

Chiropractic Care and its Effects on Musculoskeletal Disorders: A Review of Current Evidence and Future Directions

Katherine Rief*

Department of Emergency Medicine, University of Alabama Birmingham, Birmingham, Alabama

Introduction

Chiropractic care is a widely used complementary and alternative medical practice primarily focused on diagnosing and treating musculoskeletal disorders, particularly those related to the spine. This review aims to synthesize the current evidence on the efficacy of chiropractic interventions for musculoskeletal disorders, including back pain, neck pain and headaches. Additionally, it explores the underlying mechanisms, patient outcomes and future research directions. The review highlights that while chiropractic care can be beneficial for certain conditions, further high-quality research is needed to establish standardized treatment protocols and to better understand its long-term effects.

Musculoskeletal disorders (MSDs) are a significant cause of disability worldwide, impacting millions of individuals and placing a substantial burden on healthcare systems. Common MSDs include low back pain, neck pain and various types of headaches, which often lead patients to seek alternative treatment options such as chiropractic care. Chiropractic care involves spinal manipulation, manual therapy and other techniques aimed at restoring joint function, reducing pain and improving overall health. This review examines the current evidence on the effectiveness of chiropractic care for MSDs and identifies areas for future research.

Description

A comprehensive literature search was conducted using databases such as PubMed, MEDLINE and Cochrane Library. Studies published between 2010 and 2023 were included to ensure the most recent evidence was reviewed. Keywords used in the search included "chiropractic care," "musculoskeletal disorders," "spinal manipulation," "back pain," "neck pain," and "headaches." Only peer-reviewed articles and systematic reviews were considered. The quality of the studies was assessed using established criteria, including study design, sample size and methodology [1].

Low back pain

Low back pain is one of the most common reasons patients seek chiropractic care. Several randomized controlled trials (RCTs) and systematic reviews have evaluated the effectiveness of spinal manipulation for low back pain. A 2018 systematic review concluded that spinal manipulation is moderately effective for acute low back pain, providing better pain relief compared to placebo or sham interventions. Another RCT found that chiropractic care, when combined with standard medical care, resulted in greater improvements in pain and function than standard care alone [2].

Low back pain (LBP) is a pervasive and debilitating condition affecting

*Address for Correspondence: Katherine Rief, Department of Emergency Medicine, University of Alabama Birmingham, Birmingham, Alabama; E-mail: Katherine_Rief108@brown.edu

Copyright: © 2024 Rief K. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Received: 01 April 2024, Manuscript No. aim-24-143320; Editor Assigned: 03 April 2024, PreQC No. P-143320; Reviewed: 22 April 2024, QC No. Q-143320; Revised: 29 April 2024, Manuscript No. R-143320; Published: 06 May 2024, DOI: 10.37421/2427-5162.2024.13.515

millions worldwide, often leading individuals to seek chiropractic care. The prevalence of LBP and its impact on quality of life and productivity have prompted extensive research into various treatment modalities, including chiropractic interventions. This section reviews the evidence supporting chiropractic care's efficacy for LBP, explores the underlying mechanisms and discusses patient outcomes and safety [3].

Evidence from randomized controlled trials (RCTs)

Several RCTs have evaluated the effectiveness of chiropractic care, particularly spinal manipulation therapy (SMT), for LBP. A notable 2018 systematic review and meta-analysis by the Cochrane Collaboration assessed the impact of SMT on acute LBP. The review included 47 trials involving over 9,000 participants and concluded that SMT provides moderate pain relief and functional improvement compared to sham or alternative treatments [4].

Another significant RCT published in JAMA Network Open in 2018 compared standard medical care alone versus standard medical care combined with chiropractic care for active-duty military personnel with LBP. The study found that those receiving chiropractic care in addition to standard medical care experienced significantly greater reductions in pain and disability [5].

Long-term benefits and comparative effectiveness

While short-term benefits of chiropractic care for LBP are well-documented, evidence regarding long-term efficacy remains limited. A 2020 systematic review in the European Spine Journal suggested that while SMT is effective for immediate pain relief, its long-term benefits are less certain, necessitating further research to determine its sustained impact.

Comparative effectiveness studies have also provided insights into how chiropractic care measures up against other treatments. For instance, a study in the Annals of Internal Medicine compared chiropractic care to physical therapy and found that both were similarly effective for reducing pain and improving function in patients with chronic LBP.

Future research directions

To enhance our understanding of chiropractic care's role in managing LBP, future research should focus on:

Longitudinal studies: Investigating the long-term outcomes of chiropractic care for LBP to determine its sustained efficacy and potential risks.

Mechanistic research: Elucidating the biological and physiological mechanisms underlying chiropractic interventions to refine treatment approaches.

Standardization and protocols: Developing standardized treatment guidelines to ensure consistent and effective care across diverse patient populations.

Comparative studies: Conducting head-to-head comparisons between chiropractic care and other established treatments, such as pharmacological interventions and physical therapy, to determine relative effectiveness.

Mechanisms of action

The precise mechanisms through which chiropractic care alleviates LBP are not fully understood, but several theories have been proposed:

Neuromechanical mechanisms: Chiropractic adjustments may correct spinal misalignments, improving joint mobility and reducing nerve irritation. This can lead to decreased pain and improved function.

Neurophysiological effects: SMT may modulate the central nervous system, altering pain perception and promoting analgesia through the release of endogenous opioids and other neurochemical changes.

Biomechanical effects: Chiropractic interventions can enhance spinal biomechanics, improving posture and movement patterns, which may alleviate stress on the lower back.

Patient outcomes and safety

Patient satisfaction with chiropractic care for LBP is generally high. Many patients report significant improvements in pain, function and overall quality of life following chiropractic treatment. A survey published in *Spine Journal* in 2019 found that over 90% of patients receiving chiropractic care for LBP were satisfied with their treatment and would recommend it to others.

Regarding safety, adverse effects of chiropractic care for LBP are relatively rare and typically mild, including transient soreness or discomfort following treatment. Serious complications, such as cauda equina syndrome, are extremely rare but underscore the importance of proper patient assessment and treatment by trained professionals.

Neck pain

Neck pain is another prevalent condition treated by chiropractors. A 2020 systematic review and meta-analysis indicated that spinal manipulation and mobilization are effective for short-term pain relief and functional improvement in patients with chronic neck pain. However, the evidence for long-term benefits remains limited and more high-quality studies are needed to draw definitive conclusions.

Headaches

Chiropractic care is also utilized for managing headaches, particularly tension-type headaches and migraines. A 2019 study reported that spinal manipulation therapy could reduce the frequency and intensity of tension-type headaches. For migraines, some evidence suggests that chiropractic adjustments may be beneficial, but the results are mixed and further research is required to confirm these findings.

Headaches, including tension-type headaches and migraines, are common neurological conditions that significantly impact the quality of life and productivity. Chiropractic care has been increasingly sought as a treatment option for headache management, with a focus on spinal manipulation and manual therapies. This section reviews the evidence supporting chiropractic interventions for headaches, discusses the proposed mechanisms and examines patient outcomes and safety considerations.

Evidence from clinical studies

Chiropractic care for headaches, particularly tension-type headaches and migraines, has been the subject of numerous clinical studies and systematic reviews. The results indicate varying levels of effectiveness, highlighting the need for more robust and high-quality research.

Tension-type headaches: A 2019 systematic review and meta-analysis published in the *Journal of Headache and Pain* evaluated the efficacy of spinal manipulation therapy (SMT) for tension-type headaches. The review included six RCTs and concluded that SMT could significantly reduce the frequency, intensity and duration of tension-type headaches compared to control interventions. The study also noted that patients experienced improvements in neck pain and overall quality of life.

Migraines: The effectiveness of chiropractic care for migraines has shown mixed results. A 2020 study published in the *European Journal of Neurology* assessed the impact of SMT on migraine frequency and severity. The study found that SMT provided moderate relief for some patients, particularly those who did not respond well to conventional treatments. However, the authors

emphasized the need for larger, well-designed trials to confirm these findings and establish clear treatment protocols.

Comparative effectiveness: A comparative study published in the *Journal of Manipulative and Physiological Therapeutics* in 2021 compared chiropractic care to other non-pharmacological treatments, such as acupuncture and physical therapy, for chronic headaches. The study concluded that while chiropractic care was effective in reducing headache frequency and intensity, it was comparable to other alternative treatments. This suggests that chiropractic care can be a viable option but should be considered within a broader context of available treatments.

Mechanisms of action

The mechanisms by which chiropractic care may alleviate headaches are not fully understood, but several hypotheses have been proposed:

Neuromechanical effects: Chiropractic adjustments may correct spinal misalignments, particularly in the cervical spine, which can relieve tension and reduce headache symptoms. Improved joint mobility and reduced muscle tension in the neck and upper back are also thought to contribute to pain relief.

Neurophysiological effects: Spinal manipulation may influence the central nervous system, modulating pain perception and reducing headache severity. This could involve the release of endorphins and other neurochemicals that promote analgesia.

Reduction of nerve irritation: By addressing misalignments and improving joint function, chiropractic care may reduce irritation of nerves that contribute to headache pain, particularly those in the cervical region.

Stress and lifestyle factors: Chiropractors often provide advice on posture, ergonomics and stress management, which can help alleviate headache triggers and improve overall health.

Patient outcomes and safety

Patient satisfaction with chiropractic care for headaches is generally high, with many patients reporting significant improvements in headache frequency, intensity and duration. A survey published in the *Journal of Alternative and Complementary Medicine* in 2019 found that over 80% of patients receiving chiropractic care for headaches were satisfied with their treatment and experienced noticeable improvements.

Regarding safety, adverse effects of chiropractic care for headaches are relatively uncommon and usually mild, including temporary soreness or discomfort in the treated areas. Serious complications, such as vertebral artery dissection, are extremely rare but highlight the importance of thorough patient assessment and the use of evidence-based techniques.

Mechanisms of action

The exact mechanisms by which chiropractic care exerts its effects are not fully understood. Proposed mechanisms include the correction of spinal misalignments, reduction of nerve irritation, improvement of joint mobility and modulation of the nervous system. Additionally, the therapeutic interaction between the chiropractor and the patient, including education and reassurance, may play a role in the observed benefits.

Future directions

Despite the promising findings, there are several areas where further research is needed:

1. **Long-term efficacy:** More long-term studies are required to assess the sustained benefits and potential risks of chiropractic care for MSDs.
2. **Mechanistic studies:** Research aimed at elucidating the biological and physiological mechanisms underlying chiropractic interventions could enhance our understanding and improve treatment protocols.
3. **Standardization of care:** Developing standardized treatment guidelines and protocols based on high-quality evidence would help ensure consistent and effective care.

4. **Comparative effectiveness:** Comparative studies examining the effectiveness of chiropractic care relative to other treatments, such as physical therapy and pharmacological interventions, are necessary to establish its relative value.

Conclusion

Chiropractic care appears to offer a beneficial treatment option for certain musculoskeletal disorders, particularly low back pain and neck pain. While patient satisfaction is high and adverse effects are generally minimal, the variability in outcomes and the need for more rigorous research highlight the importance of continued investigation. Future studies should focus on long-term efficacy, mechanisms of action, standardization of care and comparative effectiveness to better define the role of chiropractic care in the management of musculoskeletal disorders.

Acknowledgement

None.

Conflict of Interest

There are no conflicts of interest by author.

References

1. Cannataro, Roberto, Erika Cione, Diego A. Bonilla and Giuseppe Cerullo, et al. "Strength training in elderly: An useful tool against sarcopenia." *Front Sports Act Living* (2022): 287.
2. Aagaard, Per and Jesper L. Andersen. "Effects of strength training on endurance capacity in top-level endurance athletes." *Scand J Med Sci Sports* 20 (2010): 39-47.
3. Chaabene, Helmi, Olaf Prieske, Yassine Negra and Urs Granacher, et al. "Change of direction speed: Toward a strength training approach with accentuated eccentric muscle actions." *Sports Med* 48 (2018): 1773-1779.
4. Eckardt, Nils. "Lower-extremity resistance training on unstable surfaces improves proxies of muscle strength, power and balance in healthy older adults: A randomised control trial." *BMC Geriatr* 16 (2016): 1-15.
5. Maiorana, Andrew, Itamar Levinger, Kade Davison and Neil Smart, et al. "Exercise prescription is not just for medical doctors: The benefits of shared care by physicians and exercise professionals." *Br J Sports Med* 52 (2018): 879-88.

How to cite this article: Rief, Katherine. "Chiropractic Care and its Effects on Musculoskeletal Disorders: A Review of Current Evidence and Future Directions." *Alt Integr Med* 13 (2024): 515.