018). Effectiveness of yoga combined with back school program on anxiety, kinesiophobia and pain in people with nonspecific chronic low back pain: a prospective randomized trial. Muscles, Ligaments & Tendons Journal, 8(1): 104-112.

Conclusion

- A complete systematic review of the effects on Yoga on Anxiety, Depression and Low Back Pain indicates that Yoga improves pain and mental health scores in all patient types
- Yoga is better or comparable to medication for the treatment of all three health care conditions.
- Yoga was equal to physical therapy for the treatment of Chronic Low Back Pain.
- **The goal of this proposed project** is to provide primary care providers with the latest evidenced based information and provide patients with an effective complementary treatment options with or without adjunctive medication

Appendix B

Audio Transcription of slides

yoga slide week 1: Studies on evidence-based practice demonstrate that yoga therapy is an effective modality in reducing anxiety in adults.

yoga Slide Week 2: Evidence based research on the use of yoga in the treatment of depression indicates that yoga is equally as effective as medication in reducing depressive symptoms

Yoga slide Week 3: Evidence based practice studies analyzing the effect of yoga on chronic low back pain have shown that yoga effectively decreases pain levels and that there is a consistently lower use of pain medication among the yoga group in younger and older adults.

yoga slide Week 4: A complete systematic review on the effects of yoga on anxiety, depression, and chronic low back pain indicate that yoga improves pain and mental health scores in all patient types. Yoga is better or comparable to medication in all three health conditions and yoga was equal to physical therapy in the treatment of chronic low back pain. Yoga is now reimbursable through certain insurance companies. I hope you will consider using yoga for the treatment of anxiety, depression, and low back pain. Thank you.

Yoga final slide: **Conclusion**: the main findings of this evidence based systematic review illustrates that current evidence shows the positive effects on decreasing lower back pain and improving mental health scores for anxiety and depression. These findings are mirrored in several other countries. The goal of my evidenced based on-line project is threefold: to provide pcp's (primary care providers) with current evidence-based data that supports the use of yoga in

these mental health and psychiatric conditions, 2 to influence prescribing habits and 3, prescribe our patients an effective complimentary treatment option for these life-affecting significant diseases. Yoga interventions via on-line platforms have been shown to improve stress management. In the future, we may be able to deliver health care via on-line programs that will offer patients a new and convenient option for the treatment of these and other health-related conditions. health care providers may be able to offer in-office yoga programs that are reimbursable by insurance. The gaps in literature only include a few studies that utilize yoga as a therapeutic modality for all three disorders. there are consistent limitations to these studies. 1. they are predominantly white female, 2. small sample size, 3. short study periods typically 8-12 weeks, most have weak to moderate evidence and high heterogeneity and younger patient age. the participants are voluntary which may contribute to convenience sampling bias. small sample sizes may limit generalizability. several authors recommend development of longer duration, higher quality studies to help demonstrate clinical relevance and provide meaningful data for patients and clinicians. Despite individual study weaknesses and inability to blind participants to yoga therapy, there is a growing body of evidence toward yoga improving health care outcomes. thank you for your participation and patience.

Appendix B

Final Letter to Participants

Dear Study Participants

I want to thank everyone who participated in this study regardless of whether you completed the final study or not. You are great colleagues, and I am proud to be part of UVa and working in Family Medicine.

you have my sincere gratitude and appreciation for taking your personal time to participate and help me reach my goal and complete my studies.

The final results of this study

1. 100% of all participants agreed that yoga was an effective modality for the treatment of anxiety, depression, and low back pain.

2. 84.6% would utilize yoga therapy if they had an instructor in the office. The one person who replied negatively, was a sole provider in the office and stated that he was not a yoga instructor.

Reimbursement factoids

1. Medical Yoga practitioner can bill at 1 hour level 5. Medicare cost for a level 5 office visit $183.19 and it is worth 2.8 work RVUs.

2. Subsequent yoga visits can be accomplished by other personnel in the office, provided that they are yoga instructors. These visits would be charged as a prolonged nurse visit if the provider checks on the patient during the visit. Prolonged clinical staff services can be charged as a code 99211, for a nurse supervised yoga visit. Medicare average payment is $21.96. (Hughes, 2016, Huang, 2021).

We are missing not only an opportunity to help our patient by utilizing yoga as a therapeutic modality, but also missing increased practice revenue. These yoga sessions can be a group activity, which would make the activity cost effective.

Yoga could be used to help both Nursing and Medical personnel, students, and residents in the treatment of work-related stressors.

I hope you will consider recommending yoga therapy in the future for your patients and yourselves. We can help ourselves using yoga.

Thank you for your time and expertise. I will be donating $100 each to both UVa Family and Internal medicine as a thank you for your help.

Steve

Appendix C

Prism Diagram

PubMed©, CINAHL©, PsychInfo©, and Proquest Global ©were used for the systematic review.

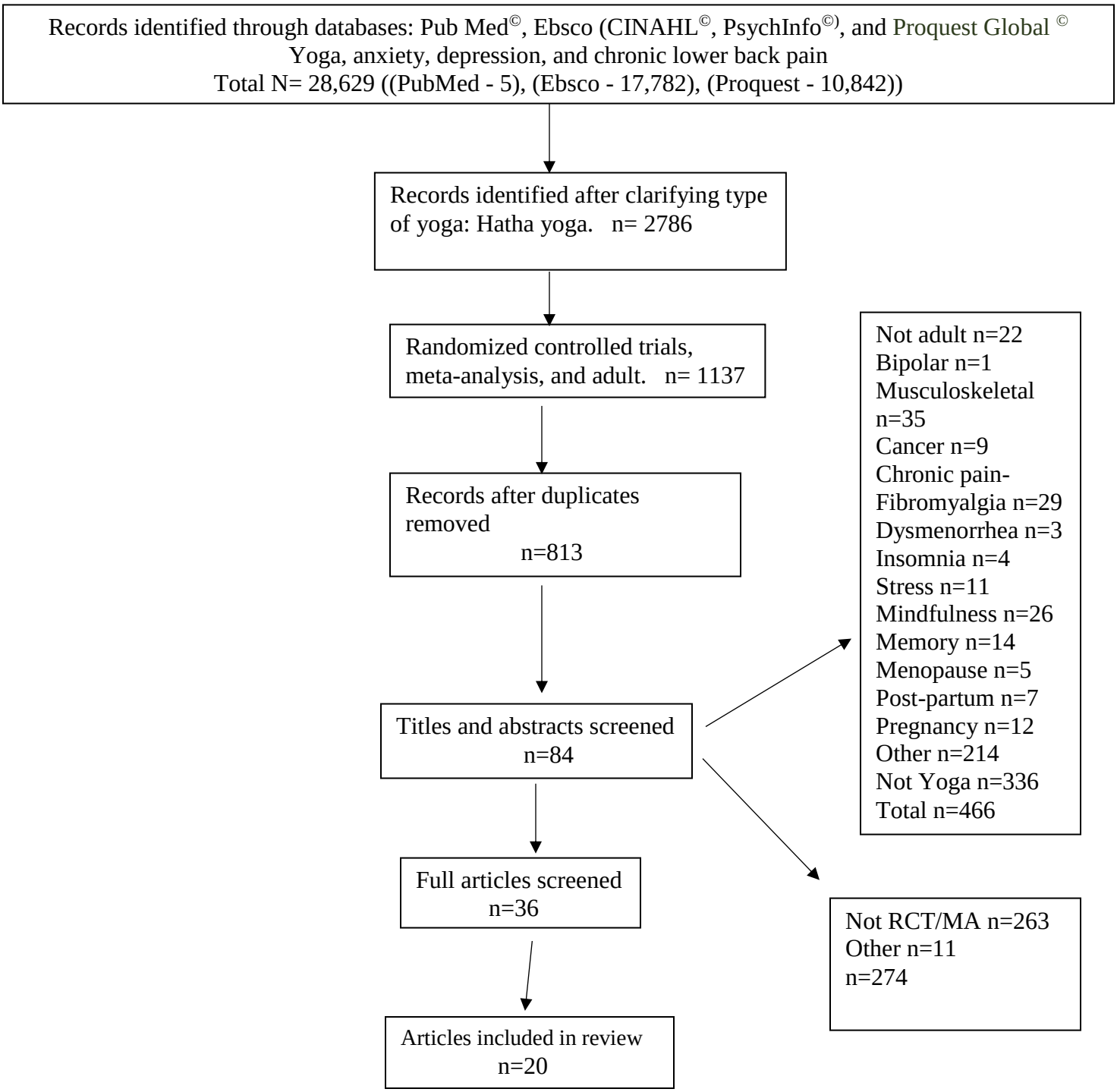

Figure 1: Systematic review Flowchart (modified PRISMA flow diagram): Study: the effect of yoga on anxiety, depression, and lower back pain

SYSTEMATIC REVIEW

Table 1

Literature review:

Study number	Author	Title	Study Sample	Study Country	Sample Size	Overall Study Design	Intervention / What was it compared to?	Intervention Duration	Outcome and How measured (if of interest)	Findings Relative to Outcome	Statistics	TOPIC
1	Uebelacker LA, Weinstock LM, Battle CL, Abrantes AM, Miller IW. 2018	**Treatment credibility, expectance and preference: prediction of treatment engagement and outcome**	Adults over 18. English speaking	USA	124	RCT	YOGA VS HEALTH EDUCATION; SECONDARY ANALYSIS	10 WEEKS INITIAL STUDY WITH 3 AND 6 MONTH FOLLOW-UP	DEPRESSION SCORING SPSS	higher expectations for improvement with yoga - were associated with more improvement with yoga than health education - associated expectancy with health education was not associated with improvement - expectancy and credibility were not associated with intervention adherence	p=0.012 concordance yoga vs HLW group	DEPRESSION AND ANXIETY
2	Uebelacker LA, Kraines M, Broughton MK, Tremont G, Gillette LT, Epstein-Lubow G, Abrantes AM, Battle C, Miller IW. 2017	**perceptions of hatha yoga amongst persistently depressed individuals**	ADULTS over 18. English speaking	USA	50	RCT CONSORT CRITERIA	YOGA VS HEALTH EDUCATION	8 WEEKS WITH 10 WEEK FOLLOW-UP	Quick INVENTORY OF DEPRESSION SYMPTOMS questionnaires about perceptions of class with comments.	yoga increased acceptability of depressed individuals due to non-competitive, non-judgemental atmosphere and individualized attention. Breathing exercises have positive impact on everyday life. -The most serious concern was that yoga classes wer too difficult for given physical abilities. -yogi's where veiwed positively	X 2=0.75 p=0.36	DEPRESSION AND ANXIETY
3	Uebelacker LA, Tremont G, Gillette LT, Epstein-Lubow G, Strong DR, Abrantes AM, Tyrka AR, Tran T, Gaudiano BA, Miller IW. 2017	**Adjunctive yoga v. health education for peristent major depression**	adults over 18. English speaking	USA	122	RCT	YOGA VS HEALTH EDUCATION	10 WEEKS INITIAL STUDY WITH 6 MONTH FOLLOW-UP	QUICK INVENTORY OF DEPRESSION SYMPTOMS	no change in depressive symptoms at end of intervention but yoga participants had fewer depression symptoms over the entire follow-up period	at 10 week -p=0.36 at 6 month f/u 50% reduction in yoga group. P=0.04	DEPRESSION AND ANXIETY
4	Prathikanti S, Rivera R, Cochran A, Tungol JG, Fayazmanesh N, Weinmann E. 2017.	**Treating major depression with yoga: a prospective, randomized, controlled pilot trial**	Adults over 18. English speaking	USA	38	RCT	YOGA VS ATTENTION CONTROL EDUCATION	8 WEEKS	BECK DEPRESSION SCALE. GENERAL SELF-EFFICACY AND SELF ESTEEM QUESTIONAIRE	Statistically and clinically significant reduction in depression in the yoga tx group	reduction in depression p-value = 0.034 more yoga participants achieved remission p=0.018. Cohen's d= -0.96	DEPRESSION AND ANXIETY
5	Sarubin N, Nothdurfter C, Schüle C, Lieb M, Uhr M, Born C, Zimmermannc R, Bühner M, Konopka K, Rupprecht R, Baghai TC. 2014	**The influence of Hath Yoga as an add-on treatment in major depression on hypothalamic-pituitary-adrenal axis activity**	Adults over 18.	GERMANY	60	RCT	YOGA VS MEDICATION	5 WEEKS	BECK DEPRESSION SCALE. AND CORTISOL LEVELS	DECREASE DEPRESSION WITH MEDICATION AND YOGA THERAPY but medication has earlier effect and downregulated HPA axis function for favorable treatment response	no difference in clinical improvement x2=0.03; p=0.862 but significant time effect p=0.000	DEPRESSION AND ANXIETY
6	Saper RB, Sherman KJ, Delitto A, Herman PM, Stevans J, Paris R, Keosaian JE, Cerrada CJ, Lemaster CM, Faulkner C, Breuer M, Weinberg J. 2014	**Yoga vs. physical therapy vs education for chronic low back pain in minority populations**	ADULTS 18-64	USA	320	RCT - SINGLE BLIND	HATHA YOGA VS PHYSICAL THERAPY VS EDUCATION	12 WEEKS	Roland Morris Disability questionnaire (RMDQ) and 11 point pain scale	yoga was non-inferior to physical therapy	no difference in clinical outcomes, physical health scores, patient satisfaction, improvement of mental health scores between the groups 95% CI for -Disability=0.83 -Pain = 0.97	LOW BACK PAIN

7	Kinser PA, Bourguignon C, Whaley D, Hauenstein E, Taylor AG. 2013		ADULTS OVER 18	USA	27	RCT	ADJUNCTIVE TREATMENT FOR DEPRESSION	8 WEEKS	PHQ-9, PSS-STRESS SCALE, STATE TRAIT ANXIETY, RUMINATION SCORE	Comparison of yoga and health education: Both groups reported decreased depression from moderate to minimal. Unique to yoga there was a decrease in rumination.	p-value for depression = 0.05 for rumination =0.1	DEPRESSION
8	Saper RB, Sherman KJ, Cullum-D	**Yoga, physical therapy vs education for chronic low back pain in minority populations**	ADULTS OVER 18	USA	30	PILOT RCT	HATHA YOGA VS WAIT LIST CONTROL	12 WEEK WITH 26 WEEK FOLLOW-UP	PAIN SCORE	yoga demonstrated -a decrease in pain scores, compared to usual care. -decrease in analgesic use - less opiate use -greater overall improvement - no difference in health related quality of life scores and no adverse	p-values 0.02 0.003 0.04 0.03	LOW BACK PAIN
9	Taspinar, B; Aslan, U; Agbuga, B; Taspinar, F . 2014	**A comparison of the effects of hatha yoga and resistance exercise on mental health and well being in sedentary adults: a pilot study**	ADULTS AGE 20-40	TURKEY	51	RCT	HATHA YOGA VS RESISTANCE EXERCISE VS CONTROL (WAIT LIST)	7 WEEKS	BECK DEPRESSION; NOTTINGHAM HEALTH PROFILE; ROSENBERG SELF ESTEEM	Yoga and exercise have a positive effect on mental health and well-being. Improvement: Yoga/exercise/control 75% values shown fatigue: -1.2/-0.6/1.3 depression: -0.5/-2/1 self-esteem: 5/2/2.5 body image: 31.5/31.5/8.5 quality of life: -17.3/-4.48/23 energy level: 0/0/0 pain: 0/0/0 emotional rxn: 0/0/12.2 social isolation: 0/0/10 sleep: 0/0/0 physical activity: 0/0/5.4 resistance exercise improve body image at median level Both had similar decrease in	results not normally distributed. 25,50 and 75% values used to compare groups %75 change yoga:	MENTAL HEALTH
10	De Giorgio, A., Padulo, J., Kuvačić, G. 2018	**Effectiveness of yoga combined with back school program on anxiety, kinesiophobia and pain**	ADULTS OVER 18	USA	70	RCT	HATHA YOGA AND BACK PAIN SCHOOL VS HATHA YOGA	8 WEEKS WITH 12 WEEK FOLLOW-UP	Hamilton Anxiety scale, BODY CATHEXIS SCALE; Back pain disability and quality of life scales.	Decrease in means scores for all psychological variables. YOGA AND BACK PAIN SCHOOL BETTER THAN YOGA ALONE	F and p values Anxiety: 53.5, <0.001 kinesio:52.2, <0.001 disability: 128.3, <0.001 body pain:20.9, <0.001 mental health: 7.3, 0.011 health percept: 7.87, 0.008	LOW BACK PAIN
11	Nascinmento, P.R.C, Costa, L.O.P., Araujo, A.C., Poitras, S., Bilodeau, M.	**Effective of interventions for non-specific low back pain in older adults.**	Adults over 60	Brazil	18	Systematic review and meta-analysis	RCT's testing interventions to manage low back pain in older adults	Review- not applicable	databases: medline, Embase, Cinahl, Lilacs, Pedro, Cochrane	Evidence is limited about interventions in older adults	Risk of bias: moderate 6.4 with SD=1.44	low back pain
12	Park, J., Krause-Parello, C.A., & Barnes, C.M.	**A narrative review of movement based mind-Body interventions: effects of Yoga, tai chi and qigong for back pain patients**	adults over 18	USA	32	literature review	Mid Body interventions	Review- not applicable	pubmed, Cinhahl Elsevier, Psychinfo Cochrane	Mind body interventions are safe, effective, and feasible for treatment of patients with low back pain. Mild adverse effects reported	reported statist significance (no actual value)	low back pain
13	Kuvacic, G., Fratini, P., Padulo, J., Antonio, D.I., & DeGiorgio, A.	**Effectiveness of yoga and educational intervention on disability, anxiety, depression and pain in people with CLBP: a randomized controlled trial**	adults over 18	Italy	30	RCT	yoga vs educational intervention	8 week	Oswestry low back pain disability questionnaire, zung self-rating depression scale, zung self-rating anxiety scale and numeric rating scale for pain	yoga showed significant decrease in all variables compared to baseline. -significant differences in groups with regards to depression, anxiety and pain but not in disability	yoga effective in reducing depression, anxiety ($p<.05$) which affects perception of pain. Yoga also was stat significant compared to education ($p<.05$).	anxiety, depression and chronic low back pain.

14	Kizhakkeveettil, A., Whedon, J., Schmalzl, L., & Hurwitz, E.L	**Yoga for Quality of Life in Individuals with Chronic Disease: A Systematic Review**	adults over 18	USA	7	systematic review	yoga effect on quality of life	review not applicable		five report statistical advantage over usual care for the improvement in quality of life, but only one study showed clinical significance of the difference. Quality MEASURES VARIED, chronic disease varied.	Conclusion was that more high-quality studies are needed. For pain, one study, showed that yoga lead to improved vitality and mental health $p<0.05$ but no improvement in pain scores with $p>0.05$. another study, pain, physical functioning, mental health all improved with yoga treatment. $p>0.05$ Conclusion: yoga alone, for the treatment of most chronic disease, unlikely to be used as primary intervention but holds promise for adjunctive therapy.	mental health, and pain
15	Chong, C. S. M., Tsunaka, M., Tsang, H.W. H., Chan, E. P., & Wai M. C.	**Effects of Yoga on Stress Management in Healthy Adults: A Systematic Review.**	adults over 18	China	8	systematic reviews of rct and ccts	yoga and stress	review: not applicable		8 rct and cct revealed positive reduction in stress in health adults. Used hatha, kundalini, asana, iyengar, Sudarshan kriya,	to significance of $p<0.05$), overall wellbeing improvement (($p<0.05$), mental health improvement $p=0.02$). 6 month f/u on one study showed relaxation exercise were easier to maintain than yoga treatment.	stress managment
16	McCall, M.C. Ward, A., Roberts, N. W., & Heneghan, C.	**Overview of Systematic Reviews: Yoga as a Therapeutic Intervention for Adults with Acute and Chronic Health Conditions.**	adults over 18	United Kingdom	26	systematic reveiws	yoga and 13 chronic health conditions	review: not applicable		26 ARTICLES REVEIWED 11 REVEIWS POSITVE/15 UNCLEAR RESULTS YOGA MOST EFFECTIVE IN REDUCEING SYMPTOMS IN ANXIET, DEPRESSION AND PAIN.	Effect size ranged from -0.54 with $p=0.01$ for fibromyalgia to -3.25 with $p=0.002$ for psychiatric disorders. Ten studies using integrated yoga, Sudarshan, Kriya, Hatha, and Iyengar techniques	chronic health conditions

Table 2
Grey Literature

ID	Author	Title	Journal	Year	Volume, Issues	Pages	Study Sample: demographics, essential clinical characteristics	Study Setting/ Country, possibly more specific	Sample Size: toatl and each group for all groups	Methodology Intervention randomized or not No intervention Systamatic Review (quantative only) Scoping Review	Intervention / What was it compared to?	Intervention Duration	Outcome and How measured (if of interest)	Findings Relative to Outcome
1	Eyigor,Eyigor S, Uslu R, Apaydın S, Caramat I, Yesil H.	Can yoga have any effect on shoulder and arm pain and quality of life in patients with breast cancer?	Therapeutic Clinical Practice	2018	32	40-45	adults with breast cancer and shoulder or arm pain	U.S.	42	prospective randomized study	yoga therapy compared to control	10 weeks	depression and quality of life scoring	yoga is safe and effective. P=<0.05 in total discomfort score but no difference in quality of life scores
2	Adair M, Murphy B, Yarlagadda S, Deng J, Dietrich MS, Ridner SH.	Feasibility and Preliminary Efficacy of Tailored Yoga in Survivors of Head and Neck Cancer: A Pilot Study.	Integrative Cancer Therapy	2018	17(3)	774-784	adults with head and neck cancer	U.S.	73	randomized wait list controlled	yoga therapy compared to wait list control	8 weeks	satisfaction and range of motion measurements	high therapy satisfaction. Further investigatioin recommended. Improved rom with p=<.005 decreased pain p=<.005 decreased anxiety with p=.015
3	Benvenutti MJ, Alves EDS, Michael S, Ding D, Stamatakis E, Edwards KM. A	A single session of hatha yoga improves stress reactivity and recovery after an acute psychological stress task-A counterbalanced, randomized-crossover trial in healthy individuals.	Compl. Therapeutic Medicine	2017	35	120-126	healthy adults. Stress tasks with yoga therapy and control group	U.S.	24	single session randomized session	yoga vs control group	2 days	blood pressure and cortisol levels measured	single session yoga improved blood pressure (p=.047 and .018), cortisol reactivity (p=.01), and increased self-confidence (p=.006).
4	Mussman, K.B.	Online yoga intervention as e-health for improving stress management: percieived stress, stage for change for stress management and engangement in yoga	dissertation proquest	2016			adults 18 years and older	U.S.	14	survey monkey convenience sampling	yoga participants no control group	4 weeks	online yoga classes may be alternative treatment for stress management	12 women 2 men intervention was effecti ve in reducing stress for the past month p=0.0055 64% planed to continue online yoga practice
5	Kruer-Zerhusen, A.E.	Mind-Body interventions for chronic pain and trauma: a qualitative research perspective on group psychotherapy intervention.	dissertation proquest	2015	Publication Number:10076300 ISBN:978-1-339-58601-4		adult men and women 18 years or older	U.S.	5	convenience sampling attended group psychotherapy with meditation and yoga component	yoga group no control group	4 months	30 minute talk therapy 30 minute yoga 45-75 minute recorded interview demographics and interview analysis	participants regained a hope for change
6	Zoogman, S.	Yoga and Anxiety: a meta-analysis of Randomized controlled trials	proquest dissertations and theses global	2016	publishing number 10108122		adult women	U.S.	53	Meta-Analysis of quantitative studies	anxiety	n/a	yoga significantly decreses anxiety symptoms	effects other biologic measures : other mental health outcomes, physical health outcomes, stress and life satisfaction
7	LaRocque, C.L.	A Randomized controlled trial of Bikram yoga and aerobic exercise in the treatment of depression: efficacy and underlying physiological and psychological mechanisms	proquest dissertations and theses global	2018	Publication Number: 110999571		adult women	Canada	53	Randomized controlled	Bikram yoga compared to aerobic exercise	8 weeks	Beck's Depression scale intent to treat analysis	50% reduction in depression 61.1%, 60.0%, and 6.7%, respectively, for the yoga, exercise, and waitlist groups. P-values: 0.076, 0.013,

Appendix D

Chi Square Analysis and Fisher Exact Test

Group 1	Before interventions	After interventions	chi square test stat
Use yoga	12	13	0.083333333
No yoga	5	0	5
	17	13	5.083333333
p-value	0.024156885	reject null using p-value	
Test stat	5.083333333		
Critical value	3.841458821	Reject the null since test stat is greater than critical value. There is a significant relationship between the two variables. The educational module **does** affect providers willingness to prescribe yoga therapy for anxiety, depression, and low back pain.	

h_0: educational module will not affect prescribing yoga
h_a: educational module will affect prescribing yoga

Conditions:

1. Reject null hypothesis if p-value <=alpha	p-value is .02415
2. Do not reject null hypothesis if p-value>alpha	p-value is less <= .05 so we reject null. Educational module **does** affect prescription

This is a Chi-square test of Independence: looks for an association between two categorical variables within the same population.

With one assumption violated "No yoga – after intervention".
Fisher Exact Test had to be utilized. This was a two-tailed test, with p-value 0.05245393.

For reporting: The educational module demonstrated an increase in primary care providers willingness to recommend yoga to their patients with anxiety, depression, and low back pain but the results were not statistically significant (p=0.054245393). More studies are recommended to extend this pilot study.

Appendix E

Journal Article (Journal of Nurse Practitioners)

Cover letter

My name is Steve Fetcho, I am a Doctor of Nursing Practice (DNP) student at the University of Virginia. As part of my doctoral project, the primary care providers at two local hospitals agreed to participate in an on-line 4-week evidence-based educational module on the effect of yoga on anxiety, depression, and low back pain. The participants included nurse practitioners and physicians. This online evidence-based educational program demonstrated a 47% increase in the willingness of primary care providers to prescribe yoga for the treatment of anxiety, depression, and low back pain.

I believe this article would fit into the mission proposed by the Journal of Nurse Practitioners because this study was an evidence-based educational module that utilized both nursing and medical providers as participants and led to improved knowledge in the treatment of anxiety, depression, and low back pain without the addition of medication. These interventions may have led to an increase in willingness to prescribe yoga, and a possible change in practice recommendations by primary care providers for their adult patients with these conditions. Through this educational program, I had hoped to advocate the use of an evidence-based, non-medicinal treatment option for our patients with mental health and physical needs.

This article has not been submitted elsewhere for publication, while I await your decision.

Conflict of interest: I have no conflict of interest. Form is attached to this submission

Title: Using Evidence-based Practice to Promote the Use of Yoga for the treatment of Anxiety, Depression, and Lower back Pain in Primary Care

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Abstract

Objective: The goal was to demonstrate that by utilizing an evidence-based educational module, primary care providers can be encouraged to prescribe yoga therapy is a viable alternative to current medical therapy, either as adjunctive treatment or as sole therapy for the treatment of these conditions.

Background: Anxiety, depression and low back pain costs American $665 billion/year in lost productivity, appointments, and treatment.

Main idea: Yoga therapy offers a non-medication-based approach in the treatment of these conditions. Any modality that can decrease anxiety, depression, and pain, then this would be a good option to improve patient care, with or without medication.

Study Design: A one-month educational pilot study, using weekly evidence-based education modules to evaluate the willingness of primary care providers to prescribe yoga therapy for the treatment of anxiety, depression, and lower back pain.

Conclusion: A 4 week online educational program was effective in increasing recommendations for yoga therapy for the treatment of anxiety, depression, and low back pain. Willingness to prescribe increased from 52.9% to 100% in the final cohort. All but one PCP had hesitancy regarding the effectiveness of yoga for the above conditions.

Keywords

Keywords: primary care provider, yoga, anxiety, depression, chronic lower back pain

Highlights

The readiness of primary care providers (Family and Internal Medicine) to recommend yoga as a treatment for anxiety, depression and low back pain increased from 52.9 to 100%. This was a 47.1% increase in a consideration on prescribing, based on posttest analysis. While some participants dropped out of the study, and this drop out number may have affected the final tally, several providers who were initially opposed to using yoga therapy due to lack of knowledge, altered their impression of yoga as a therapeutic modality and would now utilize this treatment option. Provider's knowledge of the benefits of yoga therapy improved including, the educational benefits of therapy, reimbursement information and insurance coverage. After the educational modules, 84.6% of study participants would use a yoga instructor in the office if available. 9% of participants would still not use a yoga instructor, which is a decrease from 29.4% who had not considered using yoga before this program. One participant would consider using yoga in the future, depending on reimbursement.

Introduction

Depression, anxiety, and lower back pain contribute to both morbidity and mortality in the United States. United States statistics indicate that Depression affects 16 million adults, approx. 6.7% adults with a reduced work productivity of 80% and is associated with an increase in loss of 8 days per worker per year[1,2,3,4]. According to 2021 statistics, suicide rates related to depression in the U.S. were 14 per 100,000 people[5]. Anxiety impacts, one in five adults in the U.S[6]. Anxiety prevalence in the U.S. is 3.1% with an average of 4.6 workdays lost per month, and productivity loss of more than $31 billion per year[7].

Lower back pain's prevalence in the U.S. is estimated at 25% with economic effect including both medical expenses and lost productivity, costs the Unites States over $635 billion per year (Yang, 2016). In one study[10], the percentage of anxiety and depression among people with lower back pain was significantly higher than people without back pain. For those with anxiety and back pain vs no anxiety and lower back pain, the prevalence was 9.5% vs 6.2%, for depression, the prevalence was 13.7% vs 8.5%. The gross national income of the United States, in 2016, was almost $19 trillion[11].

Yoga has been shown in many studies to be a safe and effective modality for treating pain, anxiety and depression related to chronic lumbar disease. For example, Hatha yoga is a form of gentle exercise that develops strength, flexibility, body relaxation and mental concentration. Further, Non-medication modalities, such as yoga, have been shown to improve functionality and return patients to normal life patterns, better than other standard treatment modalities such as physical therapy and medication. Interactive, video-based Yoga programs can offer a safe, convenient, and comfortable opportunity to improve health and return our patients to normal function.

Methods

Purpose of this evidence-based practice project is to present the current facts and educate primary care providers (PCPs), which includes Medical Doctors (MDs) doctors of Osteopathy (Dos), Nurse Practitioners (NPs), and Physician Assistants (PAs), on the current evidence supporting the use and effectiveness of yoga therapy in treating anxiety, depression, and chronic lower back pain in adults, in hopes of educating PCPs and advancing the use of yoga as a primary or adjunct treatment modality in the treatment of these conditions. This study was delivered via email, required few minutes of time per week to complete, and maintains social distancing required during the coronavirus pandemic.

This evidence-based clinical application of yoga to treat anxiety, depression, and lower back pain is a 4-week pilot study. Our specific research question is, can a weekly evidence-based information program influence the prescribing habits in PCPs, with regards to anxiety, depression, and lower back pain. Current evidence has proven that yoga therapy can successfully treat anxiety, depression, and lower back pain in adult patients.

PICOT: Does an on-line yoga education module, encourage health care professionals to prescribe yoga therapy for the treatment of depression, anxiety, and chronic lower back pain**.**

Literature Review

The primary finding of this literature review is that yoga is an effective modality for the treatment of lower back pain, anxiety, and depression. Depression and anxiety cost the U.S. over $1 trillion in lost productivity[12]. Labor costs for lower back pain is estimated at $66-102 billion per year. Savings have been estimated at $391 for a 6–12-month period with decrease in medication usage[13,14]. These three medical conditions contribute to significant morbidity in the United States affecting depression affecting an estimated 260 million people with many suffering

from anxiety[12]. Traditional and non-traditional treatments for these conditions have included medication, physical therapy, massage, acupuncture, and surgery.

The literature review was performed using Pub Med©, Ebsco (CINAHL©, PsychInfo©), and Proquest Global © Databases with the following search terms: "yoga", "hatha yoga", "anxiety". "depression", "lower back pain", "meta-analysis" and "randomized controlled trial".

The Preferred Reporting Items for Systemic Reviews and Meta-Analysis (PRISMA) criteria, nursing, health, behavioral, and psychological databases were reviewed, using PubMed, CINAHL, PsycInfo and Proquest Global (for gray literature). The main findings for this review illustrated the positive effects of yoga on decreasing lower back pain and improving mental health scores for anxiety and depression. These findings are mirrored in several other countries, as detailed in this review. Yoga interventions via e-health platforms have been shown to improve stress management[15]. The current literature supports the use of yoga for the treatment of anxiety, depression, and lower back pain. The goal of my evidenced-based, online project is twofold: 1. to provide PCPs with current evidence-based data that supports the use of yoga in these medical and psychiatric conditions and change prescribing habits and 2. to provide our patients with an effective complementary treatment option for these life-affecting, significant diseases. In the future, we may be able to deliver healthcare via on-line systems will offer patients a new and convenient option for the treatment of these and other heath related conditions. The gaps in the literature include only a few studies combining all three disorders, utilizing yoga as a therapeutic modality.

There are several consistent limitations to these studies. The studies included predominantly white females, small sample sizes, short study periods typically 8-12 weeks, although follow-up surveys still support the beneficial effects of yoga even 3-6 months post treatment. participants

were voluntary which may contribute to convenience sampling bias. Most studies have weak to moderate evidence, small sample sizes, high heterogeneity, and younger population age. One study, Light[16], indicated that older adults may benefit from yoga therapy. Small sample sizes may limit generalizability and voluntary participants contribute to sampling bias. Several authors recommended the development of longer duration, higher-quality studies to help demonstrate clinical relevance and provide meaningful data for patients and clinicians. Despite individual study weaknesses and the inability to blind participants to yoga therapy, and lack of follow-up, there is a growing body of evidence that supports yoga improving health outcomes.

Theoretical framework

The gap between current evidence and practice includes the lack of power, unable to blind participants to yoga treatment and limited extended follow-up for study participants. Evidence-based practice has been shown to save money, improve quality of care, and protect patients. Using Iowa model for evidenced-based practice, the problems identified in this review are the extent of anxiety, depression, and lower back pain in the United States population with limited effective options for treatment that are safe and encourage the patient's active participation in their own care. Evidence-based research has indicated that yoga therapy provides patients with a way to change unhealthy behavior and promote health.

According to the current evidence presented above and non-invasive treatment guidelines (2016), presented by the Agency for Healthcare Research and Quality (AHRQ) in their "Effective Health Care program" indicate that ineffective medicinal therapies include acetaminophen and tricyclic antidepressants. Nonsteroidal anti-inflammatories (NSAIDs) and Cymbalta help some to reduce pain. Tramadol reduces pain if used short term up to 4 months. Current research shows that opioids help little in the short term (less than 4 months) but shows

that, after 4 months, use of long-term opioid use is neither safe nor effective. Long term use of medications has also been shown to have significant side effects.

The AHRQ lists the following effective treatments for lower back pain, that return people to function and decrease pain, these include heat, massage, muscle relaxers, acupuncture, physical therapy, chiropractic/osteopathic care, yoga, tai chi, relaxation, electromyography biofeedback and cognitive behavior therapy. Modalities that do not appear effective have the potential to significantly reduce the impact of mental health and pain in our patients. These combined conditions cost the U.S. over $5 trillion dollars and affect over 20% of U.S. adults, in their lifetime. There are limited studies involving yoga, anxiety, depression, and lower back pain and no studies combining these with life satisfaction scores[17].

Using the Iowa Model of Evidence-based practice (EBP), the problem, and knowledge-focused triggers, including anxiety, depression, and low back pain, have been identified and because of their prevalence and cost in the U.S., these conditions should be a priority for developing low cost, patient-oriented, effective therapies. Current evidence indicates that yoga has the potential to reduce the psychological impact of these mental health disorders and the physical impact that lower back pain has on the health of adults in the United States. Although not the scope of this project, we propose that yoga will also demonstrate a positive impact on life satisfaction due to decrease in mental health stress and pain. Using this pilot study, we have demonstrated healthcare providers willingness to prescribe yoga for the treatment of anxiety, depression, and low back pain. This pilot study proved that online programs can be effective in the dissemination of the information to colleagues and may encourage a change in prescribing habits. I believe more reinforcement, through ongoing programs and education, is needed to change prescribing habits. Future goals would be to apply for grants that could be used to

educate a wider range of individuals including nursing and medical students who would encourage patients to use yoga, but this educational format may also help colleagues to use yoga as a self-treatment for the daily stressors we all face. The goal of this pilot study is to bring awareness, to primary care providers, of the current evidence regarding the effectiveness of yoga therapy and encourage yoga's use in the treatment of anxiety, depression, and low back pain. This evidenced-based modality would offer patients an additional option to improve their overall health and well-being using a non-medication base technique to treat their illness.

Using the Iowa Model for evidence-based practice, as the theoretical framework to facilitate a change in practice and improve patient care, current evidence indicates yoga to be a potentially effective adjunctive therapy for the treatment of anxiety, depression, and lower back pain. The goal of this evidence-based practice project was to present the current evidence regarding yoga's effectiveness for the treatment of chronic problems such as anxiety, depression, and lower back pain, to primary care providers in Family and Internal medicine, and encourage more providers to use yoga as an effective, non-drug treatment option. Nursing and other allied health professionals can help influence these health decisions and by giving specific information, knowledge, or direction to help motivate a person toward a specific health promoting behavior. This change in behavior would result in improved patient health, enhanced functional ability and better quality of life. There are competing life demands and expectations that can affect both health decisions and behavior. These life demands can derail intended actions for promoting health[19].

The general hypothesis for this evidence-based project is that by presenting health care professionals with the evidence that yoga therapy improves the health status in people with anxiety, depression, and lower back pain, we hope to change prescribing habits whereby

prescribers will present yoga therapy to their patients as an effective option for treatment of these conditions. The hypothesis is that by providing health professionals with the evidence on the benefits of yoga, these professionals take the authoritative lead in recommending a proven evidenced-based modality, such as yoga, earlier in the treatment process, to improve patient outcomes. Patients would then benefit directly from this provider directed education project. The belief is that some patients would follow the directions of the healthcare provider and through the use of yoga, patients would take the initiative in their own self-care and utilize the practice of yoga to improve their own health status. Yoga has been shown to demonstrate improvement in pain, mental health, and functionality. Secondary, benefit is that some providers may participate in yoga therapy for their own physical and mental well-being. In one study, forty-two percent (42%) of family physicians report burnout from their work once a week or more[20]. Another study of nearly 1800 nurses from various health care systems, found that over 50% reported suboptimal physical and mental health, 255 reported depression which was the leading cause of medical errors, which is the third leading cause of death in America[21]. Any evidence-proven modality, that can improve health and reduce the mental and physical challenges on the members of our profession, should be utilized to keep our members well. Yoga is one of these evidence-based modalities that has ancient roots and proven effectiveness.

Research/QI/EBP/Program Evaluation Design

This pilot study was an evidenced-based, quantitative, translational practice project to advance the mainstreaming of yoga in personal health improvement. This stud is a quasi-experimental descriptive study, using a pretest and posttest design to assess the impact of an educational module on health care providers willingness to prescribe yoga for the treatment of mental health and pain.

This pilot program/project is a quantitative, quasi-experimental design that uses convenience sampling that is designed to answer the question: Can a short 4-week educational module on the use of yoga to treat patients with anxiety, depression, and low back pain provide enough evidence-based information to initiate a change in prescribing practice in Family and Internal medicine primary care. *Inclusion criteria* will be English speaking healthcare practitioners, who can use email and complete a 4-week educational module with initial demographics and final questionnaire. The participants can include experienced practitioners or those with minimal or irregular practice. *Exclusion criteria* includes all individuals below 21 years of age, non-English speaking, non-health care practitioner who do not have access to email, zoom capabilities and cannot complete the on-line questionnaires. The online module was accomplished on-line either in health care provider office or home. The online intervention was a short three-page informational slide module listing the benefit of yoga with evidential reference. A follow-up e-mail was delivered to study participants with the results of the study and further positive points including the estimated financial benefits for a practice that includes yoga therapy as a modality. Data collection and analysis was performed using Qualtrex, Excel, Word, and SPSS programs.

Results

Study participation

In this study, while the participants in this study were primarily female, which is a similar finding to other yoga studies. In this study, there was a greater larger number of men who participated in this study compared to prior yoga studies. Research studies involving yoga, tai chi and qigong have shown an increase in male participation. One study comparing men and women in the United States, measuring participation in these therapies from 2002 to 2017,

female participation increased from 8.15 to 19.6% and male participation increased from 3.35 to 9.1%, other studies have indicated that yoga practice is predominantly female which is consistent with other studies on the use of yoga[22]. For this study, I attribute this result of increased male participation to a combination of factors: 1. recommendation from the head of Family Medicine, 2. familiarity with the primary investigator, 3. Primary care providers with an interest in finding alternative treatments to health problems that encourage patient activity and that are not medication-based therapies, 4. With the percentage of male providers in both FM and IM, at 39.3% and female providers at 60.7%, this may have influenced my study percentage of male participants, as well, but my study, correlates with observations in studies that yoga participation is predominantly female.

Participant comments

Positive comments: would use yoga as a therapy if you had an instructor in the office.

1. it is an effective adjunctive therapy and reasonably inexpensive for patients

2. I am in favor of trying non-pharmacologic treatment when possible

3.morbidity from anxiety, depression and low back pain is so significant that the more treatment tools we have the better

4. I would give the patient a chance to discuss yoga therapy first

Negative or neutral comments:

1. I would not use (yoga as a treatment), because I am not a yoga instructor

Discussion

Study design and limitations

The primary strengths of this project were a translation of evidence into practice. actively engages primary care providers in an on-line educational module and builds on current evidence with the goal of improving patient health. The primary weaknesses of this project were that it was quasi-experimental, non-randomized, self-reporting, and used virtual technology. These factors may limit the studies generalizability and lack of in-person education may interfere with a true benefit that may have been obtained in an in-person educational module.

This evidence-based practice study demonstrated that we could increase knowledge in primary care provider in Family and Internal Medicine departments by utilizing a weekly online program. This program took no longer than 3-5 minutes once a week.

Readiness to recommend yoga increased from 52.9 to 100%. this is a 47.1% increase in a consideration on prescribing based on this posttest analysis. While some participants dropped out of the study, and this drop out number may have affected the final tally, several providers altered their impression of yoga as a therapeutic modality and would now utilize this treatment option. Provider's knowledge that yoga can be reimbursed improved, would now prescribe yoga as a treatment. One provider would refer only if the patient requested.

Participant hesitancy to prescribe yoga decreased from 29.4% to 9% of participants after the intervention. One participant would consider using yoga in the future. Utilizing yoga as an alternative treatment, the initial percent of health care providers who use or recommend alternative treatment such as yoga increased from 70.6 to 84.6%. The percent providers who would recommend yoga therapy increased from 52.9 to 84.6%, after the intervention. While this study did not achieve statistical significance, there was an observed benefit of this educational

module with an increase in willingness of healthcare practitioners to prescribe yoga for these diseases.

I believe that if we could continue to educate our colleagues on the benefits of yoga and utilize yoga instructors in our practice then we could improve our patient's lives by decreasing pain, depression and anxiety and potentially decrease the need for medication. This action could have a significant impact on patient health and decrease health care spending by using yoga as both an active treatment and preventive therapy for our patients. We, as health care providers, can help our patient with decisions to choose yoga, massage, meditation, tai chi or some other movement-based therapy. We should be able to comfortably recommend these treatments to all ages, sexes, and stages of disability. We, as providers, should emphasize that yoga can be done by all ages. Utilization of chair yoga programs for those patients with significant orthopedic and developmental problems. We need to re-enforce the benefits of yoga to our patients, including overall cost benefit for both the patient and health care in general.

Healthcare providers know their patients well, including behavior, belief and affects. we can use this knowledge to influence our patient's behavior and ultimately their health, the patient would be able to perceive a personal benefit from the yoga therapy, barriers such as a disability and cost, can be addressed by using chair yoga for those with disabilities and by utilizing online programs, most of which are free, for those patients who do not have the financial resources to pay for yoga classes. Health care provider can emphasize the personal benefit of this modality by indicating that self-efficacy will results in perceiving fewer barriers and promote a healthy behavior with improved function. A positive attitude, with help from the provider, by emphasizing the scientific evidence on the benefits of yoga can increase the effectiveness of

yoga and increase commitment. Past research has indicated that patients will more likely commit if they have someone, the provider, supporting this change in behavior.

Conclusion

By educating healthcare practitioners and patients on the benefits of yoga therapy, addressing situational barriers, and encouraging participation in this activity, we can promote the use of yoga. As the benefits of this therapy diffuses among our healthcare colleagues, this knowledge will be passed on to our patients. As the patient benefits from participation in a yoga program, this observed benefit will be passed on to other patients and practitioners. Both teams will be shown proof that yoga offers a greater benefit to health than traditional therapy and this perceived benefit will overcome any perceived barrier. Emphasizing that active participation in the health plan will ensure that the behavior and improvement will be maintained over time. Lastly, a healthcare provider's positive attitude toward this modality, may help promote a positive attitude in the patient which will help increase patient commitment to the plan. Greater perceived self-efficacy results in few perceived barriers with increased patient commitment and wellness can be maintained over time.

Wiles, et.al., (2021) in their investigation on the use of yoga in recreational therapy practice, indicated that all patients benefit from yoga, including specific populations with physical and mental disabilities. The investigators also found that the use of chair yoga, is suitable for use in older and trauma sensitive individuals. This evidence-based, educational module demonstrated a moderate improvement in the willingness of primary care providers, from 53% to 100%, to recommend yoga as a treatment for mental health disorders such as anxiety and depression and for physical ailments such as low back pain.

there were 4 participants who dropped out by the end of the month-long study, of the four participants who dropped out of this study, three (3) participants on the initial demographic did not refer for yoga and one (1) was in favor of using yoga as a treatment.

With the high prevalence of mental health disorders and chronic pain in the U.S., it is imperative that we, as health care advocates, find effective, evidence-based treatments for our patients with various health conditions. We must lead by example and educate other health care members on the use of these treatments, even if these safe and effective modalities are outside the normal practice protocols. I believe that as a health care provider, we need to use the all the weapons in our armamentarium to help improve the health our patients. We are also responsible for the education of other healthcare practitioners. If we can use health promotion modalities that require active participation by our patients, these activities will have a longer lasting and more effective impact on our patients' lives.

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