

Title: Music therapy for palliative care: a realist review

Short title: Music therapy for palliative care

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ABSTRACT

Objectives: Music therapy has experienced a rise in demand as an adjunct therapy for symptom management among palliative care patients. We conducted a realist review of the literature to develop a greater understanding of how music therapy may benefit palliative care patients and the contextual mechanisms that promote or inhibit its successful implementation.

Methods: We searched electronic databases (CINAHL, Embase, Medline, and PSYCHinfo) for literature containing information on music therapy for palliative care. In keeping with a realist approach, we examined all relevant literature to develop theories which could explain how music therapy may work.

Results: Forty six articles were included for the review. Music therapy had a therapeutic effect on the physical, psychological, emotional and spiritual suffering of palliative care patients. We also identified programme mechanisms that help explain music therapy's therapeutic effects, along with facilitating contexts for implementation.

Significance of results: Music therapy may be an effective nonpharmacological approach to managing distressing symptoms in palliative care patients. Findings also suggest group music therapy may be a cost-efficient, and effective way to support staff caring for palliative care patients. We encourage others to continue developing

the evidence base in order to expand our understanding of how music therapy works with the aim of informing and improving the provision of music therapy for palliative care patients.

Key words: realist review; music therapy; palliative care

INTRODUCTION

Music and healthcare have been interconnected from the time of the ancient Greeks (Gallagher, 2011). The healing power of music has been recorded as far back as 1500 BC on Egyptian medical papyri (O'Kelly, 2002). Furthermore, music has been used for improving physical, psychological and emotional problems during the Middle Ages and the Renaissance in Europe (Cardozo, 2004). More recently, there has been a resurgence of music in healthcare brought about by music therapists (Hogan, 2003). However, it is important to distinguish what is termed 'music medicine' (passive listening to pre-recorded music delivered by healthcare professionals) from music therapy (a music intervention tailored to the individual, in the presence of a therapeutic relationship, delivered by a trained music therapist) (Bradt & Dileo, 2010).

Music therapy is defined as the use of music as part of a developing relationship between a patient and therapist to support and improve physical, mental and spiritual well-being (Bunt & Hoskyns, 2002). This holistic approach to healthcare is consonant with that of palliative care which involves an approach that focuses not only on the physical person, but that also encompasses the psychological and

existential aspects of individuals (Bowers, 2014). In this context, music therapy aims to improve quality of life through the relief of physical symptoms and psychological difficulties, by providing comfort and support, enabling communication, and ameliorating existential concerns. Music therapy also seeks to address the coping, communicative, and bereavement needs of family and caregivers (Dileo & Bradt, 2005). It is not surprising therefore that music therapy has experienced a rise in demand as an adjunct therapy for symptom management among palliative care patients (Hilliard, 2005).

An investigation of the particular types of music therapy interventions used for palliative care shows the practice to be diverse and tailored to individual needs. Different techniques are categorised as receptive or interactive and may be used in combination. They involve listening to music (played by the therapist or recorded), music making (instrumental or vocal performance and improvisation), song writing and recording (often for life review or legacy work), lyric analysis (Curtis, 2011) and music entrainment (Cottrell, 2000). In music entrainment the music therapist matches the musical tempo to the patient's mood and then changes that tempo to alter their mood in the direction of therapeutic goals.

Several studies have reported positive results for music therapy among palliative care patients. These include a systematic review of randomised controlled trials indicating reduced pain (McConnell et al., 2016), and a meta-analysis indicating reduced nausea/vomiting, depression, anxiety, and an improved sense of well-being and mood (Dileo & Bradt 2005). The literature also suggests most referrals for music therapy are in relation to anxiety, pain, depression and quality of life (Bowers, 2014).

However, what is still not clear is how music therapy exerts its effect, for whom it works best, and in what circumstances. There is an increasing demand, not only for evidence-based practice, but also for a greater understanding and description of how an intervention works in order to optimise success (Pawson, 2006). Therefore, the principal questions for this review were:

- What appeared to be the therapeutic mechanisms?
- For whom did these work?
- Which contexts helped or hindered the intervention achieve its desired outcomes?

METHODS

Fundamental to critical realism is a rejection of models that assume unilinear causality (such as the assumption that the effectiveness of an intervention is solely the result of its inherent qualities). Instead, it regards outcomes as resulting from the complex interactions of a number of causal mechanisms, whose precise relationship will differ in different contexts. As a consequence, rather than regarding causal mechanisms as determining outcomes, they are seen as tendencies (Blackwood et. al, 2010). Pertinent mechanisms may be embedded in the intervention itself (in this case music therapy), or they may be embedded in the social and organisational context into which the intervention is introduced (in this case, those institutions and services providing palliative care). To make matters even more complex, these programme and contextual mechanisms are experienced by people, with their capacities to interpret and choose, which means that an analysis of the effectiveness of an intervention should include consideration of how different types of people tend

to respond to it and why. In other words, human agency also has to be taken into account (Porter, 2015a). To sum this up formulaically, the critical realist approach to explaining the effectiveness of an intervention involves explaining outcomes in terms of a combination of contextual mechanisms + programme mechanisms + agency (Porter, 2015b).

In line with this formula, this review identifies the putative mechanisms embedded in music therapy that have been identified by the literature to make an effective contribution to palliative care. It analyses these mechanisms in terms of their projected effects upon human agency. Finally, it examines the putative contextual mechanisms that are regarded as either promoting or inhibiting the successful implementation of music therapy interventions in palliative care settings.

Theoretical framework

To develop our theoretical framework on music therapy for palliative care patients, we began by conducting a broad rapid review on music therapy for palliative care patients. This was followed up with interviews with palliative care music therapists to test provisional ideas of what were the underlying therapeutic factors, for whom, and the facilitating or hindering contexts. This first step led to a provisional theoretical framework based on Dileo and Dneaster's (2005) palliative care model for music therapy (see Table 1) which we developed further with the addition of a social domain.

Search strategy

We did not aim to exhaustively search all available evidence, but rather build up a representative body of literature to help us test and refine the intervention theories (Wong et al., 2010). We initially searched various electronic databases, such as CINAHL, EMBASE, MEDLINE and PsychINFO from their first available date until December 2015 using music therapy, hospice, and palliative care as broad search terms. Further studies were identified through pearling (searching reference lists of included studies). There were no date limits, but we did restrict articles to English due to resource constraints. Searching was iterative and ongoing during the review using the same searching process to identify additional data when required to test developing theories. TM searched and screened citations for inclusion in two stages – the first was of title and abstract, and the second was the full text of potentially relevant literature. Articles were included if they met inclusion criteria for each step of the searching process (initially they needed to address music therapy for a palliative care population and for subsequent searches they needed to address developing theoretical assumptions). Studies were excluded if they were music medicine (listening to music only with no therapeutic relationship present). The pertinence of included articles was judged by their ability to identify and test intervention theories (their relevance) rather than overall methodological quality (Pawson, 2006).

Information on characteristics of included articles were extracted into a word table to include article details; country of origin; article type; aim; research method where applicable; and a record of how the article informed our theoretical framework (available upon request). We coded verbatim sections of text against our programme theories in a word document to facilitate transparency and retrieval. Additional codes

were created as the synthesis developed to depict new data for theory testing and articles were revisited to ensure coding was complete and consistency maintained (Wong et al., 2010).

TM and SP undertook data synthesis and thematic analysis. An inter-rater reliability strategy was used throughout to enhance rigour (Hruschka et al., 2004). We developed a data analysis template to record key themes of importance to explaining music therapy's outcomes, including any information on context. Prevalent recurring themes and facilitating contexts were noted and used to help identify the underlying therapeutic ingredients (programme mechanisms) that could explain the most common palliative care outcomes for music therapy. This iterative searching provided us with further data to develop and test theories, and was repeated for different domains of our theoretical framework.

RESULTS

Theoretical framework

Our theoretical framework consisted of four separate but interrelated domains that encapsulate palliative care as a holistic approach to caring for terminal and end-of-life patients. These domains include the supportive (physical and psychological domain), communicative/expressive (emotional domain), and transformative (spiritual/existential domain) (Dileo & Dneaster, 2005). The social domain was added to the framework based on its prominence in the literature for explaining music therapy's therapeutic effects (See Table 1)

Search and study characteristics used in synthesis

Iterative searching led to a total of 51 articles which provided data to test our framework (Table 1). Of the 51 articles included, all were in English and dated from 1964 to 2015. The majority of primary research was carried out in the USA 17/33 (51%), followed by Australia 6/33 (18%), Canada 3/33 (9%), United Kingdom 2/33 (7%), Singapore 1/33 (3%), Tanzania 1/33 (3%), Switzerland 1/33 (3%), Japan 1/33 (3%) and Thailand 1/33 (3%). 33 articles were primary research, 4 were reviews, 4 theoretical papers, one book chapter, one report, and six discussion pieces. The most commonly used method for primary research was Quasi-experimental 12/33 (40%), followed by Qualitative 13/33 (33%), Randomised Controlled Trials 5/33 (17%) and Surveys 3/33 (10%).

Key outcomes

Both quantitative (Hilliard, 2003; Curtis, 2011) and qualitative (Kitawaki, 2007) evidence suggests that music therapy improves overall quality of life for palliative patients. Music therapy has also been shown to reduce physical discomfort (Gallagher et al., 2006) and pain (Krout, 2001; Gallagher et al., 2006; O'Callaghan & Hiscock, 2007; O'Kelly & Koffman, 2007; Leow et al, 2010b; Curtis, 2011; Gutsell et al., 2013). In terms of psychosocial benefits, quantitative evidence suggests that music therapy improves patients' mood (Gallagher et al. 2006; Nokayama et al. 2009; Curtis, 2011) and reduces anxiety (Nguyen, 2003; Gallagher et al. 2006; Horne-Thompson & Grocke, 2008). Furthermore, qualitative studies suggest that

music therapy improves emotional wellbeing (O' Callaghan, 1996; O'Callaghan & Hiscock, 2007; O'Kelly & Koffman, 2007), social interaction (O'Kelly & Koffman, 2007; Leow et al. 2010b), and spiritual or existential wellbeing (Okamoto, 2005; O'Callaghan & Hiscock 2007; Wlodarczyk, 2007).

While music and the music therapist are referred to as the therapeutic agents of music therapy (Leow, 2011) their therapeutic influence remains elusive. However, our realist approach to the literature helped us uncover the underlying interplay of programme mechanisms, agency, and contextual mechanisms that help explain the various outcomes observed.

Therapeutic mechanisms

The following sections identify therapeutic mechanisms purported by the literature to make an effective contribution to palliative care, and their projected effects on human agency for each domain of our theoretical framework.

Supportive (physical and psychological domain)

It is widely recognised that physical and psychological factors have a synergistic effect whereby affective factors impact on pain levels. Thus, higher anxiety, depression, and anger all increase pain perception (Bradt, 2010). One model of pain perception which helps explain how music therapy exerts its effects is the gate control theory which emerged in the 1960s. This is the most widely recognised model of pain perception, acknowledging sensory, affective as well as

cognitive mechanisms (Melzack and Wall, 1965). This model provides a neurophysiological explanation for the effects of several psychological interventions on pain reduction and a rationale for using treatments that target brain processes (Jensen & Turk, 2014). The theory underlying this model postulates that the volume of information from the peripheral nervous system signifying damage or the threat of physical damage that reaches the brain, modulating the experience of pain, is regulated in the spinal cord at the dorsal horn by input from the periphery and output from the brain. As an example, when one rubs part of their body (creates a distraction), this sends information to the dorsal horn which 'closes' this hypothetical gate and decreases pain sensation. Processes such as attention, affect, memories and interpretation can all impact how 'open' or 'closed' the gate is and as such influence the intensity of any pain experienced (Melzack & Wall, 1965). Therefore, to be effective, an intervention needs to act as a distraction, and more importantly influence attention, affect, memories and interpretation.

Music therapy appears to influence pain perception, not only by offering a distraction (Groen, 2007; Hartwig, 2010; Bradt, 2010; McClean et al, 2012; Pitts & Cevasco, 2013), but also by influencing a number of affective factors such as evoking happier memories (Clements-Cortes, 2004; Cadrin, 2006; McClean et al, 2012), improving mood (Gallagher et al., 2006; Nokayama et al. 2009; O'Callaghan, 2009; Leow 2010b; Curtis, 2011; McClean et al, 2012), and reducing anxiety (Nguyen, 2003; Gallagher et al., 2006; Horne-Thompson & Grocke, 2008). The developments in neuro-scientific literature pertaining to music therapy helps to further explain *how* it may improve psychological symptoms (Archie et al., 2013). Numerous studies have shown that music therapy positively modulates the activity of

brain structures that affect psychological processes such as levels of anxiety and emotional distress (Fachner et al., 2013; Raglio et al., 2015).

As will be seen in the transformative domain of the model, music therapy also helps patients reframe their interpretation of their situation from viewing themselves as a sick, dying patient to an empowered individual who still has experiences to enjoy and to leave behind for others. Similarly there is overlap between this domain of the framework and the subsequent communicative/expressive domain. Research has shown that patients and families who were more open about their feelings in relation to a cancer diagnosis suffered less from depression and anxiety (Edwards & Clarke, 2004). Music therapy's ability to help patients open up about their feelings appears to result in lower levels of depression and anxiety, and as a consequence this may also reduce their perception of pain.

Communicative/expressive (emotional domain)

The underlying mechanism of music therapy appears to be the cathartic influence the therapy has on palliative care patients in terms of bringing relief from repressed emotions ((O' Callaghan, 1996; Clements-Cortes, 2004; O'Callaghan and Hiscock, 2007; O'Kelly and Koffman, 2007) and a release of frustrations felt about their situation (Leow, 2010b). Communication between patients and loved ones is improved through a renewed connection facilitated by the music and the therapist's presence. The simple act of choosing songs together that had meaning for both the patient and family, helped all those involved express shared memories, feelings of loss, and hopes for the future, which the music therapist was then able to explore

further in working towards helping patients and families say their goodbyes in a supportive environment (Krout, 2003; Diamai, 2010; Sato, 2011).

Music appears to provide a safe channel for emotional expression (Salmon, 2001) and dialogue around spiritual conflicts (Burns et al., 2015; Liu et al., 2015). For example, the indirect expression of emotions through music making or song choice appears to arouse less anxiety in patients than direct verbalisation (Salmon, 2001; Clements-Cortes, 2004; Renz et al., 2005; Cadrin, 2006; Leow, 2010b; McClean et al., 2012).

Therapeutic song writing can help patients communicate thoughts and feelings in a creative, safer way, and open channels of communication. Musical improvisation can also help patients identify painful emotions, enabling them to communicate repressed thoughts and feelings aided by the therapist; thereby lessening their impact (Heath, 2013).

Transformative (spiritual/existential domain)

The term spirituality has permeated the dialogue on health and well-being since the early 1980s. However, it is a confusing term (Chui, 2004). In the healthcare literature, it incorporates a broad range of meanings, and as such differs from the idea of religion (Fryback et al., 1999). As Post-White et al. (1996 p. 1572) put it, spirituality is more about '... the search for meaning and existential purpose in life'. Indeed a recurring theme in the literature on spirituality and health is the search for meaning (Thoresen, 1999; Coyle 2002; Tanyi 2002; Chui, 2004). Facilitating this

search for meaning appears to be one of the key mechanisms by which music therapy influences improved outcomes. For example, music therapists use music chosen by clients, song writing, or music improvisation to help patients gain insight into their past accomplishments, make amends for past unreconciled events, find meaning in their present experience, and share the values and beliefs they have learned throughout their lifetime. For example, the integral connection between music and emotions means that listening to familiar songs and/or song writing supports and provides a safe medium for reminiscing, exploring, and expressing feelings in palliative care patients (Cadrin, 2006; Sato, 2011).

Another key theme related to existential comfort is that of 'transcendence', used in this context to describe rising above the monotony of everyday existence (McClellan et al., 2012). It is argued that music therapy can help palliative care patients to transcend suffering and imminent death by enjoying simple pleasures such as laughter, positive energy, relaxation, and just having fun with the music (McClellan et al., 2012). Through a process of cognitive reframing the patient can move from the perception of themselves as a sick, dying patient to an empowered individual who still has experiences to enjoy and to leave behind for others. Music enables end-of-life patients "to extend beyond the immediate context to achieve new perspectives ... when they are encouraged to maintain a sense of well-being in the face of imminent biological and social loss" (Aldridge, 1999 p. 107).

Music therapy can also contribute to the reduction of existential anxiety through its ability to enable patients to produce a lasting legacy in the form of songs they create as a gift for loved ones. Having something of themselves to leave behind

in the form of songs expressing their values, beliefs and their life's lessons, provides patients with a sense of completion and peace knowing that aspects of themselves will live on past their death (O'Kelly, 2002; Cadrin, 2006). An additional overriding theme in the literature is the comfort legacy work brought family members after the death of their loved one. Whether it was a song written by the patient, or a favourite compilation of songs, this legacy work provided families with a sense of continued connection with the deceased patient (Cadrin, 2006).

Social domain

It can be seen that music therapy's legacy function is not simply of existential benefit to the patient, but also contributes to the strengthening of social bonds with their loved ones. It is also claimed that music therapy can help support relationships in other ways. Many palliative care patients experience a sense of isolation from holding onto feelings too difficult to share with others (Clements-Cortes, 2004). The music therapist offers a safe place for patients to express these difficult emotions either verbally or non-verbally. However, music therapy focuses not only on the patient/therapist relationship but also on improving communication between patients and their families (Krout, 2003), most often through legacy work.

The literature alludes to music therapy's ability to create a sense of community within the palliative care setting (O'Kelly 2002) and improved relationships with family (O'Kelly & Koffman, 2007; Heath and Lings, 2012). Leow's (2010a) systematic review of the literature on experiences and expectations of terminally ill patients receiving music therapy in the palliative setting has also

highlighted improved communication and social interaction with family, friends, other patients and healthcare staff. When music therapy is delivered as a group therapy where visitors can also partake, research suggests this lowers levels of bereavement for families and caregivers (O'Callaghan, 2009). This also appeared to have a knock on effect on staff. For example, they reported feeling that music therapy helped soften and humanise the palliative care setting by adding life and atmosphere. This helped lift the mood of patients, families and staff; which as a consequence they felt led to improved patient care. For example, staff felt the benefits they derived from the positive impact of music therapy on the ward enabled them to focus on the experience of living rather than on issues around dying.

For whom?

It was difficult to determine which palliative care patients were most likely to benefit from music therapy. Overall trends from the primary studies included in the review showed that most patients had a diagnosis of cancer, were female, and were near the end-stage of their illness. Patients ranged in age from 16 – 101, with an average age of 61. Apart from three studies which focused specifically on pain (Lee, 2005; Gutgsell et al., 2013) and anxiety (Horne-Thompson et al., 2008), reviewed studies did not provide information on patients' physical or psychosocial symptoms; nor information on which patients were more likely to take up music therapy.

Contextual mechanisms

Key contextual mechanisms for facilitating the implementation of music therapy appeared to include organisational support in terms of management approval for music therapy (O'Callaghan, 2009), protected time (Bradt, 2010) and space for music therapy sessions to take place (Hilliard, 2003; Nguyen 2003; Clements-Cortes, 2004; Okomoto, 2005; Gallagher et al., 2006; O'Callaghan, 2009; Bradt, 2010; Curtis, 2011; Gutgsell et al., 2013), along with staff support (Hilliard, 2003; Nguyen 2003; Lee, 2005; Okomoto, 2005 Gallagher et al., 2006; Włodarczyk 2007; Horne-Thompson, 2008; Nakayama 2009; Bradt, 2010; Curtis, 2011; Gutgsell et al., 2013).

Review findings also alluded to the importance of organisational and individual palliative care professionals' understanding of the aims and belief in the benefits of music therapy for their patients, motivating them to be active facilitators of music therapy programmes (Hilliard, 2003; Clements-Cortes, 2004; Okomoto, 2005; Renz et al., 2005; Groen, 2007; Włodarczyk, 2007; Horne-Thompson, 2008; Nakayama, 2009; Bradt, 2010; Leow, 2010b).

Support for music therapy can also be strengthened by the integration of music therapists within multidisciplinary palliative care teams (O'Kelly & Koffman 2007; Tsiris, Dives and Prince 2014).

The only hindering contextual mechanism reported in one study related to excessive medical interruptions of music therapy through the performance of other clinical activities (Lee, 2005).

DISCUSSION

Notwithstanding the paucity of evidence in relation to the proclivities and interpretations of palliative care patients who receive music therapy, we have endeavoured to shed light on the underlying therapeutic factors (programme mechanisms and the facilitating contexts (contextual mechanisms) in order to provide guidance to music therapists delivering the intervention, and also to provide funders and decision makers considering music therapy as an option with a more robust understanding of its active ingredients.

Therapeutic mechanisms

This review resulted in a number of key findings which while important, are not surprising given the recognition of palliative care as synonymous with holistic care (Bowers, 2014). However, the findings do highlight the importance of recognising the synergistic effect one aspect of human experience has on others, and the ability of music therapy to tap into this synergy; thereby providing a therapeutic focus to all aspects of human experience and suffering. For example, despite the many advances in pharmacological treatment programmes for symptom control, both research and direct observation show that not all patients benefit (Groen, 2007). Pain is subjective (O'Callaghan, 1996), highly complicated in nature, and may be exhibited very differently from patient to patient depending upon physical state as well as the individual patient's psychological state (Trauger-Querry et al., 1999). Moreover research suggests that pain can become resistant to conventional

treatment measures if psychological issues are not addressed (Groen, 2007). As suggested in our findings, music therapy may be an effective nonpharmacological approach to managing pain in palliative care patients through its therapeutic effects on physical, psychological, emotional and spiritual suffering.

Furthermore, Kugelmann (2000) analysed pain narratives using a hermeneutical-phenomenological approach, which showed that the loss of a relationship was associated with psychological pain. When we think of bereavement we think of families who have suffered a loss. However, palliative care patients are in a sense already grieving for the losses implicit in their illness and imminent death, such as separation from loved ones, life's simple pleasures, and lost opportunities. Music therapy not only helps both patients and families through the grieving process, but also helps them find closure (Cadrin, 2006); thereby reducing psychological distress, and as a consequence reducing pain perception.

This review also highlights music therapy's unique contribution to addressing the spiritual needs of palliative care patients. It has been contended that music therapy as one of the most important approaches used for spiritual care of patients with advanced or life-threatening illness (Renz et al., 2005). The intensity of suffering experienced at end of life is believed to be influenced by finding meaning in one's experience, which may be facilitated by music therapy (Cassell, 1982).

For the social domain, findings from this review suggest that group music therapy not only benefits patients, families and healthcare staff, but also creates a supportive context for music therapy as an intervention by generating an

understanding of its aims and benefits. As reiterated in the literature, group music therapy provides an opportunity for multidisciplinary palliative care staff to witness firsthand the benefits of music therapy for patients and families along with deriving emotional, cognitive and team work benefits themselves (O'Callaghan, 2009).

Palliative care is associated with many pressures, including psychosocial adjustments (Onyeka, 2010). Despite staff endeavours to maintain professional relationships (Leblanc et al., 2007), uncertain illness trajectories, and many unexpected deaths may trigger staff grief (Saunders & Valente, 1994). Losing patients can heighten staffs' own former losses and trigger existential questioning (Vachon, 2004). Similarly, chronic compounded grief (Felstein & Gemma, 1995) may lead to burnout (Papadatou et al. 1994), compassion fatigue or secondary traumatic stress (Figley, 1995). Our findings suggests group music therapy is an incidental, cost-efficient, and effective way to support staff caring for palliative care patients (Aasgaard, 1999; Hogan 1999; Amadoru and McFerran, 2007; O'Kelly and Koffman, 2007).

For whom?

Despite the likelihood that different people will benefit from music therapy to different degrees (or not at all), there is little information in the literature either about the sorts of people that would most benefit, or of individual accounts of how music therapy helped or did not help improve the experience of living with a terminal prognosis, This is a significant gap in research knowledge that should be addressed in future research into the effects of music therapy on the palliative care population.

Contextual mechanisms

As is common in realist reviews, contextual mechanisms were addressed in less depth than therapeutic mechanisms in the literature (McConnell et al., 2013). We were however able to glean some putative contextual mechanisms that appeared to promote the successful implementation of music therapy in palliative care settings. Review findings alluded to the importance of 'buy-in' by the palliative care organisation and palliative care health care professionals in terms of dedicated time and resources for referring patients and conducting music therapy, along with recruiting to music therapy research. This finding is supported by the wider literature which suggests that support and advocacy from top management within an organisation are key contextual mechanisms for generating successful implementation of complex interventions (McConnell et al., 2013). Furthermore, having healthcare professionals who believe in the intervention's benefit for their patients is vital for sustaining an intervention in terms of helping to build up the evidence-base through supporting recruitment to research studies (Porter et al., 2014).

Review limitations

While we did not find any comparable reviews of the literature, we acknowledge that frameworks similar to ours may be available in grey literature that we did not explore and also as tacit knowledge within the minds of experienced music therapists. However, we hope that this attempt to develop a testable framework will be useful to other researchers wishing to investigate music therapy

processes, less experienced music therapists, and funding bodies. Music therapy research should go beyond outcome research to address the causes of observed outcomes. The underlying therapeutic and contextual mechanisms highlighted in this review provide a foundation for a deeper understanding of what works, for whom in what circumstances in relation to music therapy within a palliative care population.

As in all realist reviews we had to make judgements on all inferences made from our included literature. However, we have endeavoured to make all steps in the review process and analysis transparent so that others can clearly see how we arrived at our assumptions and theories of music therapy. We recognise that restricting our search to English papers may have resulted in missing relevant articles. However, in line with realist review principles we did conduct comprehensive purposive searching (Pawson, 2006) to arrive at a 'maximum variety sample' which could sufficiently test our theories (Wong et al., 2010).

Our included quantitative studies used a high number of self-report measures which carry a high risk of bias (Ezzati, 2006). Therefore, we recognise that inferences made from these studies may not be as strong. Similarly, the majority of studies were conducted in the USA, which may reflect a higher level of support for music therapy in this part of the world. We recognise this may also limit the transferability of our intervention theories to other countries. However, this also highlights the need for more music therapy research in other countries as palliative care is a worldwide concern (WHO, 2014).

CONCLUSION

Music therapy is increasingly being recognised as an intervention that has the potential to address the multidimensional needs of palliative care patients, their families, and care providers (O’Kelly 2002; Hilliard 2003). This realist review provides a starting point for understanding how music therapy works. We urge others to continue developing the evidence base in order to expand that understanding with the aim of informing and improving palliative care decision making and provision of care.

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Table 1. Theoretical framework: Palliative care model for music therapy (Dileo and Dneaster, 2005)

Palliative Care Model for Music Therapy	Typical Music therapy intervention	Mechanism	Agency (for whom)	Contextual mechanisms	Outcomes
Supportive (physical and psychological level)	Song choice; lyric analysis; entrainment; music and imagery (GIM); toning; singing; playing instruments; music listening; and, music and movement.	Gate control theory of pain – music therapy acts as a distraction, and influences affective and cognitive factors	Patient experiences comfort, support and/or pleasure.	Organisational and personnel support for music therapy. Health professionals' belief in music therapy's benefit to patients Understanding and integration of music therapy in palliative care teams e.g. educational workshops, opportunities to experience or witness 'real' music therapy scenarios.	Decreased levels of depression, anxiety and pain.
Communicative/expressive (emotional level)	Life review and musical life review; musical autobiographies; song dedications; music/song legacies; improvisation; music and art; song writing; song choice; lyric analysis; and, GIM.	Catharsis (relief from repressed emotions). Music as a channel for emotional expression/ allows the safe expression of emotions either verbally or non-verbally.	Patient expresses feelings of which he/she may or may not be aware.		Improved emotional wellbeing.
Transformative (existential level)	Song writing; musical improvisation; song dedications;	Cognitive reframing - Music as transformative (from suffering to	Review their lives; resolve conflicts and feelings; forgive self and/or others; address spiritual and		Improved spiritual wellbeing.

	music legacies; and, GIM.	meaning).	existential issues; and find peace		
Social level	Music legacies, musical improvisation.	Relationship completion. Sense of community. Ward 'humanised'.	Families/caregivers have positive memories and Palliative care staff benefit indirectly from seeing patients benefit	Group music therapy – positive feedback loop. Palliative care teams gain experience and witness 'real' music therapy scenarios	Lower levels of bereavement. Improved staff mood and resilience Improved patient care.