

# Implementation and outcomes of complementary therapies in hospice care: an integrative review

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**Abstract:** Complementary therapies are increasingly integrated into hospice care, emphasizing the need to examine the evidence regarding implementation and effects on end-of-life outcomes. This review synthesizes the evidence regarding the implementation of complementary therapies and effects on end-of-life outcomes in hospice care. Whittemore and Knafel's five-step integrative review process was applied. Using predefined search terms, research-based articles between 2006 and 2020 were reviewed. Twenty-three quantitative/mixed method studies conducted across eight countries met the final review criteria. Most commonly used complementary therapies were music, biofield therapies (reiki, therapeutic touch), and massage therapy. Most studies reported significant findings on physical symptoms (pain, dyspnea, fatigue, gastrointestinal symptoms, agitation) and/or psychosocial/spiritual symptoms (anxiety, depression, spirituality, well-being, quality of life); 40% of studies had both significant and nonsignificant findings. Methodological limitations included study design (few randomized controlled trials), small sample size, high attrition rate, lack of racial/ethnic diversity, unstandardized intervention implementation, and multiple outcome measurement instruments. Complementary therapies are promising components of hospice care; however, rigorous studies are needed to validate the effect on end-of-life outcomes and determine the most efficacious implementation. Complementary therapy studies face challenges consistent with end-of-life research; however, efforts to design rigorous trials and address methodological issues are required to enhance the state of the science.

**Keywords:** complementary therapies, EOL outcomes, hospice care, palliative care

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## Introduction

Over the past two decades, the number of agencies providing hospice services has increased dramatically worldwide. In 2006, 115 of the world's 234 countries had hospice services; however, 5 years later that number had increased to 136, revealing 58% of countries provided end-of-life (EOL) services.<sup>1</sup> Similarly, in 2001, 18% of all Medicare decedents in the United States had accessed hospice care for 3 or more days. In 2007 that number increased to 30% and in 2016 to 48% with 1.5 million Medicare patients enrolled in hospice at the time of death.<sup>2</sup> The model for compassionate quality care, hospice focuses on symptom management and psychosocial and spiritual support for

individuals and families during the terminal phase of illness when curative treatment for life-limiting illness is no longer beneficial. As utilization has increased over the last two decades, enhancing EOL care has become a national priority with a number of organizations calling for improvements in the quality of care and the use of multiple broad therapies to treat the distinct emotional, spiritual, and physical needs of hospice patients and families.<sup>3–5</sup> In the expert report, *Dying in America*, the Institute of Medicine<sup>5</sup> emphasized the need for comprehensive hospice care that is focused on socially supportive, comforting alternatives to medically centered interventions that typically rely on elaborate technological treatments.

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Similarly, as focus on enhancing quality care has increased over the past two decades, so has the interest and use of complementary therapies (CTs) across the lifespan.<sup>6-8</sup> While there are a number of definitions of complementary therapies, the National Center for Complementary and Alternative Medicine<sup>9</sup> defines it as a group of diverse medical and health care interventions, practices, products, or disciplines not generally considered part of conventional (Western or allopathic) medicine. Integrating these interventions as 'complementary' to traditional medical care has generated increasing interest among patients and health care professionals as studies have demonstrated potential promise as palliative therapies.<sup>10-12</sup> Approximately one third of US adults report having used CTs.<sup>13,14</sup> Generational data indicate half of baby boomers report using some form of CT by age 33 and as the first 'boomers' turned 65 in 2011, it is clear the generation who will be approaching the EOL period have broad acceptance and interest in CTs.<sup>6,15,16</sup> In addition, as boomers age, hospice care utilization is predicted to continue to increase.<sup>17</sup>

Complementary therapies have recently been more widely integrated into EOL care in hospice settings.<sup>18</sup> The 2007 National Home and Hospice Care Survey (NHHCS) conducted by the US Centers for Disease Control and Prevention revealed that 41.8% of US hospices offer CT approaches.<sup>19</sup> Approximately a fourth of surveyed patients reported receiving CTs, such as massage and music therapy, during their hospice care.<sup>19</sup> Similarly, a European survey revealed 36% of cancer patients reported using CTs.<sup>20</sup> The Hospice and Palliative Nurses Association<sup>21</sup> recognizes the potential value of CTs in hospice care and recommends the use of licensed/certified complementary therapists in the provision of holistic care. As CTs focus on quality of life (QOL) issues, they are particularly aligned with hospice care which focuses on comfort care, symptom management, and emotional support.<sup>22-24</sup>

Although use of CTs has increased, the current state of the science regarding sufficient evidence to support their use as a treatment is unclear and many health care providers lack adequate knowledge regarding their implementation.<sup>25</sup> Similarly, as support for CTs increased, the National Institutes of Health (NIH) State of the Science Conference on EOL care recognized the need for research to examine new untested interventions

including CTs to improve symptom management in patients.<sup>26</sup> A systematic review conducted in 2000 found that despite the paucity of randomized controlled trials (RCTs), data did exist to support use of certain CT modalities in EOL care for relief of pain and dyspnea in specific conditions and recommended conducting future rigorous research.<sup>10</sup> Six years later, a review of RCTs was conducted to determine the strength of evidence for CTs in EOL care and indicated that, despite variation in research methodology, studies demonstrated significant though inconsistent improvements in anxiety, emotional distress, comfort, nausea, and pain.<sup>23</sup> A more recent review demonstrated a short-term benefit in symptom improvement; however, combined studies focused on both palliative care provided for chronic conditions and hospice care and did not differentiate an EOL perspective and outcomes.<sup>27</sup> Similarly, two recent systematic reviews examined the effectiveness of CTs, however focused only on oncology patients during palliative care, not differentiating the use of CTs at EOL and excluded other conditions (besides cancer) requiring hospice care.<sup>28,29</sup>

With the continued growth in hospice services and expanded integration of complementary therapies into hospice care, the need to critically examine the implementation and effect on EOL outcomes is essential. Detailed descriptions of CT modalities and how they are delivered are lacking and require further clarification.<sup>30</sup> Since the last extensive review of CTs in hospice care was completed a dozen years ago,<sup>23</sup> a number of studies have been conducted and are ongoing. Reviews of recent studies were limited in scope, often focusing exclusively on cancer patients, or on studies that included only specific symptoms, and did not differentiate between palliative care in chronic conditions and EOL hospice care.

As a result of the increasing popularity of complementary therapies, hospice care providers must be informed and educated on the types of therapies available and evidence of their effect on EOL outcomes. Therefore, the purpose of this integrative review is to synthesize the evidence regarding implementation of complementary therapies and their effect on EOL outcomes in hospice care. This article will address the gap in our current understanding left by other reviews that did not elucidate the distinct focus of CTs in EOL/hospice care and excluded the multiple conditions experienced by hospice patients.

## Methods

Integrative reviews provide a broad perspective and allow for the inclusion of multiple study designs, including experimental, quasi-experimental, and descriptive studies. The simultaneous inclusion of a variety of study designs provides the potential to understand a particular problem with more depth and breadth and is especially useful for understanding phenomenon when diverse research methodologies have been used.

We followed the five-step integrative review method proposed by Whitemore and Knafl<sup>31</sup> which served as a guide to enhance rigor in our review process: (1) clear identification of a problem and purpose; (2) well-defined literature search strategies; (3) data evaluation; (4) data analysis; and (5) presentation of the review conclusions.

### *Search strategy and study selection*

We conducted a comprehensive literature search using the following online databases: PubMed, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Scopus, Academic Search Primer, and Medline. Key words ‘complementary therapy,’ ‘complementary therapies’ and ‘hospice care’ ‘terminal, terminally-ill, dying, or at end-of-life’ were used singularly and in combination. Three independent reviewers (AR, KK, and CD) conducted a preliminary screening of titles and abstracts to identify eligible articles based on the following inclusion criteria: research-based articles published in peer-reviewed sources, from 2006 through 2020; written in English. After initial screening of abstracts and titles, four independent reviewers (AR, CD, NL, and KK) examined the full text articles to determine consensus for the final sample of selected studies. We also supplemented the sample by hand-searching reference lists to identify relevant sources; those that met the screening criteria were reviewed for inclusion in the final review.

### *Data extraction and evaluation*

Studies that met the inclusion criteria and deemed appropriate to address the purpose of our review underwent an extensive comprehensive data extraction and evaluation process. Data extracted from each study included (1) study characteristics: aims, setting, design, year; (2) sample characteristics: age, sex, race/ethnicity, diagnoses, data source; (3) setting: inpatient, outpatient, home; (4) types of complementary therapies and

**Table 1.** Melnyk Levels of Evidence.

Level I	Systematic review & meta-analysis of randomized controlled trials; clinical guidelines based on systematic reviews or meta-analyses
Level II	One or more randomized controlled trials
Level III	Controlled trial (no randomization)
Level IV	Case-control or cohort study
Level V	Synthesis review of descriptive & qualitative studies
Level VI	Single descriptive or qualitative study
Level VII	Expert opinion

implementation strategies; (5) outcome variables and measurement; (6) primary findings; and (7) study limitations.

Because this integrative review included various research methodologies from diverse sources, each article was appraised using a rating for level of scientific evidence developed by Melnyk and Fineout-Overholt.<sup>32</sup> The evidence rating is based on the methodological quality of the study design, validity, and applicability to patient care and involves a seven-point scale. Level I represents the highest level of evidence (systematic reviews or meta-analysis) extending through to VII representing expert opinion (Table 1). Once all reviewers reached consensus on the scientific evidence rating, the resultant scores were included in the data analysis phase. This initial extraction involved development of a large detailed database that included the described items.

As proposed by Whitemore and Knafl,<sup>31</sup> our data analysis stage involved data reduction, data display, data comparison, and conclusion drawing and verification. The categories of data that were extracted during the previous stage were analyzed through iterative comparisons across primary sources. Each item of the extracted data was compared across studies and similar data grouped together as categories that were compared and further synthesized. Initial analysis was conducted independently, then followed by a series of group discussions to draw inferences from the data, using a narrative approach. Throughout the process, reviewers read and reread the primary sources, reviewed each other’s reviews, and continued to query the preliminary categories and thematic analysis until consensus

**Table 2.** Studies Included in Integrated Review.

First author, country, and year	Complementary therapy intervention(s)	Main aim	Study design and methodology	Population, setting and sample	Main findings and outcomes	Level of evidence
<b>MUSIC THERAPY</b>						
Burns <i>et al.</i> , USA, 2015	Music therapy	Examine the effect of music therapy on family perception of patients' symptoms and family satisfaction with hospice care.	Descriptive/cross-sectional, retrospective	Families of hospice patients with cancer Home and inpatient hospice N = 1495	Increased PCG perception of spiritual support. No difference in pain, anxiety, overall satisfaction for patients receiving music therapy vs those who did not.	VI
Cadwalader <i>et al.</i> , USA, 2016	Music therapy	Determine whether a single session of music therapy provided by a board-certified music therapist and using the entrainment principle would decrease agitation in hospice patients.	Pretest/posttest Single group Pilot	Hospice patients with documented agitation. Large hospice providing home care, ALF, SNF, and inpatient N = 73	Decreased agitation after one music session.	III
Choi, USA, 2010	Music therapy, progressive muscle relaxation (PMR)	Examine the effects of music, PMR, and music combined with PMR on the reduction of anxiety, fatigue, and improvement of QoL in family hospice caregivers.	Quasi-experimental (4-group comparison)	Caregivers (CG) for hospice patients. Four hospices providing home and inpatient care. N = 32	No significant difference among the 4 groups. Decreased anxiety and fatigue, and increased QoL, across all groups. Most improvement in music and PMR groups.	II
Ganzini <i>et al.</i> , USA, 2015	Music therapy	Determine the benefits of music vigils for terminally ill patients.	Mixed methods	Families of terminally ill patients Hospital PCU N = 55	Increased calmness, relaxation, relaxation of breathing, and ease of sleep after harp session.	VI
Graham-Wisener <i>et al.</i> , UK, 2018	Music therapy	Examine the provision, role and perceived impact of UK music therapists in supporting patients receiving palliative/EOL care.	Descriptive, retrospective	Music therapists who provide services for patients receiving Home & residential hospice N = 50	Improved communication / expressions, emotional and psychological well-being.	VI
Horne-Thompson <i>et al.</i> , Australia, 2008	Music therapy	Examine the effectiveness of a single music therapy session in reducing anxiety for terminally ill patients.	Randomized controlled trial 2-group comparison	Hospice patients Inpatient hospital unit N = 25	Decreased anxiety, pain, tiredness, and drowsiness in intervention group based on self-report instrument. No difference in heart rate.	II

(continued)

Table 2. (continued)

First author, country, and year	Complementary therapy intervention(s)	Main aim	Study design and methodology	Population, setting and sample	Main findings and outcomes	Level of evidence
Lindenfelser <i>et al.</i> , USA and Australia, 2012	Music therapy	Explore the impact of music therapy on parental perceptions of their family's QOL.	Mixed methods Multisite	Home / community-based hospice for children with serious illness. N = 14 (families)	Improved physical state and facilitated communication. Positive experience for families.	VI
Nakayama <i>et al.</i> , Japan, 2009	Music therapy	Determine the effectiveness of music therapy in a hospice setting on alleviating stress and its effect on mood.	Pretest / posttest Single group, pilot	Hospice patients with terminal cancer Inpatient hospice unit N = 10	Significant decrease in s-cortisol levels after music session. Significant increase in 'refreshment' parameter on Mood Inventory. Anxiety and depression decreased but not statistically significant.	III
Wlodarczyk, USA, 2007	Music therapy	Determine the effect of music therapy on the spirituality of persons in an inpatient hospice unit as measured by self-report.	Single-group comparison. Participants were their own control group (days with music therapy vs days without)	Hospice patients Inpatient hospice unit N = 10	Significant increase in spiritual well-being scores on music days. Music visits stimulated more subject-initiated discussions of spiritual issues.	III
MESSAGE						
Berger <i>et al.</i> , Canada, 2013	Aromatherapy, massage, reiki, and therapeutic touch	Determine the effect of a pilot CT program on patients'/ families' experience of quality and satisfaction with EOL care and symptom management.	Pretest / posttest Single group Pilot	Hospice patients and families Hospital PCU N = 31	Decrease in pain severity, anxiety, low mood, restlessness, discomfort. Increased inner stillness / peace.	III
Downey <i>et al.</i> , USA, 2009	Therapeutic massage, guided meditation	Examine the effect of massage and guided meditation on patients' overall QOL and pain distress.	Randomized controlled trial 3-group comparison	Hospice patients in a metropolitan area. Community-based hospice. N = 167	No significant treatment effects of massage or guided meditation compared with control group receiving 'friendly visits.'	II
Kutner <i>et al.</i> , USA, 2008	Massage, simple touch	Evaluate the efficacy of massage for decreasing pain and symptom distress and improving QOL among persons with advanced cancer.	Randomized controlled trial 2 group (massage intervention and control with simple touch) multisite	Patients with advanced cancer who had moderate-severe pain Population-based Palliative Care Research Network- 15 US hospices N = 380	Improved pain and mood immediately after massage treatment, no sustained difference after 3 weeks. Both groups had statistically significant improvements in emotional symptom distress and QOL.	II

(continued)



Table 2. (continued)

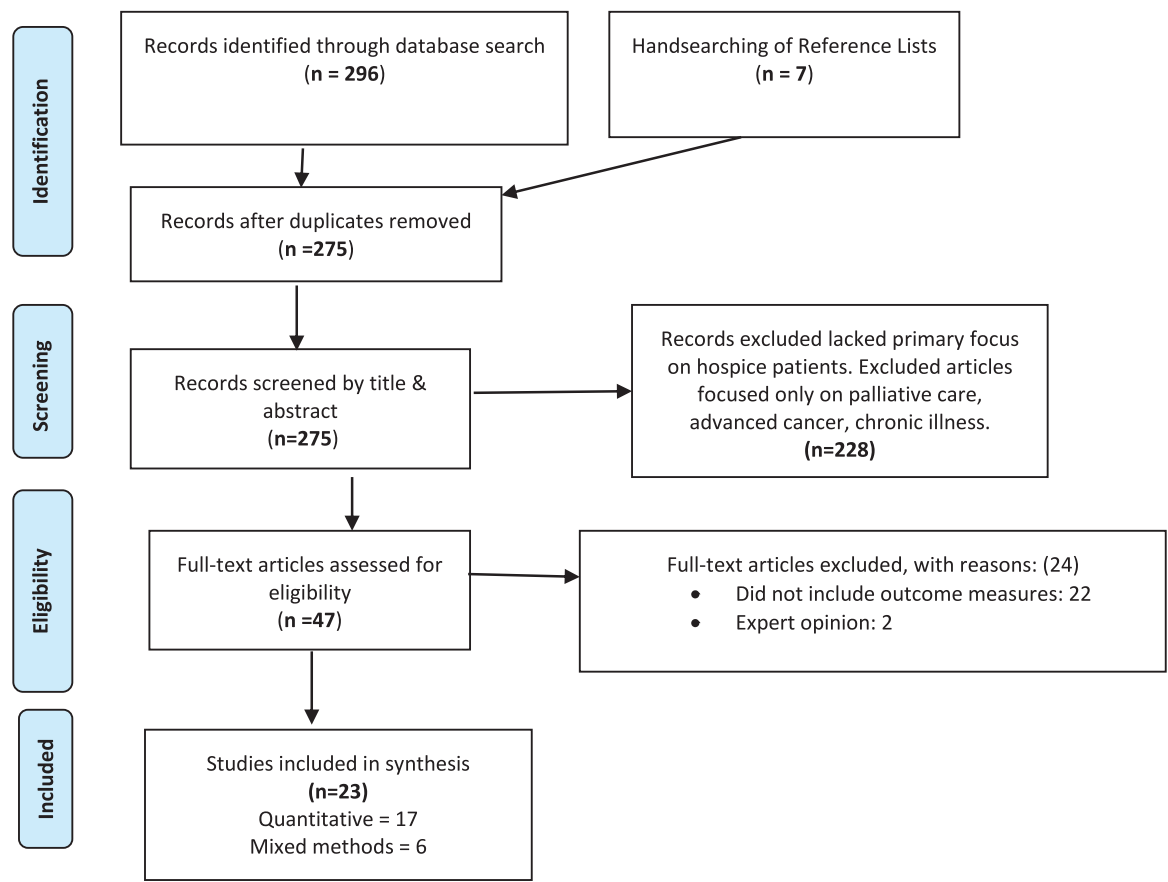
First author, country, and year	Complementary therapy intervention(s)	Main aim	Study design and methodology	Population, setting and sample	Main findings and outcomes	Level of evidence
López-Sendín <i>et al.</i> , Spain, 2012	Therapeutic massage with exercise	Determine the effects of massage and exercise, on pain and mood in patients with advanced terminal cancer.	Randomized controlled trial Pilot 2 groups (massage w/exercise vs. control with simple touch)	Patients with terminal cancer Inpatient oncology unit N = 24	Improvement in worst pain, pain right now, and BPI index for intervention group. Sustained effect on pain and psychologic distress but no difference in physical distress and least pain.	II
Pederson <i>et al.</i> , Sweden, 2018	Massage	Examine the effect of tactile massage on pain and rescue medication doses, well-being, and anxiety.	Pretest /posttest Single group	Hospice patients w/ incurable diseases. Inpatient hospice unit N = 41	Statistically significant improvement in pain, anxiety, and well-being; decreased number of pain and anxiety medication rescue doses.	III
Vandergrift, USA, 2013	Massage reiki	Examine the effect of a CT program that included massage, reiki, and music therapy on symptoms such as pain, ease in breathing, stress/anxiety, and improved relaxation.	Pretest /posttest Single group	Hospice patients Small hospice and palliative care program. N = 52	Decreased anxiety/stress, pain; improved ease of breathing and deep relaxation and peacefulness. (based on staff observation / report)	III
<b>BIOFIELD THERAPIES</b>						
De Paolis <i>et al.</i> , Italy, 2019	PMR and interactive guided imagery (IGI)	Examine the effectiveness of a PMR-IGI intervention to reduce pain when compared with usual care	4-phase multicenter randomized controlled trial	Cancer hospice patients Palliative Care Center N = 91	Significant decrease in pain score in the intervention group as compared with usual care.	II
Thrane <i>et al.</i> , USA, 2016	Reiki	Assess the feasibility and acceptability of reiki therapy to examine the effect of reiki therapy on pain, anxiety, and relaxation.	Mixed methods Single group Pretest / posttest pilot	Pediatric patients (age 7–16) with terminal conditions and their families. Consultation-based palliative care service N = 16 mothers, 16 children	Significant decrease in respiratory rate in verbal children and pain in nonverbal children. Small sample size deterred statistical significance for other symptoms.	III
Heath <i>et al.</i> , Australia, 2012	Supplements, prayer / faith healing, homeopathy, reiki, Chinese meds/herbs	Determine the perceived efficacy of CT and its effect on overall EOL care for children with cancer at EOL.	Mixed methods	Parents of children who had died of cancer Hospital N = 96	Most felt CTs were overall beneficial (more relaxed, more energy, less pain, more positive attitude/hope/spiritual strength). Strong correlation between open parent-provider discussion and CT use.	VI

(continued)

Table 2. (continued)

First author, country, and year	Complementary therapy intervention(s)	Main aim	Study design and methodology	Population, setting and sample	Main findings and outcomes	Level of evidence
OTHER MODALITIES						
Kaufman <i>et al.</i> , USA, 2008	Acupuncture	To explore in a preliminary fashion both the processes involved in acupuncture delivery and outcomes associated with this intervention.	Mixed methods	Hospice patients (EMR review). Interview with acupuncturists. Home-based hospice care from a large HMO. N = 71	Excellent or good results for improvement in pain, anxiety, SOB, and N/V.	VI
Meidell <i>et al.</i> , Sweden, 2009	Acupuncture	Investigate the feasibility of a 5-week acupuncture intervention in hospice setting. Examine the effect of acupuncture on xerostomia, dysphagia, dysarthria in terminal cancer patients.	Mixed methods	Advanced cancer patients with xerostomia Inpatient hospice unit N = 14	Improvement in xerostomia, dysphagia, and dysarthria after 4th and 5th treatment. Saliva production increased though not statistically significant.	VI
Romeo <i>et al.</i> , USA, 2015	Acupuncture	Examine the effectiveness of acupuncture to relieve symptoms commonly observed in patients in a hospice program.	Pretest /posttest Single group	Hospice patients Community-based hospice N = 26	Significant improvement in 7 out of 9 symptoms measured—pain, tiredness, nausea, depression, anxiety, SOB, and overall well-being. Improvements in drowsiness and appetite were not statistically significant.	III
Lin <i>et al.</i> , Taiwan, 2012	Art therapy	Evaluate the effect of art therapy for terminally ill cancer patients	Mixed methods	Hospice and palliative care patients with terminal cancer Inpatient PCU N = 177	Increased relaxation; less anxiety, pain, tension; more positive outlook; increased motivation after art session; felt better physically.	VI
Plaskota <i>et al.</i> , UK, 2012	Hypnotherapy	Assess the benefits of hypnotherapy in the management of anxiety, depression, sleep disturbance, and symptom severity in palliative care patients with cancer.	Pretest /posttest Single group Pilot	Advanced cancer patients Community-based hospice N = 11	Statistically significant decreased anxiety, depression, symptom severity, and sleep disturbance after 4 hypnotherapy sessions.	III

ALF, assisted living facility; CT, complementary therapies; EMR, electronic medical record; EOL, end of life; PCG, patient caregiver; PCU, palliative care unit; QOL, quality of life; SNF, skilled nursing facility; SOB, shortness of breath.



**Figure 1.** PRISMA Flow Diagram of Record Selection.  
Source: Moher et al.<sup>33</sup>

was reached and the findings of the integrative review were confirmed.

## Results

Our initial literature search resulted in 296 studies. After removing duplicates, 275 studies were screened by title and abstract. Forty-seven studies met our criteria for full text review. The other 228 records were excluded because they lacked a primary focus on hospice patients, often describing their sample as patients with cancer or other chronic conditions. However, careful reading of the abstracts and texts was required as the term ‘palliative care’ was sometimes used in the context of EOL care, which we operationalized to mean hospice care. Those studies that used the term palliative care and applied it to care at end of life were included. Of the 47 full text reviews, 22 did not include actual measurement of an outcome and two were based on expert opinion. Studies that did not involve an outcome measure, such as qualitative studies (level V) or articles representing

expert opinion (level VII), were excluded. The remaining 23 studies included in the final analysis (Figure 1) were determined to have met the established inclusion criteria: the specific patient population (hospice patients), the intervention of interest (complementary therapies), and the measurement of a specified outcome.

### *Types of studies, settings, and samples*

The 23 studies used a variety of designs: 17 quantitative and 6 mixed methods. Four of the studies were described as pilot studies. The most common quantitative design was pretest–posttest single group (9), followed by RCTs (5), two retrospective descriptive designs, and one quasi-experimental. Four of the RCTs were two-group comparisons involving one complementary therapy modality compared with an attention control group. The remaining RCT included a three-group comparison of two different modalities and an attention control group. Two RCTs were multisite. The mixed methods studies (6) typically



involved a pretest–posttest single group survey design with quantifiable items and the addition of narrative responses or individual interviews that were analyzed using qualitative thematic coding. Evaluation of the level of scientific evidence revealed 35% of the studies were level VI (descriptive), 39% were level III (controlled trials), and 26% were level II (RCTs) (Table 2).

The studies were conducted in diverse locations and settings and represented an international perspective from the United States (11), Australia (3), the United Kingdom (2), Sweden (2), Taiwan (1), Spain (1), Canada (1), Italy (1), and Japan (1). Study settings included both community-based and facility-based hospice services. Approximately half of studies were conducted in facility-based settings (57%;  $n = 13$ ) such as palliative or hospice units in acute care hospitals or free-standing residential hospice facilities. Other studies were community-based and involved home hospice services (26%;  $n = 6$ ) or a combination of settings including home-based and outpatient facility-based services (17%;  $n = 4$ ).

The majority of studies focused on adult populations (91%;  $n = 21$ ) while two studies involved pediatric palliative care at end of life. Sample size ranged from 8 to 10,434; however, over half of the studies (57%;  $n = 13$ ) had samples of 50 or less, 26% ( $n = 6$ ) had sample sizes of 51–100, and 13% ( $n = 3$ ) had samples greater than 100 (up to 380). An additional study involved retrospective review of 10,434 medical records in a large hospice organization. Over half (57%) of studies did not report race or ethnicity.

Forty-three percent ( $n = 10$ ) of the studies focused solely on cancer patients, while 35% ( $n = 8$ ) included a sample of patients with various diagnoses. Although the studies that focused on different diagnoses included cardiac, respiratory, and neurological conditions, all studies that indicated diagnoses included cancer patients among their sample. However, 22% ( $n = 5$ ) of studies did not designate any specific diagnosis, describing their sample as hospice or terminal patients.

*Complementary therapy modalities and implementation.* Most studies examined one individual modality (65%;  $n = 15$ ) in their study sample. However, nearly a third of the studies used a multicomponent intervention including a combination of modalities. The most commonly used forms of CT were music therapy (39%), biofield

therapies (reiki, therapeutic touch) (26%), and massage therapy (22%). Lesser used therapies included aromatherapy, guided meditation, and relaxation. The CT interventions were implemented differently across all studies. For example, the most variation was found in the music therapy interventions which were offered as individual sessions in some studies and group sessions in others. Two studies included just one session of music therapy<sup>34,35</sup> while others included multiple sessions over time.<sup>36–39</sup> The actual delivery of the music therapy varied across studies with some studies including instruments (such as guitar, piano, and harp)/live music<sup>34,37</sup> and interactive practices with patients and families (such as singing along, playing percussion instruments).<sup>35,38,40</sup> Other studies used prerecorded music selected on specific criteria. As an example, Choi<sup>36</sup> indicated they used research-based music selections that had a slower tempo, low pitch, and no lyrics. Other studies indicated music selection was based on patient preference or music that would be most appropriate for the patient's clinical condition on the given day. Most studies used specially trained and or certified music therapists.

Studies that used other CT modalities varied in the intervention implementation as well. Berger *et al.*<sup>41</sup> indicated they used aromatherapy, massage, reiki, and therapeutic touch but provided little detail on the number of sessions or how the therapies were delivered. In contrast, Downey *et al.*<sup>42</sup> used massage, guided meditation, and attention control and provided strict protocol guidelines, describing the training for the interventionists and their manualized protocols for the interventions in their article appendix. Similarly, Kutner *et al.*<sup>43</sup> described their RCT by including detailed description of various massage techniques, targeted body parts, and standardization of their procedures.

### *Outcome findings*

Thorough review and thematic analysis of the study findings revealed two main categories that reflected the outcome measures and results of the 23 studies: (1) *Physical symptom management* and (2) *Psychosocial and spiritual support*. The most common symptoms within the *Physical symptom management* category were pain/discomfort, fatigue/tiredness/drowsiness, dyspnea or ease of breathing, sleep, gastrointestinal symptoms (such as nausea/vomiting, appetite), and agitation/restlessness. *Psychosocial and spiritual support* outcomes

included anxiety, depression/low mood, spirituality/inner peace and well-being, QOL, and satisfaction. Many studies focused on multiple outcomes, examining the effect of a particular CT intervention on various types of symptom distress. Twenty-two studies reported statistically significant or positive findings; however, nine of those had a combination of significant and non-significant findings. Only one study did not have any significant or positive findings as a result of the CT intervention.

#### *Physical symptom management*

*Music therapy.* Music therapy studies explored its effect on physical symptoms including agitation, fatigue, ease of breathing, tiredness/drowsiness, stress (salivary cortisol), and pain. In a study of 73 hospice patients, Cadwalader *et al.*<sup>34</sup> reported a single session of music therapy resulted in a 47% reduction in agitation, regardless of age, gender, diagnosis, and location of care. Choi<sup>36</sup> conducted a four-group quasi-experimental study and found music therapy alone and in combination with muscle relaxation resulted in greater decrease in fatigue than the non-music groups. For patients who received music harp vigils, family caregivers perceived modest improvement in patients' breathing and ability to sleep, however less improvement in pain.<sup>37</sup> Horne-Thompson and Grocke<sup>35</sup> found significant reductions in pain, tiredness, and drowsiness after a single music therapy session. Similarly, stress, as measured by salivary cortisol, was reported to be significantly decreased after a single music therapy session in residential hospice patients in Japan.<sup>40</sup> Conversely, in a retrospective review of 10,534 hospice cancer patients, Burns *et al.*<sup>44</sup> found no difference in family reports of pain in patients who received music therapy compared with those who did not. However, those receiving music therapy did have lower rates of breathing trouble, though not statistically significant.

*Massage therapy.* Massage therapy studies also examined physical symptoms such as pain and discomfort, ease of breathing, restlessness, and sleep disturbances, however had the most focus on pain compared with the other CTs. Several studies combined massage therapy with other CTs, reporting significant findings, however did not differentiate the effects of each CT. Berger *et al.*<sup>41</sup> reported significant improvement in pain, discomfort, and stiffness after one or two massage therapy sessions in 31 hospice patients, however

also combined aromatherapy, reiki, and therapeutic touch. Using a similar study design, Vandergrift found the combination of massage therapy and reiki resulted in reduced pain, improved breathing and sleep, based on staff observations.<sup>45</sup> A study conducted in Spain<sup>46</sup> found massage therapy demonstrated greater improvements in current pain and worst pain with a sustained effect, compared with simple touch. However, physical distress and least pain were not different between groups. In addition, the study combined massage therapy with exercise, making it difficult to determine the sole effect of massage therapy. In contrast, Kutner *et al.*<sup>43</sup> conducted a multisite RCT of 380 advanced cancer hospice patients comparing massage with simple-touch sessions and found massage had immediate beneficial effects on pain; however, the effects were not sustained over time. Both groups experienced statistically significant improvement in pain and symptom distress, despite no increases in pain medication use and found no difference in adverse events or deaths among their advanced cancer participants, dispelling concerns regarding massage use in cancer. A study conducted in Sweden<sup>47</sup> demonstrated tactile massage therapy resulted in improvement of self-reported pain and reduction of rescue medication doses for pain after the first treatment session. In contrast, Downey *et al.*<sup>42</sup> conducted an RCT with 167 hospice patients and found no significant treatment effects for pain or pain distress between massage therapy group, guided meditation, and the active control group (who received visits from hospice-trained volunteers).

*Biofield therapies.* Studies focused on biofield therapies primarily examined physical symptoms such as pain, relaxation, and discomfort, with pain as the most common outcome variable. In most studies, biofield therapies were either included in comparison to massage therapy or in conjunction with massage therapy. Several studies demonstrated statistically significant improvement in symptoms such as pain, discomfort, relaxation, ease of breathing, and an overall general benefit<sup>41,45,48</sup> however did not differentiate the findings based on the specific CT. Other studies included biofield therapies (simple touch, therapeutic touch) as a comparison group to massage therapy and demonstrated mixed results. Kutner *et al.*<sup>43</sup> found both massage and simple touch were associated with statistically significant improvements in immediate and sustained pain outcomes and there were no statistically or clinically significant

differences between study groups in sustained outcome pain measures. A 2-group RCT revealed significant improvements in worse pain scores and pain right now in the massage/exercise group; however, physical distress and least pain scores were no different between massage / exercise and simple touch group.<sup>46</sup> Thrane *et al.*<sup>49</sup> examined the effect of reiki in children with cancer using a pretest-posttest mixed method and found decreased mean scores for pain, heart rate, and respiratory rate but reported that due to a small sample size did not achieve statistical significance. However, the study did demonstrate significant decreases for pain in nonverbal children and respiratory rate in verbal children.

*Other CT modalities.* Our review revealed a smaller number of studies focused on other modalities such as acupuncture (3), art (1), hypnotherapy (1), and meditation (1). Two of the acupuncture studies included physical outcomes such as pain, respiratory distress (shortness of breath (SOB) or dyspnea), nausea/vomiting, and tiredness and revealed significant findings. A study of home hospice acupuncture<sup>50</sup> revealed 34% of patients had excellent to good relief of pain, 22% had relief of SOB, and 29% had relief of nausea/vomiting based on medical chart review. Similarly, in a pretest/post-test pilot study, Romeo *et al.*<sup>51</sup> found seven out of nine symptoms in the Edmonton Symptom Assessment System (ESAS) were significantly improved including pain, tiredness, nausea, and dyspnea in patients receiving home care acupuncture; however, drowsiness and appetite were not improved. The third study focused on the effects of 10 acupuncture treatments on xerostomia in terminal cancer patients and found significant improvements in alleviating dryness of mouth and associated symptoms such as dysphagia after the fourth or fifth treatment.<sup>52</sup>

In a community-based pilot study of hypnotherapy, statistically significant reduction of symptom severity and sleep disturbance was noted after the fourth session.<sup>53</sup> In a Taiwanese study focused on art therapy, Lin *et al.*<sup>54</sup> found that three sessions resulted in 70% of participants feeling much more or very relaxed and 53.1% reported feeling much or very much better physically.

#### *Psychosocial and spiritual support*

*Music therapy.* All nine studies that focused on music therapy included a psychosocial or spiritual outcome measure. A cross-sectional analysis

of records from 10,534 hospice cancer patients found patients who received music therapy were more likely to have discussions about spirituality and receive appropriate spiritual care (as reported by family members).<sup>44</sup> Similarly, music therapy involving live music resulted in increased spiritual well-being in an inpatient hospice setting.<sup>39</sup> In a three-group comparison, music therapy alone and music therapy in conjunction with muscle relaxation resulted in significant differences in pre and post-test anxiety scores.<sup>36</sup> Additionally, music thanatology in the form of harp music vigils resulted in improved patient relaxation and comfort as rated by family members.<sup>37</sup> In an RCT conducted in Australia, one single session of music therapy resulted in a statistically significant reduction in anxiety demonstrated by self-report measures.<sup>35</sup> Lindenfelser *et al.*<sup>38</sup> found somewhat mixed results in which half the parents of children receiving music therapy reported improved QOL and other half did not. While participant comments were positive, they did not align with the scores on the quantitative measure (PedsQL). In a study conducted in Japan, music therapy that included musical instruments demonstrated significant improvement in the refreshment mood state on the Mood Inventory and decreased S-cortisol level.<sup>40</sup>

*Massage therapy.* While massage therapy studies focused primarily on physical symptoms, some researchers included outcomes such as anxiety, mood states, inner peace, and QOL. Berger *et al.*<sup>41</sup> found significant improvement in anxiety, low mood, and inner stillness / peace and supporting qualitative narratives regarding increased comfort among patients in a palliative care unit in Ontario, Canada. Kutner *et al.*<sup>43</sup> also found that massage therapy resulted in improvement in mood compared with simple touch therapy and a control group; however, there was no difference in QOL in cancer patients at end of life. Similarly, in an RCT examining massage therapy, meditation, and a control group receiving friendly visits, Downey *et al.*<sup>42</sup> found no difference in QOL between the treatment groups and control group over time. López-Sendín *et al.*<sup>46</sup> found a sustained improvement on psychological distress when massage therapy was offered combined with physiotherapy compared with simple touch therapy. Similarly, a study conducted in Sweden demonstrated significant reduction in the need for anxiety medication in hospice inpatients who received massage therapy sessions.<sup>47</sup> In a year-long study examining the effects of massage therapy and reiki, staff reported

patients exhibited improvements in stress / anxiety, deep relaxation, and peacefulness.<sup>45</sup>

*Biofield therapies.* Studies focused on biofield therapies demonstrated improvements in outcomes such as anxiety, mood, stress/anxiety, deep relaxation, and inner peace and QOL, however were challenging to interpret as they were sometimes combined with other CTs.<sup>41,45</sup> Reiki was effective at decreasing anxiety in a home pediatric program.<sup>49</sup> Kutner *et al.*<sup>43</sup> found simple touch resulted in significant improvements in mood, QOL, and emotional distress over time in advanced cancer patients. Mood and emotional distress improved with simple touch, however not as significantly as with massage therapy.<sup>46</sup> In a study of pediatric palliative patients, two home sessions of reiki resulted in pre-post reduction in anxiety, however did not reach statistical significance.<sup>49</sup> Reiki also resulted in an improvement in stress / anxiety (99% reported improvement), relaxation (92%), and peacefulness (97%) as reported by hospice staff.<sup>45</sup>

*Other CTs.* Investigations focused on psychosocial and spiritual support included acupuncture (3), art (1), hypnotherapy (1), and meditation (1). Acupuncture treatments implemented in home hospice resulted in improvements in anxiety (31%)<sup>50,51</sup> and well-being.<sup>51</sup> In a study of hospice patients in Taiwan, an average of three art therapy sessions resulted in improved scores of artistic expression and relaxation.<sup>54</sup> Examining the effects of hypnotherapy, Plaskota *et al.*<sup>53</sup> found statistically significant reduction in depression and anxiety after the fourth session. Finally, in a three-arm RCT comparing guided meditation, massage therapy, and an attention control group receiving friendly visits, Downey *et al.*<sup>42</sup> found no difference in QOL or in the number of weeks of good QOL.

## Discussion

This integrative review of quantitative studies published between 2006 and 2020 focused on implementation and outcomes of Complementary Therapy (CT) as a component of hospice care. The majority of studies had positive results; however, 40% had both significant and non-significant findings indicating that while there is evidence to support the use of some CTs for specific symptoms, it is not consistent, and improvements may not be sustained over time. In addition, a number of methodological issues should be considered related to study design and sample, implementation of the CT interventions, and data measurement and analysis.

Many studies had small sample size with over half reporting samples of 50 or less. Sample recruitment and high attrition rates presented challenges as some participants died or withdrew from the studies before they could complete the intervention.<sup>35,42,52,53</sup> Some studies reported their sample size was simply too small to detect statistical significance, indicating their study was statistically under powered.<sup>36,49</sup> In addition, the characteristics of the study samples were not well described as some studies did not report key demographic and clinical data such as race/ethnicity or diagnosis.<sup>35,36,41,42,45-47,55</sup> Therefore, it is not known if their sample is representative of the overall decedent population, nor can they infer any effects that may be more relevant for particular patient groups based on diagnosis or race/ethnicity. The studies that did include race and diagnosis revealed their samples were overwhelmingly White with a diagnosis of cancer. While the studies included multiple settings such as inpatient hospice and community/home hospice, they did not evaluate the implementation of CT modalities based on setting, to distinguish if some were more feasible to implement in a particular setting. Future studies that include multisite data collection or a longer data collection period would likely provide larger more diverse samples and improve study design allowing for detection of differences.

Many studies used a pretest/posttest design and did not include a comparison group. Only five of the 23 studies were RCTs and only one of those was a multisite study. In addition, the lack of standardized protocols for CT intervention implementation was a limiting factor among studies, with many studies not reporting detailed descriptions of their intervention. Other studies described CT implementation however indicated different ways and length of time the intervention was delivered, lacking fidelity across participants. Several studies combined modalities so that it was not possible to determine the effect of each individual CT. Additional studies used other CT modalities as an attention control strategy for their control group. In addition, some studies did not indicate if they accounted for other treatments (such as medication) or changes in treatments that may have confounding effects on the study outcomes. Similarly, some studies indicated they were unable to control for exposure for other potentially concurrent and intervening factors that could affect study outcomes (such as exposure to other CTs).<sup>42</sup>

Outcome measurement and analysis varied significantly across studies. Most studies primarily used



self-report instruments; however, the data were sometimes collected from patients receiving the CT intervention and in other studies the source of reporting was family caregivers or health care staff. Outcome measurement lacked standardization across studies, using various instruments for the same outcome or symptom. For example, the outcome of anxiety was measured by the Edmonton Symptom Assessment System (ESAS), a Visual Analog Scale (VAS), electronic medical record review (EMR), the State Trait Anxiety Inventory (STAI-S), the Hospital Anxiety and Depression Scale (HADS), a Mood Inventory, and staff report. Just four studies used objective measures such as heart and respiratory rates,<sup>43,49</sup> cortisol level,<sup>40</sup> and wrist actigraphy<sup>53</sup> along with subjective measures. Most studies used standard statistical analysis with an established significance level; however, some studies simply reported a percent improvement or the percent of participants who reported an improvement in a specified outcome. While it is of value to demonstrate increased improvement for patients, using standard statistical significance would provide more rigorous studies and robust evidence. In addition, only one study differentiated between statistical and clinical significance and made a substantive case for the latter.

This review revealed significant findings overall related to the effects of CTs. Similarly other reviews that synthesized evidence regarding CTs found significant improvement in outcomes in symptom clusters such as fatigue, stress, pain, and anxiety.<sup>28,56</sup> All but one study<sup>42</sup> included positive findings that supported the use of the CTs. The RCT conducted by Downey *et al.*<sup>42</sup> compared the effects of therapeutic massage and guided meditation with attention control (friendly visits) and did not find a significant difference on pain and QOL between the groups post intervention. The authors suggest the control group was receiving friendly visits that involved household and other tasks for the patients, which could have helped patients at the end of life significantly, thus producing null effect of the intervention. In addition, the selection of outcome measures such as QOL should be considered carefully, as other uncontrollable factors such as decline in condition, may affect overall QOL.

The strengths of our review include a rigorous data extraction and evaluation process, clear identification of inclusion criteria, the inclusion of multiple designs from diverse primary sources, and a well-established method for rating the scientific evidence

for each study. Using peer-reviewed publications as a source may have presented a limitation as conference proceedings and abstracts were not included. In addition, studies with overwhelming negative findings may not have been published and would not be accessible. Finally, non-English studies were not included which could be a limitation to understanding a more global perspective.

## Conclusion

Recent studies demonstrate support, albeit inconsistent, for consideration of CTs as a component of holistic hospice care. In addition, studies also demonstrate effectiveness of CTs may be limited to specific situations and may not be sustained over time. The literature also reveals some of the challenges of conducting research focused on hospice patients and families. Future studies that start implementation earlier in end-of-life care; include larger, diverse samples; utilize rigorously designed comparisons of each modality, and include carefully planned standardized implementation to increase fidelity and common measurement of outcomes would improve the generalizability of studies and strengthen the evidence needed to determine the value of CT in hospice care.

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