

Role of Music Therapy in Burns Management: A Review of Literature

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Received: June 29, 2026; **Accepted:** July 03, 2026; **Published:** July 13, 2026**ABSTRACT**

Burn injuries are associated with substantial procedural and background pain and anxiety, particularly during dressing changes and debridement, and pharmacological analgesia alone is often insufficient to control this distress. Music therapy and music medicine have emerged as low-cost, non-pharmacological adjuncts thought to act through attentional distraction, anxiolysis, and autonomic and neuroendocrine modulation. This narrative review summarises available randomised controlled trials, systematic reviews, and meta-analyses examining music intervention in burn care. Foundational crossover trials demonstrated reductions in pain, anxiety, and muscle tension during debridement and dressing changes, findings later replicated in larger trials addressing both procedural and background pain. Three recent meta-analyses, pooling over two thousand patients, confirm statistically significant reductions in pain and anxiety, although the magnitude of benefit appears to depend on timing of delivery relative to the procedure. Evidence in paediatric burn patients remains limited and less consistent. Across the literature, music intervention is consistently reported as safe and well tolerated, with no significant adverse effects. However, the overall quality of evidence is limited by small trial sizes, heterogeneous protocols, and inherent challenges in blinding. Music therapy should therefore be regarded as a useful adjunct within a multimodal pain management strategy rather than a substitute for established pharmacological treatment.

Introduction

Music therapy refers to the clinical use of music-based interventions, delivered either by a credentialed music therapist (music therapy proper) or incorporated into routine care by other health professionals using pre-recorded music (commonly termed music medicine), to achieve defined physiological and psychological therapeutic goals. In the context of burn care, music has been increasingly investigated as an adjunctive, non-pharmacological intervention aimed at reducing the substantial burden of procedural pain, background pain, and anxiety experienced by burn patients throughout treatment, particularly during dressing changes, debridement, and rehabilitation. Interest in this application dates back to the late 1970s, but the supporting evidence base has expanded considerably over the past two decades.

Rationale and Mechanism of Action

The rationale for using music in burn care rests on several overlapping mechanisms. Music is thought to act as a form of

attentional distraction, diverting cognitive resources away from the processing of nociceptive input and thereby reducing the perceived intensity of pain, a concept broadly consistent with the gate control theory of pain. In addition, music has well-documented anxiolytic effects, producing measurable reductions in self-reported anxiety as well as in autonomic markers of arousal such as heart rate and blood pressure. At a more physiological level, electrophysiological studies in burn patients undergoing music-assisted relaxation have demonstrated changes in electroencephalographic oscillatory activity together with increased high-frequency heart rate variability, consistent with a shift toward a more parasympathetically dominant, relaxed state. A neuroendocrine mechanism has also been proposed in the broader clinical literature on music and stress, with several studies reporting reductions in circulating cortisol, catecholamines, and overall sympathetic tone following music exposure; however, findings on cortisol specifically are inconsistent across studies, and burn-specific endocrine

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data remain limited, so this mechanism should be regarded as plausible rather than firmly established in this population. Because procedural pain and anxiety in burn care are closely interlinked, with anxiety tending to amplify the perception of pain during dressing changes and debridement, an intervention capable of addressing both domains simultaneously, without adding to the pharmacological side-effect burden, positions music therapy as an attractive adjunct within a multimodal pain management strategy.

Review of Literature

One of the earliest systematic accounts of the rationale for music therapy in burn care was provided by, who outlined several protocols adapted specifically for burned patients and reported preliminary clinical responses supporting its use [1]. Around the same time, conducted a prospective randomised crossover trial comparing music-based imagery and musical alternate engagement during burn debridement, demonstrating measurable reductions in both pain and anxiety [2]. Subsequently extended this work in a further randomised crossover trial, confirming reductions in pain, anxiety, and muscle tension during burn dressing changes using structured music therapy protocols [3].

Iranian investigators have contributed substantially to the individual-trial literature over the subsequent decade. Najafi Ghezeljeh et al. demonstrated in a randomised controlled trial that music intervention significantly reduced background pain and anxiety levels in hospitalised burn patients, and in a separate trial compared music intervention with massage therapy, finding both interventions effective in reducing pain and anxiety and promoting relaxation, with neither demonstrating clear superiority over the other [4,5]. In a trial of seventy patients randomised to a music or control arm, similarly found that music intervention reduced both pain and anxiety specifically during the dressing-change procedure itself, one of the most distressing components of burn care for patients [6].

It is worth noting that an earlier, related strand of research examined distraction more broadly rather than music in isolation. Miller, Hickman, and Lemasters' 1992 trial, often cited as one of the earliest studies of distraction therapy in burn care, used scenic videos accompanied by background music, administered alongside standard analgesics, to reduce procedural pain and anxiety during dressing changes; while frequently referenced in the music-in-burns literature, it is more accurately characterised as a video-based distraction intervention with a musical component than as a music therapy trial in the strict sense.

Similarly, a widely cited Cochrane review of music for pain relief found a small but statistically significant analgesic benefit across a range of acute, chronic, and cancer pain conditions; however, this review was not specific to burn injury, characterised the clinical relevance of the benefit as uncertain given its small magnitude, and was subsequently withdrawn in 2013 pending an update that was not completed. It should therefore not be read as burn-specific evidence, though it lends general support to the plausibility of an analgesic effect of music.

These individual trials have since been synthesised in several systematic reviews and meta-analyses. review of randomised controlled trials concluded that music intervention produced a statistically significant reduction in pain during burn treatment procedures, alongside more modest effects on anxiety and physiological parameters [7]. A more recent and comprehensive review by, updating the evidence specifically in adult burn patients, similarly found that music interventions were associated with significant reductions in both pain and anxiety and noted improvements in broader measures of mental health, while emphasising that the overall quality of the existing evidence remains only preliminary and calling for further high-quality randomised trials before formal guidelines could be established [8]. A further systematic review and meta-analysis by, pooling seven trials and 524 patients, found that music intervention significantly reduced both pain and anxiety at background levels and immediately before dressing changes, though the effect was less consistent at later time points during and after the procedure, indicating that the timing of delivery relative to the procedure may influence the magnitude of benefit observed [9]. In the paediatric population, however, findings have been more equivocal: randomised trial comparing live music with verbal support during donor-site dressing changes, conducted in a small sample of fourteen children, reported mixed and inconclusive results, with apparent physiological stabilisation not corroborated by the children's own pain and anxiety ratings [10].

Importantly, the evidence is not uniformly positive. Several primary studies, particularly those evaluating music as a passive listening intervention during ward-based exercises rather than during acute procedures, have failed to demonstrate significant benefit, and meta-analyses have noted considerable heterogeneity in intervention type (recorded versus live music, therapist-delivered versus self-selected), outcome measurement, and study quality across the field, limiting the strength of conclusions that can currently be drawn.

Table 1: Summary of key Trials and Reviews on Music Intervention in Burn Care

Study (Year)	Design & Setting	N	Intervention Compared	Key Findings
Fratianne et al. (2001)	RCT, repeated-measures crossover; burn debridement	25	Music-based imagery vs musical alternate engagement vs no music	Significant reduction in pain and anxiety with both music protocols during debridement
Tan et al. (2010)	RCT, crossover; burn dressing changes (ICU)	29	Music-based imagery / musical alternate engagement vs standard care	Significant decrease in pain, anxiety, and muscle tension on music-intervention days
Najafi Ghezeljeh et al. (2016)	RCT, pretest-posttest; background (non-procedural) pain	100	Music intervention vs no intervention	Significant reduction in background pain and anxiety levels

Najafi Ghezeljeh et al. (2017)	RCT, 2×2 factorial; background pain	240	Music vs massage vs music+massage vs control	Music and massage each reduced pain/anxiety; combining them gave no added (synergistic) benefit
Hsu et al. (2016)	RCT, single-centre; dressing changes over 5 consecutive days	70	Pre-recorded music before/ during/after dressing change vs standard care	Significant reduction in pain (from day 3 onward) and anxiety in the music group
Li et al. (2017)	Systematic review & meta-analysis of RCTs	804 (17 studies)	Music intervention vs control, pooled across procedures	Significant reduction in pain (SMD -1.26; 95% CI -1.83 to -0.68); modest effect on anxiety
Monsalve-Duarte et al. (2022)	Systematic review & meta-analysis of RCTs, adults	1061 (10 studies)	Music therapy/music medicine vs control	Significant reduction in pain and anxiety; improved relaxation; evidence rated preliminary
Wu et al. (2022)	Systematic review & meta-analysis of RCTs	524 (7 studies)	Music therapy at varying timing relative to dressing change	Significant ↓ pain & anxiety at baseline/before dressing change; weaker, less consistent effect during/after the procedure
Whitehead-Pleaux et al. (2006)	RCT; paediatric donor-site dressing change	14	Live music vs verbal support	Mixed, inconclusive results; physiological stabilisation not corroborated by children's own pain/anxiety ratings

N = number of participants enrolled (or pooled across studies for the two meta-analyses); SMD = standardised mean difference; CI = confidence interval.

Clinical Applications in Burn Care

Within burn care, music intervention has been applied across several discrete clinical contexts. It is most extensively studied as an adjunct during dressing changes and burn debridement, where procedural pain and anxiety are typically most acute and where distraction-based interventions are particularly well suited. It has also been used as a background or ambient intervention for hospitalised burn patients, aimed at reducing persistent background pain and anxiety outside specific procedures. In the intensive care setting, music-assisted relaxation has additionally been studied using physiological and electrophysiological outcome measures, including heart rate variability and electroencephalography, as objective correlates of the relaxation response. Finally, music has been incorporated into rehabilitation and physiotherapy sessions for burn survivors, where it may improve compliance with painful but necessary range-of-motion exercises.

Practical Implementation

In practice, music interventions in burn care are delivered along a spectrum from formal music therapy, in which a credentialed music therapist tailors live or recorded music, often combined with guided imagery or breathing techniques, to the individual patient's clinical state, to music medicine, in which pre-recorded music is selected and administered by nursing or medical staff without specialist input. Within this spectrum, interventions are sometimes further classified as passive, in which the patient simply listens to preferred recorded music and which is the form most commonly used on burn units; active, in which the patient participates directly through singing, instrument playing, or songwriting under the guidance of a therapist, more often employed in rehabilitation settings; or receptive, in which listening is combined with guided relaxation or imagery, as in the music-based imagery protocols described above. Patient preference for music selection appears to be an important

variable, with several trials specifically incorporating patient-preferred music rather than a standardised playlist. The timing of the intervention, whether initiated before, throughout, or only during the most painful component of a procedure, and its duration, have varied considerably between studies and remain incompletely standardised. Music intervention is generally regarded as a safe, low-cost, non-invasive adjunct that can be incorporated alongside, rather than as a replacement for, standard pharmacological analgesia and anxiolysis.

Limitations of Current Evidence

Despite generally favourable findings, several limitations temper the current evidence base. Most trials are limited by small sample sizes and are conducted at single centres, restricting generalisability. A substantial proportion of the available literature originates from a small number of research groups and from studies published in languages other than English, complicating systematic synthesis. Outcome measures, intervention protocols, and the timing of delivery vary considerably between studies, and blinding of participants to a music versus non-music intervention is inherently difficult, introducing potential performance bias. Several authors have accordingly concluded that while the existing evidence is encouraging, it remains preliminary, and that further high-quality randomised controlled trials are required before standardised guidelines for the use of music therapy in burn care can be established.

Conclusion

Music therapy and music medicine interventions represent a low-cost, low-risk, non-pharmacological adjunct with a growing evidence base supporting their role in reducing procedural and background pain and anxiety in burn patients, particularly during dressing changes and debridement. The proposed mechanisms include attentional distraction, anxiolysis, and modulation of autonomic arousal, though the precise relative contribution

of each remains incompletely understood. While individual randomised trials and several systematic reviews and meta-analyses report consistent benefit, the overall quality of evidence remains limited by small trial sizes, heterogeneous protocols, and inherent challenges in blinding. Music intervention should accordingly be regarded as a useful adjunct within a multimodal pain management strategy in burn care rather than as a substitute for established pharmacological treatment.

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