Use of Acupuncture as a Complementary Therapy for the Treatment of Chronic Pain in the Veteran Population to Improve Outcomes: An Integrative Review

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Tabitha T. Smithers

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Scholarly Project Chair Approval:

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Abstract

Clinical care in patient management is progressive and should change as evidence-based practice research is available. Veterans' experiences with pain related to their service-related injuries are unique. This pain can limit their ability to function in society successfully. Many of the patients continue to experience uncontrolled pain, as well as side effects from medications that have been prescribed. This integrative review focused on the use of acupuncture as a complementary therapy to improve pain and quality of life in the Veteran population. The review analyzes systematic reviews, randomized control trials, and additional levels of evidence from scholarly articles supporting the benefits of acupuncture use. The literature promotes acupuncture therapy as a complementary therapy to improve patient outcomes—specifically pain intensity and quality of life. As a relatively safe therapy compared to opioid use, it is essential to implement acupuncture therapy for pain management into clinical practice.

Keywords: acupuncture, veteran, pain management, pain intensity, quality of life, complementary pain therapy

Dedication

I dedicate this integrative review to my husband and children, who have been beside me throughout this journey. Thank you for your unwavering love, sacrifice, and encouragement each day. Thank you for being a tangible example of God's grace and mercy. Thank you for helping me persevere. Thank you, God, for your gifts.

Acknowledgment

I want to thank my project chair, Dr. Vickie Moore, who has been steadfast and consistent. Her spirit, smile, and compassion were seen in every aspect of her work. She provided a gentle hand of guidance and support as this project came to life. I am incredibly grateful for her leadership and mentorship throughout this doctoral process. May you always know how deeply you are appreciated.

List Of Abbreviations

AACN: American Association of Colleges of Nursing

CINAHL: Cumulative Index of Nursing and Allied Health Literature

CITI: Collaborative Institutional Training Initiative

IR: Integrative Review

MAP: Mission, Aspiration, and Purpose

NIH: National Institute of Health

PRISMA: Preferred Reporting Items for Systemic Review and Meta-Analyses

PTSD: Post-traumatic Stress Disorder

Table of Contents

Use of Acupuncture as a Complementary Therapy for the Treatment of Chronic Pain in the Veteran Population to Improve Outcomes: An Integrative Review

Chronic pain is seen among all professions, from first responders to healthcare professionals and throughout the military population. The National Institutes of Health (NIH) reported that 65.5% of Veterans surveyed had pain within three months of being asked (U.S. Department of Veteran Affairs, 2021). In a recent study through the National Health Interview Survey, Veterans experienced more severe pain than non-veterans, with back and sciatica pain being the second-highest complaint of pain (U.S. Department of Health and Human Services, 2023). Considering the increased incidence of pain in the Veteran population compared to the general population, it is crucial to manage their pain effectively. The efforts align with the American Association of Colleges of Nursing (AACN) Essentials to Doctoral Nursing Practice. Improving pain management calls for advanced providers to lead collaboration efforts, improving health outcomes within the population (American Association of Colleges of Nursing, 2006). This integrative review (IR) focused on the essential need for pain management among the Veteran population and the impact acupuncture has on improving patient outcomes. The disproportionate percentage of chronic pain secondary to military service highlights the need for effective management. The IR calls for implementing alternative therapies to improve patient outcomes. The purpose of this IR is to review current research on the effects of acupuncture on reducing pain intensity and improving quality of life.

Background

Pain can affect one's well-being and overall quality of life. Being the fifth vital sign, it is essential to understand methods for treating patients who experience pain. With the opioid

epidemic and concern for large amounts of pain medication usage, it is crucial to understand the available alternative therapies for pain management.

In the Veteran population, mental health disorders often accompany pain (U.S. Department of Veteran Affairs, 2021). Chronic pain can contribute to depression, anxiety, poor sleep patterns, decreased quality of life, and substance use disorder (U.S. Department of Veteran Affairs, 2021). These factors increase the risk of successful suicide, enhancing the need for effective management.

Existing treatments in pain management include opioid therapy, nerve block, injections, spinal cord stimulation, surgery, a combination of pharmaceuticals, infusions, and integrative and complementary therapies (Frank et al., 2018). Complementary pain treatments, such as acupuncture as adjunct therapy, have decreased the amount of opioid usage and improved the quality of life in patients with chronic pain (Urits et al., 2020). This is especially important for the Veteran population.

Lower musculoskeletal pain is most common among Iraq and Afghanistan Veterans. In 2017, the NIH reported that severe pain was 40% greater in Veterans than in non-veterans, with an increased amount in those who served during conflict (U.S. Department of Veteran Affairs, 2021). Considering the increased pain incidences in the Veteran population, the Veterans Health Administration (VHA) began looking at ways to effectively manage chronic pain and decrease the effects of long-term opioid usage. Prescribing opioids for pain management increases the risk of deadly overdose and the adverse effects of long-term treatment in the Veteran population (Sullivan, 2018). Offering complementary pain management such as acupuncture to Veterans suffering from pain supports the initiative to decrease opioid usage.

Veterans' potential opposition to complementary therapies such as acupuncture, tai chi, chiropractic services, and massages can present a barrier to change in the treatment regimen. Studies have shown that acupuncture reduces the need for pharmaceuticals and improves pain (Pham et al., 2021). Additional studies show that pain is improved when using acupuncture with medications compared to using drugs alone (Valera-Calero et al., 2022). Therefore, instituting complementary therapies such as acupuncture is essential in pain management and improving patient outcomes.

The VHA National Pain Management Strategy started on November 12, 1998, prioritizing pain management nationally and facilitating pain management strategies for Veterans (U.S. Department of Veteran Affairs, 2021). The pain management strategy is the utilization of a comprehensive, multifaceted, system-wide approach targeted to reduce pain and improve quality of life for Veterans (U.S. Department of Veteran Affairs, 2021). VHA supports veterans receiving pain management from secondary services such as physical medicine and rehabilitation, pain management clinics, palliative care, and hospice care. Therefore, implementing elements supporting secondary services to improve patient outcomes is crucial.

The VHA utilizes the Whole Health concept of care. Whole Health is individualized care focusing on the Veteran's mission, aspiration, and purpose (MAP). Knowing the MAP of each patient facilitates care tailored specifically to their needs. The concept incorporates education, training, and videos educating patients on treatments tailored to their needs (U.S. Department of Veteran Affairs, 2024b), therefore further supporting complementary therapy such as acupuncture in a holistic approach to care in pain management. The impact of this IR is significant to the veteran population worldwide. Distributing knowledge on how acupuncture usage can impact pain management concerning pain intensity and quality of life is crucial.

Defining Concepts and Variables

The conceptual definition of acupuncture is a complementary therapy based on traditional Chinese medicine. The technique involves inserting needles under the skin at specific points. The needles stimulate a flow of energy to promote an improvement in pain. This energy is balanced to assist in promoting healing.

The operational definition of acupuncture is using thin needles placed on the body at specific points, balancing vital energy flow. The operational definition considers the duration and frequency of visits guided by the patient's response. Various variables impact the effect of acupuncture, including age, treatment completion, treatment duration, proper technique, and the acupuncturist's qualification. To diminish variables in research, only studies that address the effects of acupuncture in adult patients with pain treated by certified acupuncturists were included in the IR.

Rationale for Conducting the Review

The veteran population, especially those who served in Afghanistan and Iraq, are among those with high opioid usage (Bennett et al., 2022). As this patient population reported chronic pain, the use of opioid treatment increased. These patients also have additional medical conditions, making chronic opioid use complications more complex. From 2010 to 2019, the number of veterans who overdosed increased by 53% (Bennett et al., 2022). This increase highlighted the importance of implementing complementary therapies for pain management to minimize opioid use and misuse. The Veteran population is multifaceted, with various elements impacting the dynamics concerning opioid use. Considering this population and the complex dynamics unique to the Veteran population, acupuncture is supported in the VA’s Whole Health program.

This IR aligns with VA Directive 1137, supporting complementary and integrative health (U.S. Department of Veteran Affairs, 2024a). Support of complementary therapies requires education on the effects, implementation, and utilization. Even though the directive supports complementary and integrative health utilization, understanding its impact on patient outcomes is critical. The review seeks to present the effects of acupuncture on pain intensity and quality of life.

The rationale for conducting the IR is to promote acupuncture to improve patient outcomes. Research supporting acupuncture for pain management is evolving and growing to include the benefits for patients with acute and chronic pain. This IR summarizes the current literature on acupuncture's positive effects on pain intensity and quality of life.

Purpose of the Integrative Review and Clinical Question

The purpose of this IR is to review current research on the effects of acupuncture on reducing pain intensity and improving quality of life. The goal is to provide adequate pain management with improved patient outcomes in alignment with the VA Directive. Providing efficient pain management optimizes patient outcomes, ultimately leading to improved health outcomes in the Veteran population. The clinical question giving guidance and purpose of the IR is: Does the use of acupuncture as a complementary therapy for chronic pain in the Veteran population reduce pain intensity and improve the quality of life?

Inclusion and Exclusion Criteria

Searching medical databases for key terms allows for research focused on the question asked. Using *keywords* helps narrow down the research in support of the proposed project (Bramer et al., 2018). Literature ranked high in evidence levels, further strengthens, and supports the clinical question.

The Liberty University Jerry Falwell and Virginia Commonwealth University Health Sciences Libraries were searched for this IR. The databases utilized were the Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, and Google Scholar. The keywords of *veterans, pain management, alternative therapies, acupuncture, education, patient education, patient outcomes, barriers to care, and opioid usage* were utilized in the database search. The IR included full-text articles published within the last five years, peer-reviewed, printed in English, and scholarly articles using acupuncture and the aforementioned keywords. The exclusion criteria were literature published before 2018, articles not published in English, articles without full text, non-peer-reviewed studies, and articles that did not focus on acupuncture as a complementary pain management therapy.

Conceptual Framework

The framework utilized for this IR was based on the framework developed by Whittemore and Knafl (2005). This framework was the basis for ensuring proper high-quality literature was identified and utilized in the IR. Five key concepts make up the conceptual framework: (1) problem identification, (2) literature review, (3) data evaluation, (4) data analysis, and (5) presentation (Whittemore & Knafl, 2005). When responding to the clinical question, the high-quality literature meeting the inclusion and exclusion criteria must be included for evaluation. Ensuring the use of quality data to make conclusions related to the clinical question is crucial. Utilization of the conceptual framework guides a literature review supporting clinical practice, providing a systematic approach to minimizing bias. Considering acupuncture as a supplemental therapy, high-quality literature research and supporting evidence versus opinion provide a basis for best practices in the clinical setting.

Section Two: Literature Review

Search Strategy

Searching medical databases for key terms allows for research focused on the question asked. Using keywords helps narrow down the research in support of the proposed review (Bramer et al., 2018). Literature ranked high in evidence levels further strengthens and supports clinical implementation.

The Liberty University Jerry Falwell and Virginia Commonwealth University Health Sciences Libraries were searched for this IR. The databases utilized were the Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, and Google Scholar. The keywords of *veterans, pain management, alternative therapies, acupuncture, patient outcomes, barriers to care, and opioid usage* were utilized in the database search. The IR included full-text articles published between 2018 and 2023, printed in English, scholarly articles utilizing acupuncture, and using the keywords above. The exclusion criteria were literature published before 2018, articles not published in English, articles without full text, non-peer-reviewed studies, and articles that did not focus on acupuncture as a complementary pain management therapy.

Clinical Appraisal

The appraisal reviews the effectiveness of acupuncture as a complementary therapy and its impact on patient outcomes. Nineteen articles were included in the assessment, with the majority being systematic reviews or randomized control trials providing robust evidence to support clinical change—the samples combined more than 30,000 participants. Melnyk's level of evidence hierarchy was utilized to review the articles in the literature matrix.

The literature matrix provided a means to review each article systematically. Each study was analyzed for purpose, sample, research method, results, level of evidence, and limitations. The project leader also assessed the articles to determine if they would be utilized to change clinical practice. The literature matrix also included a ranking, determining the level of evidence according to Melnyk's rating system. Melnyk's level of evidence hierarchy provides seven different ratings from lowest to highest. The top level is a systemic review with meta-analyses (Melnyk & Fineout-Overhold, 2022). While the evidence selected supports using acupuncture to improve patient outcomes, there was variability in the levels. The IR includes nine Level 1, five Level 2, one Level 3, one Level 4, and three Level 5 articles. The literature matrix may be found in Appendix A.

PRISMA

When examining research studies for analysis, assessing for possible bias is essential. Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA) is a reporting tool that minimizes bias and evaluates the intervention's effects (Page et al., 2021). PRISMA is used to identify and analyze studies pertinent to the clinical question.

The articles included in this IR had to meet the inclusion and exclusion criteria. Of the sources identified through the research process, 20,237 were reviewed for full-text selection. After completing the full-text review, 19 articles were included in the literature matrix. The PRISMA flow diagram is included in Appendix D for review.

The Collected Data

A list of source citations was maintained throughout the data collection and analysis, all addressing the clinical question being studied. A literature matrix was developed, including sources that were accurate and relevant to the IR. The literature matrix served as a source for

housing high-quality evidence pertinent to the review. The 19 articles were included in the literature matrix (see Appendix A) and the reference list.

Synthesis

The literature reviewed included information that was valid and had the potential to be applied to practice. As a result of conducting the IR, the project leader concluded that acupuncture positively impacts pain intensity and quality of life. While acupuncture is a complementary therapy, it is often overlooked as an alternative to opioid usage for pain control.

Out of the 19 articles included, nine reviews were at the highest level of evidence for research. The top level of evidence is the systematic review and meta-analysis (Glasofer & Townsend, 2020). The systemic review and meta-analysis present holistic evidence supporting up-to-date research for clinical change (Melnyk & Fineout-Overhold, 2022). All 19 articles used acupuncture as a complementary therapy, improving patient outcomes.

The Veteran population is unique in the conditions related to their military experiences (U.S. Department of Veteran Affairs, n.d.). Pain that is not controlled affects the elements that impact quality of life—for example, sleep, depression, anxiety, daily activities, and social well-being. A meta-analysis conducted by Schiller et al. (2022) studied the impact of acupuncture on depression, sleep, anxiety, and quality of life. Their findings suggested that acupuncture, along with combination therapy, exhibited an overall improvement in depression scores compared to no treatment. Schiller et al. reported an overall pain score improvement of 30% for acupuncture and 20% for combination therapy during the six-month follow-up. Acupuncture therapy supported by the VHA is correlated with improving patient pain management.

Summary

The literature review provided evidence supporting the use of acupuncture as a complementary therapy for pain to improve patient outcomes. This information considers that no adverse effects were presented concerning the patients and their outcomes in utilizing this complementary form of pain relief. The literature is a basis for the necessary evidence to provide consistent clinical change within the VHA.

Education on the benefits of acupuncture regarding patient outcomes will be essential to implementing change. Reinforcing evidence-based intervention within the clinical setting improves participation (Duff et al., 2020; Melnyk et al., 2018). Staff participation and engagement provide the potential for longevity and patient outcome transformation. The involvement of healthcare professionals will assist in a consistent transition incorporating methods to reduce barriers and improve patient outcomes.

High levels of evidence, such as systemic reviews and meta-analyses, support applying a practice change (Melnyk & Fineout-Overhold, 2022). Even with solid evidence, there is always room for growth in research; for example, expanding research to include a larger population and additional clinical sites.

This IR aligns with the VA Pain Management Directive 2009-053. The Veteran population is at a high risk for pain related to time spent serving in the military. Considering the unique factors that a Veteran has experienced compared to the general population, alternative therapies in pain management are essential. Patient education can break down barriers to implementing alternative treatment, providing an option to improve patient outcomes. The opioid crisis has identified an increased risk of death through overdose, further reinforcing the need for consistent referral and utilization of alternative treatments.

Section Three: Data Analysis and Synthesis

Thematic Analysis

The thematic analysis of the IR focuses on the effects of acupuncture concerning (1) pain intensity and (2) the elements affecting quality of life. The two elements impact each other and play a role in holistic pain management. A thematic analysis was performed using data on acupuncture's impacts on patient outcomes. The analysis provided the opportunity to identify patterns and trends. The efficacy of acupuncture repeated throughout the literature strengthens the desired improvement in patient outcomes.

Pain Intensity

When managing pain, it is crucial to understand the perceived pain intensity of the patient. Pain impacts a patient's overall well-being and can negatively affect physical and mental health. Long-term pain can enhance the effects of chronic medical conditions; therefore, it is essential to maintain an acceptable level of intensity.

Overall, the high-quality literature highlighted support for acupuncture therapy. Consistently, research shows that acupuncture reduces pain intensity. The benefit has been demonstrated through various situations—for example, musculoskeletal pain, migraines, chronic pain, cancer pain, and even acute pain.

The impact of auricular acupuncture on chronic pain associated with insomnia was studied by Garner et al. (2018) in a randomized controlled trial, including 45 participants who received auricular acupuncture for four days. The findings showed improved pain severity with auricular acupuncture and improvement in patient insomnia. This study provided continued support for acupuncture to decrease the use of opiates for pain control.

A systematic review by Ameallem et al. (2021) researched the effects of a non-pharmaceutical approach to pain management in at-home care. The review focused on chronic pain management patients greater than 60 years of age receiving pain management treatment. While the study showed analgesics had the most significant effects, the systematic review supported non-drug alternative therapy, such as acupuncture, as a complementary therapy.

He et al. (2020) also studied the impacts of acupuncture and acupressure on cancer pain compared to the use of analgesic therapy alone. This systematic review and meta-analysis included 17 randomized controlled trials with a total of 920 participants being treated for cancer pain in various places around the world. The review showed that acupuncture and acupressure positively impacted pain reduction. Combined with an analgesic, acupuncture decreased the analgesics needed for pain control. The patient self-reported pain intensity, which may have affected the results if the patient was aware of the treatment. However, considering these results, it is still applicable to practice complementary methods to improve pain intensity and decrease the need for pain medications when possible. Further research on specific cancers and the analgesics used would be beneficial.

Fan et al. (2020), Hando et al. (2019), Kalinowski et al. (2015), Knopp-Sihota et al. (2022), and Yang et al. (2021) supported the use of nonpharmaceutical therapies for pain control. These systematic reviews with meta-analysis and randomized control trials were ranked at the top two levels of evidence promoting clinical practice change, and the consistent theme throughout all five articles supported the use of acupuncture alone or as a combination therapy in pain intensity reduction. Even though lower on the evidence-level hierarchy, the results presented by Arazi et al. (2023), Fereidouni et al. (2019), and Zeliadt et al. (2020) remained consistent with acupuncture as an option for pain management. The theme remained constant

throughout these three articles, further supporting clinical practice action. None of the adverse effects presented argued against the use of acupuncture.

Quality of Life

Various elements can impact a patient's quality of life. These elements are inclusive of both physical and psychological characteristics. While research supports decreasing the patient's pain intensity, it also positively impacts their quality of life. Consistently, research concerning the use of acupuncture provides improvement to mental health, sleep quality, and stress reduction.

Improving post-traumatic stress disorder (PTSD) is a critical component in the Veteran population. Acupuncture has been shown throughout the literature to reduce PTSD and anxiety. Grant et al. (2018) conducted a systematic review and a meta-analysis explicitly focused on the effects of acupuncture for the treatment of PTSD. The high-quality research included seven randomized controlled trials with 709 participants. The average age of the participants ranged from 33 to 65 years old. The groups were comprised of active-duty members, Veterans, and civilian participants. Four trials occurred in the United States, and three were in China. The studies took place within outpatient clinics and an inpatient treatment center. Treatment took place between 3 and 12 weeks. The findings suggested that acupuncture usage had positive effects on PTSD, depressive, and anxiety symptoms, along with influencing better sleep quality (Grant et al., 2018). All elements positively impacted the quality of life. However, further studies with a longer duration and follow-up would strengthen acupuncture as an evidence-based treatment.

Other elements for consideration when improving quality of life are depression and anxiety. Schiller et al. (2022) compared the effects of acupuncture and medical training therapy

together or separately on the patient's quality of life, depression, and anxiety. In a single-center, prospective, randomized, controlled, unblinded trial, 96 adults with an average age of 38.7 years old, 75 females and 20 males, were randomized into four groups. The treatment groups received six weeks of acupuncture, medical therapy, or both. The researchers concluded that acupuncture and combination therapy produced positive effects on depression, anxiety, and quality of life, and acupuncture mediated the therapeutic effects.

Armour et al. (2019) studied the effects of acupuncture on depression. This systematic review and meta-analysis analyzed the effects of acupuncture in major depressive disorder patients. English, Chinese, and Korean databases were searched for research from 1982 to November 2018. The clinical trials included using manual, electric, or laser acupuncture. A total of 29 studies with 2,268 participants were included in the review. The results indicated the significance of acupuncture usage in reducing the severity of depression and showed positive effects as a complementary therapy. The researchers also noted a direct link between the number of acupuncture sessions and a decrease in depression severity.

Along with these high-level scholarly articles, Garner et al. (2018), Jiang et al. (2018), Krebs et al. (2018), and Krøll et al. (2021) also supported the use of acupuncture, as it produced positive results beneficial to the patient to maintain their ability to be productive members of society. The research supports the positive impact of acupuncture on the quality of life. Therefore, use in the Veteran population can impact pain, optimize function, and keep a holistic approach aligning with the Whole Health initiative for the Veteran population.

Synthesis

Acupuncture may often be overlooked when managing pain, as medication usage is taught more often to the medical professional. However, improving pain intensity and quality of

life can significantly influence the patient's health. This IR focused on two key elements: (1) pain intensity and (2) quality of life. However, acupuncture is an evidence-based intervention that can improve patient outcomes.

Veterans with uncontrolled pain have been shown to respond positively when acupuncture is used as a complementary therapy. The ability of acupuncture to target specific areas of the body provides the Veteran with a means of focused therapy, minimizing the adverse effects of treatment for chronic medical conditions (Lu et al., 2022). Patients who participated in acupuncture therapy for pain control have experienced an overall different perception of pain and its impact on their lives.

Veterans' unique experiences while serving in the military increase the risk of negative impacts on their life quality. Incorporating a holistic approach to healthcare provides the opportunity for individualized treatment. These life events can lead to depression, anxiety, PTSD, and insomnia (Schiller et al., 2022). The proven positive effects have been shown in the literature and strengthen support for the implementation of acupuncture use in the clinical setting.

Ethical Considerations

Ethical considerations look at the integrity and consistent following of ethical and regulatory guidelines for research. Another ethical consideration is the integrity of the project. The project integrity strengthens the validity of the project (Shaw & Satalkar, 2018). The analysis of the IR was reported with honesty and integrity, supported by data obtained within the project.

The doctoral project team, including the doctoral student and project Chair, completed research ethics training to ensure human subjects are protected. The doctoral student completed

the Collaborative Institutional Training Initiative (CITI) Certificate. This training served as a guide for the project leader in conducting a review of the literature for the IR. A copy of the certificate is included in Appendix B.

The project was submitted to and approved by the Liberty University Institutional Review Board as a non-human subject integrative review. A copy of the approval letter is provided in Appendix C.

Timeline

The IRB was planned and completed over 24 weeks during the Doctor of Nursing practice practicum courses. The courses provided guidance and objectives to remain on track for completion. Steps of the IR process was completed according to this timeline:

- Initial development of IR: December 2023
- Section One and Two completed: January 2024
- First Defense: February 2024
- Institutional Review Board approval: February 2024
- Section Three completed: March 2024
- Section Four Completed: March 2024
- Final draft to submitted to project chair: March 2024
- Final draft to the editor: April 2024
- Final defense: April 2024
- End of academic term: May 2024

Section Four: Discussion

Descriptive Results

The literature points towards the effectiveness of acupuncture as a complementary therapy for reducing pain and improving quality of life. Acupuncture is a safe and effective intervention that can be utilized to minimize the need for opiates and pain management. Scholarly studies included in this IR are diverse, including articles from the United States and other countries. The main population of patients was adults; however, the minimal adverse effects presented would not negatively impact the safe use of acupuncture in a broader population.

Summary of Evidence

The literature analyzed within this IR provides strong evidence to support the use of acupuncture as a complementary therapy for pain management. The IR demonstrates that acupuncture is a practical, evidence-based intervention with short and long-term benefits to improve pain and quality of life. The use of acupuncture originated in China and is an element of traditional Chinese medicine. Evidence has shown that acupuncture effectively reduces pain and improves elements that are beneficial to enhancing the quality of life—for example, sleep, depression, and anxiety.

The two patient outcomes of focus in this IR, pain and quality of life, showed improvement and supported acupuncture's utilization as a complementary therapy for pain management. Pain impacts the Veteran physically and mentally, further supporting the importance of effective management. The physical impact of pain affects the veteran's ability to perform daily activities. Prolonged pain leads to overall physical functional decline. This physical decline negatively impacts the quality of life. Chronic pain can also lead to mental

health decline, which influences the quality of life. Considering the opioid crisis and the high-risk Veterans' pain has on their outcomes, acupuncture is an effective complementary therapy.

Implications for Practice

The purpose of this IR was to evaluate the impact of acupuncture on patient outcomes, precisely pain intensity and quality of life. Even though pain is the fifth vital sign, the effects on patient outcomes are often overlooked. The opioid crisis brought to light the challenge of managing pain in the Veteran population. This crisis highlighted the need for alternative pain therapy to decrease the use of opioids and, therefore, opioid dependency.

The literature analyzed within this IR provides evidence-based solid support for using acupuncture to decrease pain and improve quality of life. Acupuncture improves patient outcomes through pain reduction, improved sleep, mental health, anxiety, and depression. Using acupuncture to improve patient outcomes is supported through the VHA Whole Health Program.

Limitations

During the implementation of this research review, the limitations were addressed. Throughout the IR, the limitations must be considered when analyzing the results and their impact on the clinical setting. The integrity of the IR must also be interpreted based on the limitations considered.

The limitation the project leader faced was the studies published. The positive results are more likely to be published than the negative results. Also, if the patients knew they were receiving acupuncture, the potential for bias existed. The population could include a larger age group and ethnic population. In addition to the general limitations, each study noted potential limitations such as blinding, which increases the risk of bias, lack of a control group, long-term

follow-up after acupuncture, therapy, and limited locations. Even though limitations and barriers were identified within the literature review, the benefits of acupuncture are supported.

Dissemination Plan

The benefits of acupuncture found within research highlight the positive impact on patient outcomes. The findings could influence the Veteran population's short- and long-term pain management. This IR is foundational for future research projects and studies impacting clinical practice. The project leader intends to share the IR results with the local and regional pain management teams to facilitate change. The IR will be submitted to Scholar's Crossing, Liberty University's repository for scholarly papers. The IR supports the utilization of acupuncture therapy to improve outcomes within a population that is vulnerable when faced with pain.

Conclusion

The positive effects of acupuncture therapy on pain management and patient outcomes are apparent. Not addressing the opioid crisis by providing an effective means of alternate or complementary pain management may lead to further adverse outcomes. The research results in this IR confirm the benefit of acupuncture therapy to Veterans. As a high-risk population, the inability to manage pain negatively impacts these patients' quality of life, placing them at an increased risk for depression and anxiety, which may lead to suicide. Advocating for evidence-based interventions with a positive impact on patient outcomes is essential. This IR can aid healthcare professionals in caring for the Veteran population, breaking down barriers, and implementing complementary therapy to improve outcomes.

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Appendix A:

Literature Matrix

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Amsallem, F., Sanchez, S., Armoiry, X., & Mion, F. (2021). Effectiveness of non-pharmacological interventions for irritable bowel syndrome: A systematic review. *Evidence-Based Complementary and Alternative Medicine*, *2021*, 1–10. https://doi.org/10.1155/2021/4404185	The purpose of the study was to determine if nonpharmacological approaches to pain management should be considered in at home care, patience with chronic pain.	In-home residents greater than 60 years of age receiving chronic pain interventions.	System review and meta-analysis. Research studies obtained through six database searches. Meta analyses calculated standardized mean differences suing random-	65 studies were analyzed in total. Analgesic treatment had the greatest effect. Followed by nondrug alternative treatment, combination, and education.	Level 1	Risk of bias was a limitation. None of the studies were eliminate based on quality. Researchers should try to implement blinding among the study participants and possibly assign random	Yes. Based upon results the clinician should consider non analgesic drug therapy for treating chronic pain in in home residents. The strength of the study could be increased by including a sample which

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
			effects models. Cochran Risk of Bias tool used for assessing risk of bias.			groups.	incorporated more individuals outside of in-home care.
Arazi, S., Rashidi, F., Raiesifar, A., Veisani, Y., & Azadi, A. (2023). The effect of a non-pharmacological multi-component pain management program on pain intensity and quality of life in community-dwelling elderly men with chronic musculoskeletal pain. *Pain Management Nursing*, *24*(3), 311-317.	To determine the effects of nonpharmacological pain management interventions on older men with musculoskeletal pain.	Men aged sixty and older with musculoskeletal pain. Participants must have been able to communicate in Farsi, be in a fair	Quasi-experimental study	A significant difference was seen in the experimental and control group in terms of quality of life and pain management. A six-week physical	Level 3	The study only involved elderly males and cannot be assumed for females. The study only included comprehensive healthcare centers	No. The study is a start to implementing nonpharmacological pain management in chronic musculoskeletal pain. However, more

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
https://doi.org/10.1016/j.pmn.2023.01.001		cognitive and mental state, physically able to exercise, and willingness to participate. Participants were placed randomly into a control or experimental group.		activity and education plan should be implemented to improve quality of life and decrease pain intensity.		potentially compromising eternal validity. There was not long-term follow up. There are benefits to expanding the sample population and include long term benefits.	research and trials are needed to evaluate the impact on a greater sample of participants.
Armour, M., Smith, C., Wang, L.-Q., Naidoo, D., Yang, G.-Y., MacPherson, H., Lee, M., &	The effects of acupuncture	Twenty-nine studies	Systematic review and meta-	Acupuncture should clinically	Level 1	Most of the included trials had a	Yes. However, further

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Hay, P. (2019). Acupuncture for depression: A systematic review and meta-analysis. *Journal of Clinical Medicine*, *8*(8), 1140. https://doi.org/10.3390/jcm8081140	in major depressive disorder.	including 2264 participants. Twenty-two trials in China, and seven outsides of China.	analysis	relevantly benefit. It reduces the severity of depression at the end of treatment compared to the control group. It should be considered as adjunct therapy to antidepressant medications. Increased number of treatments correlated to reduction in		risk for bias for performance blinding. Safety report was poor. The trials didn't provide any post trial follow up.	studies are needed to include short-, medium-, and long-term follow-up on the benefits of acupuncture related to the severity of depression.

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
				depression severity.			
Duff, J., Cullen, L., Hanrahan, K., & Steelman, V. (2020). Determinants of an evidence-based practice environment: An interpretive description. *Implementation Science Communications, 1*(1), 1-9. https://doi.org/10.1186/s43058-020-00070-0	The purpose of the study was to emphasize an understanding of the determinants of the evidence base project environment.	The study consisted of 12 nurses from a variety of roles within an academic healthcare center. The goal being to obtain their perspective and experience using the model. Data was collected	Interpretive descriptive methodology	Four determinants of the environment where identified (1) The importance of a shared model to guide staff through the process, (2) support for evidence base in the form of education, hands-on training, and knowledge infrastructure	Level 5	The focus of the study changed over time which could be seen as a limitation.	Yes. Understanding the use of evidence base in the clinical setting is essential to improving, consistent use.

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
		during the first half of 2019.		(3) active team, facilitation by direct care nurses, nurse, managers, specialist, and nurse scientist, and (4) culture and leadership that encourages evidence base practice			
Fan, M., & Chen, Z. (2020). A systematic review of non-pharmacological interventions used for pain relief after orthopedic surgical procedures. *Experimental and Therapeutic Medicine*, *20*(5), 1–	The purpose of the study was to evaluate the available evidence on the efficacy	Five studies were included. Three randomized control	Systemic review	All included studies supported use of non-pharmaceutical treatment for pain	Level 1	The small number of included studies. Lack of a control group limits the	Yes. This high level of evidence supports non-pharmaceutical therapies

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
7. https://doi.org/10.3892/etm.2020.9163	of non-pharmaceutical interventions to relieve orthopedic pain after surgery.	trials and two non-randomized control trials.		management.		ability to draw conclusions related to the effectiveness of the intervention. Various biases existed in the included studies, therefore weakening conclusions.	for pain management. Additional studies assessing the role of its non-pharmaceutical technique would further strengthen implementation into practice.
Fereidouni, Z., Sabet sarvestani, R., Hariri, G., Kuhpaye, S., Amirkhani, M., & Kalyani, M. (2019). Moving into action: The master key to patient education. *Journal of Nursing Research,*	The purpose of the study is to explore the perspective and	The study included eight lead nurses and sixteen staff	Qualitative exploratory design	The themes within the study were strengthen total commitment,	Level 5	The study was only conducted in two hospitals. Elements	Yes. The article supported consistent participation of nurses in

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
27(1), e6. https://doi.org/10.1097/jnr.0000000000000280	recommendations of nurses on improving patient education.	nurses during 2016.		reconstructing infrastructure, developing motivational factors, systemic activity, and contextual promotion.		may have been missed even though the data saturation was met.	improving education impacting patient outcomes.
Garner, B. K., Hopkinson, S. G., Ketz, A. K., Landis, C. A., & Trego, L. L. (2018). Auricular acupuncture for chronic pain and insomnia: A randomized clinical trial. *Medical Acupuncture*, *30*(5), 262–272. https://doi.org/10.1089/acu.2018.1294	The purpose of this study is to assess the feasibility and credibility of auricular acupuncture. The study also seeks to	Forty-five participants randomized to auricular acupuncture or control group for days into	Randomized control trial	Retention within the study was 96%. Standard auricular acupuncture protocols showed significant within and	Level 2	Movement of military personnel, geographical spread, potential for military uniform violation. Further limitations	Yes. As there was not identified safety concerns and review did support positive effects for patients with chronic pain

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
	evaluate the effects of auricular acupuncture on pain severity and interference scores, and on insomnia severity over an eight-day study period.	treatment. Standard or regular acupuncture protocol was in place for up to four days.		between group, reduce pain, severity, and interference scores. This is compared to the control group. Both groups showed reduced insomnia scores. However, the acupuncture group showed reduced insomnia scores		were lack of a short or long term follow up, lack of a sham group, lack of comparison with cognitive based therapy, lack of PTSD measurements.	and insomnia. The easy to administer therapy

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
				compared to the control group. Acupuncture was beneficial in chronic pain and insomnia.			
Grant, S., Colaiaco, B., Motala, A., Shanman, R., Sorbero, M., & Hempel, S. (2017). Acupuncture for the treatment of adults with posttraumatic stress disorder: A systematic review and meta-analysis. *Journal of Trauma & Dissociation*, *19*(1), 39–58. https://doi.org/10.1080/15299732.2017.1289493	The purpose of the study is to evaluate effects of acupuncture on PTSD symptoms, depressive symptoms, anxiety, symptoms, and sleep quality in	Seven Randomized control trials with 709 participants. Average age ranges from 33 to 65 years of age. Four studies took place	Systemic review with Meta-analysis	Even with positive effects the review is not strong enough to utilize acupuncture as sole treatment for PTSD. Functional status and	Level 1	Further research could strength and change the direction and magnitude of effects. The review focused on needle acupuncture and did not	No. As a sole study a change is not warranted. However, with no safety adverse effects and additional reviews further supporting

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
	adults.	in the United States and three in China. The settings included private offices and residential PTSD treatment facilities, VA medical center, and psychiatric hospital.		clinical benefits post intervention and in the months to follow. However, limited confidence in the needle acupuncture reducing PTSD and depressive symptoms at follow up.		include other techniques. Further studies should include sham comparators. The research timeline should also be extended to analyze the effects of acupuncture over a longer period.	positive effects the review can be used for clinical change.
Hando, B. R., Rhon, D. I., Cleland, J. A., & Snodgrass, S. J.	To assess the short- and long-term	Participants were chosen	Randomized control trial.	Evidence reported collected	Level 2	Disagreement remains concerning	No. Considering the

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
(2019). Dry needling in addition to standard physical therapy treatment for sub-acromial pain syndrome: A randomized controlled trial protocol. *Brazilian Journal of Physical Therapy*, *23*(4), 355–363. https://doi.org/10.1016/j.bjpt.2018.10.010	effects of adding dry needling to a standard physical therapy approach with management of patients diagnosed with subacromial pain syndrome.	from two physical therapy clinics in the US military health system. Participants had a primary complaint of unilateral shoulder pain. Inclusion criteria was ages 18 to 65, English-	Anticipates a randomly chosen to receive either standard physical therapy, standard physical therapy and dry needling, or standard physical therapy and sham dry needling. The participants will be	from the participants at baseline, six weeks, six months, and one year post enrollment in the study. Data collection completion is still underway through particle trials.gov. Long-term outcomes are still expected to be posted.		the ideal approach for subacromial pain syndrome management. Exercise therapy and manual treatment are supported with the most evidence. Exercise compared to surgery has produced similar results.	disagreement concerning the recommendations for subacromial pain syndrome management it is not recommended to implement practice changes. Further study and trials could further support literature, showing

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
		speaking, eligible for military health services, able to attend eight to twelve treatment sessions over six weeks, meet specific physical exam criteria. 130 subjects enrolled to	blind to whether they receive real or say, I'm dry needling, however, they will know if they are in the group that does not receive either.				nonsurgical, and non-pharmacological treatment.

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
		have an estimated 108 complete their one year follow ups.					
He, Y., Guo, X., May, B. H., Zhang, A., Liu, Y., Lu, C., Mao, J. J., Xue, C., & Zhang, H. (2020). Clinical evidence for association of acupuncture and acupressure with improved cancer pain. *JAMA Oncology*, *6*(2), 271. https://doi.org/10.1001/jamaoncol.2019.5233	The purpose of the study was to assess if acupuncture and acupressure improve cancer pain management compared to sham interventions or analgesic	Seventeen randomized controlled trials were used for the study sample. The 920 participants were being treated for pain	Systemic review and meta-analysis. Cochrane Collaboration risk of bias tool used. Evidence and certainty of evidence evaluated	Review of seventeen trials showed a significant association between real acupuncture and reduce pain. Acupuncture combined with analgesic therapy was	Level 1	Heterogeneity contributed to lowering the evidence to moderate. Further research is needed to fully understand the impact of various types of pain related to	Yes. Considering the evidence is moderate and does support a significant reduction in pain it would be beneficial as a consideration for pain management.

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
	therapy alone.	related to cancer. The studies took place in various countries throughout the world.	with Grading of Recommendations Assessment, development, and evaluation approach.	associated with decreased analgesic use. Pain control, or reduction in pain was patient reported. Therefore, detection bias existed if the participants were not blinded to the treatment.		cancer, cancer treatment, and the acupuncture method. The type of analgesic used was not specified and may play a role in the study's results. Open studies contribute to bias and lack of blinding. Unlimited number of trials were	Further, studying specific cancers, their treatment, and the type of analgesic used would strengthen the evidence further supporting acupuncture usage.

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
						included and therefore more research is necessary.	
Jiang, Y., Bai, P., Chen, H., Zhang, X.-Y., Tang, X.-Y., Chen, H.-Q., Hu, Y.-Y., Wang, X.-L., Li, X.-Y., Li, Y.-P., & Tian, G.-H. (2018). The effect of acupuncture on the quality of life in patients with migraine: A systematic review and meta-analysis. *Frontiers in Pharmacology*, *9*, 1-13. https://doi.org/10.3389/fphar.2018.01190	The purpose of the study is to analyze the efficacy and safety of acupuncture for treatment of migraines, and its effect on improving anxiety.	Randomized control trials, which focuses on participant who were diagnosed with migraine. Sixty-two randomized control trials were included with a total	Systemic review and meta-analysis	Acupuncture was effective for short-term treatment compared to no treatment. With regards to medication, acupuncture, resulting in better efficacy at follow up times up to three months	Level 1	It cannot be ruled out that some trials with small sample sizes have not been published, and therefore unable to be included in this review. The overall efficacy and safety of acupuncture	Yes. Even considering the limitations, the use of Acupuncture is superior to no treatment. Acupuncture should be recommended for use in the treatment of migraines. Larger research

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
		of 4,947 participants. The trials participants were from around the world. Forty-one studies included medication as the control group twenty-two included sham acupuncture, and one		after treatment. Acupuncture is superior to sham acupuncture.		was addressed versus the acupoint itself, considering the variety of points utilized. Therefore, further studies concerning specific acupoints, and their efficacy would be beneficial.	studies with focus on specific acupoints, frequency, and duration of treatment would be beneficial to strengthen clinical practice change.

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
		included no treatment.					
Kalinowski, S., Budnick, A., Kuhnert, R., Könner, F., Kissel-Kröll, A., Kreutz, R., & Dräger, D. (2015). Nonpharmacologic pain management interventions in german nursing homes: A cluster randomized trial. *Pain Management Nursing, 16*(4), 464-474. https://doi.org/10.1016/j.pmn.2014.09.002	To access nonpharmacological therapies usage in nursing home patients. The research sought to enhance application by nurses. It also sought to increase the prescription by	Two groups of six nursing homes were used with one set as the control group and the other as the experimental group. The average sample was 126 residents.	Cluster randomized trial	Three measurements were taken in the nurses who applied nonpharmacological therapy and ones who were part of the control group. At the first interval the nurses in the control group were higher than the	Level 2	The final sample size was smaller than the calculated sample size due to challenge with accessing the population of nursing home residents. Potentially the residents gave socially desirable	Yes. However, utilization compliance through nursing documentation is essential. Therefore, education and policy implementation would help to support utilization in practice. Further study

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
	physicians.	Participants lived in a nursing home for more than three months, were 65 years of age and older, and without cognitive impairment. Total participating residents was 747.		experimental group. In the second measuring the reverse was present. The portion of the nursing home residents who nonpharmacological therapy was higher in the experimental group. The most frequently applied nonpharmacological		answers when interviewed about their pain status when receiving nonpharmacological pain therapy.	is necessary in supporting the long-term effect of non-pharmacological therapy usage.

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
				therapy was cryotherapy and hyperthermia. Nonpharmacological therapies which required more time was not performed at all. The residents implemented more nonpharmacological therapies on themselves and therefore			

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
				the physicians increased their prescribing.			
Knopp-Sihota, J. A., MacGregor, T., Reeves, J. T., Kennedy, M., & Saleem, A. (2022). Management of chronic pain in long-term care: A systemic review and meta-analysis. *Journal of the American Medical Directors Aaaociation, 23*, 1507–1516. Retrieved January 23, 2023, from https://doi.org/10.1016/j.jamda.2002.04.008	To examine the effectiveness of pain management interventions in at home care residents with chronic pain.	Fifty-five randomized and non-randomized controlled trials were selected with a total of 9955 participants included. Long term care residents were	Systemic review and meta-analysis	Analgesic treatment showed the greatest effect with non-alternative treatment next, and combined interventions and education last.	Level 1	The risk of bias in studies is a limitation. Quality was not a component for study exclusion. Blinding should be implemented when possible. Participants should also	Yes. The study used the highest level of research and provided data applicable for practice in the long-term care setting. Further studies should be performed to

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
		greater than 60 years of age and currently receiving treatment for chronic pain.				be assigned randomly to study groups. External validity of the result is limited. The sample study was limited.	expand the application into additional healthcare settings.
Krebs, E. E., Gravely, A., Nugent, S., Jensen, A. C., DeRonne, B., Goldsmith, E. S., Kroenke, K., Bair, M. J., & Noorbaloochi, S. (2018). Effect of opioid vs nonopioid medications on pain-related function in patients with chronic back pain or hip or knee osteoarthritis pain. *Journal of*	To compare opioid use versus non opioid medication, use over twelve months on function, intensity, and adverse effects	Two hundred forty participants were randomized. The group was divided in half and randomly assigned as	Randomized clinical trial	Treatment with opioids compared to non-opioids did not show significant improved pain related function over one year. Nonopioid treatment did	Level 2	The complexity of the intervention prevented masking of the participant. An imbalance was present in	No. The study could be used in the veteran population but would need further research and trials to determine impact on a larger sample

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
American Medical Association, 319(9), 872-882. https://doi.org/10.1001/jama.2018.0899	related to chronic back, hip, or knee osteoarthritic pain.	a control or experimental group. The participant had a mean age of 58.3 years old. Total of thirty-two were female. The sample contained 65% with back pain and 35% with hip or knee		produce significantly better pain intensity. Pain related function improved for most participants.		prerandomization treatment preferences. Characteristics of participants were different from the general population sine the participants were chosen from a veteran facility. Participants who were on long term	group. The study should include more females and other health care institutions.

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
		osteoarthritis pain.				opioid dependence were excluded.	
Krøll, L., Callesen, H., Carlsen, L., Birkefoss, K., Beier, D., Christensen, H., Jensen, M., Tómasdóttir, H., Würtzen, H., Høst, C., & Hansen, J. (2021). Manual joint mobilisation techniques, supervised physical activity, psychological treatment, acupuncture and patient education for patients with tension-type headache. a systematic review and meta-analysis. *The Journal of Headache and Pain*, *22*(1). https://doi.org/10.11	To review evidence for manual joint mobilization techniques, supervised physical activity, psychological treatment, acupuncture, and patient education as treatment for tension-type headaches effecting the	Literature review performed and thirteen randomized clinical trials selected. Participants were greater than eighteen years of age and suffered	Systemic review and meta-analysis	Manual joint mobilization techniques, supervised physical activity, psychological treatment, acupuncture, and patient education can be considered for tension-type headache treatment.	Level 1	The study may have been downgraded due to not being double blinded presenting a challenge with non-pharmacological treatment. The sample may not be representative of total	No. The overall evidence was rated as low and very low. The results state the techniques might provide relief to tension-type headaches. It needs more definite answers on

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
86/s10194-021-01298-4	headache frequency and quality of life.	from tension-type headaches.				headache population. The authors of the studies included were not contacted for updated information. Low sample size was also a limitation.	the impact before implementation into practice.
Melnyk, B., Gallagher-Ford, L., Zellefrow, C., Tucker, S., Thomas, B., Sinnott, L. T., & Tan, A. (2018). The first US study on nurses' evidence-based practice competencies indicates major deficits that threaten healthcare quality, safety, and patient outcomes. *Worldviews on*	The purpose of the study is to (1) describe the state of evidence-based practice competencies	2,344 participants from nineteen hospital systems.	Cross sectional descriptive study	Overall, the nurses were not competent in meeting the twenty-four elements. Younger nurse and	Level 5	The sample size was done through convenience and therefore may not be generalized to all nurses. The response	Yes. It is important to understand how knowledge of evidence-based practice is understood

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Evidence-Based Nursing, 15(1), 16–25. https://doi.org/10.1111/wvn.12269	throughout the United States, and (2) determine important factors associated with evidence-based competency.			those with higher educational levels were more competent than those who were older and with less education. There was not aa distinct difference between those in a Magnet vs non-Magnet organization.		cannot be calculated as it is not known how many opened their email with the study link. Self-reporting of the nurses can also be seen as a limitation.	and utilized. Education of staff and their ability to be competent effects patient outcomes and healthcare quality. It reinforces the need for mentorship of fellow nursing colleagues.
Schiller, J., Niederer, D., Kellner, T., Eckhardt, I., Egen, C., Zheng,	The purpose of the study		Randomized control		Level		Yes.

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
W., Korallus, C., Achenbach, J., Ranker, A., Sturm, C., Vogt, L., Gutenbrunner, C., Fink, M. G., & Karst, M. (2023). Effects of acupuncture and medical training therapy on depression, anxiety, and quality of life in patients with frequent tension-type headache: A randomized controlled study. *Cephalalgia*, *43*(1), 1-13, 033310242211328. https://doi.org/10.1177/03331024221132800	is to analyze the effects of acupuncture medical training therapy in combination or individually with tension type headache treatment. It will discuss the effects acupuncture has on quality of life, depression, and anxiety.		trial		2		

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Yang, J., Wahner-Roedler, D. L., Zhou, X., Johnson, L. A., Do, A., Pachman, D. R., Chon, T. Y., Salinas, M., Millstine, D., & Bauer, B. A. (2021). Acupuncture for palliative cancer pain management: Systematic review. *British Medical Journal Supportive & Palliative Care, 11*(3), 264–270. https://doi.org/10.1136/bmjspcare-2020-002638	The purpose of the study is to assess literature addressing the use of acupuncture to treat cancer pain in palliative care.	Participants were greater than 18 years old, diagnosed with cancer, received acupuncture therapy, in palliative care, and pain was assessed using a validation method. Five studies	Systemic review	In the five studies which included 189 participants the evidence supported a favorable effect of acupuncture on pain relief in palliative care for cancer patients.	Level 1	This was the first review concerning acupuncture use in palliative care. The sample size and quality of the studies used need to be increased. The sample size was small and the quality low.	No. Due to the number of research studies available concerning acupuncture and palliative care pain it would be beneficial to incorporate more research. Increasing the sample size and quality would strengthen the use in

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
		with 189 participants between 1999 and 2019. Sample size of twenty to sixty-eight participants were used.					clinical practice.
Zeliadt, S. B., Thomas, E. R., Olson, J., Coggeshall, S., Giannitrapani, K., Ackland, P. E., Reddy, K. P., Federman, D. G., Drake, D. F., Kligler, B., & Taylor, S. L. (2020). Patient feedback on the effectiveness of auricular acupuncture on pain in routine clinical care. *Medical*	To assess the effectiveness of battlefield auricular acupuncture (BFA) on immediate pain relief and	Electronic medical records of 11,406 Veterans treated with BFA at 57 VHA medical	Cross sectional cohort study	More than 75% experienced immediate decreases in pain following BFA. The average	Level 4	The data did not provide the effect of BFA on long term pain reduction. The reason the Veteran participated	Yes. Especially considering there were not any adverse reactions and the patients who had not

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Care, *58*, S101–S107. https://doi.org/10.1097/mlr.0000000000001368	identified subgroups of patients where BFA is effective.	centers between October 2016 to September 2018.		decrease in pain intensity was 2.5 points on the initial treatment and 2.2 points on subsequent treatments. The Veterans who had not received opioids in the year prior to BFA experienced more improvement than those who had received		in the study. There was not a control group to compare the effectiveness to. There was not a means to measure expectancy effects of BFA participants.	been started on opioids had more of an improvement in pain than those who had been. This further supports complementary therapy usage for pain management.

Article Title, Author, etc.	Study Purpose	Sample (Characteristics of the Sample: Demographics, etc.)	Methods	Study Results	Melnyk Level of Evidence	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
				opioids in the past year.			

Appendix B:

CITI Completion Certificate

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 2 OF 2
COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elem
course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the co

- **Name:** Tabitha Smithers (ID: 12497229)
- **Institution Affiliation:** Liberty University (ID: 2446)
- **Institution Email:** tsmithers5@liberty.edu

- **Curriculum Group:** Biomedical Research - Basic/Refresher
- **Course Learner Group:** Biomedical & Health Science Researchers
- **Stage:** Stage 1 - Basic Course
- **Description:** Choose this group to satisfy CITI training requirements for Investigators and staff involved primarily i research with human subjects.

- **Record ID:** 57806010
- **Report Date:** 13-Oct-2023
- **Current Score**:** 86

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
History and Ethics of Human Subjects Research (ID: 498)	13-Oct-2023	4/5 (80%)
Liberty University (ID: 15111)	26-Aug-2023	No Quiz
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	13-Oct-2023	5/5 (100%)
Informed Consent (ID: 3)	13-Oct-2023	4/5 (80%)
Belmont Report and Its Principles (ID: 1127)	26-Aug-2023	3/3 (100%)
Social and Behavioral Research (SBR) for Biomedical Researchers (ID: 4)	13-Oct-2023	2/4 (50%)
Records-Based Research (ID: 5)	13-Oct-2023	4/4 (100%)
Genetic Research in Human Populations (ID: 6)	13-Oct-2023	4/5 (80%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	13-Oct-2023	5/5 (100%)
Recognizing and Reporting Unanticipated Problems Involving Risks to Subjects or Others in Biomedical Res	26-Aug-2023	5/5 (100%)
Research and HIPAA Privacy Protections (ID: 14)	13-Oct-2023	4/5 (80%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	13-Oct-2023	4/5 (80%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing in identified above or have been a paid Independent Learner.

Verify at www.citiprogram.org/verify/?kbee69b4d-5eaf-40e2-aca1-636f3dc0ebbf-57080601

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Appendix C:

Institutional Review Board Approval Letter

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

February 13, 2024

Tabitha Smithers
Vickie Moore

Re: IRB Application - IRB-FY23-24-1387 Use of Acupuncture as a Complementary Therapy for the Treatment of Chronic Pain in the Veteran Population to Improve Outcomes: An Integrative Review
Dear Tabitha Smithers and Vickie Moore,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds that your study does not meet the definition of human subjects research. This means you may begin your project with the data safeguarding methods mentioned in your IRB application.
Decision: No Human Subjects Research

Explanation: Your project is not considered human subjects research because it will not involve the collection of identifiable, private information from or about living individuals (45 CFR 46.102).
Please note that this decision only applies to your current application. Any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.
For a PDF of your IRB letter, click on your study number in the My Studies card on your Cayuse dashboard. Next, click the Submissions bar beside the Study Details bar on the Study Details page. Finally, click Initial under Submission Type and choose the Letters tab toward the bottom of the Submission Details page.
If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu. Sincerely,

G. Michele Baker, PhD, CIP
Administrative Chair
Research Ethics Office

Appendix D:

PRISMA Diagram