Review

The Healing Power of Music: A Comprehensive Review of Music Therapy

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Review

The Healing Power of Music: A Comprehensive Review of Music Therapy

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Abstract: Music has been an integral aspect of human culture for millennia, serving a multitude of purposes such as religious observances, social gatherings, and leisure activities. The history of Music Therapy (MT) can be traced back to ancient civilizations where music was utilized to cure physical and psychological maladies. Over time, MT has evolved from an intuitive practice to a structured, evidence-based discipline and complementary therapy in modern medicine. This study provides a comprehensive historical overview of MT, tracing its evolution from ancient civilizations to its current applications in healthcare. By examining its efficacy in treating conditions such as chronic pain, neurological disorders, mental health challenges, and emotional trauma, this review highlights the versatility of MT through its various forms; receptive, re-creation, improvisation, and composition/songwriting. It underscores the importance of interdisciplinary collaboration in refining and expanding the integration of MT into mainstream healthcare, emphasizing its role as a patient-centered intervention that provides healing benefits across diverse populations. Despite its demonstrated benefits, MT faces challenges, including accessibility, lack of standardized training, cultural sensitivity, and the need for more robust, large-scale research. By blending the timeless healing power of music with the rigor of modern science, MT can continue to evolve as an evidence-based intervention that honors both its ancient roots and its potential impact in contemporary healthcare.

Keywords: music therapy; historical evolution; neuroscience; healthcare settings; complementary therapy

1. Introduction

Music can be defined as an art form and cultural activity that uses sound as a medium for the creation and expression of emotions, ideas, and experiences (Kokkidou, 2022). It is characterized by the organization of rhythm, melody, harmony, and timbre into patterns that are designed to evoke specific responses in listeners (Lindström, 2004). Music can be performed live or recorded and can take many forms, including classical, jazz, rock, pop, and world music (Coulangeon, 2005). Music transcends linguistic and cultural barriers, making it a powerful tool for communication, healing, and cultural expression (Clarke et al., 2015). This universality of music sheds light on its unique capacity to influence human cognition, emotion, and behavior.

Music has been a timeless aspect of human culture for thousands of years. It served a variety of purposes such as spiritual rituals, social events, and entertainment (Trehub et al., 2015). Yet, beyond its cultural and social significance, music has also been discovered to possess therapeutic properties, leading to the development of Music Therapy (henceforth MT) as an adjunct complementary therapy in the medical field (Porter et al., 2017). The utilization of music as a means of healing can be traced back to ancient civilizations, where it was used to address a range of physical and mental ailments (Thaut, 2015). This historical foundation laid the groundwork for the modern evolution of MT, which has since transitioned from anecdotal practices to an evidence-based field supported by scientific research.

The rise of MT as a complementary therapy in modern medicine reflects a growing recognition of the limitations of purely pharmacological or surgical interventions (Bernatzky et al., 2011). MT

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offers a non-invasive, patient-centered approach designed to alleviate not only physical symptoms but also emotional and cognitive well-being (Lorek et al., 2023; Bleibel et al., 2023). However, the field is not without its challenges. The variability in therapeutic outcomes, influenced by factors such as individual preferences, cultural contexts, and the specific form of MT employed, necessitates a deeper understanding of its mechanisms and applications. This study seeks to provide a comprehensive historical overview of MT, examining its evolution from ancient practices to its current status as a scientifically validated intervention. By critically analyzing the evidence supporting its efficacy, this review aims to highlight both the strengths and limitations of MT, highlighting its potential in healthcare settings.

2. Historical Overview

2.1. Ancient Practices

The utilization of music as a therapeutic tool dates back to antiquity, where it was interwoven with spiritual and medical practices. This early integration suggests that ancient civilizations intuitively recognized the profound connection between sound, the human psyche, and the body, a connection that modern neuroscience is currently investigating (Zhang, 2020; Zaatar et al., 2023; Fong, 2024). For instance, the rhythmic patterns of nature, such as the swaying of grass or the Brownian motion of cytoplasm and protoplasm, have been theorized to produce a form of primordial music, hinting at an innate human affinity for rhythm and harmony (Meymandi, 2009). This idea aligns with contemporary neurobiological theories that suggest rhythmic auditory stimuli can synchronize neural activity, influencing both cognitive and motor functions (Crasta et al., 2018; Pranjić et al., 2024; Pando-Naude et al., 2024).

In ancient Greece, music was not merely an art form but a therapeutic intervention. The Greeks believed that music could influence both mind and body, and they incorporated it into medical treatments with sophistication (Thumiger, 2018). Instruments like flutes, lyres, and zitters were used to address ailments ranging from digestive issues to mental distress (Pretorius, 2017). The vibrations produced by these instruments were thought to influence the body's internal rhythms, a concept that finds echoes in modern vibroacoustic therapy (Boyd-Brewer, 2003; Fooks & Niebuhr, 2024).

Hippocrates and Aristotle, two pioneering figures in the history of medicine, share the idea that music could soothe the mind and promote tranquility. Aristotle, in his work *De Anima*, even suggested that flute music could arouse strong emotions and purify the soul (Meymandi, 2009), and with its rhythmic and harmonic structures, music could be seen as a means of influencing the soul's faculties, particularly those related to perception and emotion (Shields, 2020). This hylomorphic perspective suggests that music's therapeutic effects arise from its ability to harmonize the soul's interactions with the body, foreshadowing modern understandings of how music modulates stress responses and regulates emotional states through neurotransmitter activity (Babikian et al., 2013; Thoma et al., 2013; Zaatar et al., 2023).

While ancient Egyptians also recognized the therapeutic potential of music, using musical incantations to heal the sick, the Sumerians —one of the earliest known civilizations— used musical accents in their language to modulate sounds (Meymandi, 2009). Accordingly, there's an early awareness of the relationship between rhythm, speech, and emotions. These ancient practices highlight a universal human recognition of music's power to influence both mind and body.

2.2. Middle Ages and Renaissance

Although the use of MT can be traced back to ancient civilizations where music was used to heal physical and mental disorders, the practice declined during the Middle Ages (Thaut, 2015). This was due to a shift in focus towards more traditional medical treatments. However, music was still used in religious contexts and some monasteries and convents provided MT for those with mental and emotional disorders (Rebecchini, 2021). During this period, music was also used in rituals and ceremonies, such as religious processions and the singing of hymns, having a strong emotional

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impact on those who participated, and many individuals found solace and comfort in the music (Walter & Altorfer, 2022). This persistence highlights the enduring human belief in music's capacity to heal, even in the absence of formalized medical frameworks.

The Renaissance marked a revival of MT when musical performances were held in hospitals and other medical facilities. This was a time of great cultural, scientific, and artistic advancement, and many musicians and composers were interested in exploring the therapeutic properties of music (Horden, 2017). Musicians and composers began to music more systematically, using it to soothe patients and improve their mental states (Franssen, 2021). This era laid the groundwork for the more structured and scientific approaches to MT that would emerge in later centuries.

2.3. From the Enlightenment to Modernity

The Enlightenment brought another approach to MT, one that is influenced by the era's emphasis on reason and scientific inquiry. Three distinct traditions emerged during this time: Asclepius's use of Symphonia to treat mental illness, Herophilus's focus on the therapeutic benefits of rhythmic beats, and Saul's reliance on music's harmonizing effects to alleviate hypochondria (Pigeaud & Jafflin, 2013). These traditions further recognize music's therapeutic potential, from its ability to regulate emotions to its capacity to synchronize physiological processes (Gold et al., 2011).

By the late 19th and early 20th centuries, MT had begun to evolve into a more structured discipline. This period saw the development of formal theories and practices, as well as the application of MT to a wider range of conditions, including mental illness, physical disabilities, and neurological disorders (Korenjak, 2018). Noteworthily, MT was used to treat soldiers suffering from shell shock during World War I, highlighting its potential to address trauma and psychological distress (Gooding & Langston, 2019). This application revealed the therapeutic potential of MT, paving the way for its integration into modern medical practice.

The 20th century witnessed a growing interest in the neurobiological mechanisms underlying MT. As the field of MT continued to evolve, researchers began to investigate the specific therapeutic properties of different types of music (Darnley-Smith & Patey, 2003). They discovered that specific genres or rhythms could elicit distinct therapeutic responses (Schäfer et al., 2013). For instance, classical music was found to have a calming effect on individuals with anxiety, while more upbeat music was shown to enhance motor function in patients with physical disabilities (Osmanoglu & Yilmaz, 2019). These findings not only validated ancient intuitions about music's healing power but also provided a scientific basis for its use in clinical settings.

Today, MT is widely recognized and used in many different settings, including hospitals, rehabilitation centers, schools, and community centers. Particularly, a study was conducted by Li (2022) using a group MT intervention aimed at improving mood and self-identity in elementary and middle school students with mood disorders. The study design involved a music activity-based mental health education program for the experimental group and a regular mental health education curriculum for the control group. The results showed that the MT intervention had a positive impact on the students' positive emotions, particularly on indices such as happiness, mental toughness, and interpersonal assistance.

MT is also used in research studies, and many of these studies have shown that MT is an effective complementary therapy for a range of medical conditions, including mental illness, physical disabilities, and neurological disorders (Golden et al., 2021). Its evolution from an ancient practice to a modern, evidence-based discipline reflects a broader trend in medicine; the integration of traditional healing methods with contemporary scientific research.

3. Forms of MT

MT has a variety of approaches adapted to meet specific therapeutic goals and patient needs. The following description of the four primary forms of MT (receptive, re-creation, improvisation, and composition/songwriting) is based on the work of Parkinson (2020):

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a. Receptive therapy involves the patient listening to music and responding to the experience. This form of therapy is particularly effective for individuals who may have difficulty expressing themselves verbally, as it allows them to engage with music on an emotional and sensory level, and can evoke powerful emotional responses, facilitating introspection and emotional release, which are crucial for therapeutic progress.
b. Re-creation therapy involves playing or singing along to pre-composed songs. This approach is often used to improve motor skills, enhance cognitive function, and enhance social interactions, develop a sense of accomplishment and self-efficacy, which are essential for rehabilitation and personal growth.
c. Improvisation therapy involves spontaneous music-making, where patients create music in the moment without pre-planned structure. This form of therapy is particularly beneficial for individuals who struggle with self-expression or have experienced trauma, as improvisation allows them to explore their emotions in a non-verbal and non-threatening way, providing a safe space for emotional exploration and healing.
d. Composition/songwriting therapy involves creating music or lyrics. This form is often used to help patients process complex emotions, tell their personal stories, and develop a sense of identity, necessary for self-reflection and emotional catharsis, enabling them to articulate their experiences and find meaning in their struggles.

These approaches are not mutually exclusive; they are often combined to create personalized therapy depending on the individual's needs and specific therapeutic goals (Parkinson, 2020). For instance, cancer has been found to experience active and passive MT differently, with each technique having its own benefits for coping with the disease (Lynch et al., 2021). This highlights the importance of adapting MT interventions to the specific needs of each patient, ensuring that the therapeutic process is both specific and effective.

4. Applications of MT in Medical Settings

The potential MT in addressing a range of physical, emotional, and mental health conditions has been widely recognized thanks to its versatility and non-invasive nature, particularly for patients who may not respond well to traditional medical treatments (Rebecchini, 2021). It is recognized as a credible and effective form of treatment for a variety of medical conditions, and it is increasingly being incorporated into mainstream medical practice to help with physical and mental health conditions, as well as emotional disorders (Cleveland Clinic, 2022).

MT has demonstrated significant efficacy in treating physical conditions such as chronic pain, stroke, and Parkinson's disease (Machado Sotomayor et al., 2021; Pando-Naude et al., 2024). For individuals with chronic pain, MT can help reduce levels of pain and discomfort (Lee, 2016). This is achieved by using music to stimulate the production of endorphins, which are natural pain-relieving substances produced by the body (Harvard Health, 2021). Additionally, MT can help improve the quality of life for individuals with chronic pain by reducing levels of anxiety and depression (Korenjak, 2018). This dual benefit underscores the interconnectedness of physical and emotional health.

In stroke rehabilitation, MT is effective in improving physical and cognitive function (Xu et al., 2022). For instance, research has shown that MT can help to improve motor function, speech, and overall quality of life of stroke survivors (Rusowicz et al., 2022). This is achieved by using music to stimulate the neural pathways responsible for motor control and speech (Zhang, 2020). This suggests that MT not only addresses the physical aftermath of stroke but also supports cognitive and emotional recovery, making it a necessary therapeutic tool. Similarly, Chéour et al. (2023) highlighted the benefits of combining MT with physical rehabilitation for elderly patients with mild Alzheimer's disease, noting improvements in both cognitive and motor functions.

MT has been widely used to address a variety of mental health conditions such as depression, and anxiety. For individuals with depression, MT can help alleviate symptoms by stimulating the production of neurotransmitters responsible for regulating mood, such as serotonin and dopamine

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(Speranza et al., 2022). According to a study by Aalbers et al. (2017), MT is effective in reducing levels of depression and improving mood in individuals with depression. Similarly, Tang et al. (2020) found that MT was a promising intervention for reducing depression.

Anxiety, characterized by excessive and persistent worry (Mayo Clinic, 2018), is another condition where MT has shown significant benefits. According to Lu et al. (2021), MT has proven effective in reducing anxiety levels and improving the overall quality of life in individuals with anxiety. By reducing physiological tension such as heart rate and blood pressure and relaxation, MT can help individuals manage anxiety more effectively, which is particularly important in today's fast-paced world, where stress and anxiety are increasingly prevalent. These findings are supported by a systematic review by Da Silva Santa et al. (2021), which highlighted the efficacy of music interventions in pediatric oncology, particularly in reducing anxiety and improving emotional well-being.

Another piece of evidence is shown through the utilization of MT in post-traumatic stress disorder (PTSD) patients. PTSD is a complex mental health condition resulting from experiencing or witnessing a traumatic event (Mayo Clinic, 2022). According to Pant et al. (2022), MT reduces symptoms of PTSD, including intrusive thoughts, avoidance behaviors, and hypervigilance, and enhances feelings of emotional resilience necessary to rebuild life after trauma. For individuals who have experienced trauma and abuse, MT helps engage the brain's emotional and sensory processing centers in real-time (Trost et al., 2024). For individuals with PTSD, MT has positive effects on mood regulation and stress reduction, as well as being an effective tool for processing traumatic memories and emotions (Leubner & Hinterberger, 2017; Landis-Shack et al., 2017). MT allows patients to process emotions through music, bypassing the need for direct verbal expression (Grimaud & Eerola, 2022). This is particularly beneficial for those who may struggle to articulate their experiences or who find verbal communication hard. MT also helps to regulate the nervous system, which is often dysregulated in individuals with a history of trauma (Dennis et al., 2016).

In addition to its use in helping individuals with mental health conditions, MT has proven effective in helping individuals with emotional disorders such as grief and loss, and in the treatment of trauma and abuse. Grief and loss are challenging experiences, and as Patrick DiMaio & Economos (2017) noted, MT can help individuals process feelings of loss and support the grieving process. This is achieved through the use of music to express emotions, such as sadness, anger, and guilt, and by creating feelings of comfort and closure.

The COVID-19 pandemic has increased feelings of grief and loss for many individuals, making the role of MT even more critical (Henry et al., 2021). In this context, MT provides an outlet for individuals to process their emotions and find solace in music. This is particularly important in a time of lockdown, widespread social isolation, fear, and uncertainty, where traditional support systems may be less accessible (Hwang et al., 2020). Additionally, the creative and expressive nature of MT empowers individuals to cope and reclaim agency over their emotions and experiences, creating a sense of control and self-efficacy that is often eroded by trauma (Garrido et al., 2015). In this way, MT supports the rebuilding of trust, safety, and emotional resilience, making it a powerful tool in the healing process.

5. Limitations and Future Prospects

Despite its numerous advantages, MT is not without its challenges. One of the most pressing issues is accessibility, as many rural and underserved areas lack the infrastructure and trained professionals required to provide MT services. This disparity highlights the need for greater investment in training programs and resources to expand MT's reach (Popa, 2015). Another significant challenge is the lack of standardization of training and certification for practitioners, with inconsistencies across institutions and countries creating barriers to widespread adoption. This lack of uniformity can undermine the credibility of MT as a discipline and hinder its integration into mainstream healthcare systems. Additionally, the cultural sensitivity of MT can vary, as the therapeutic impact of music may differ based on cultural contexts and individual preferences

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(Hakvoort & Tönjes, 2022). Finally, while there is a growing body of evidence supporting its efficacy, there is a lack of large-scale, long-term studies that validate its outcomes across diverse populations. This gap in research limits the ability to draw definitive conclusions about the long-term benefits of MT and its applicability across different demographic groups. Addressing these challenges is vital for enhancing MT's credibility and ensuring its integration within global healthcare systems.

The growing body of evidence on the efficacy of MT is likely to result in increased acceptance and integration. As research continues to uncover the neurological and psychological mechanisms underlying its efficacy, music therapy is increasingly being integrated into evidence-based practices. In healthcare, its role in managing chronic conditions, such as cancer, dementia, and mental health disorders, is expected to grow, particularly as non-pharmacological interventions gain traction. (Bleibel et al., 2023) Furthermore, advancements in neuroimaging technologies, such as fMRI and EEG, are enabling researchers to better understand how music influences brain plasticity, emotional regulation, and stress responses (Cantou et al., 2017), paving the way for more personalized therapeutic interventions. The use of music therapy in palliative and end-of-life care is also expanding, offering comfort and emotional support to patients and their families during challenging times (McConnell et al., 2016; Graham-Wisener et al., 2018).

In education, music therapy is being explored as a tool to support cognitive and emotional development in children, particularly those with neurodevelopmental disorders such as autism spectrum disorder (ASD) and attention-deficit/hyperactivity disorder (ADHD) (Mayer-Benarous et al., 2021). Its ability to improve communication, social skills, and emotional expression makes it a valuable adjunct to traditional educational methods (Shi et al., 2024). As interdisciplinary collaborations between music therapists, neuroscientists, psychologists, and linguists continue to flourish, the field is likely to see the development of standardized protocols and best practices. This will not only enhance the credibility and acceptance of music therapy but also facilitate its integration into mainstream healthcare systems in the years to come.

6. Conclusion

MT has evolved from ancient spiritual and medical practices to a scientifically validated, non-invasive intervention that addresses physical, emotional, and cognitive well-being. Its historical roots, spanning ancient civilizations to modern clinical practice, reveal a deep-seated human recognition of music's capacity to heal and harmonize. Today, MT is supported by scientific evidence of its efficacy in treating conditions such as chronic pain, stroke, depression, anxiety, and trauma. Its diverse forms (receptive, re-creation, improvisation, and composition) allow for personalized interventions adapted to individual needs to enhance emotional expression, cognitive rehabilitation, and social connection. However, issues of accessibility, inconsistent training standards, cultural variability, and a lack of large-scale, longitudinal studies pose significant challenges to its widespread adoption and integration into mainstream healthcare. Addressing these limitations requires concerted efforts to standardize training, expand access, and conduct rigorous, inclusive studies that validate its long-term benefits across diverse populations.

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