

## INTRODUCTION

- Chemotherapy is a vital cancer treatment, but it often leads to Chemotherapy-Induced Peripheral Neuropathy (CIPN).
- CIPN causes pain, numbness, and reduced sensation in extremities, significantly impacting cancer patients' quality of life.
- Pharmacological treatments for CIPN have limitations and side effects, necessitating exploration of non-pharmacological interventions.
- This study evaluates the effectiveness of various non-pharmacological strategies, including acupuncture, cryotherapy/compression therapy, and more.
- The aim is to improve CIPN management and enhance overall chemotherapy effectiveness, prioritizing patients' well-being.

## OBJECTIVE

This study aimed to assess the effectiveness of non-pharmacological interventions in the management of Chemotherapy-Induced Peripheral Neuropathy (CIPN).

## METHODOLOGY

### Database & Key terms:

- A thorough search was conducted in databases such as PubMed and Google Scholar.
- The search strategy included keywords related to CIPN and non-pharmacological interventions such as 'acupuncture', 'cryotherapy/compression therapy', 'scrambler therapy', 'physical exercise', 'photo biomodulation', and nutritional supplements.
- The impact of each strategy in alleviating CIPN symptoms were evaluated

### Identification of Studies:

- The study identified 156 studies related to non-pharmacological interventions for CIPN.
- After a rigorous review process, 10 studies were selected based on the inclusion criteria for the study.
- These studies likely met certain quality and relevance standards.

### Inclusion Criteria:

- Studies focusing on non-pharmacological interventions for CIPN
- Studies involving patients with advanced cancer undergoing chemotherapy.
- Human clinical trials and observational studies.
- Studies from the last 10 years (2013-2023) to ensure the relevance of information.
- Studies published in the English language.

### Exclusion Criteria:

- Studies not related to CIPN or non-pharmacological interventions.
- Studies involving patients with cancer at an early stage or not undergoing chemotherapy.
- Studies not available in full text.
- Non-English language studies.
- Animal or in vitro studies.
- Duplicate studies or redundant data.

## RESULTS

- A total of 156 studies investigating non-pharmacological strategies for CIPN were identified from the database.
- Among these included studies, 10 were selected based on the inclusion criteria for the study.
- Physical exercise strategies emerged as the most effective intervention for managing CIPN in individuals with advanced cancer. Exercise not only improved physical function but also reduced inflammation, suppressed pain pathways, and enhanced neuroprotective factors associated with nerve development and function.
- Acupuncture, cryotherapy/compression therapy, and photo biomodulation also demonstrated promising results in reducing CIPN symptoms, with significant improvements reported in three studies.
- Two studies depicted that nutritional supplement, such as Omega-3 PUFA (polyunsaturated fatty acids) and glutamine, exhibited potential benefits in CIPN management.
- The key findings for each intervention were as follows

Sr. No	Nonpharmacological Intervention	Observation
1	Acupuncture	Acupuncture, a traditional therapy, shows potential in managing CIPN and cancer-related pain. A pilot trial on breast cancer survivors revealed significant improvements in neuropathic symptoms after an 8-week acupuncture intervention.
2	Cryotherapy and Compression Therapy	Cryotherapy and compression therapy have shown promise in preventing taxane-induced peripheral neuropathy. Clinical trials indicate that both cryotherapy and compression therapy are safe and potentially effective.
3	Scrambler Therapy	Scrambler therapy, a cutaneous neuro-stimulatory treatment, showed promise in a Phase II trial for managing Chemotherapy-Induced Peripheral Neuropathy (CIPN). Patients receiving scrambler therapy experienced at least 50% improvement in CIPN symptoms during the 2-week treatment, outperforming transcutaneous electrical nerve stimulation (TENS).
4	Physical Exercise	Physical exercise has potential benefits in managing CIPN, with the ability to alleviate pain and improve grip strength. It influences various factors including blood circulation, inflammation, neurotransmitters, and neuroplasticity, making it a promising non-pharmacological intervention. A single-blind, randomized study in breast cancer patients undergoing taxane chemotherapy showed trends of reduced pain and improved pain pressure thresholds and grip strength with a physical-therapy home program.
5	Photobiomodulation (PBM)	Patients receiving PBM showed reduced neuropathy scores and symptom improvement at 4, 8, and 16 weeks. Caution is advised due to limited evidence and unestablished adverse effect profiles.
6	Nutritional Supplement	<b>Glutamine supplementation:</b> Lower CIPN incidence, improved quality of life, and reduced chemotherapy dose reduction in colorectal cancer patients; very low-quality evidence. <b>Omega-3 PUFA-enriched nutrition drink:</b> Reduced CIPN severity, improved fatigue, appetite, and body weight maintenance in lung cancer patients; very low-quality evidence. <b>Curcumin supplementation:</b> Higher cancer treatment response rate and survival but increased diarrhea in colorectal cancer patients; very low-quality evidence. No serious adverse events reported for any nutrition supplements.

## CONCLUSION

- Physical exercise was reported as the most effective non-pharmacological treatment for CIPN.
- However, further research is required to establish the best exercise plans and validate findings of the literature review.
- The focus should be on well-designed trials, standardized protocols, and assessing potential side effects to optimize non-pharmacological approaches for CIPN management, leading to improved quality of life for patients and enhanced effectiveness of chemotherapy treatment

## REFERENCE

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## CONFLICT OF INTEREST

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