



# Massage therapy in palliative care populations: a narrative review of literature from 2012 to 2022

Cal Cates<sup>1</sup>, Kerry Jordan<sup>1</sup>, Niki Munk<sup>2,3,4^</sup>, Rory Farrand<sup>5^</sup>, Ann Blair Kennedy<sup>6,7^</sup>, Hunter Groninger<sup>8,9^</sup>

<sup>1</sup>Healwell, Arlington, VA, USA; <sup>2</sup>Department of Health Sciences, Indiana University School of Health and Human Sciences, Indianapolis, IN, USA; <sup>3</sup>Australian Research Centre in Complementary and Integrative Medicine (ARCCIM), Massage & Myotherapy Australia Fellow and Visiting Faculty of Health, University of Technology Sydney, Sydney, Australia; <sup>4</sup>National Centre for Naturopathic Medicine, Southern Cross University, East Lismore, Australia; <sup>5</sup>National Hospice and Palliative Care Organization, Alexandria, VA, USA; <sup>6</sup>Department of Biomedical Sciences, University of South Carolina School of Medicine Greenville, Greenville, SC, USA; <sup>7</sup>Prisma Health Department of Family Medicine, Prisma Health, Greenville, SC, USA; <sup>8</sup>MedStar Health Research Institute, Hyattsville, MD, USA; <sup>9</sup>Department of Medicine, Georgetown University School of Medicine, Washington, DC, USA

**Contributions:** (I) Conception and design: C Cates, K Jordan, H Groninger, N Munk; (II) Administrative support: None; (III) Provision of study materials or patients: None; (IV) Collection and assembly of data: None; (V) Data analysis and interpretation: C Cates, K Jordan, H Groninger, N Munk, AB Kennedy; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

**Correspondence to:** Hunter Groninger, MD. MedStar Health Research Institute, Hyattsville, MD, USA; Department of Medicine, Georgetown University School of Medicine, 110 Irving Street NW, Room 2A68, Washington, DC 20010, USA. Email: hunter.groninger@medstar.net.

**Background and Objective:** Patients living with serious illness are often eligible for palliative care and experience physical symptoms including pain or dyspnea and psychological distress that negatively impacts health-related quality of life and other outcomes. Such patients often benefit from massage therapy to reduce symptom burden and improve quality of life when such treatment is available. At present, no synthesis or review exists exploring massage therapy specifically provided with palliative care patient populations. This review is needed because those with serious illness are a growing and important vulnerable population. Massage therapy is used frequently and in many healthcare delivery contexts, but the body of research has not led to its systematic integration or broad acceptance.

**Methods:** PubMed search for clinical research focused on massage therapy for palliative care-eligible populations from 2012 and 2022. Search terms included keywords: massage, massage therapy, serious illness, advanced illness, and palliative care.

**Key Content and Findings:** Thirteen unique articles were identified through the PubMed database search and from a manual review of references. Study designs of included articles were one pilot, one quasi-experimental single-arm study, one mixed-methods study, two qualitative (both with hospital-based palliative care populations), seven randomized controlled trials, and one retrospective cohort analysis in a major Veterans Health Administration health care facility.

**Conclusions:** Variability was found in study design, scope, sample size, and outcomes for related articles published in the last ten years. Few eligible interventions reflected real-world massage therapy delivery suggesting more clinical research is needed to examine massage provided by massage therapists trained to work with palliative care populations. Gaps in the current body of existing evidence supports the need for this review and recommendations for the direction of future related research.

**Keywords:** Massage; palliative; serious illness; symptom; integrative medicine

Submitted Feb 04, 2023. Accepted for publication Jul 31, 2023. Published online Aug 11, 2023.

doi: 10.21037/apm-23-126

View this article at: <https://dx.doi.org/10.21037/apm-23-126>

<sup>^</sup> ORCID: Niki Munk, 0000-0003-0099-8440; Rory Farrand, 0000-0003-0711-8426; Ann Blair Kennedy, 0000-0002-3518-6314; Hunter Groninger, 0000-0001-7416-1999.

## Introduction

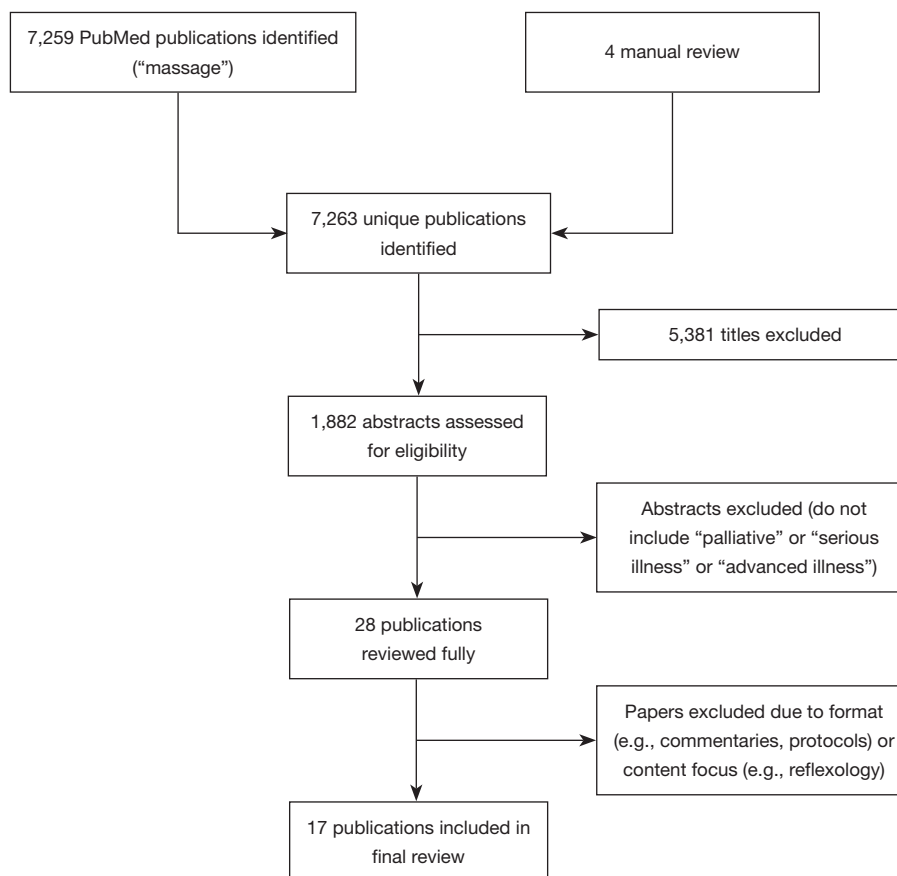
Palliative care provides holistic expert symptom management for patients and families facing serious illness such as cancer, heart disease, multiple sclerosis, or kidney disease across care settings. According to the National Institutes of Health, palliative care refers to the management of physical and emotional distress caused by severe illness and is administered simultaneously with the ongoing treatment for the illness (1). Palliative care assists not only in enhancing the quality of life of the patient but also supports the patient's family members. As such, many such patients experience lower quality of life (QOL) due to moderate-severe pain or other symptoms and require strong pharmacotherapies—often controlled substances such as opioids or benzodiazepines—to alleviate associated distress. A major tenet of quality supportive care is the combination of many types of therapy, both pharmacologic and nonpharmacologic. Some professional society guidelines now advocate for inclusion of massage therapy, as a leading integrative therapy, into symptom management in serious illness (2-4). However, broad implementation of massage therapy remains challenging, limited in large part by comparative cost, availability of practitioners, and weak evidence to support use of massage therapy (5,6).

Therapeutic massage—herein is defined as “the application of massage and non-hands-on components, including health promotion and education messages, for self-care and health maintenance; therapy, as well as outcomes, can be influenced by: therapeutic relationships and communication; the therapist's education, skill level, and experience; and the therapeutic setting (7)”—is an increasingly common integrative modality used to improve quality of life across the United States (8). Clinical evidence supporting massage to improve the experience of living with serious illness has been evolving for several decades. For example, a now seminal retrospective study published in 2004 measured the impact of massage therapy to mitigate pain and other common symptoms in outpatient and inpatient cancer populations at a large, urban comprehensive cancer center (9). The study showed improvement in symptoms of pain and anxiety of 50% or more in both inpatient and outpatient settings and demonstrated, given the initial sample size of more than 1,000 patients, that the delivery of the service was more than feasible. In addition, no adverse effects were reported. A 2008 randomized controlled trial of massage versus light touch delivered to patients with breast cancer receiving

home and inpatient hospice services showed again that the delivery of massage therapy was feasible and safe (10). In both studies, massage therapists provided a patient-centered, real-world intervention adapted in real-time to the needs of the patient. In the time since these major studies, neither massage therapy integration nor massage therapy research have progressed impactfully.

The durability of treatment effects for massage therapy interventions are often temporary, with effect duration varying between lasting a few hours after the intervention (9-14) to holding as long as 4 weeks after treatment delivery (15,16). For the seriously ill however, even temporary relief is a welcomed experience and can improve tolerance and outlook (17). Research over the last decade has demonstrated that massage therapy can be feasibly delivered across care settings to patients experiencing a wide variety of states of serious illness (18-20). Current data suggest there is therapeutic value in the incorporation of massage therapy in the care of these patients (9-21). Considering the slowly growing acceptance of massage interventions applied in palliative-eligible populations, along with the need to collate a stronger evidence base, a synthesis of current and related massage therapy research is needed. Existing reviews include massage therapy among other integrative therapies, including other “touch therapies” such as reflexology and Reiki, and thereby lack the focus intended with this review. Currently, no review exists that looks specifically at research measuring massage therapy as a discreet intervention when it is not offered with other integrative interventions like aromatherapy or when it is not compared with other integrative interventions. Our interest is in isolating massage therapy research designed to measure the impact of massage therapy alone and/or compared with standard care.

The intent of this narrative review is to summarize how massage therapy delivery is described and incorporated in clinical research with serious or advanced illness populations, regardless of underlying diagnosis, and highlight existing evidence gaps specific to patient experience, effective management of coexisting symptoms beyond pain and to specific positive outcomes conferred by improved quality of life. This work seeks to improve awareness of opportunities to deeply engage massage therapy and massage therapists into interdisciplinary care for palliative-eligible patients. This work was conducted in accordance with the Narrative Review reporting checklist (available at <https://apm.amegroups.com/article/view/10.21037/apm-23-126/rc>).



**Figure 1** Search procedure for narrative review.

## Methods

A literature search of PubMed was conducted for publications circulated between 01/01/2012 and 12/31/2022 (Figure 1). Search term combinations focused on the intervention of interest (e.g., “massage”, “massage therapy”) and the patient population of interest (e.g., “palliative care,” “advanced illness”, “serious illness”). Search terms “therapeutic touch”, “touch massage”, “reflexology”, “aromatherapy”, and “reiki” were intentionally excluded as the focus of this review is not integrative therapies broadly, but specifically massage therapy.

Titles and abstracts were reviewed to determine relevance for inclusion (Table 1). An article was included for consideration if it reported a clinical study of a patient population with serious or advanced illness that primarily employed massage therapy, without aromatherapy, as the intervention of interest. Articles focusing on non-massage interventions (e.g., discrete aromatherapy, reflexology, Reiki, healing touch), on non-adult populations with serious

illness, and/or were not published in English were also excluded. Additional articles were included following a manual review of references. Upon manuscript completion, the Narrative Review Reporting Checklist was saved and finalized.

## Results

A total of 7,259 results were discovered in PubMed with the use of “massage” as the keyword inclusive of the review period 2012 to 2022. This number decreased to 1,882 when limited to clinical studies/trials, meta-analyses, and systematic reviews. Further restriction to “massage” and “palliative care” yielded 28 results. These results were reviewed by the authors and restricted to only those in which massage was a primary study focus (e.g., studies focusing on acupuncture or aromatherapy were excluded). Articles discovered in references meeting the inclusion criteria and that were not identified in PubMed, were

**Table 1** Search strategy summary

Items	Specification
Date of search	12/16/2022 to 01/29/2023
Databases and other sources searched	PubMed
Search terms used	Massage, massage therapy, serious illness, advanced illness, and palliative care
Timeframe	01/01/2012–12/31/2022, additional articles are included following a manual review of citations
Inclusion and exclusion criteria	English language for full-text publications. Systematic reviews and meta-analyses were included in the initial review. Narrative reviews, scientific meeting abstracts, and study protocols were excluded. Studies focusing on pediatric populations were excluded, as were studies in which massage was not a primary intervention of interest
Selection process	Original selection was independently performed by authors CC, KJ and HG. Titles and abstracts were screened, and discrepancies were addressed in a manner that was conservative and inclusive so as to not erroneously exclude any potentially relevant publications

included in the review. *Table 2* summarizes the literature included in this review (N=13).

Variability across included articles was the key finding in this narrative review and is presented within four categorizations: study outcomes, massage providers, intervention specifics, and population. Each variability categorization highlights an aspect of research that is essential to understanding the impact of massage therapy in this population. These variabilities result in unique and specific challenges to how the research informs and is applicable to massage therapy as part of the care for patients experiencing advanced and serious illness.

### *Study outcomes*

Primary outcome measures used in the reviewed studies vary widely and challenge general synthesis. Outcome measures include biomarkers (e.g., salivary cortisol and alpha-amylase), physiological indicators, including arterial pressure, vital signs, dyspnea, leg cramping, and spasticity (12–14,16,21). Quality of life and psychosocial metrics were captured with the State Trait Anxiety Inventory (STAI) (12,13), and a variety of modifications of validated scales including the Health Status Questionnaire (modified from the McGill Quality of Life Scale) (16), an adaptation of Giasson's Well-Being Scale (14), and the Kidney Disease Quality of Life Short Form (KDQOL-SF) (18). Finch *et al.* measured self-efficacy in multiple sclerosis patients using the Multiple Sclerosis Self-Efficacy (MSSE) survey (15). Pain is included as a discrete primary outcome measure in three of the included trials with each using a different measurement tool to assess the degree to which pain

interfered with function or quality of life (14,16,26).

Reviewed literature demonstrates a common, reductive view not only of massage therapy, but also the experience of patients living with serious illness. Symptoms like pain and anxiety are measured separately and without the benefit of qualitative data to explore patients' experience of the relationship of their symptoms to each other in many of the included articles (11–15,25,26). Eight of the ten trials included were conducted with a population living with a specific diagnosis (11,12,15,16,18,21,24,26). Each lacked exploration of other conditions with which these individuals may be living or the potential impact of those other conditions on overall symptom burden. In addition, as is highlighted by Armstrong *et al.*, the quality-of-life measurement tools used in many of the studies include questions about factors, such as spending more time with family and financial or work concerns, that could not reasonably be ameliorated by even the most skillfully administered massage therapy intervention (5). Certainly, these factors are important to quality of life, but including them in the measurement of impact of a massage therapy intervention may hinder sensitivity of the tool to detect change specific to the intervention.

Several studies demonstrated that the state of peacefulness or relaxation achieved through massage therapy allowed patients to better tolerate pain or other physical symptoms or emotional distress (14,17,20). Mitchinson's study examining the effect of massage therapy on pain, anxiety, dyspnea, relaxation, and inner peace in veterans included "pain unpleasantness" allowing for exploration of patients' subjective experience of symptoms (14).

Given that patients receiving palliative care live with

Table 2 Review results

Title	First author	Year	Sample size analyzed	Provider	Setting	Study design	Patient cohort	Intervention	Dose/frequency	Outcomes
Integrating Massage Therapy Within the Palliative Care of Veterans With Advanced Illnesses: An Outcome Study (14)	Mitchinson	2014	115	MT students	Inpatient, clinic	Retrospective cohort analysis	Veterans in VA Ann Arbor Healthcare System	Effleurage massage, some limited trigger point therapy	20–30 min	Symptom measures
A pragmatic investigation into the effects of massage therapy on the self efficacy of multiple sclerosis clients (15)	Finch	2014	15	MTs	Clinic	Prospective randomized waitlist control	Adult patients with multiple sclerosis	Individualized to participant	60 min, weekly, for 8 weeks	MSSE measure
Effect of therapeutic Swedish Massage on anxiety level and vital signs of ICU patients (13)	Alves da Silva	2017	48	Physiotherapist	ICUs in single hospital	Quasi-experimental single-arm	Adult patients in ICU	Swedish massage	30-min Swedish massage delivered once	State Trait Anxiety Inventory-State measure, vital signs
The effects of an olive-oil massage on hemodialysis patients suffering from fatigue at a hemodialysis unit in southern India—a randomized controlled trial (22)	Lazarus	2020	200	Not specified	Outpatient hemodialysis center	Randomized controlled trial	Adults with end stage renal disease on hemodialysis reporting fatigue	Lower back, lower leg massage using olive oil	Every hour of dialysis session for 8 weeks	Fatigue Severity Scale
Back massage intervention for improving health and sleep quality among intensive care unit patients (23)	Hsu	2019	60	Nurses	ICUs in single hospital	Quasi-experimental randomized controlled trial	Adult patients in ICU	Back massage	10-min back massage for 3 consecutive nights	Verran and Snyder-Halpern Scale (sleep), Hospital Anxiety and Depression Scale
Impact of Massage Therapy on Fatigue, Pain, and Spasticity in People with Multiple Sclerosis: a Pilot Study (16)	Backus	2016	24	MTs	Long-term care facility	Single-arm pilot	Adult patients with multiple sclerosis	Strict massage and positioning protocol	30–60 min, once weekly for 6 weeks	Modified Fatigue Index Scale, the Modified Ashworth Scale (spasticity), and the MOS Pain Effects Scale
The Effects of Hand Massage on Stress and Agitation Among People with Dementia in a Hospital Setting: A Pilot Study (11)	Schaub	2018	40	Nurses, care assistants	Inpatient	Randomized controlled trial	Adult inpatients with dementia	Structured hand massage protocol	16–20 min (>8 min per hand) delivered 7 times over 3 weeks	Salivary biomarkers, Cohen-Mansfield Agitation Inventory
The effect of back massage on physiological parameters, dyspnoea, and anxiety in patients with chronic obstructive pulmonary disease in the intensive care unit: A randomised clinical trial (12)	Kütmeç Yilmaz	2021	58	Not specified	ICUs in single hospital	Randomized controlled trial	Adult patients with COPD, requiring non-invasive mechanical ventilation in ICU	Back massage (effleurage, petrissage, friction, tapotement)	15-min back massage, daily for 4 consecutive days	Baseline Dyspnoea Index, State-Trait Anxiety Inventory, physiologic measurements
Intradialytic Massage for Leg Cramps Among Hemodialysis Patients: a Pilot Randomized Controlled Trial (21)	Mastnardo	2016	24	MTs	Outpatient hemodialysis center	Randomized controlled trial	Adults with end stage renal disease on hemodialysis reporting leg cramping	Strict massage protocol	20-min massage of the lower extremities at each dialysis session (thrice weekly) for 2 weeks	Kidney Disease Quality of Life Short Form
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 (24)	Miladinia	2023	248	Not specified	Three outpatient cancer centers	Randomized controlled trial	Adults living with cancer reporting pain, fatigue, and sleep disturbance	Slow-stroke back massage	15, 30, or 60 min; twice or thrice weekly for 4 weeks	Symptom cluster intensity
“I Didn’t Know Massages Could Do That:” A qualitative analysis of the T perception of hospitalized patients receiving massage therapy from specially trained massage therapists (17)	Kelemen	2020	20	MTs	Inpatient	Qualitative	Adult inpatients receiving palliative care consultation able to complete a 30-min interview	Individualized to participant	Either three 20-min massages on consecutive days, three 10-min massages on consecutive days, or one 20-min massage	Subthemes related to overall hospital experience and impact of MT on hospital experience
A qualitative study—Patient experience of tactile massage after stroke (25)	Seiger Cronfalk	2020	8	Nurses, nursing aides, physicians	Hospital - Rehabilitation Unit	Qualitative	Adult patients post stroke	“Tactile massage”—light touch massage to hand or foot	20 min thrice weekly for 1–3 weeks	Subthemes related to improved anxiety and sleep after massage
A Canadian Experience of Integrating Complementary Therapy in a Hospital Palliative Care Unit (26)	Berger	2013	31	Volunteer complementary therapists	Hospital - Palliative Care Unit	Mixed methods	Inpatient palliative care unit	Aromatherapy and massage, Reiki, Therapeutic Touch™	Not described	Symptom measures, qualitative data

MT, massage therapist(s); ICU, intensive care unit; COPD, chronic obstructive pulmonary disease; VA, veterans administration; MSSE, Multiple Sclerosis Self Efficacy; MOS, medical outcomes study.



an average of four comorbidities (27), future studies would do well to reflect this reality and to acknowledge the multifactorial and symbiotic relationship of symptom clusters (26). It is understood that anxiety impacts a patient's experience of pain and that symptoms like shortness of breath can exacerbate depression and anxiety (12) and that the combination of these symptoms can adversely impact sleep quality and other aspects of experience inherent in positive quality of life (22). Discrete measurement of symptoms that occur in relationship to one another limits our ability understand and measure the impact of massage therapy on the undoubtedly complicated and multifactorial realities of patient experience. Miladinia *et al.* (24) is the only study in our review that addressed symptom clusters and there is a decided lack of qualitative data to capture the patients' experience of the intervention itself, even in this study.

### Sample size

Three of the 10 papers (not including qualitative and reviews) in this review have a sample size greater than 100 patients (11,22,24). These studies are outliers in the current body of literature where sample sizes tend to range between as few as 15 to just under 100 (11,15,16,23). Inadequately powered studies can point toward new directions for research, but the authors of this review did not recognize a trend of replication or expansion among published studies, regardless of sample size. None of the studies included in this review highlighted inadequate power as a possible limitation.

### Variability in providers of massage intervention

A wide range of providers delivered the massage interventions included in this review. Of the ten total trials included, one does not specify the discipline or training of the clinician who provided the intervention (24), two use massage therapists trained in basic techniques (15,16), five studies employed other providers (nurses, nursing assistants, physiotherapists, massage students) (11-13,25,26), and two had specially trained massage therapists (with population-, setting-, or diagnosis-specific focus) provide the interventions (14,21).

The role and training of the intervention provider as a member of the team is rarely explored or described in the literature. Four of the ten trials in this review found massage therapists providing the study intervention (14-16,21). Mastnardo (21) and Mitchinson (14) share specific details

about the broader role and specific training of the massage therapists in the care studied. The Berger and Kelemen mixed-methods (26) and qualitative (17) studies speak to specific training of the intervention providers in aspects of care like therapeutic relationship, specifics of serious illness, hospital-based practice and/or participation, with additional mention by Mitchinson (14) about the participation of the massage therapist in interdisciplinary rounds.

Given the collaborative and interdisciplinary nature of palliative care, future studies of massage therapy could include measures of the benefit that an integrated, palliative-trained massage therapist brings to the scope and continuity of care beyond the intervention itself. This could be assessed through interviews of fellow practitioners on interdisciplinary teams as well as gathering impressions from patients and family members.

### Study intervention variability

Reviewed trials demonstrate wide intervention variability with a range of approaches to the hands-on mechanics of the intervention. Strict hands-on protocols in terms of timing and/or specific stroke and direction were employed in four of the ten reviewed studies (11,13,16,26). Two reviewed studies used real-world intervention applications that allowed for patient preference, patient/practitioner interaction, and attention to comfort in the environment when allowable (14,15). Among the two qualitative studies (17,25) and one mixed method study (26), little specificity is conveyed regarding intervention mechanics. One does not include any details about the mechanics of the intervention (25), one was intentionally unscripted, but the study's authors indicated that this unscripted design was crafted to facilitate individualized co-creation of the massage intervention by the patient and practitioner (17), and the third described not scripting the hands-on aspects while also highlighting therapeutic relationship and skillful touch as integral program attributes (26). Of the two that described reasoning for their intervention approach, Kelemen *et al.* rationalized not using a detailed protocol because "effective massage delivery requires massage treatment 'outside the norm'—that is to say, flexibility in timing and delivery given interruptions, noise, physical constraints, etc. ..." (17). Patients in the Kelemen study also identified massage therapists' ability and flexibility to adjust pressure as an important treatment component. Berger *et al.* noted that providing psychological assistance and spiritual guidance are the duty of the members of the palliative care team;

furthermore, patients tend to ask questions and share their thoughts and feelings (26). While intervention variability exists among the included studies, a few speak directly to the value of the massage practitioner's presence beyond the discreet intervention, when the provider is a massage therapist.

Three of the trials had interventions provided by a single person (12-14). Backus *et al.* noted their attempt to ensure all interventions were provided by a single practitioner, but they indicated that they were not always successful (16). Finch, Schaub, and Mastnardo all employed multiple practitioners, but none provided information about specific intent to support or avoid a provider/recipient dynamic resulting from the same provider engaging with the same patients throughout the study period (11,15,21). The remaining three trials did not specify how many providers were involved in delivering the intervention or allude to concerns to control for "therapist effect" (15,22,24).

Exploration about the possible benefits or drawbacks of a dynamic in which subjects receive massage from a variety of providers throughout a study versus from a single provider is largely missing from the reviewed studies, but contradictory concerns were noted. Both Schaub and Finch noted it as a possible limitation in their studies that the same patient received interventions from different nurses or massage therapists (11,15). On the other hand, Mitchinson noted the delivery of all interventions by a single massage therapist as a limitation (14). While generalizability challenges exist for effectiveness research using a single practitioner to deliver all interventions (28), continuity of care and therapeutic relationship is perhaps more easily cultivated when treatments are provided by the same clinician (29,30). None of the reviewed studies directly evaluated or discussed the possible therapeutic value of provider continuity. This information would be important to consider in terms of staffing for massage therapy integration.

Studies that employ a strict protocol understandably desire standardization for replicability. Still, it is possible that essential aspects of the interpersonal, patient-centered value of an intervention like massage therapy are not captured in this structure. As Armstrong *et al.* note, not all interventions, especially those that are complex, are suited for strict standardization (5). Future research about the use of massage therapy in palliative populations should consider this guidance carefully.

Heterogeneity across studies was found regarding setting, intervention dosing, and timing of data collection. Two studies taking place in the intensive care unit (ICU)

involved interventions on consecutive days (12,23). Two studies involved weekly interventions: one for 6 weeks (16), and one for 8 weeks (15)—in an inpatient rehabilitation facility and a student massage therapy clinic, respectively. One study involved a single dose (30 min) of massage therapy in an ICU (13). Another involved multiple massage sessions in both inpatient and outpatient settings, but the data presented in the study looked only at the first encounter (12). Two trials took place in outpatient dialysis centers (21,22). In one study, the intervention was delivered multiple times per week (frequency not specified) and each intervention involved massage of unspecified duration focused on the lower back and lower legs (22). The interventions took place at the beginning of dialysis and again every hour for each of the four hours of the dialysis process, ultimately resulting in four mini-interventions in close succession within each documented, 4-hour encounter. As a result, patients may have been receiving up to twelve small interventions each week, but this is not clear. In the other dialysis study, patients received a specific 20-min lower leg massage protocol three times per week for 2 weeks (21). Finally, Miladinia *et al.* conducted a study in an outpatient oncology setting specifically geared to explore dosing strategies (24). The study compared six intervention arms with patients randomized to receive massage therapy either twice per week or three times per week and either 15, 30, or 60 min of massage therapy for four weeks with a usual care control arm.

Data collection timing varied among the reviewed studies and included simple, immediate pre- and post-intervention measures as well as more complicated schemes of pre-, post-, time point, and intra-intervention data collection. Among the ten reviewed trials, seven different data collection and follow-up strategies were employed. Three studies used a simple immediate pre- and post-intervention data collection strategy (12,14,25). In their ICU study, Alves da Silva *et al.* employed immediate pre- and post-intervention data collection as well as a follow-up at 30 min post-intervention (13). Three studies collected baseline data at the beginning of the study and the only other data collection point was at the end of the study with study lengths of 2 weeks (21), 6 weeks (16), and 8 weeks (22). In Miladinia's dosing study, data were collected at baseline, weekly during the intervention period, and weekly throughout a 4-week, non-intervention follow-up period (24). Hsu *et al.* took baseline measures and then daily measures were collected at an unspecified time during the three-day study period (23). Patients in Hsu's study also wore actigraphs throughout the study to measure sleep quality and duration. The data

collected through actigraphy was compared with data collected by nurses trained to observe and track patients' sleep, however it was also noted that nurses' observations of sleep were not often accurate. In Finch's 8-week study, data were collected at baseline, mid-study, end of study, mid-post-study (4 weeks post-intervention) and end-post-study (eight weeks post-intervention) (15). Schaub *et al.*'s trial represented the most complex process, measuring agitation in addition to salivary cortisol and alpha-amylase levels (11). Cortisol and alpha-amylase were collected at pre-intervention and both 20 and 40 min post-intervention, while agitation was measured immediately before the intervention, during the intervention, and 3 hours after the first, fourth, and seventh intervention; essentially once each week during the 3-week study period. The authors of the four reviews noted that the follow-up strategies of the studies they reviewed were also varied (5,31-33). Some of these variations can be accounted for by the requirements of the measurement tools in use, but it is unclear why researchers made the choices they made regarding the frequency or timing of data collection in most of the studies included in this review. Future research would benefit from a more complete explanation of the rationale for various collection strategies, particularly given that many massage therapy studies indicate that the effects are temporary.

### **Study participant populations**

Demographic data in the reviewed trials lack useful detail. Four are limited to factors like age, sex, diagnosis and other disease-specific data (11,15,16,24) with one including body mass index as well (19). Information about marital status, education level, and socioeconomic status were included in four trials (12,14,22,23). Race and ethnicity were captured in two (14,21) of the trials, but Mitchinson *et al.* captured only "white" as a race indicator with 89% of participants identified as white. There is no specific breakout of the distribution of non-white participants in this study and more than 97% of participants were male. The authors note that this is a possible limitation of the study, as female veterans make up 30% of the population of veterans who receive care through the Veterans Health Administration (34). Broader, more inclusive demographic data in future studies will support our understanding of the impact of massage therapy interventions on patients of varied socioeconomic status, race, and ethnicity. These factors are increasingly understood as determinants of likelihood to access and receipt of effective healthcare

(35-38). As such, it will be important for future research to describe the patient population more specifically regarding these factors so identified disparities can be addressed.

The exclusion criteria of many trials may also benefit from closer examination and expansion when it comes to palliative care-eligible populations. Presence of comorbidities (23), limb amputation (13), dementia (12,23), low platelets (23), recent surgery or history of surgery (13,23), hearing or sight problems (12,23), and wounds (13) were all factors that excluded patients from participation in the included studies. The researchers' decision to exclude these patients makes sense as these conditions could be confounding variables. Nevertheless, low platelets, surgery, and wounds, for instance, are commonplace among these (23) and, with appropriate adaptation of massage therapy, should not exclude patients from receiving massage. Future studies could benefit not only from listing these exclusions as possible limitations when they occur, but also by considering the inclusion of patients who are experiencing these issues. In the case of challenges like hearing or sight impairment, additional exploration of the impact of massage therapy among these patients is certainly warranted, perhaps as a discrete study population within palliative care.

It is important to note the prevalence of some level of bias in a majority of the studies in this review. The intervention provider collected the data in three of the ten included trials (12-14). It was not made clear who collected the data in two (22,23) of the trials and three studies relied heavily on patient self-report instruments, including a researcher-generated paper journal (15,21,24). Backus *et al.* employed a study coordinator (16) and Schaub *et al.* indicated that "research team members" handled data collection (11). It is notable that all four of the included systematic reviews reported potential for bias as a limitation that was omnipresent in the body of research (5,31-33). Future study designers would be wise to include funding to support objective data collection. There is also likely value in establishing validity and patient comprehension and competency checks when using patient self-report tools.

### **Discussion**

This narrative review explores the use of massage therapy with patients affected by serious illness and reveals an array of data gaps that would benefit from further exploration and focus. Patients affected by serious illness experience multiple symptoms simultaneously and those symptoms impact each other and a patient's experience of their illness



in a way that is unique when compared with more robust populations. The studies reviewed here primarily measured symptoms discreetly and were limited by the need to use adapted, shortened or novel, but unvalidated measurement tools to assess the intervention's effect on symptom burden and quality of life. Most studies were subject to bias and did not employ real-world interventions that support models of effective implementation. The volume of data about massage therapy in the serious illness population has undoubtedly grown in the last decade, but the ability of that data to translate into practice has not.

Of concern, racial and ethnic demographics explored in the reviewed studies demonstrate a lack of focus on the growing and underserved population of patients of color. The Center to Advance Palliative Care noted marked disparities in the experience and treatment of pain in Black patients (38). As a currently non-standard form of pain and symptom management, massage therapy could be uniquely positioned as an addition to the suite of services offered to Black and brown palliative care-eligible patients of color who are historically distrustful of mainstream medicine (39,40).

The literature reviewed in this narrative finds research subjects receiving care in inpatient palliative care units/facilities (14,17,26), intensive care units (12,13,23), outpatient and inpatient oncology settings (24), dialysis centers (21,22), a massage school clinic (18), post-stroke recovery facilities (25) and inpatient geriatric psychiatric centers (11). Five studies in this review used non-massage therapists to provide interventions, reflecting a basic lack of feasibility with the assumption that nurses, nursing assistants, or other traditional allopathic care providers could be expected to add massage therapy to their already burdensome workloads (11-13,23,24). The responsibilities carried by modern nurses has been an increasing area of concern over the last few decades, but certainly something to consider with an even sharper focus in a post-pandemic healthcare system (41-43). Proponents of massage therapy may reflect times past when nurses provided nightly back rubs as a part of standard patient care. Indeed, massage therapy was once part of physician and nurse training and delivery repertoire in the 1800s and early 1900s (44,45). Reference to such nostalgia speaks not to the feasibility of nurses or doctors returning to this historic practice, but to the long-held belief that massage, and touch delivered through massage, is valuable and integral to the provision of comfort and care, contributing to a positive patient experience. Massage therapy provided by healthcare workers whose responsibilities already exceeds practice

time allotments is not a sustainable or feasible approach to delivering massage therapy within palliative patient populations (41-43). In addition, Schaub *et al.* reported study outcomes for hand massage provided by nurses in an acute geriatric psychiatric unit, noting particular challenges including the fixed time within a busy schedule that could sometimes cause nurses to have less patience and empathy for the patients they were expected to massage (11). Patients were further noted to not necessarily want massage at planned times or at all, wanting seemingly instead to spend the contact time chatting with the nurse providing the massage; essentially, desiring to socially engage with their massage provider. Schaub also indicated the likelihood that some patients in their study had less affinity with intervention-delivery nurses which could have potentially impacted patient and/or clinician willingness to engage in the massage intervention (11). Studies that measure the impact of protocol-driven massage provided by caregivers other than massage therapists do not provide practical evidence for a future in which massage therapy as a discipline, with its related physiological and spiritual benefits, is a standard aspect of patient-centered care for palliative populations (5,26,46).

Most studies of massage therapy lack the necessary scientific rigor, sample size, and/or focus on measures appropriate to the improvement of outcomes and experiences of palliative care patients (5). Few studies in this review seek to investigate effective, sustainable implementation of massage within a realistic healthcare context. Rather, the existing body of literature seems to reflect a frantic, worldwide effort to provide "more data", while the lack of financial drivers (47-49), limited specialized education and training for massage providers (2,44), and limited systems integration persists. Many clinical research studies focused on massage are plagued with small sample sizes (9,11,13,15,16), moderate to high risk of bias (10) and inadequately nuanced tools (5) to measure possible improvement in patients' outcomes or quality of life through reliably available, massage therapy or palliative-trained massage therapists. Despite multiple published guidelines and recommendations (3) for the incorporation of massage therapy into mainstream care, existing evidence is challenged by lack of large, randomized trials.

Without exception, the duration of the studies explored in this review is short and the frequency of interventions is variable. Some employ a single intervention (13,14). Others measure the impact of interventions over a period of weeks with some follow-up in the weeks after the

intervention has been discontinued (11,15,16,21,22,24). If massage therapy is being asked to “compete” with other symptom management interventions like physical therapy and pharmacology, studies need to demonstrate parity and include massage intervention approaches with more frequent durations reflective of a symptom management approach. The standard of care for other interventions is daily at least, and typically multiple times per day. It would be unethical to offer a patient an opioid for pain management or rehabilitation twice a week. It is neither reasonable nor useful to hold massage therapy to a different standard. In addition, the publication of more studies comparing integrative therapies like Reiki, aromatherapy, and Therapeutic Touch to each other does not advance the implementation of integrative therapies. These modalities will be empowered to serve the future of care more effectively if measured against or as augmenting the benefits of established standards of care.

## Summary

This review highlights problematic and pervasive shortcomings in recent existing research about the use of massage therapy with palliative care-eligible populations. Research questions and outcome measures that do not support a greater understanding of the impact of massage on patient experience, on other members of the care team, or on hospitals' and care teams' abilities to implement massage therapy are problematic. Short-duration, small-sample study designs generate more data, but not necessarily more valuable data.

Several overarching modifications to research approaches for massage therapy within the palliative context can improve the value of evidence moving forward. Qualitative data and even some quantitative data demonstrate the potential for massage therapists to engage patients across the domains that adversely affect quality of life. As such, resources should be placed with well-designed, appropriately powered research that moves beyond the confines of the randomized controlled trial and which makes room for and deeply explores the nuances of the illness experience and what improves it. Additional, thoughtful, forward-thinking research will be essential to gathering the data necessary to ensure the proper integration of massage therapy and massage therapists into standard palliative care.

One key action that should be taken in the near future is the validation of new measurement instruments specific to

the effects of massage therapy that have been highlighted in qualitative analysis. When researchers are required to use modified versions of tools that were designed to measure standard interventions like function after surgery and pharmacotherapy, the unique value of massage therapy is likely to be misinterpreted or overlooked entirely.

Mixed-methods study designs that combine qualitative and quantitative data will be indispensable to a strong future for massage therapy in palliative care (29,50). These studies should be supported by the funding necessary for appropriate analysis of the interplay between the real-world factors that influence the most common and burdensome symptoms experienced by palliative patients such as comorbidities, polypharmacy, social support, and patient perspective. In addition, appropriate levels of funding should be available to support unbiased data collection by researchers who are not also intervention providers.

Massage therapy dosing needs to be studied more fully, more rigorously, and in real-world care environments. The ideal palliative care trajectory is that a patient begins receiving palliative care from the moment of diagnosis with a chronic or serious illness (51,52). Millions of patients will benefit from this proactive implementation of interdisciplinary palliative care, but this future requires, among other things, a clear understanding of how and how often massage therapy should be provided for maximum benefit in outpatient, inpatient, and actively dying populations. Recommendations will vary for these populations in ways not yet understood.

There may also be value in additional studies that compare symptom clusters (i.e., anxiety, pain, fatigue) treated with medication versus treatment with massage therapy (24). Semi-structured interviews with patients whose symptoms would likely be improved by both interventions could help us better understand the specific value and appropriate dose of each as it relates to the experience of patients and perhaps support our ability to understand how pharmacotherapy and massage therapy could work together in appropriate doses.

As with any narrative review, a limitation is potentially overlooked literature despite a thorough search and manual review of citations. Another potential limitation is that there are very few studies that name the population they are studying as “palliative care” despite the likelihood that the population they are referring to would be considered under the broad umbrella of populations that would benefit from palliative care (52).

## Conclusions

While several massage focused studies within serious illness populations have been published in the past decade, a cohesive and robust evidence base supporting real-world massage integration into clinical care has yet to emerge. Challenges presented in this review reflect variability across many aspects of study design, outcome practicality, and intervention delivery approach; including, few articles examining interventions delivered by massage therapists, who are the most feasible clinical care professionals poised and capable to provide massage within the busy clinical care environment.

There is clearly a valuable role for massage therapists and massage therapy in palliative care, and continued research is needed. The evolution of our understanding of massage therapy's benefit to the interdisciplinary team, particularly in the palliative care environment, is only just beginning. The next decade of research into massage therapy will need to focus on meaningful, collaborative implementation strategies in real-world environments to measurably improve clinical and experiential outcomes for those with advanced and serious illness.

## Acknowledgments

*Funding:* None.

## Footnote

*Reporting Checklist:* The authors have completed the Narrative Review reporting checklist. Available at <https://apm.amegroups.com/article/view/10.21037/apm-23-126/rc>

*Peer Review File:* Available at <https://apm.amegroups.com/article/view/10.21037/apm-23-126/prf>

*Conflicts of Interest:* All authors have completed the ICMJE uniform disclosure form (available at <https://apm.amegroups.com/article/view/10.21037/apm-23-126/coif>). The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

*Open Access Statement:* This is an Open Access article

distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

## References

1. National Institutes of Nursing Research. What is palliative care? Available online: <https://www.ninr.nih.gov/newsandinformation/what-is-palliative-care>
2. Brennan MK, Healey D, Tague C, et al. Hospital based massage therapy specific competencies. *J Bodyw Mov Ther* 2019;23:291-4.
3. Mao JJ, Ismaila N, Bao T, et al. Integrative Medicine for Pain Management in Oncology: Society for Integrative Oncology-ASCO Guideline. *J Clin Oncol* 2022;40:3998-4024.
4. Horrigan B, Lewis S, Abrams DI, et al. Integrative Medicine in America—How Integrative Medicine Is Being Practiced in Clinical Centers Across the United States. *Glob Adv Health Med* 2012;1:18-52.
5. Armstrong M, Kupeli N, Flemming K, et al. Complementary therapy in palliative care: A synthesis of qualitative and quantitative systematic reviews. *Palliat Med* 2020;34:1332-9.
6. Jonas W, Schoemaker E, Berry K, et al. A Time for Massage. *Pain Med* 2016;17:1389-90.
7. Kennedy AB, Cambron JA, Sharpe PA, et al. Clarifying Definitions for the Massage Therapy Profession: the Results of the Best Practices Symposium. *Int J Ther Massage Bodywork* 2016;9:15-26.
8. Clarke TC, Black LI, Stussman BJ, et al. Trends in the use of complementary health approaches among adults: United States, 2002-2012. *Natl Health Stat Report* 2015;(79):1-16.
9. Cassileth BR, Vickers AJ. Massage therapy for symptom control: outcome study at a major cancer center. *J Pain Symptom Manage* 2004;28:244-9.
10. Kutner JS, Smith MC, Corbin L, et al. Massage therapy versus simple touch to improve pain and mood in patients with advanced cancer: a randomized trial. *Ann Intern Med* 2008;149:369-79.
11. Schaub C, Von Gunten A, Morin D, et al. The Effects of Hand Massage on Stress and Agitation Among People with Dementia in a Hospital Setting: A Pilot Study. *Appl*

- Psychophysiol Biofeedback 2018;43:319-32.
12. Kütmeç Yılmaz C, Duru Aşiret G, Çetinkaya F. The effect of back massage on physiological parameters, dyspnoea, and anxiety in patients with chronic obstructive pulmonary disease in the intensive care unit: A randomised clinical trial. *Intensive Crit Care Nurs* 2021;63:102962.
  13. Alves da Silva T, Stripari Schujmann D, Yamada da Silveira LT, et al. Effect of therapeutic Swedish massage on anxiety level and vital signs of Intensive Care Unit patients. *J Bodyw Mov Ther* 2017;21:565-8.
  14. Mitchinson A, Fletcher CE, Kim HM, et al. Integrating massage therapy within the palliative care of veterans with advanced illnesses: an outcome study. *Am J Hosp Palliat Care* 2014;31:6-12.
  15. Finch P, Bessonnette S. A pragmatic investigation into the effects of massage therapy on the self efficacy of multiple sclerosis clients. *J Bodyw Mov Ther* 2014;18:11-6.
  16. Backus D, Manella C, Bender A, et al. Impact of Massage Therapy on Fatigue, Pain, and Spasticity in People with Multiple Sclerosis: a Pilot Study. *Int J Ther Massage Bodywork* 2016;9:4-13.
  17. Kelemen A, Anderson E, Jordan K, et al. "I Didn't Know Massages Could Do That:" A qualitative analysis of the perception of hospitalized patients receiving massage therapy from specially trained massage therapists. *Complement Ther Med* 2020;52:102509.
  18. Lopes-Júnior LC, Rosa GS, Pessanha RM, et al. Efficacy of the complementary therapies in the management of cancer pain in palliative care: A systematic review. *Rev Lat Am Enfermagem* 2020;28:e3377.
  19. Armstrong M, Flemming K, Kupeli N, et al. Aromatherapy, massage and reflexology: A systematic review and thematic synthesis of the perspectives from people with palliative care needs. *Palliat Med* 2019;33:757-69.
  20. Weekly T, Riley B, Wichman C, et al. Impact of a Massage Therapy Intervention for Pediatric Palliative Care Patients and Their Family Caregivers. *J Palliat Care* 2019;34:164-7.
  21. Mastnardo D, Lewis JM, Hall K, et al. Intradialytic Massage for Leg Cramps Among Hemodialysis Patients: a Pilot Randomized Controlled Trial. *Int J Ther Massage Bodywork* 2016;9:3-8.
  22. Lazarus ER, Deva Amirtharaj A, Jacob D, et al. The effects of an olive-oil massage on hemodialysis patients suffering from fatigue at a hemodialysis unit in southern India - a randomized controlled trial. *J Complement Integr Med* 2020;18:397-403.
  23. Hsu WC, Guo SE, Chang CH. Back massage intervention for improving health and sleep quality among intensive care unit patients. *Nurs Crit Care* 2019;24:313-9.
  24. Miladinia M, Jahangiri M, Kennedy AB, 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. *Palliat Med* 2023;37:108-19.
  25. Seiger Cronfalk B, Åkesson E, Nygren J, et al. A qualitative study-Patient experience of tactile massage after stroke. *Nurs Open* 2020;7:1446-52.
  26. Berger L, Tavares M, Berger B. A Canadian experience of integrating complementary therapy in a hospital palliative care unit. *J Palliat Med* 2013;16:1294-8.
  27. Palliative Care Facts and Stats. Center to Advance Palliative Care. Available online: Available online: [https://media.capc.org/filer\\_public/68/bc/68bc93c7-14ad-4741-9830-8691729618d0/capc\\_press-kit.pdf](https://media.capc.org/filer_public/68/bc/68bc93c7-14ad-4741-9830-8691729618d0/capc_press-kit.pdf)
  28. Thorpe KE, Zwarenstein M, Oxman AD, et al. A pragmatic-explanatory continuum indicator summary (PRECIS): a tool to help trial designers. *J Clin Epidemiol* 2009;62:464-75.
  29. Porcino AJ, Verhoef MJ. The use of mixed methods for therapeutic massage research. *Int J Ther Massage Bodywork* 2010;3:15-25.
  30. Saxon D, Firth N, Barkham M. The Relationship Between Therapist Effects and Therapy Delivery Factors: Therapy Modality, Dosage, and Non-completion. *Adm Policy Ment Health* 2017;44:705-15.
  31. Coelho A, Parola V, Cardoso D, et al. Use of non-pharmacological interventions for comforting patients in palliative care: a scoping review. *JBHI Database System Rev Implement Rep* 2017;15:1867-904.
  32. Shin ES, Seo KH, Lee SH, et al. Massage with or without aromatherapy for symptom relief in people with cancer. *Cochrane Database Syst Rev* 2016;2016:CD009873.
  33. Wu J, Wang Y, Wang Z. The effectiveness of massage and touch on behavioural and psychological symptoms of dementia: A quantitative systematic review and meta-analysis. *J Adv Nurs* 2017;73:2283-95.
  34. Women Veterans Healthcare. U.S Department of Veterans Affairs. Available online: <https://www.womenshealth.va.gov/about-us.asp#:~:text=The%20number%20of%20women%20Veterans,changes%20and%20can%20overcome%20challenges>
  35. Chen J, Vargas-Bustamante A, Mortensen K, et al. Racial and Ethnic Disparities in Health Care Access and Utilization Under the Affordable Care Act. *Med Care* 2016;54:140-6.
  36. Mahajan S, Caraballo C, Lu Y, et al. Trends in Differences

- in Health Status and Health Care Access and Affordability by Race and Ethnicity in the United States, 1999-2018. *JAMA* 2021;326:637-48.
37. Fiscella K, Sanders MR. Racial and Ethnic Disparities in the Quality of Health Care. *Annu Rev Public Health* 2016;37:375-94.
  38. Health Care for Black Patients with Serious Illness: A Literature Review. August 2021. Available online: <https://www.capc.org/health-care-for-black-patients-with-serious-illness-a-literature-review/#key-findings>
  39. Jones D, Cohen L, Rieber AG, et al. Complementary and Alternative Medicine Use in Minority and Medically Underserved Oncology Patients: Assessment and Implications. *Integr Cancer Ther* 2018;17:371-9.
  40. Scharff DP, Mathews KJ, Jackson P, et al. More than Tuskegee: understanding mistrust about research participation. *J Health Care Poor Underserved* 2010;21:879-97.
  41. Lou NM, Montreuil T, Feldman LS, et al. Nurses' and Physicians' Distress, Burnout, and Coping Strategies During COVID-19: Stress and Impact on Perceived Performance and Intentions to Quit. *J Contin Educ Health Prof* 2022;42:e44-52.
  42. New Surgeon General Advisory Sounds Alarm on Health Worker Burnout and Resignation. Available online: <https://www.hhs.gov/about/news/2022/05/23/new-surgeon-general-advisory-sounds-alarm-on-health-worker-burnout-and-resignation>
  43. Harrad R, Sulla F. Factors associated with and impact of burnout in nursing and residential home care workers for the elderly. *Acta Biomed* 2018;89:60-9.
  44. Ruffin PT. A history of massage in nurse training school curricula (1860-1945). *J Holist Nurs* 2011;29:61-7.
  45. Calvert R. Massage in Nursing. April 24, 2014. Available online: <https://www.massagemag.com/magazine-2003-issue103-history103-24225/>
  46. Steinhorn DM, Din J, Johnson A. Healing, spirituality and integrative medicine. *Ann Palliat Med* 2017;6:237-47.
  47. Lake J. Research funding favors allopathic medications. *Virtual Mentor* 2008;10:165-70.
  48. Kang A. Is Massage Therapy Covered by Insurance? Available online: <https://houseofdebt.org/does-insurance-cover-massage-therapy/>
  49. Medicare.gov: Massage Therapy. Available online: <https://www.medicare.gov/coverage/massage-therapy>.
  50. Baskwill A. A Case for Mixed Methods Research in Massage Therapy. *Int J Ther Massage Bodywork* 2017;10:14-6.
  51. Kelley AS, Morrison RS. Palliative Care for the Seriously Ill. *N Engl J Med* 2015;373:747-55.
  52. Swami M, Case AA. Effective Palliative Care: What Is Involved? *Oncology (Williston Park)* 2018;32:180-4.

**Cite this article as:** Cates C, Jordan K, Munk N, Farrand R, Kennedy AB, Groninger H. Massage therapy in palliative care populations: a narrative review of literature from 2012 to 2022. *Ann Palliat Med* 2023;12(5):963-975. doi: 10.21037/apm-23-126