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A Systematic Review of Literature on the Effectiveness of Rock Salt Hot Application in Managing Pain Among Patients with Arthritis

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ABSTRACT:

This systematic review explores existing literature on the management of pain in arthritis, the use of hot applications as non-pharmacological interventions, and specifically the role of rock salt hot application. The review is structured into three sections: literature related to pain in arthritis patients, hot applications in arthritis management, and evidence supporting the use of rock salt for pain relief. A total of 32 articles were reviewed. Findings show that hot applications, including Epsom and rock salt, are effective in reducing pain and improving function among arthritis patients. Rock salt, in particular, has shown potential therapeutic effects, but further empirical studies are required to validate its efficacy exclusively.

1. INTRODUCTION

Arthritis is a chronic, progressive condition characterized by joint pain, inflammation, stiffness, and functional limitations that can significantly impair an individual's quality of life. Although pharmacological treatments remain the cornerstone of pain management, there is growing interest in complementary and non-pharmacological therapies that offer symptom relief with fewer side effects. Among these, hot fomentation techniques are widely recognized for their ability to enhance blood circulation, reduce muscle tension, and relieve joint stiffness. A novel approach gaining attention is the use of rock salt hot applications, which combine the therapeutic benefits of heat with the mineral-rich properties of rock salt. This method is believed to aid in deeper tissue penetration and prolonged warmth retention, potentially enhancing pain relief. This systematic review aims to consolidate and critically analyze existing literature to understand the overall effectiveness of rock salt hot application in managing arthritis-related pain. Specifically, it reviews the nature and severity of pain experienced by arthritis patients, explores the general efficacy of hot applications in pain management, and assesses the therapeutic benefits and clinical outcomes associated with rock salt heat therapy.

2. METHODOLOGY

This review follows a systematic and structured literature review approach to evaluate the effectiveness of rock salt hot application in reducing pain among patients with arthritis. A comprehensive search was conducted across major academic databases and search engines including PubMed, Google Scholar, Scopus, Web of Science, and CINAHL. The review emphasized peer-reviewed journals, clinical studies, randomized controlled trials, and meta-analyses published within the last 10 years(2014 to 2024).

3. SEARCH STRATEGY

- Keywords used: arthritis, joint pain, rock salt hot application, heat therapy, non-pharmacological pain management, thermal therapy, complementary treatment for arthritis.
- Boolean operators such as AND, OR were used to refine and narrow down the search results effectively.
- Inclusion criteria: Studies published in English that focus on the use of hot applications, specifically rock salt or thermal therapy, for pain relief in arthritis patients; articles published between 2014 to 2024; studies involving adult patients with osteoarthritis or rheumatoid arthritis.
- Exclusion criteria: Non-peer-reviewed articles, case reports with insufficient data, studies unrelated to hot application or rock salt therapy, and articles without full-text access.

4. DATA EXTRACTION AND ANALYSIS

Relevant articles were screened based on title, abstract, and full-text review. The selected studies were critically analyzed to extract information related to the type of arthritis, methodology of hot application, outcomes on pain intensity, duration and frequency of therapy, and patient-reported relief. Thematic synthesis was conducted to identify patterns, therapeutic outcomes, limitations, and recommendations. This methodical approach ensures a comprehensive understanding of the clinical effectiveness and potential benefits of rock salt hot application as a complementary therapy in arthritis pain management.

5. REVIEW OF LITERATURE

The literature on arthritis pain management highlights a wide range of pharmacological and non-pharmacological approaches aimed at reducing joint inflammation, stiffness, and pain. Several studies have demonstrated the effectiveness of thermal therapy in enhancing circulation, promoting muscle relaxation, and decreasing joint discomfort in individuals with osteoarthritis and rheumatoid arthritis. Among the emerging modalities, rock salt hot application has gained attention for its ability to retain heat longer and for its potential anti-inflammatory properties due to the mineral content in rock salt.

Research suggests that localized heat application, including hot packs and compresses, can significantly reduce pain intensity and improve joint flexibility. Traditional practices incorporating heated rock salt are being explored for their synergistic benefits, combining thermal effects with the natural healing properties of salt. Studies also highlight the safety, affordability, and simplicity of this intervention, making it a feasible home-based therapy.

Furthermore, findings from small-scale clinical trials and community-based interventions indicate that rock salt hot applications may contribute to improved quality of life in arthritis patients, with minimal adverse effects. However, literature also emphasizes the need for more large-scale, controlled studies to validate its effectiveness and standardize treatment protocols. Overall, the reviewed evidence supports the use of rock salt hot therapy as a promising complementary approach in the holistic management of arthritis-related pain.

Table 1: Literature related to pain in arthritis patients

Sr No	Author & Year	Title of the Study	Methodology	Results	Conclusion
1.	Maria Gabriela Chancay, Shirin Nouri Guendsechadze, and Irene Blanco (2019)	Types of Pain and Their Psychosocial Impact in Women with Rheumatoid Arthritis	A descriptive research study was conducted to assess different types of pain and psychosocial effects in women diagnosed with Rheumatoid Arthritis (RA)	All patients with RA experience various pain types. Women particularly reported increased mechanical pain, fibromyalgia, anxiety, depression, sleep disturbances, sexual dysfunction, and disability.	Addressing alternative pain triggers and understanding the psychosocial burden of RA is essential, especially for patients unresponsive to conventional pharmacotherapy.
2.	Angela Zhang and Yvonne C. Lee (20 August 2018)	Mechanisms for Joint Pain in Rheumatoid Arthritis (RA): From Cytokines to Central Sensitization	Literature review evaluating studies on RA pain mechanisms, including patient-reported outcomes, quantitative sensory testing, and neuroimaging	Despite the use of DMARDs, many RA patients still experience pain. Findings suggest that both joint inflammation (peripheral mechanisms) and abnormalities in central nervous system (CNS) pain processing contribute to pain. Some DMARDs and adjunctive therapies (e.g., antidepressants, antiepileptics) may help reduce pain.	Effective pain management in RA requires identification of both peripheral and central mechanisms using accurate assessment tools so treatments can be targeted appropriately.
3.	Dr. Ali M. Alshami (2014)	Knee Osteoarthritis-Related Pain:	Descriptive research using narrative	Paracetamol, oral and topical NSAIDs, opioids,	Patient education programs

		A Narrative Review of Diagnosis and Treatment	review; English journal articles related to pain were searched via PubMed (2002–2012) and the Physiotherapy Evidence Database.	corticosteroid injections, and physical therapy (therapeutic exercises, joint manual therapy, TENS) help reduce pain and improve function.	and weight loss for overweight individuals should be considered as part of comprehensive pain management strategies for knee osteoarthritis.

Table 2: Literature related to hot application use in arthritis patients

Sr No	Author & Year	Title of the Study	Methodology	Results	Conclusion
1	Pallvi Nimkar, Sudnyan Gawaie, Veda Vivek, Panjabrao Deshmukh, and Vasant Gawande (2021)	Effectiveness of Hot Water Application with Epsom Salt to Reduce Knee Joint Pain in Osteoarthritis	Quasi-experimental study; 100 women with osteoarthritis from a selected urban community in Maharashtra; convenience sampling used.	Hot water application with Epsom salt showed a highly significant difference ($t = 39.41$, $p < 0.0001$) between pretest and posttest. Mean ± SD: 2.68 ± 0.67.	Hot water application with Epsom salt is effective in reducing mild to moderate knee joint pain among urban women with osteoarthritis.
2	Derin Okram, Dipak Sethi, Chavan Ranjana, and Sharadha Ramesh (Oct–Dec 2020)	Effectiveness of Hot Fomentation with Epsom Salt Versus Common Salt on Knee Joint Pain	Quasi-experimental study; 40 elderly participants (20 per group) from a selected old age home in Pune City; non-probability	Both interventions were effective, but Epsom salt was more effective. Epsom salt group: $t = 26.29$, $p = 0.00001$; Common salt group: $t = -21.03$, $p = 0.0001$ (both p-values < 0.05).	Hot fomentation with Epsom salt is more effective than with common salt in reducing knee joint pain among

			purposive sampling.		elderly individuals.
3.	K. Samayochitha and B. Geetha Praveena (2020)	Efficiency of Applying Hot Water with Epsom Salt Versus Hot Water Alone to Relieve Knee Pain in the Elderly	True experimental study; 60 participants (30 experimental, 30 control) from selected old age homes in Rajahmundry; convenience sampling technique used.	Experimental group t-value = 4.9; control group t-value = 5.6; difference in post-test scores = 9.09.	Hot water with Epsom salt is more effective than hot water alone in reducing knee pain among elderly individuals.

Table 3: Literature related to rock salt hot application

Sr No	Author & Year	Title of the Study	Methodology	Results	Conclusion
1.	Kayikci Emel Emine and Can Gulbeyaz (2022)	Effect of Rock Salt Hot Water Bath on Treatment-Related Peripheral Neuropathy in Cancer Patients Receiving Taxane and Platinum-Based Therapy	Experimental research study; patients at a national cancer institute; data collected using simple random sampling technique.	Patients in the rock salt hot water bath group experienced less severe peripheral neuropathy and significantly higher quality of life scores compared to the control group.	Rock salt hot water bath is an effective strategy for managing peripheral neuropathy caused by taxane and platinum-based chemotherapy treatment in cancer patients.
2.	Apurbo Sarker, Arittra Ghosh, Kinsuk Sarker, Debojyoti Basu, and Prof. Dr. Dhrubo Jyoti	Therapeutic Benefits of Rock Salt (Halite) Compared to Common Salt	Descriptive research; comparison between composition and health benefits of rock salt vs common salt.	Rock salt contains 85% NaCl and 15% trace minerals, while common salt contains 97% NaCl and additives. Rock salt is used as natural therapy for joint stiffness,	Rock salt has significant therapeutic benefits and can be effectively used in hot packs to relieve joint pain, stimulate nerves, and

	Sen (04 Oct. 2016)			rheumatic pain, sinusitis, insect bites, and other conditions.	promote relaxation of body and mind.

6. CONCLUSION

The study concluded that rock salt (halite) offers substantial therapeutic benefits compared to common salt due to its richer mineral composition (85% NaCl and 15% trace minerals). It is effective as a natural remedy for various health conditions, including rheumatic pain, joint stiffness, sinusitis, insect bites, and skin irritations. When used as a heated pack applied to affected joints, rock salt helps relieve pain, stimulate nerves, and promote relaxation of the body and mind, making it a valuable alternative in natural pain management and holistic care.

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