

Physiotherapy Strategies for Pain Management in Palliative Care

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Keywords:

1. Manual Therapies
2. Integrative Therapies
3. Pain
4. Physical Exercise
5. Non-Pharmacological Interventions
6. Quality of Life

Abstract

RATIONALE AND OBJECTIVES: Palliative care aims to improve the quality of life of patients with serious, progressive diseases, focusing on reducing physical, emotional, spiritual, and social suffering. In this context, Physical Therapy plays a key role by using techniques to relieve symptoms such as pain, dyspnea, and fatigue, contributing to more humanized care. The objective of this study was to evaluate the effectiveness of non-pharmacological and non-surgical alternative interventions in improving symptoms and quality of life in this population.

CONTENT: A systematic review was conducted covering practices such as acupuncture, Reiki, reflexology, manual therapies, and physical exercises, applied either alone or in combination with electrothermophotherapy. Reflexology was associated with pain reduction, while Reiki and acupressure showed benefits in relieving pain and fatigue. Physical exercises, ranging from light to high intensity, were crucial for well-being and symptom reduction in cancer patients. Additionally, manual therapies, such as lumbar massage, provided emotional benefits and pain relief, with effectiveness varying according to the intervention and patient profile. Transcutaneous electrical nerve stimulation (TENS) showed temporary effectiveness in pain reduction. These findings underscore the importance of Integrative and Complementary Health Practices (IChP), although further research is necessary to validate some of these practices.

CONCLUSION: Alternative interventions have significant potential to promote quality of life in patients receiving palliative care, especially when tailored to individual needs. Encouraging research on these practices is essential to optimize symptom management and the patient experience.

Highlights:

1. Integrative and Complementary Health Practices (ICHP) reduce pain, nausea, and fatigue, enhancing comfort in palliative care.
2. Reflexology and Reiki relieve pain and fatigue, improving quality of life.
3. Massage and reflexology aid in physical and emotional relief for patients.
4. Light to moderate exercise controls symptoms and promotes well-being in cancer patients.

Introduction

Palliative care is a set of practices and approaches aimed at improving the quality of life for patients facing serious and progressive illnesses without a cure. Therefore, the primary goal of this care is not to cure the disease but to alleviate physical, emotional, spiritual, and social suffering, thereby providing continuous support to the patient, family, and caregiver.

In Physical Therapy, these care practices play a crucial role. Through different techniques and therapeutic approaches, symptoms such as pain, dyspnea, fatigue, and other factors that limit functionality and well-being can be relieved. This allows for the creation of a more humanized care plan that focuses not on the disease but on the person as a whole, ensuring the patient has the opportunity to live as fully as possible, regardless of the prognosis.

Pain is a complex and multifaceted experience and is one of the main reasons individuals seek healthcare assistance. Its prevalence varies widely across different diagnoses, reflecting the diversity of conditions that can trigger it. Chronic diseases, such as arthritis, fibromyalgia, and neuropathy, are frequently associated with persistent pain, impacting patients' quality of life. Furthermore, acute conditions like sports injuries or surgeries also present high prevalence of pain, requiring effective interventions for pain management.

Oncologic pain is another noteworthy example, where patients face not only physical discomfort but also emotional and psychological challenges resulting from the diagnosis. Studies show that pain is prevalent in approximately 50% of patients undergoing cancer treatment.

Although pain is a common symptom in various conditions, its assessment and treatment remain challenging. Factors such as variability in individual response, comorbidities, and psychosocial dimensions complicate its management. Additionally, pain may be underdiagnosed and undertreated, leading to significant impacts on the overall well-being of patients. Therefore, a holistic approach that considers pain in various health conditions is essential to optimize care and improve quality of life.

Within this approach, non-pharmacological pain management involves techniques and approaches that do not rely on medications but encompass a wide range of intervention categories, including cognitive training, physical exercises, dietary treatments, behavioral therapies, and complementary therapies. This type of management is especially useful in minimizing the harmful effects of polypharmacy and increasing therapeutic options for cases refractory to pharmacotherapy. The benefits of non-pharmacological therapy include acceptance, adherence, minimal side effects, and the ability to be combined with other treatments, as well as applicability to different stages of illness. This strategy thus improves quality of life and promotes a personalized approach to patient care.

To ensure that palliative care interventions are effective, it is essential that the numerous treatment options are carefully cataloged and organized based on scientific evidence. This ensures that palliative treatment is a holistic approach grounded in proven practices, promoting interventions that truly meet physical, emotional, social, and spiritual needs, in addition to integrating continuous evaluations that allow for adaptation of approaches to each clinical case and its particularities. In this way, the management of incurable and progressive diseases becomes more assertive, bringing greater quality of life to these individuals.

In this context, this study aims to describe, through a systematic review, the effectiveness of non-pharmacological and non-surgical therapies in managing pain in patients with various incurable chronic diseases.

Methodology

This is a systematic review conducted in accordance with the guidelines outlined by PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), accessible at: [PRISMA](#). The included articles addressed the following aspects: (1) randomized clinical trials; (2) limited to publication years between 2014 and 2024; (3) studies mentioning non-pharmacological or non-surgical pain management in patients diagnosed with chronic and incurable diseases; (4) studies with populations including children, adolescents, adults, or seniors over 60 years of age. Excluded were review articles, articles older than 10 years, articles mentioning pharmacological or surgical pain management, and articles without available full text.

Search Strategy

The search was conducted through the PubMed, Lilacs, and Web of Science databases. The search terms used were (“Palliative Care” AND “Pain” AND “physiotherapy”), and the search was conducted from March to May 2024.

Data Collection and Analysis

Initially, descriptors were entered into the databases, yielding a total of 100 articles (Table 1). Data screening was performed in stages: title, duplicate identification, abstracts, and full-text reading, considering inclusion and exclusion criteria, resulting in 29 articles on non-pharmacological pain management in palliative care patients. These included 9 articles on exercise, 4 on manual therapy, 8 on combined therapies, and 8 on Integrative and Complementary Health Practices (IChP). All information was stored in Microsoft Excel spreadsheets. Figure 1 shows the flowchart of the data extraction process for articles included in the study.

Data Extraction

In the first stage, two reviewers (IF and EL) independently reviewed titles to select only those meeting the inclusion criteria. Discrepancies were resolved by a third reviewer (CL). In the second stage, two reviewers (CL and EL) analyzed the abstracts and keywords of the previously selected articles, retaining studies that fully met all criteria and those that partially met criteria but lacked sufficient information to determine relevance. Discrepancies were resolved by a third reviewer (IF). Data were independently extracted and recorded by two reviewers (CL and EL), followed by random accuracy checks by the third reviewer (IF). Discrepancies generated by reviewers CL and EL were resolved by the third reviewer (IF). Extracted data included: author name(s), year of publication, study design, population characteristics, main intervention, data collection, and results.

Results

A total of 100 articles were considered for this study, with 13 removed before the selection process due to duplication or other reasons. Of the remaining 87 articles, 47 were excluded based on the title and abstract. Of the 51 remaining articles, 7 were removed due to the unavailability of full text, leaving 44 articles. In the final screening process, 15 references were excluded after full-text reading, resulting in a total of 29 studies that met the inclusion criteria and were included in this systematic review.

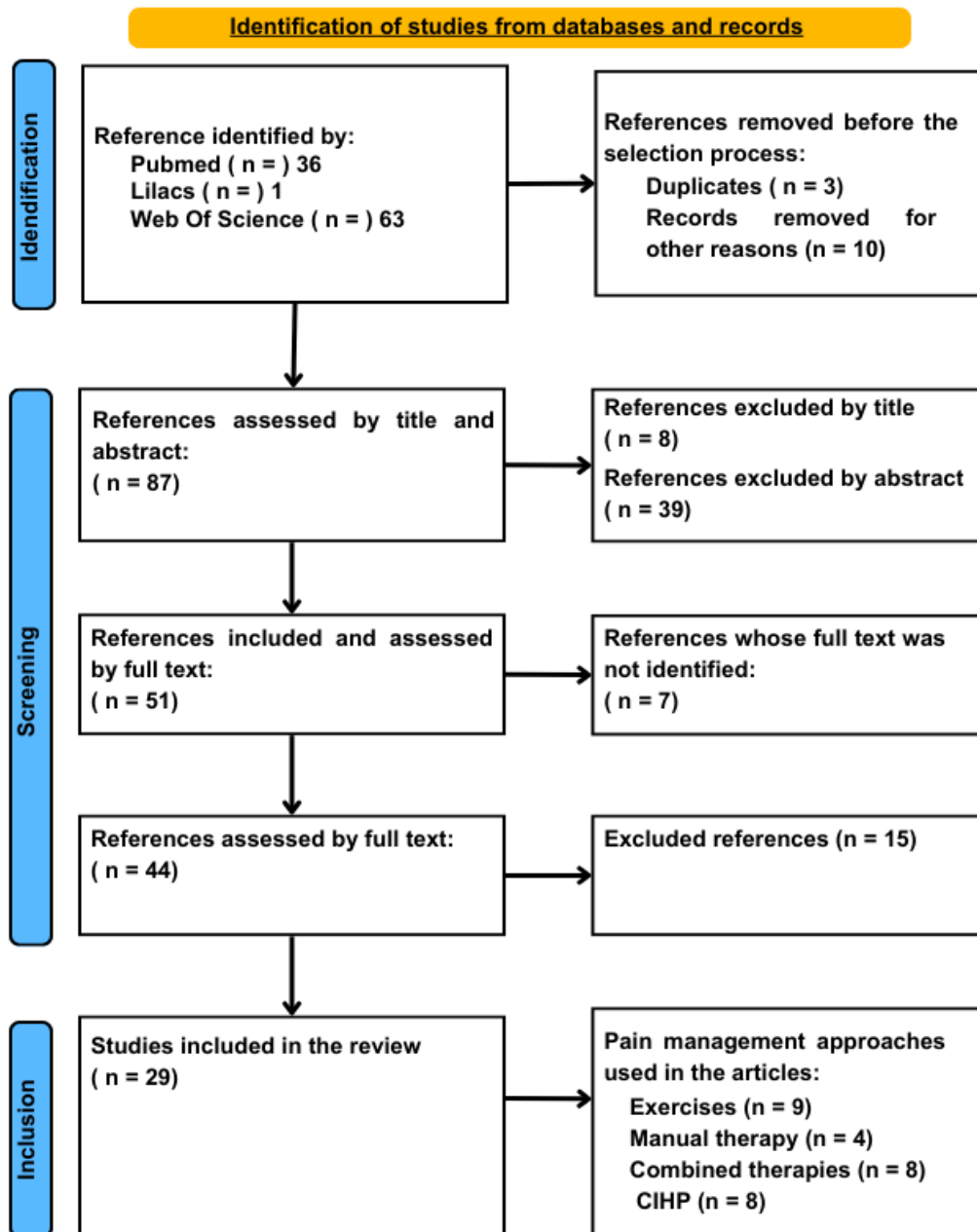


Figure 1. Flowchart and Process of Primary Study Inclusion

Study Characteristics

In total, 33 randomized clinical trials were included, with all characteristics (authors/year, study design, population, main intervention, study variables, and

outcomes) described in Table 1. Specifically, the selection included three-arm randomized controlled trials, single-blind randomized controlled trials, feasibility randomized controlled trials, and retrospective observational studies, each with two articles. Additionally, one article each was included for pragmatic randomized controlled trials, double-blind placebo-controlled crossover studies, multicenter controlled and randomized trials, case studies, feasibility studies, two-arm randomized controlled trials, single-group pre-test and post-test designs, cross-sectional designs, longitudinal observational studies, and proof-of-concept studies.

Population

The studies analyzed included diverse populations, primarily focusing on patients with serious or chronic conditions, many related to cancer and degenerative diseases. Among the investigated populations, Sirkoskii et al. (2020) included patients with stage III and IV breast cancer, while Molassiotis et al. (2014) studied individuals undergoing metagenic chemotherapy, and Hediye Utlı et al. (2022) focused on cancer patients in palliative care. Epstein et al. (2023) centered on patients with advanced cancer, and Sturm et al. (2014) studied those undergoing active antineoplastic treatment. Ordoñez-Mora et al. (2023) investigated individuals with prostate, uterine, and breast cancers experiencing oncologic pain.

Additionally, Chassot et al. (2015) examined women with chronic tension headaches, and Swan et al. (2019) focused on elderly patients with chronic dyspnea associated with respiratory diseases. Other studies included patients with breast or gynecologic cancer undergoing chemotherapy (Ben-Arye et al., 2022), individuals with head, neck, and chest cancer pain in palliative care (Kashyap et al., 2020), and older adults living with HIV and other chronic diseases (Moore et al., 2019).

Further populations studied included patients with malignant lymphedema (Liao, 2016), an elderly patient with lung adenocarcinoma and malignant hemorrhagic pleural effusion (Lakkadsha et al., 2022), and terminal cancer patients (Jensen et al., 2014). Some studies also analyzed patients with colorectal cancer and extremity sensory disturbances (Al Onazi et al., 2021), while others focused on oncology patients in stages I to IV (Miladinia M et al., 2022), adults with advanced cancer (Kawabata N et al., 2020), and patients admitted to palliative care centers for physical discomfort relief (Marcolin et al., 2023). Siemens et al. (2020) specifically assessed hospitalized patients with cancer-related pain ranging from 3 to 11 points on the NRS scale.

The age ranges of these populations varied from 18 to 80 years, with a prevalence over 40 years, including both male and female genders, with a predominance of women in studies on breast cancer, chronic tension headache, and malignant lymphedema.

Types of Interventions

The primary interventions included Integrative and Complementary Health Practices (IChP), such as reflexology, acupressure, Reiki, acupuncture, massage, and body and behavioral techniques. Combined Therapies included exercise guidance associated with portable ventilation and the Calming Hand technique, the use of analgesics with electrotherapy through Scrambler Therapy, cognitive-behavioral therapy integrated with Tai Chi, text message support, and support groups. Additionally, active exercises were combined with myofascial release, proprioceptive neuromuscular facilitation, electroacupuncture, and other complementary therapies, including Complex Decongestive Physiotherapy (CDP) and pulmonary rehabilitation with kinesiotherapy and aerobic exercises. Other interventions included breathing exercises, muscle strengthening, patient transfers, gait training, balance, functional and ergonomic exercises, as well as manual therapies such as slow lumbar massage, effleurage massage with aromatic oils, massage therapy, and reflexology.

Study Variables

The main questionnaires used in the studies include the Brief Pain Inventory (BPI), which assesses pain intensity and its impact on patients, and the Brief Fatigue Inventory, which measures fatigue intensity. The Insomnia Severity Index is employed to assess the severity of sleep problems, while the Patient-Reported Outcomes Measurement Information System (PROMIS) - version 1.2 (Global Health) analyzes overall patient health. The Visual Analog Scale (VAS) is used to measure pain intensity on a 10 cm scale, and the Roland-Morris Disability Questionnaire (RMDQ) assesses disability related to back pain.

Additionally, the Functional Assessment of Chronic Illness Therapy: Fatigue Questionnaire assesses fatigue in patients with chronic diseases. The EORTC QLQ-C30 is used to assess cancer-related quality of life. The Montreal Cognitive Assessment (MoCA) measures cognitive aspects such as memory and attention, and the Hospital Anxiety and Depression Scale (HADS) assesses anxiety and depression levels. The Central Sensitization Inventory (CSI) measures central pain sensitization, while the Pain Catastrophizing Scale (PCS) assesses pain catastrophizing. Finally, the Beck Depression Inventory (BDI) is used to assess depression intensity.

Outcomes

The outcomes of interventions in patients with advanced cancer revealed positive effects in various areas, including pain, fatigue, and quality of life. Participants who received acupressure or Reiki showed significant reductions in mean NRPS scores and fatigue compared to the control group. Reflexology also showed benefits in pain reduction, although improvements in fatigue did not reach statistical significance.

Interventions such as cognitive-behavioral therapy (CBT), Tai Chi, and text message support resulted in significant improvements in reducing excessive alcohol consumption and physical performance. Electroacupuncture (EA)

reduced pain intensity and analgesic use, with persistent effects on quality of life.

Furthermore, physical therapy programs showed a significant reduction in fatigue and drowsiness, as well as improved patient well-being. Moderate to vigorous intensity exercise brought multiple benefits, especially for those with bone metastases.

In summary, integrative interventions, such as acupressure, Reiki, reflexology, CBT, and physical therapy, demonstrated effectiveness in providing symptom relief and improvements in the quality of life of palliative care patients.

Authors and Year	Study Design	Population	Main Intervention	Study Variables	Results
Abradeli Gunn et al, 2022	Randomized clinical trial	155 patients with cancer levels III/IV needing palliative care or experiencing pain or fatigue	Reiki sessions	Brief Pain Inventory, Brief Fatigue Inventory, Analgesic follow-up form	Significant reduction in pain, fatigue and analgesic use in intervention group
Epstein et al, 2023	Pragmatic randomized clinical trial	298 patients with advanced cancer	Acupuncture sessions	Brief Pain Inventory, Brief Fatigue Inventory, Functional Assessment of Cancer Therapy-General, Hospital Anxiety and Depression Scale	Significant reduction in pain, fatigue and improvement in quality of life in intervention group
Sturm et al, 4	Randomized and controlled clinical trial	40 patients in adjuvant radiotherapy treatment (25) or neoadjuvant (15) with moderate or severe fatigue	Massage therapy sessions	Functional Assessment of Chronic Illness Therapy-Fatigue, Functional Assessment of Cancer Therapy-General, Hospital Anxiety and Depression Scale	Significant improvement in fatigue and quality of life in intervention group

Moore et al, 2019	Randomized controlled clinical trial with 3 arms	55 participants in a community organization providing services to AIDS patients with cancer levels III/IV and subsidies for 50 years or older suffering from chronic disease	Cognitive-behavioral therapy group (CBT)	Quality of Life Questionnaire, Physical Performance Battery	Significant improvement in quality of life and physical performance in CBT group
Sirotkin et al, 2020	Randomized clinical trial	Patients with stage III or IV breast cancer undergoing chemotherapy, hormone therapy, or other therapies	Reflexology sessions	Center for Epidemiologic Studies-Depression Scale, M.D. Anderson Symptom Inventory	Significant improvement in depression and symptom control in intervention group
Molassiotis et al, 2014	Randomized controlled clinical trial with 3 arms	Patients undergoing chemotherapy treatment	Aromatherapy	Rhodes Index of Nausea, Vomiting and Retching, Functional Assessment of Cancer Therapy-General, Hospital Anxiety and Depression Scale	Significant reduction in nausea and vomiting and improvement in quality of life in intervention group
Ordóñez-Mora, L.T., et al, 2023	Randomized controlled clinical trial, single-blind	180 adults with cancer, people with breast, prostate, colon, or lung cancer, over 60 years old	Neurofeedback (NFB) sessions	Visual Analog Scale (VAS), Functional Assessment of Cancer Therapy-General, Hospital Anxiety and	Significant reduction in pain and improvement in quality of life in intervention group

				Depression Scale	
Ozsoy et al., 2019	Randomized, double-blind, controlled study	36 women with chronic non-specific low back pain	Electroacupuncture	VAS, ODI, BDI	Significant reduction in pain and disability in the electroacupuncture group
Choi et al., 2014	Randomized controlled trial	31 patients with colorectal cancer with neuropathic pain	Medication and exercise	FACT/GOG-Ntx, EORTC QLQ-C30, Clinical Evaluation of Sensory Intention	Significant improvement in pain and quality of life in all groups, with the combination therapy group showing the most significant improvement
Ben-Arye et al., 2012	Multicenter, randomized, controlled study	148 participants with advanced cancer	Integrative oncology care vs. standard care	EORTC QLQ-C30, Edmonton Symptom Assessment Scale (ESAS)	Significant improvement in quality of life and symptom management in the integrative oncology care group
Lakdawala, TM et al., 2022	Case study	Male patient with advanced lung cancer and severe neuropathic pain	Multimodal intervention: pain management, physical therapy, psychological support, nutritional support	QLQ, Fatigue Scale, Pain Scale	Significant improvement in pain management and quality of life
Searl et al., 2019	Feasibility study	Patients with chronic pain and negative beliefs about pain	CBT, CBT + exercise, CBT + mindfulness, CBT + education	Modified Instrumental Activities of Daily Living (IADL) Scale, General Health Questionnaire (GHQ)	Significant improvement in pain management and quality of life in all groups, with the CBT + exercise group showing the most significant improvement

Jensen, W et al., 2014	Observational retrospective study	168 female patients with cancer, admitted to a palliative care unit	Physical Exercise and Physical Therapy Program (PEPT)	EMG, Pain Scale, QLQ	Significant improvement in pain management and quality of life in patients participating in the PEPT program
Poynor, Anna et al., 2017	Randomized controlled trial	60 patients with advanced cancer	Integrative oncology care vs. standard care	Numeric Rating Scale (NRS), Quality of Life Questionnaire (QLQ)	Improvement in quality of life in the integrative oncology care group
Kashyap et al., 2020	Randomized controlled clinical trial	Patients with head/neck cancer and thoracic cancer in a palliative care center	Intervention group: medication for pain or electrotherapy through Scrambler Therapy (10 days, 40 minutes/session, intensity 1-7). Control group: pain medication only	Numeric Rating Scale, Chi Square Test (morphine use)	Pain reduction in both groups (no significant difference at first session, P=0.67). Intervention group: pain reduced to 1.5 after 7th session, control group: 3.5. Morphine use not significantly different (P=0.07), but intervention group used less (average 66.67 mg vs. 82.47 mg in 7th session).
Liao, SF, 2016	Retrospective Observational Study	29 patients with malignant lymphedema	Complex Decongestive Physiotherapy (CDP): compression, manual lymphatic drainage, skin care, exercises, compression bandage	Affected limb circumference, volume, PEV (Percentage of Excess Volume), limb movement amplitude	Reduced affected limb circumference (17.1%, P=0.001), PEV (44.8%, P=0.002), and limb volume (40.8%, P=0.001). Improved limb movement amplitude (P=0.001).
Miladinia M et al, 2022	Randomized controlled clinical trial	Ambulatory cancer patients (18-64 years old, diagnosed	MSSM massage (sternum, sacrum, iliac crest) with slow, smooth,	Analyzed using statistical software R	Aromatherapy in massage did not show more effective results, but 30-minute

		with stage I-IV)	rhythmic hand movements		massage was effective.
Kawabata N et al, 2020	Randomized controlled clinical trial	74 patients (18+ years old) with advanced cancer	Reflexology massage (palms, soles, big toe) with adjustable intensity (0-10) for 30 minutes	Richards-Campbell Sleep Questionnaire, Brief Fatigue Inventory	Aromatherapy in massage did not show more effective results, but 30-minute massage was effective.
Marcolin, et al, 2023	Feasibility study and randomized clinical trial (2 arms)	Patients in a palliative care center with discomfort	Therapeutic massage (feet) or reflexology (feet) for 15-20 minutes	ESAS scale (sleep quality, anxiety, pain), Suffering Symptom	30 participants (15 reflexology, 15 massage). Aromatherapy in massage did not show more effective results, but 30-minute massage was effective.
Siemens et al., 2020	Randomized and controlled clinical trial	Adults hospitalized with cancer pain	TENS therapy	Brief Pain Inventory, Verbal Rating Scale, EORTC QLQ-C30, McGill Pain Questionnaire, Edmonton Classification System for Cancer Pain, DN4	TENS therapy reduced pain intensity and improved quality of life.
Covinsky/Szanton et al., 2020	Post-test study of a single group	60 older adults in outpatient chronic care service	Physiotherapy (breathing exercises, strengthening, stretching, relaxation)	Shapiro-Wilk, Wilcoxon signed-rank test, Mann-Whitney test, and descriptive measures	Interventions were feasible and well-accepted by patients.
Guinan et al., 2022	Cross-sectional study	58 patients with metastatic diseases	Physical activity (≥ 150 minutes/week)	SRI, EORTC QLQ-C30, EORTC QLQ-FA12	No significant differences in quality of life between those meeting physical activity recommendations

					ons and those who did not.
Hensel et al., 2021	Randomized and controlled clinical trial	350 patients with metastatic breast cancer	Supervised exercise program (resistance and aerobic exercises)	EORTC QLQ-C30 and EORTC QLQ-FA12	No significant differences in quality of life between the exercise and control groups.
Nielsen, L.K. et al., 2021	Longitudinal Observational Study	92 patients with multiple myeloma in remission	Multidisciplinary rehabilitation (5-day residential course, home exercises, 2-day follow-up)	Charlson Comorbidity Index, Number of medications, FACT-G, HADS, EQ-5D, PASE, PROMIS	Significant reduction in anxiety and improvement in physical and emotional function.
Myrick, D. et al., 2021	Proof of concept study	92 palliative care patients	"Motivate" and "Mobilize" phases intervention	PPS, FACIT, HADS, EQ-5D, PROMIS	Significant improvement in quality of life and reduction in anxiety and depression.
Bamshoom K.J. et al., 2015	Randomized and controlled clinical trial, single group	56 adult patients with complex regional pain syndrome type 1	Exposure therapy (PEPT)	ISS-RV, VAS, HADS, EQ-5D, PROMIS	Significant improvement in pain intensity, anxiety, depression, and quality of life.
Henke CC, et al, 2014	Randomized and controlled clinical trial	46 patients over 18 years old with stage IIIA, IIIB, and IV lung cancer undergoing chemotherapy	Intervention group: Endurance training, strength training, respiratory techniques, occupational therapy. Control group: special physiotherapy.	Barthel Index, 6-Minute Walk Test, EORTC QLQ-C30, Borg Scale	Intervention group showed significant improvement in 6-minute walk test compared to the control group. No significant differences were found in other outcomes.
Larsen, RF, et al, 2019	Randomized feasibility clinical trial	102 patients over 18 years old recently diagnosed with multiple myeloma	Intervention group: Personalized physical activity plan (warm-up, strengthening, aerobic exercises)	EORTC QLQ-C30	Patients in the intervention group showed significant improvement in physical activity levels and quality of life compared to the control group.

Amitzbal G, et al, 2020	Randomized and controlled clinical trial	158 women after breast cancer surgery with axillary lymph node dissection (ALND)	Exercise program (3 times/week, 20 weeks supervised, 30 weeks self-administered)	Pain intensity, neuropathic pain, impact of pain on daily life	Baseline pain reduced by more than half in 12 months. Neuropathic pain remained stable. Exercise group showed favorable effects on pain intensity indicators.
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Table 1. Characteristics of the included studies.

Integrative and Complementary Practices in Palliative Care

Integrative and Complementary Practices in Health (PICS) include a variety of therapies such as acupuncture, homeopathy, meditation, Reiki, reflexology, among others. In this context, this discussion reviews the main findings of studies on PICS applied in palliative care.

Interventions

The interventions used in the studies varied between integrative therapies such as reflexology, acupressure, Reiki, acupuncture, and massage, as well as other physical and behavioral techniques. The study by Sirkoskii et al. (2020) used reflexology applied by trained caregivers in home sessions over four weeks. Molassiotis et al. (2014) applied acupressure using wristbands with buttons that pressed the P6 acupuncture point for chemotherapy patients. Hediye Utli et al. (2022) combined Reiki and acupressure, applied in eight sessions over four weeks. Epstein et al. (2023) compared the effects of acupuncture and massage, focused on pain relief in patients with advanced cancer. Sturm et al. (2014) used dance classes for patients with severe and moderate fatigue, held in 10 sessions over five weeks. Ordoñez-Mora et al. (2023) applied pain neuroscience education (PNE) with weekly sessions, aiming to address cancer pain and central sensitization. Other studies such as Zeng et al. (2018) used practices such as reflexology, Reiki, acupuncture, and massage in the treatment of patients in palliative care, especially in managing symptoms such as pain and nausea.

Relevance of Interventions

The results varied in terms of clinical impact and statistical significance. The study by Sirkoskii et al. (2020) showed that reflexology was more effective than control for pain relief in breast cancer patients but did not show significant differences for other symptoms, such as fatigue. In Molassiotis et al. (2014), both acupressure and placebo reduced nausea, but not to a statistically significant level, suggesting that other factors may influence patients' response to chemotherapy. Hediye Utli et al. (2022) observed that Reiki and acupressure provided statistically significant reductions in pain and fatigue in patients in palliative care, unlike the control group, which received only conventional treatment. Ordoñez-Mora et al. (2023) demonstrated that participants in the PNE group had a significant reduction in pain intensity, decrease in levels of catastrophizing, central sensitization symptoms, as well as improvements in functional capacity and quality of life. Sturm et al. (2014) found significant improvements in fatigue and physical and emotional functioning of patients after dance classes. Epstein et al. (2023) found that both acupuncture and massage were effective in relieving pain in patients with advanced cancer. These findings align with the systematic review by Zeng et al. (2018), which reinforces the importance of PICS in the treatment of patients in palliative care, especially in managing symptoms such as pain and nausea. Practices such as reflexology, Reiki, acupuncture, and massage have shown positive results in several studies. However, acupressure has shown less consistent evidence, indicating

the need for more research to validate its effectiveness in different clinical contexts.

Combined Therapies in Palliative Care

In nine studies, combined therapies were analyzed as an intervention for pain management in palliative care, involving highly heterogeneous populations, both in terms of health conditions and age groups. The majority, however, remained elderly patients with cancer diagnoses.

Interventions

The interventions applied in these studies varied significantly, but all incorporated elements of combined therapies. Swan et al. (2019) used exercise guidance, portable ventilation, and the "Calming Hand" technique. Kashyap et al. (2020) combined analgesic medication and electrotherapy via Scrambler Therapy. Moore et al. (2019) integrated cognitive-behavioral therapy (CBT), Tai Chi, text messages, and support groups. Pyszora et al. (2017) applied a physiotherapy program with active exercises, myofascial relaxation, and proprioceptive neuromuscular facilitation. Chassot et al. (2015) used electroacupuncture sessions, while Ben-Arye et al. (2022) combined acupuncture with other complementary therapies. Liao (2016) adopted Complex Decongestive Physiotherapy (CDP), which included compression, manual lymphatic drainage, mobility exercises, skin care, and compression bandaging. Lakkadsha et al. (2022) introduced a pulmonary rehabilitation program that included intercostal drainage, PLB, TENS, CPAP, range of motion exercises, as well as a home program with aerobic and strengthening exercises. Jensen et al. (2014) applied physical exercise programs, massage, respiratory training, and lymphedema treatment. Al Onazi et al. (2021) conducted balance exercises and therapeutic ultrasound. Lopes-Júnior et al. (2020) reviewed the use of combined techniques such as massage and exercises in pain management treatment in palliative care.

Relevance of Interventions

The results of these studies demonstrate the effectiveness of combined therapies in reducing symptoms and improving the well-being of patients. Pyszora et al. (2017) observed significant reductions in fatigue and drowsiness, as well as improvements in patients' overall well-being. Kashyap et al. (2020) reported that after the third session, the intervention group showed improvement in the pain scale compared to the control group. Swan et al. (2019) observed a significant reduction in morphine use among participants, suggesting better control of dyspnea. Moore et al. (2019) reported significant improvements in pain relief, physical performance, and substance use, particularly in the group that received CBT, Tai Chi, and text messages. Chassot et al. (2015) reported that after the fifth session, the intervention group showed a reduction in morphine use, which decreased from 66.67% to 48.27% in the seventh session. Ben-Arye et al. (2022) observed an improvement in the severity of symptoms reported by patients. Liao (2016) reported a significant reduction in the circumference and volume of the affected limb, as well as

improvements in pain, heaviness sensation, tension, and shoulder range of motion. Lakkadsha et al. (2022) reported significant improvements across all scales between admission, discharge, and follow-up, including improvements in cough, fatigue, functionality, and quality of life. Al Onazi et al. (2021) observed initial improvements in the group that received ultrasound, especially in quality-of-life measurements related to neurotoxicity, although no significant statistical differences were found after six weeks of follow-up. Finally, the systematic review by Lopes-Júnior et al. (2020) aligns with this study, indicating that combined therapies are effective and promising for pain reduction, but also suggesting that more studies are needed to confirm their actual relevance.

Exercises in Palliative Care

In nine reviewed studies, physical exercises were the main intervention in patients under palliative care, especially those with different types of cancer. Six of these studies focused on patients with various cancers, such as multiple myeloma in remission, multiple myeloma in intensive chemotherapy, bone metastases, metastatic breast cancer, and in the postoperative period of axillary lymph node dissection.

Interventions

The rehabilitation programs analyzed ranged from 12 weeks to 1 year in duration, with a frequency of 2 to 3 weekly sessions, and each session lasting between 40 minutes to 1 hour and 15 minutes. In the study by Ammitzbøll et al. (2020), exercises were initially supervised by physiotherapists, progressing to unsupervised resistance exercise programs for the upper and lower limbs performed in a gym or at home.

Other programs, such as in the study by Larsen et al. (2019), included an educational approach, with health orientation booklets, instructions on transfers, and encouragement to stay active, reserving four days a week for moderate to vigorous intensity activities for at least 30 minutes, as well as a varied exercise program (aerobic, resistance, stretching). Henke CC et al. (2014) emphasized resistance training and breathing exercises, while Ćwirlej-Sozańska et al. (2020) implemented comprehensive interventions with physiotherapy care, including breathing exercises, strengthening, transfers, gait training, balance, functional activities, and ergonomic adaptations to better meet the patient's needs.

Myrcik et al. (2021) used home visits to make ergonomic adaptations, health education, and exercise orientation, as well as monitoring the patient's adaptation to the program. Another home study, Hiensch et al. (2022), encouraged participants to stay physically active with a multimodal exercise program at home, supported by an activity tracker and exercise app. Nielsen et al. (2021) also presented a home approach, offering rehabilitation courses, follow-up, and guidance for unsupervised exercise practice.

Guinal et al. (2022) proposed an intervention of 150 minutes weekly of moderate to vigorous intensity physical activities. Finally, the study by

Barnhoorn KJ et al. (2015) was the only one to address therapeutic exercises with pain exposure for patients with complex regional pain.

Relevance of Interventions

Physiotherapeutic interventions demonstrated a significant impact on improving the performance of daily living activities (ADLs), emotional state, cognitive function, and quality of life of patients. There was also a reduction in baseline pain, stability in neuropathic pain, decreased fatigue, and a reduction in the perception of dyspnea. However, in the group of patients with multiple myeloma undergoing intensive chemotherapy, the results were not significant in tests that assessed increased strength, decreased sensation of dyspnea and fatigue, as well as quality of life.

A single study addressed interventions in patients with complex regional pain syndrome, using the pain exposure physiotherapy technique. This method involved gradual exposure to movements and activities that caused pain, with a maximum of five sessions, each lasting 40 minutes. The results indicated improvements in range of motion scores, reduction in pain levels, and improvement in quality of life. Among the analyzed interventions, only Guinan et al. and Larsen et al. recommend moderate and vigorous intensity physical activities. In a randomized clinical trial, C. S. Kampshoff et al. demonstrated that a moderate to high-intensity exercise program, conducted by cancer patients during chemotherapy, over 12 weeks with a frequency of twice a week, brought significant benefits. The program included resistance exercises, warm-up, 30-second cycling at 65% of maximum effort capacity, followed by 60 seconds at 30% of maximum capacity. In addition, motivational and behavioral counseling techniques were applied, as well as guidelines to maintain an active lifestyle. The results showed long-term improvements in social participation, quality of life, cardiorespiratory fitness, and a reduction in anxiety and depression. Therefore, it is important to give greater importance to studies that present interventions specifically with moderate to intense intensity exercises. Moreover, the interventions and findings in this systematic review agree with external literature that encourages healthy living counseling through health education, home follow-up, moderate to high-intensity exercises, and maintaining different types of physical exercises as maintenance of physical and mental health in patients with incurable chronic diseases.

Manual Therapies in Palliative Care

Four studies on manual therapies were analyzed with distinct interventions aimed at symptom relief, focusing on pain, in patients in advanced stages of diseases, mainly cancer.

Interventions

Miladinia M et al. (2022) analyzed a slow back massage intervention (MSSS). This technique involves gentle and rhythmic movements on the back, from the neck to the sacrum, and was applied with variable doses of 30 to 60 minutes. Kawabata N et al. (2020) used effleurage massage with aromatic oils (lavender,

orange, or both), performed on the upper and lower extremities for 30 minutes. Marcolin, et al. (2023) used foot massage therapy and reflexology with sessions lasting 15 to 20 minutes. Siemens, et al. (2020) used modulated TENS application, compared to a placebo group. The narrative review by Cates C, et al. (2023), analyzed the action of different massage techniques, combined or not with other therapies, for pain treatment in patients in palliative care.

Relevance of Interventions

The slow back massage (MSSS) analyzed by Miladinia M et al. (2022) stands out for its effectiveness in reducing multiple symptoms when applied in higher doses, suggesting that simple massage techniques can have a positive impact on palliative care. On the other hand, the aromatherapy massage analyzed by Kawabata N et al. (2020), although promising for specific groups, showed limited benefits in general terms, indicating the need for more studies to determine its effectiveness in different subgroups of patients. The interventions with reflexology and foot massage therapy analyzed by Marcolin, et al. (2023), despite not showing a statistical difference between the groups, evidence that manual therapies can positively impact emotional well-being, as observed in the reduction of psychological suffering. Finally, the application of TENS analyzed by Siemens, et al. (2020), proved to be a safe and effective intervention for temporary pain control, although without significant reduction in medication use. The narrative review by Cates C, et al. (2023), suggests the need for more studies to analyze the relevance of manual therapies in palliative care, given that the studies presented many variables.

Study Limitations

This study presents limitations such as the heterogeneity of types of neoplasms in different stages, therefore, different pathophysiological mechanisms involved in the symptoms; not all studies addressed the levels of controlled medication during the interventions; populations under intensive chemotherapy treatment or other types of chemotherapy were compared with populations in remission stage of neoplasia or under light chemotherapy or other types of cancer treatment; and many of the methods for evaluating intervention results were subjective scales or difficult to access or interpret.

Conclusion

In this systematic review, it was possible to evaluate the impact of various interventions applied to patients in palliative care, mainly those with cancer and other serious illnesses. Among the analyzed interventions, some proved to be particularly beneficial, such as acupressure, Reiki, reflexology, cognitive-behavioral therapy, and physiotherapy, which provided significant relief of symptoms such as pain, fatigue, and improved quality of life. Physical exercise programs and manual therapies also demonstrated a positive impact on the functionality and well-being of patients.

However, some interventions, such as acupressure and certain high-intensity exercise programs for patients with advanced cancer, showed less consistent results. Acupressure, for example, had a limited impact on reducing nausea and fatigue, not reaching statistical significance in some studies, which suggests the need for more research to confirm its effectiveness in different clinical contexts.

In conclusion, Integrative and Complementary Practices in Health (PICS), as well as combined and manual therapies, can be effective resources in managing the symptoms of patients in palliative care, offering improved quality of life. However, it is essential to continue research to better understand the less consistent interventions and adapt the practices individually, promoting increasingly effective and humanized treatments.

Bibliographic References

1. UTLI, H.; DINÇ, M.; UTLI, M. D. A. The effect of acupressure or reiki interventions on the levels of pain and fatigue of cancer patients receiving palliative care: A randomized controlled study. *EXPLORE*, v. 19, n. 1, p. 91–99, 1 jan. 2023.
2. EPSTEIN, A. S. et al. Acupuncture vs Massage for Pain in Patients Living With Advanced Cancer. *JAMA Network Open*, v. 6, n. 11, p. e2342482–e2342482, 14 nov. 2023.
3. STURM, I. et al. Effect of dance on cancer-related fatigue and quality of life. *Supportive Care in Cancer*, v. 22, n. 8, p. 2241–2249, 27 mar. 2014.
4. MOORE, A. A. et al. Establishing the feasibility, acceptability and preliminary efficacy of a multi-component behavioral intervention to reduce pain and substance use and improve physical performance in older persons living with HIV. *Journal of Substance Abuse Treatment*, v. 100, p. 29–38, maio 2019.
5. SIKORSKII, A. et al. Symptom response analysis of a randomized controlled trial of reflexology for symptom management among women with advanced breast cancer. *Supportive Care in Cancer*, v. 28, n. 3, p. 1395–1404, 2 jul. 2019.
6. MOLASSIOTIS, A. et al. The Effectiveness of Acupressure for the Control and Management of Chemotherapy-Related Acute and Delayed Nausea: A Randomized Controlled Trial. *Journal of Pain and Symptom Management*, v. 47, n. 1, p. 12–25, 1 jan. 2014.
7. ORDÓÑEZ-MORA, L. T. et al. NEUROCANTRIAL: study protocol for a randomised controlled trial of a pain neuroscience education programme in adults with cancer pain. *BMJ Open*, v. 13, n. 9, p. e071493, 2023.
8. CHASSOT, M. et al. Electroacupuncture analgesia is associated with increased serum brain-derived neurotrophic factor in chronic tension-type headache: a randomized, sham controlled, crossover trial. *BMC Complementary and Alternative Medicine*, v. 15, p. 144, 7 maio 2015.
9. AL, M. M. et al. Therapeutic Ultrasound for Chemotherapy-Related Pain and Sensory Disturbance in the Hands and Feet in Patients With Colorectal Cancer: A Pilot Randomized Controlled Trial. *Journal of Pain and Symptom Management*, v. 61, n. 6, p. 1127–1138, 1 jun. 2021.
10. ERAN BEN-ARYE et al. Impact of acupuncture and integrative therapies on chemotherapy-induced peripheral neuropathy: A multicentered, randomized controlled trial. *Supportive Care in Cancer*, v. 128, n. 20, p. 3641–3652, 12 ago. 2022.
11. LAKKADSHA, T. M. et al. Palliative Care as an Adjunct to Standard Pulmonary Rehabilitation: A Pathway To Improving Functional Independence & Quality of Life in a Patient With Lung Cancer. *Cureus*, 30 ago. 2022.
12. SWAN, F. et al. The Hand-Held Fan and the Calming Hand for People With Chronic Breathlessness: A Feasibility Trial. *Journal of Pain and Symptom Management*, v. 57, n. 6, p. 1051-1061.e1, jun. 2019.
13. JENSEN, W. et al. Physical exercise and therapy in terminally ill cancer patients: a retrospective feasibility analysis. *Supportive Care in Cancer*, v. 22, n. 5, p. 1261–1268, 1 maio 2014.

14. PYSZORA, A. et al. Physiotherapy programme reduces fatigue in patients with advanced cancer receiving palliative care: randomized controlled trial. *Supportive Care in Cancer*, v. 25, n. 9, p. 2899–2908, 16 maio 2017.
15. KASHYAP, K. et al. The Efficacy of Scrambler Therapy for the Management of Head, Neck and Thoracic Cancer Pain: A Randomized Controlled Trial. *Pain Physician*, v. 23, n. 5, p. 495–506, set. 2020.
16. LIAO, S.-F. Lymphedema Characteristics and the Efficacy of Complex Decongestive Physiotherapy in Malignant Lymphedema. *American Journal of Hospice and Palliative Medicine*, v. 33, n. 7, p. 633–637, 19 maio 2015.
17. MILADINIA, M. et al. Determining massage dose-response to improve cancer-related symptom cluster of pain, fatigue, and sleep disturbance: A 7-arm randomized trial in palliative cancer care. *Palliative Medicine*, p. 026921632211291, 13 out. 2022.
18. KAWABATA, N.; HATA, A.; AOKI, T. Effect of aromatherapy massage on quality of sleep in the palliative care ward: a randomized controlled trial. *Journal of Pain and Symptom Management*, jan. 2020.
19. MARCOLIN, M. L. et al. The effects of foot reflexology on symptoms of discomfort in palliative care: a feasibility study. *BMC Complementary Medicine and Therapies*, v. 23, n. 1, p. 66, 28 fev. 2023.
20. SIEMENS, W. et al. Transcutaneous electrical nerve stimulation for advanced cancer pain inpatients in specialist palliative care—a blinded, randomized, sham-controlled pilot cross-over trial. *Supportive Care in Cancer*, v. 28, n. 11, 3 mar. 2020.
21. ĆWIRLEJ-SOZAŃSKA, A. et al. Assessment of the effects of a multi-component, individualized physiotherapy program in patients receiving hospice services in the home. *BMC Palliative Care*, v. 19, n. 1, 9 jul. 2020.
22. GUINAN, E. M. et al. Associations Among Physical Activity, Skeletal Related Events, and Patient Reported Outcomes in Patients with Bone Metastases. *Seminars in Oncology Nursing*, p. 151274, 15 abr. 2022.
23. HIENSCH, A. E. et al. Design of a multinational randomized controlled trial to assess the effects of structured and individualized exercise in patients with metastatic breast cancer on fatigue and quality of life: the EFFECT study. *Trials*, v. 23, n. 1, 29 jul. 2022.
24. NIELSEN, L. K. et al. Health-related quality of life in patients with multiple myeloma participating in a multidisciplinary rehabilitation program. *Annals of Hematology*, 6 jan. 2021.
25. MYRCIK, D. et al. Influence of Physical Activity on Pain, Depression and Quality of Life of Patients in Palliative Care: A Proof-of-Concept Study. *Journal of Clinical Medicine*, v. 10, n. 5, p. 1012, 2 mar. 2021.
26. BARNHOORN, K. J. et al. Pain exposure physical therapy (PEPT) compared to conventional treatment in complex regional pain syndrome type 1: a randomised controlled trial. *BMJ Open*, v. 5, n. 12, p. e008283, dez. 2015.
27. HENKE, C. C. et al. Strength and endurance training in the treatment of lung cancer patients in stages IIIA/IIIB/IV. *Supportive Care in Cancer*, v. 22, n. 1, p. 95–101, 1 set. 2013.

28. LARSEN, R. F. et al. Supervised and home-based physical exercise in patients newly diagnosed with multiple myeloma—a randomized controlled feasibility study. *Pilot and Feasibility Studies*, v. 5, n. 1, 12 nov. 2019.
29. AMMITZBØLL, G. et al. Effect of progressive resistance training on persistent pain after axillary dissection in breast cancer: a randomized controlled trial. *Breast Cancer Research and Treatment*, v. 179, n. 1, p. 173–183, 11 out. 2019.