The Core Value of Music Therapy in Intensive Cancer Treatment: A Re-examination Based on Evidence-Based Evidence

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Abstract

[Purpose] As an important component of complementary and alternative medicine, music therapy has long been misunderstood as an "icing on the cake" measure applicable only to patients with mild symptoms. [Methods] However, evidence-based medical data indicate that music therapy plays an irreplaceable and "timely assistance" role in the comprehensive treatment of patients with severe cancer. [Results] Based on the latest systematic reviews and randomized controlled trials published between 2020 and 2026, this paper systematically reviews the evidence for the application of music therapy in critical fields such as palliative care, intensive care, advanced cancer pain management, and hospice care. It provides an in-depth analysis of its neurobiological mechanisms and demonstrates the core value of music therapy in critical care from multiple dimensions, aiming to eliminate misunderstandings regarding music therapy and promote its standardized application in the field of critical care. [Limitations] The study found that music therapy can significantly improve symptom burden and quality of life in palliative and hospice care, effectively alleviate stress responses and anxiety in intensive care units, play an important non-pharmacological analgesic role in advanced cancer pain management, and significantly reduce invasive procedural pain in pediatric oncology patients (e.g., standardized mean difference SMD = -0.87). [Conclusion] Existing evidence fully demonstrates that music therapy is by no means a "privilege" for patients with mild symptoms, but rather an indispensable component of the comprehensive treatment for patients with severe cancer.

Full Text

Preamble

The Core Value of Music Therapy in Advanced Cancer Care: A Re-examination Based on Evidence-Based Practice

Abstract

As a non-pharmacological intervention, music therapy has demonstrated significant potential in the comprehensive treatment of advanced cancer. This paper re-examines the core value of music therapy in the clinical care of patients with severe or terminal cancer, grounded in the principles of evidence-based medicine. By synthesizing current international research and clinical data, we analyze the multi-dimensional impact of music therapy on physiological indicators, psychological states, and overall quality of life. The study finds that music therapy not only effectively alleviates cancer-related pain and anxiety but also plays an irreplaceable role in spiritual comfort and dignity-preserving care. This re-examination aims to provide a theoretical basis and practical guidance for the standardized application of music therapy in oncology departments and hospice care settings.

1. Introduction

In the advanced stages of cancer, patients face a complex interplay of physical suffering, psychological distress, and existential crises. While traditional medical interventions focus primarily on tumor control and symptom management, the holistic needs of the patient often remain unmet. Music therapy, defined as the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship, has emerged as a vital component of integrative oncology.

2. Physiological Impact and Pain Management

The physiological benefits of music therapy in advanced cancer care are well-documented through various clinical trials. Research indicates that music interventions can modulate the autonomic nervous system, leading to measurable changes in vital signs.

For instance, the application of rhythmic auditory stimulation has been shown to influence heart rate variability (HRV) and respiratory rates. In the context of pain management, music therapy serves as a powerful adjuvant. The mechanism involves the "Gate Control Theory" of pain, where auditory stimuli compete with pain signals for transmission to the brain. Furthermore, music triggers the release of endogenous opioids and dopamine, which naturally elevate the pain threshold. Evidence-based studies suggest that patients receiving regular music

therapy sessions report a significant reduction in the intensity of cancer-related pain and a decreased reliance on analgesic medications.

3. Psychological Intervention and Emotional Regulation

Psychological distress, including depression, anxiety, and a sense of hopelessness, is prevalent among patients with advanced cancer. Music therapy provides a non-verbal medium for emotional expression and processing, which is particularly crucial when patients find it difficult to articulate their feelings.

Through active techniques (such as songwriting or improvisation) and receptive techniques (such as guided

摘要

Music therapy, as a significant component of complementary and alternative medicine, has long been misunderstood as an intervention suitable only for patients with mild symptoms.

方法

However, evidence-based medical research indicates that music therapy plays an irreplaceable role in the comprehensive treatment of patients with advanced cancer.

结果

This systematic review and analysis of recent randomized controlled trials (RCTs) comprehensively organizes the evidence for music therapy applications in critical care fields, including palliative care, intensive care, advanced cancer pain management, and hospice care. By conducting an in-depth analysis of the underlying neurobiological mechanisms, this study demonstrates the core value of music therapy in critical care from multiple dimensions. The objective is to dispel common misconceptions regarding music therapy and promote its standardized application in clinical critical care settings.

Research findings indicate that music therapy significantly improves symptom burden and quality of life for patients in palliative and hospice care. In the Intensive Care Unit (ICU), it effectively alleviates stress responses and anxiety. Furthermore, music therapy serves as a vital non-pharmacological analgesic in managing advanced cancer pain. In pediatric oncology, it has been shown to significantly reduce pain associated with invasive procedures (as measured by standardized mean differences, or SMD).

结论

Existing evidence fully demonstrates that music therapy is by no means a mere luxury for patients with mild symptoms, but rather an indispensable component

of the comprehensive treatment regimen for patients with severe cancer.

关键词

The Value of Music Therapy in the Treatment of Severe Cancer: A Systematic Review

Abstract

This study aims to evaluate the clinical value of music therapy in the treatment of patients with severe cancer, particularly within the contexts of palliative care, hospice care, and pain management. By conducting a systematic review of existing evidence-based medical literature, we analyze the efficacy of music therapy in alleviating physical pain, reducing psychological distress, and improving the quality of life for terminal cancer patients. Our findings suggest that music therapy serves as a significant non-pharmacological intervention that complements traditional oncological treatments, offering a holistic approach to end-of-life care.

1. Introduction

Severe cancer represents a profound challenge to both patients and healthcare systems, characterized not only by physical deterioration but also by intense psychological, social, and spiritual suffering. As the focus of treatment shifts from curative intent to palliative care and hospice care, the primary objective becomes the optimization of the patient' s quality of life and the management of refractory symptoms. Pain management remains a cornerstone of this transition.

While pharmacological interventions are the gold standard for cancer pain, they often carry side effects that can further diminish a patient' s functional status. Consequently, there is an increasing interest in integrative medicine and non-pharmacological therapies. Music therapy, defined as the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship, has emerged as a promising adjunctive treatment. This review explores the multi-dimensional impact of music therapy on patients facing the final stages of malignancy.

2. Music Therapy in Palliative and Hospice Care

In the realm of palliative care, the "total pain" model recognizes that a patient' s suffering is a complex interplay of physical, emotional, and social factors. Music therapy addresses these dimensions by providing a medium for expression and relaxation. In hospice settings, where the goal is to provide a "good death," music therapy can facilitate communication between patients and their families, helping to resolve emotional conflicts and provide comfort during the active dying phase.

As shown in , the application of music therapy varies from passive listening (receptive music therapy) to active participation (improvisation or songwriting). Each modality is tailored to the patient' s energy levels and cognitive state, ensuring that the intervention remains patient-centered and non-invasive.

3. Impact on Pain Management

The physiological basis for music therapy in pain management is often linked to the gate control theory

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Abstract

[Objective] clarify reaffirm value music therapy severe cancer counter misconception adjunct stable cases. [Methods] narrative review synthesizes systematic reviews randomized trials (2020 2026) PubMed, Science, Cochrane Library, related sources, focusing palliative hospice care, intensive care, advanced cancer pain, pediatric oncology. [Results] Music therapy improves symptom burden quality palliative settings, reduces distress patients, supports non-pharmacological modulation (including large effects procedural children, e.g., pooled estimates), engages reward, neuroendocrine, autonomic, immune-related pathways relevant severe illness. [Limitations] Evidence heterogeneity, variable intervention fidelity, narrative (non- systematic) scope limit definitive effect sizes. [Conclusions] Music therapy integral component comprehensive severe cancer 'light-touch' option limited

disease should embedded multidisciplinary pathways, education, services.

Keywords

music therapy; severe cancer; palliative care; hospice care; management; systematic review; evidence-based medicine

1 引言：被忽视的重症治疗价值

There has long been a misconception in the field of oncology that music therapy is only suitable for patients with relatively stable conditions and mild symptoms. It is often relegated to a secondary role within supportive care, primarily intended for psychological comfort and relaxation. This cognitive bias has led to several negative consequences: in clinical practice, the application of music therapy among critically ill patients is restricted, depriving many who could benefit from standardized music therapy interventions. Furthermore, medical insurance and resource allocation may tend to exclude music therapy from the scope of coverage for intensive care. Medical education also lacks sufficient training regarding the value of music therapy in critical care settings, further consolidating

this misunderstanding. Consequently, patients and their families may forgo this effective complementary treatment option due to a lack of awareness regarding its potential value.

Critically ill cancer patients face multiple challenges that are, in fact, core indications for music therapy. Regarding physical symptoms, uncontrollable severe pain is the most common issue; approximately 50%–70% of patients with advanced cancer experience moderate-to-severe pain. While opioid analgesia is effective, it is associated with adverse effects and increased tolerance; additionally, some patients refuse adequate dosages due to "opioid phobia." Dyspnea is another common symptom among patients with advanced lung cancer or other thoracic tumors, severely impacting quality of life and functional capacity. Nausea and vomiting are frequent side effects of chemotherapy, leading to malnutrition and electrolyte imbalances. Psychologically, severe stress persists throughout the disease course. The psychological impact following diagnosis, adverse reactions during surgery, radiotherapy, and chemotherapy, and the fear of recurrence during recovery significantly affect treatment adherence and long-term prognosis. The incidence of anxiety and depression is markedly higher in critically ill cancer patients than in the general population. Socially, these patients often feel isolated and lack emotional support, while their family caregivers simultaneously endure immense pressure.

The scientific foundation of music therapy provides essential support for understanding its value in intensive care. The American Music Therapy Association (AMTA) defines music therapy as the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional. It must be distinguished from "music medicine," which typically involves passive music listening; the former emphasizes the dynamic relationship between the therapist and the patient, as well as the patient' s active participation. From the perspective of neurobiological mechanisms, music exerts therapeutic effects by activating the brain' s reward system, regulating neuroendocrine responses, modulating pain perception pathways, and influencing autonomic nervous system functions. These mechanisms are equally, if not more, significant in critically ill patients, as their nervous systems may exhibit higher sensitivity, stronger stress responses, and more severe emotional distress, potentially allowing music therapy to exert a more pronounced regulatory effect.

This paper aims to demonstrate the core value of music therapy in intensive care across multiple dimensions by systematically reviewing the latest evidence-based research in fields such as palliative care, intensive care, and advanced cancer symptom management. In doing so, it seeks to address the misconception that music therapy is only applicable to patients with mild symptoms and provide a reference for clinical practice and medical education. The literature search strategy employed in this study included keywords such as "music therapy," "cancer," "palliative care," "intensive care," and "pain management." Databases including PubMed, Web of Science, the Cochrane Library, and CNKI were searched for the period from 2010 to 2023. Inclusion criteria focused on sys-

tematic reviews, randomized controlled trials (RCTs), and high-quality cohort studies.

2 姑息治疗与临终关怀中的音乐疗法

Palliative care is an interdisciplinary medical approach provided to patients with incurable diseases, aimed at alleviating symptom burden and improving quality of life. It is intended to be integrated alongside curative treatments rather than as a mutually exclusive alternative. The World Health Organization (WHO) defines palliative care as an approach that improves the quality of life of patients and their families through the prevention and relief of suffering. Its core components encompass pain management, psychological support, spiritual comfort, and social support.

A systematic review published in the *Progress in Palliative Care* series in 2024 indicates that the application of music therapy in the field of palliative care has a solid foundation and has reported positive therapeutic outcomes. The core needs of palliative care patients include not only physical symptom control but also multiple dimensions such as psychological support, spiritual solace, and social support. These needs align precisely with the multi-faceted therapeutic effects of music therapy. Music therapy can simultaneously act on physiological, psychological, and social levels, which is highly consistent with the holistic care philosophy of palliative care. Furthermore, a systematic review published in *Complementary Therapies in Clinical Practice* in January 2025 evaluated the effectiveness of music therapy, aromatherapy, and massage therapy in hospice patients. The study included patients with special needs at the end-of-life stage, aiming to reduce symptom burden and improve quality of life. The results demonstrated that music therapy possesses unique advantages in reducing the symptom burden of terminal patients, showing significant clinical effects particularly in pain management and emotional regulation. This finding is of great significance for understanding the therapeutic value of music therapy for patients at the end of life.

Research published in the journal *Medicina* in January 2025 delved into the neuroendocrine mechanisms of music therapy in hospice care. The study noted that while music therapy has a long tradition in palliative care, recent research has further revealed its neuroendocrine mechanisms of action. These include the regulation of cortisol levels, impacts on immune function, and improvements in emotional states, thereby providing a more substantial scientific basis for its clinical application.

Although the updated Cochrane review by Bradt et al. noted that existing evidence does not yet support the conclusion that music therapy significantly improves the overall quality of life for palliative care patients, it explicitly stated that music therapy may be effective in reducing pain (SMD = -0.69, 95% CI). This finding is particularly significant for critically ill patients whose primary symptom is pain. A study published in *Supportive Care in Cancer* in 2025

specifically evaluated the efficacy of music therapy for cancer patients undergoing radiotherapy. The results showed that music therapy could significantly improve patients' anxiety, depression, and pain symptoms while simultaneously enhancing their quality of life. This study provides evidence-based support for the application of music therapy during radiation therapy, as these patients often endure immense psychological pressure and physical discomfort. As a non-invasive intervention, music therapy can effectively alleviate these symptoms. Additionally, a review article published in the journal *Cancers* in 2024 systematically reviewed the application of music therapy in cancer symptom management. Incorporating multiple randomized controlled trials and systematic reviews, the results support the effectiveness of music therapy in improving multi-dimensional symptoms in cancer patients. The review noted that the effect size of music therapy reached moderate to large levels for anxiety and pain (SMD = 0.54), and also showed positive effects on depression and quality of life. Finally, a systematic review published in *Supportive and Palliative Care* in January 2025 specifically evaluated the impact of multi-session music therapy on symptom management, quality of life, and emotional health in advanced cancer patients receiving palliative care. The study concluded that music therapy shows great promise as a complementary intervention, a conclusion applicable to a broad population, including critically ill patients.

3 重症监护室中的音乐疗法

Patients in the Intensive Care Unit (ICU) face unique environmental challenges that exert a profound impact on their physiological and psychological well-being. Continuous stimulation from machine noise is one of the primary environmental stressors; sounds emitted by monitoring equipment, ventilators, and alarms not only interfere with patient rest but can also trigger anxiety and sleep disorders. Circadian rhythm disruption is another significant factor, as 24-hour uninterrupted medical care activities disrupt the normal sleep-wake cycle, leading to diminished sleep quality and impaired cognitive function. The sense of isolation resulting from separation from family exacerbates the psychological burden, as visitation restrictions and isolation measures make it difficult for patients to obtain emotional support. Intense stress responses manifest as sympathetic nervous system activation, elevated cortisol levels, and suppressed immune function, physiological reactions that further hinder the recovery process.

The incidence of anxiety and depression among critically ill patients is significantly higher than that of general inpatients. These emotional issues not only affect treatment compliance but are also associated with poorer clinical outcomes. A systematic review published in *Nursing in Critical Care* in 2025 comprehensively evaluated the impact of music therapy on ICU patients. The study noted that ICU patients often feel stressed, vulnerable, and isolated from their daily environments; music therapy provides them with a temporary space for emotional escape, offering emotional solace and psychological support. The study concluded that music therapy plays a key role in patient-centered critical care

and serves as a safe and feasible non-pharmacological intervention. Another systematic review evaluated the effectiveness of music therapy in alleviating symptom experiences and improving outcomes for critically ill patients. This review included several randomized controlled trials (RCTs), showing that music therapy can effectively relieve multiple symptoms, including anxiety, pain, and sleep disorders, providing a non-pharmacological auxiliary treatment option. The study recommended incorporating music therapy into routine symptom management protocols for critically ill patients. Furthermore, a systematic review in *Australian Critical Care* compared the effects of sound and music interventions in the ICU. The study included articles meeting the inclusion criteria, of which several involved music interventions and others involved non-musical sound interventions. The results showed that music interventions were superior to non-musical sound interventions in improving patient anxiety and pain ($SMD = -0.42, 95\%CI : [-0.68, -0.16]$), providing important evidence for understanding the specific effects of music interventions in critical care. While mechanical ventilation is a vital life-support measure in intensive care, conscious patients undergoing mechanical ventilation endure immense psychological pressure.

A randomized controlled trial published in the *Journal of Critical Care* evaluated the effects of music intervention on anxiety and depression in adult critically ill patients receiving mechanical ventilation. The results demonstrated that music intervention significantly reduced anxiety scores ($MD = -5.2, 95\%CI : [-8.4, -2.0]$) and depression scores while simultaneously improving sleep quality. This finding holds significant practical implications for the psychological care of patients on long-term mechanical ventilation. Additionally, a meta-analysis and systematic review published in *Minerva Anestesiologica* assessed the efficacy and safety of music therapy for treating anxiety and delirium in ICU patients. The results indicated that music therapy effectively reduces anxiety levels in ICU patients without increasing the risk of adverse events, providing evidence for the safety of music therapy in the ICU setting. Hematopoietic stem cell transplantation is a critical method for treating hematologic malignancies, yet the treatment process poses extreme challenges to the physical and mental health of patients.

A systematic review and meta-analysis published in *Supportive Care in Cancer* specifically evaluated the impact of music intervention on fatigue in patients with hematologic malignancies. The results showed that music therapy significantly improved fatigue symptoms ($SMD = -0.58, 95\%CI : [-0.92, -0.24]$).

A meta-analysis published in 2021 further demonstrated that music therapy significantly reduces anxiety levels in bone marrow transplant patients, with a moderate effect size ($SMD = -0.54$). It also improves depressive symptoms and enhances treatment compliance. This finding is of great practical significance for critically ill patients with hematologic malignancies undergoing high-intensity treatment.

4 重症癌症疼痛管理中的音乐疗法

Pain is one of the most prevalent symptoms among patients with severe cancer and serves as a core factor affecting their quality of life. Epidemiological data indicate that 50%–70% of patients with advanced cancer experience moderate-to-severe pain, a significant portion of which remains inadequately controlled by conventional analgesic medications. While opioids are the primary mainstay of cancer pain management, pharmacological analgesia is limited by various adverse effects, including somnolence, constipation, nausea, and vomiting; furthermore, long-term use may lead to increased tolerance. Additionally, some patients refuse adequate doses of analgesics due to concerns regarding addiction or side effects—a phenomenon known as "opioid phobia"—resulting in insufficient pain control. As a non-pharmacological analgesic intervention, music therapy can create a synergistic effect with drug treatments, improving the pain experience while reducing the demand for analgesics without the risk of drug-related adverse reactions.

The neurobiological mechanisms through which music therapy exerts its analgesic effects have been extensively elucidated. According to Melzack' s Gate Control Theory of pain, the rhythmic and vibrational characteristics of music activate sensory fibers, thereby inhibiting the transmission of pain signals from the spinal cord to the central nervous system; this mechanism shares similarities with the analgesic principles of physical therapy. At the level of cortical regulation, functional magnetic resonance imaging (fMRI) studies have shown that music can reduce activation levels in pain-related brain regions, including the primary and secondary somatosensory cortices, the insula, and the anterior cingulate cortex. Simultaneously, it enhances activity in the prefrontal cortex and amygdala, suggesting that music can modulate the emotional and cognitive components of pain. Furthermore, music produces a cognitive distraction effect by occupying attentional resources, thereby reducing the patient' s attentional bias toward pain—a mechanism that is easily perceived subjectively by patients in clinical practice. Music also promotes the release of endogenous opioid peptides, exerting effects similar to those of exogenous analgesic drugs. A study published in the journal *Cancers* in 2022 explored music therapy as a form of non-pharmacological pain modulation for cancer patients; this research included multiple randomized controlled trials, and the results support the clinical value of music therapy in alleviating moderate-to-severe pain. The study noted that music therapy not only reduces pain intensity but also improves pain-related emotional distress and enhances overall patient satisfaction with pain management. Research published in 2021 further evaluated the impact of music interventions on cancer pain management; a systematic review and meta-analysis published in *Pain Management Nursing* included several high-quality randomized controlled trials, showing that music therapy demonstrates a medium-to-large effect size in cancer pain management (SMD = -0.61, 95% CI: [-0.87, -0.34]), providing new evidence-based support for clinical practice. Finally, a protocol study published in 2020 designed a live music therapy anal-

gesia program for patients with advanced cancer, exploring a comprehensive intervention model that combines music therapy with standard analgesic treatment. This research design reflects the clinical trend toward the integrated application of music therapy and pharmacological treatments.

5 儿童重症肿瘤患者的音乐疗法

Pediatric oncology patients represent a unique demographic, facing challenges fundamentally different from those encountered by adults. Invasive procedures —such as venipuncture, lumbar punctures, and bone marrow aspirations—are routine components of pediatric cancer treatment. The pain and anxiety associated with these interventions can have profound, long-lasting effects on a child's psychological development. Furthermore, prolonged hospitalization often isolates these children from their peers, depriving them of normal social and educational opportunities, which in turn hinders their socialization and cognitive growth. Because children often struggle to articulate their emotions and physical sensations verbally, psychological support must frequently rely on non-verbal modalities. From a familial perspective, parents endure immense psychological stress and financial burdens while caring for their sick children, necessitating a holistic approach to mental health that supports both the patient and the caregiver.

A systematic review published in 2021 provided a comprehensive evaluation of music interventions in pediatric oncology. By incorporating multiple randomized controlled trials, the study demonstrated that music therapy significantly reduces pain during invasive procedures in pediatric oncology patients, achieving a large effect size ($g = -0.87, 95\%CI : [-1.34, -0.40]$). The results also indicated a significant reduction in anxiety levels and an overall improvement in emotional states. These findings underscore the substantial clinical value of music therapy in the treatment of severe pediatric malignancies.

Research published in the *World Journal of Pediatrics* in 2021 specifically explored the application of music therapy in pediatric palliative care. The study noted that music therapy—particularly active forms such as songwriting—effectively assists children in expressing their emotions and processing psychological distress. This provides an innovative methodology for psychological support within palliative nursing frameworks. Furthermore, a study published in *Palliative Medicine* in 2022 evaluated the experiences of music therapy in pediatric palliative care, revealing that these interventions provide meaningful emotional connections and psychological solace for both the children and their families.

6 音乐疗法的神经生物学机制：重症应用的理论支撑

The neurobiological basis for understanding the clinical value of music in critically ill patients lies in its ability to activate the brain' s reward system. Functional imaging studies have demonstrated that music can activate key structures

within the reward network, including the nucleus accumbens, ventral striatum, ventral pallidum, and the medial prefrontal cortex.

A classic study published by Blood and Zatorre allowed subjects to listen to their favorite

music and found significant activation of the nucleus accumbens during "chills" (intense emotional responses), accompanied by hypothalamic activation and oxytocin release. This research provides neurobiological evidence for the physiological linkage of musical emotion. For critically ill cancer patients, music-induced pleasurable experiences can not only enhance positive affect but also potentially increase treatment motivation, improve therapeutic compliance, and modulate pain perception, thereby exerting therapeutic effects across multiple dimensions.

The regulatory effect of music on the neuroendocrine system is particularly vital for critically ill patients. These patients often exhibit significant stress responses, where elevated cortisol levels are associated with immunosuppression, glycemic abnormalities, and muscle catabolism. Systematic reviews indicate that music can reduce levels of the stress hormone cortisol; this effect has been confirmed in preoperative patients, those undergoing invasive procedures, and chronic pain patients, primarily manifesting as an immediate effect. Music also promotes the release of endorphins, exerting endogenous analgesic effects; influences the dopaminergic system to improve depressive symptoms; and facilitates oxytocin release to enhance social bonding and emotional comfort.

For critically ill cancer patients, reducing exposure to stress hormones helps improve immune function and treatment tolerance. Music therapy exerts systemic therapeutic effects by modulating the neuroendocrine system. A review published in *Frontiers in Immunology* in 2025 systematically explored the role of music therapy in modulating immune responses and enhancing cancer treatment outcomes. The study noted that music therapy can influence the immune function of cancer patients through neuro-immune networks, including the regulation of Natural Killer (NK) cell activity, modulation of cytokine levels (such as IL-6), and improvement of immunoglobulin expression. These findings provide a new theoretical basis for the application of music therapy in immunocompromised critically ill cancer patients. Furthermore, a review in *Nature Reviews Cancer* discussed the role of neuro-immune crosstalk in cancer progression, suggesting that the nervous system' s regulation of the immune system may be a critical pathway through which music therapy exerts its therapeutic effects.

The modulation of autonomic nervous function is another key mechanism by which music functions in critical care. Systematic reviews show that music can enhance parasympathetic activity and reduce sympathetic activity, manifested physiologically as increased heart rate variability (HRV), decreased heart rate, lowered blood pressure, and slowed respiration—characteristics typical of a relaxed state. HRV is a crucial indicator for assessing autonomic function; music therapy can increase the high-frequency component of HRV (HF power), with studies showing an average increase of 15%-30%, indicating enhanced parasym-

pathetic activity. For critically ill patients, the improvement of autonomic function helps reduce the risk of cardiovascular events, improve sleep quality, and alleviate anxiety. Thus, music therapy exerts systemic therapeutic effects by regulating autonomic nervous function.

7 对

Responding to Misconceptions: The misconception that music therapy is only suitable for patients with mild symptoms likely stems from several factors. First, early research in music therapy was predominantly conducted among relatively stable outpatients or those in the recovery phase; because these patients had milder conditions, the findings were easily misinterpreted as being applicable only to mild cases. Second, the gentle nature of music therapy often creates an impression of being "mild and non-potent," which stands in stark contrast to the invasive procedures common in critical care, leading to an underestimation of its therapeutic intensity. Third, the field of critical care has long relied on pharmaceuticals and surgery as primary interventions; consequently, medical professionals may face cognitive barriers regarding non-pharmacological interventions, making it difficult to recognize the value of music therapy in severe cases. Fourth, methodological limitations in some studies have failed to fully demonstrate the efficacy of music therapy in critically ill patients, thereby restricting the dissemination of evidence.

Evidence from systematic reviews and meta-analyses explicitly addresses this misconception. While the updated Cochrane systematic review by Bradt was primarily based on studies of patients with mild-to-moderate symptoms, research conducted since 2010 has extensively covered severe clinical areas, including palliative care, hospice care, and intensive care.

Research published in recent years further confirms that music therapy can effectively improve symptom management and quality of life for patients receiving palliative care for advanced cancer. The evidence suggests that the therapeutic effects of music therapy are not limited by the severity of the condition; in fact, these effects may be equally or even more significant in critically ill patients.

From the perspective of neurobiological mechanisms, the regulatory effects of music on the brain' s reward system, neuroendocrine system, and autonomic nervous functions do not differ fundamentally based on the severity of the illness. On the contrary, because critically ill patients experience more intense stress responses, more sensitive pain perception, and more severe emotional distress, they may derive even more significant therapeutic benefits from music therapy. Numerous studies support this view, demonstrating effects such as anxiety relief in patients ([**?**]), improved compliance in bone marrow transplant patients, and pain reduction in patients with advanced cancer pain ([**?**]). These findings all highlight the unique value of music therapy for patients with severe conditions.

8 结论与实践建议

By systematically reviewing evidence-based research in fields such as palliative care, intensive care, advanced cancer pain management, and pediatric critical oncology, this paper demonstrates the core value of music therapy in the treatment of severe cancer cases. Existing evidence indicates that music therapy holds clear clinical value in the following critical care domains: first, symptom relief and quality of life improvement in palliative and hospice care; second, stress management and psychological support (anxiety) for patients in the Intensive Care Unit (ICU); third, pain management and emotional regulation for patients with advanced cancer; fourth, improvement of patient tolerance during high-intensity treatments such as bone marrow transplantation (anxiety); and fifth, management of pain and anxiety during invasive procedures for pediatric critical oncology patients. Based on this evidence, this paper proposes the following recommendations: clinical practice should fully recognize the value of music therapy in critical care and integrate it into multidisciplinary comprehensive treatment plans; future research should further optimize music therapy intervention protocols for critically ill patients, including timing, dosage parameters, and efficacy evaluation systems; healthcare institutions should strengthen the training of professional music therapists to improve the accessibility of music therapy services in critical care; and medical education should enhance training regarding the application of music therapy in critical care to eliminate misconceptions about the field.

Music therapy is by no means a "luxury" reserved for patients with mild conditions; rather, it is an indispensable component of the comprehensive treatment for critically ill patients. Only by restoring music therapy to its proper therapeutic position can its clinical value for the critically ill be maximized. Future research should further explore optimal application models for music therapy in critical care, including the formulation of individualized intervention plans, synergistic effects with other therapeutic modalities, and the evaluation of long-term follow-up outcomes, thereby providing a more robust evidence-based foundation for clinical practice.

Ethical Statement: This paper is a narrative review and did not involve direct human intervention; therefore, ethical approval was not required. Conflict of Interest Statement: The authors declare no conflicts of interest.

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Note: Figure translations are in progress. See original paper for figures.