

The role of music in mental health treatment

By Bedanto Bhattacharjee

Author Biography

My name is Bedanto Bhattacharjee and I am an 11th grader pursuing science. I am based out of Kolkata, West Bengal. I find Biology and Chemistry fascinating and intend to pursue medicine. I have an immense passion for music, and if you don't see me with a guitar, you will find me on the athletics track, practising my runs and jumps. Alongside music and sports, I volunteer at CRY, an NGO, teaching kids Math and English.

Abstract

A review and meta-analysis of music therapy (de Witte, 2019) found an overall beneficial effect on stress-related outcomes. Research suggests that music engagement not only shapes our personal and cultural identities but also plays a role in mood regulation. Moreover, music can be used to help in addressing serious mental health and substance use disorders. Music has been an integral part of human culture for millennia, serving as a medium for expression, communication, and community bonding. In recent decades, the therapeutic potential of music has garnered significant attention, particularly in the realm of mental health. Music therapy, an evidence-based practice, employs music to address physical, emotional, cognitive, and social needs of individuals. This article is aimed at showing the role of music in mental health treatment.

Introduction

The influence of music on the human psyche can be understood through several psychological and neuroscientific theories. One such theory is the “Mozart Effect” (Rauscher & Shaw, 1998), which suggests that listening to Mozart’s music can temporarily enhance spatial-temporal reasoning abilities. While the validity of the Mozart Effect is debated, it underscores the broader principle that music can significantly impact cognitive functions and emotional states. From a neuroscientific perspective, music engages multiple brain areas involved in emotion, memory, and reward processing. Research has shown that music can stimulate the release of dopamine (Dolan, 2019), a neurotransmitter associated with pleasure and reward. This neural activation can foster emotional well-being and mitigate symptoms of mental health disorders such as depression and anxiety. Music therapy has shown promise in providing a safe and supportive environment for healing trauma and building resilience while decreasing anxiety levels and improving the functioning of depressed individuals. Music therapy is an evidence-based therapeutic intervention (AMTA, 2005) using music to accomplish health and education goals, such as improving mental wellness, reducing stress and alleviating pain. Music therapy is offered in settings such as schools and hospitals. Research supports that engaging in music-making activities, such as drumming circles, songwriting, or group singing, can facilitate emotional release, promote self-reflection, and create a sense of community.

Impact of Music on the Brain

According to the World Health Organization, mental health can be defined as the state of well-being wherein an individual realizes their own potential, can cope with the normal stresses of life, can work productively, and is able to make a contribution to their community (WHO, 2022). On the other hand, mental illness is a

condition that disrupts a person’s thinking, feeling, mood, behavior, daily functioning, and ability to relate to others (NAMI, 2019) and may be associated with significant distress or disability in social, occupational, academic, or other important activities. This paper aims to answer how music affects the brain and helps in alleviating mental illnesses.

Long before the advent of psychology and neuroscience as academic disciplines, music was an integral part of community and cultural practices for its healing properties. Greek physicians employed instrumental vibrations to aid digestion, enhance mental well-being, and promote sleep. Throughout history, music in its various forms has been acknowledged for its ability to evoke profound emotions, provide healing to both performers and listeners, and foster social cohesion. Recent neuroscientific and psychological research has illuminated the mental and physical benefits of experiencing music, whether through listening or training. Listening to music triggers the release of biochemical mediators such as endorphins, endocannabinoids, dopamine, and nitric oxide, which can aid in emotional regulation and the management of neurological disorders through music therapy. The increase in dopamine levels from listening to music can enhance mental health and reduce stress. Additionally, listening to pleasant music activates brain regions associated with reward and pleasure.

Listening to and processing music activates not just one hemisphere or a specific region of the brain, but various cerebral structures in combination. The network that processes musical emotions includes areas such as the insula and the limbic system, which comprises the amygdala, hippocampus, and their cortical and subcortical connections (Koelsch, 2014). While listening to music already has strong benefits for well-being, playing and interacting with music are even more

effective in improving certain neural, cognitive, and even social mechanisms.

Music Therapy

Music therapy encompasses a variety of techniques and methods, each tailored to the individual's needs. Active music therapy involves the client actively creating music through singing, playing instruments, or composing songs (Schneider et al., 2022). This form of therapy encourages self-expression and emotional release. Receptive music therapy, on the other hand, involves listening to music selected by the therapist. This can facilitate relaxation, reflection, and emotional processing. The settings for music therapy can be individual or group-based. Individual music therapy allows for personalized interventions, while group music therapy fosters social interaction and support among participants, which can be particularly beneficial for individuals experiencing social isolation or interpersonal difficulties.

Numerous studies have demonstrated the effectiveness of music therapy in treating a variety of mental health conditions. For instance, a meta-analysis of randomized controlled trials found that music therapy significantly reduced symptoms of depression compared to standard care (Tang et al., 2020). Similarly, research has shown that music therapy can alleviate anxiety, with participants reporting lower anxiety levels and improved emotional states after therapy sessions (Lu et al., 2021).

In the context of Post-Traumatic Stress Disorder (PTSD), music therapy has been employed to help individuals process traumatic memories and reduce hyperarousal symptoms. A study involving military veterans with PTSD found that music therapy led to significant improvements in mood, emotional regulation, and social functioning (Bensimon et al., 2008).

An AARP (formerly the American Association of Retired Persons) survey on music and brain health revealed intriguing findings regarding the impact of music on cognitive and emotional well-being (Mehegan, 2020):

Music listeners scored higher for mental well-being and had slightly lower levels of anxiety and depression compared to the general population.

Among respondents who currently attend musical performances, 69% rated their brain health as “excellent” or “very good,” compared to 58% of those who attended in the past and 52% of those who never attended.

Of those who were often exposed to music as children, 68% rated their ability to learn new things as “excellent” or “very good,” compared to 50% of those who were not exposed to music.

Active musical engagement, including among those over age 50, was associated with higher rates of happiness and better cognitive function.

Adults with no early music exposure but who currently engage in some form of music appreciation showed above-average mental well-being scores.

Applications of Music Therapy

Depression

Music therapy helps individuals with depression by promoting emotional expression and providing a sense of accomplishment through musical creation. It can also distract from negative thoughts and foster a sense of community in group settings (Tang et al., 2020).

Anxiety

Music therapy employs techniques such as guided imagery with music to induce relaxation and reduce physiological symptoms of anxiety, such as rapid heartbeat and muscle tension. Listening to calming music has been shown to decrease cortisol levels, a biomarker of stress (Lu et al., 2021).

Autism Spectrum Disorders

Music therapy can enhance communication and social skills in individuals with autism. Rhythmic activities and musical games encourage interaction and can improve language development and social engagement (Yellow Bus ABA, 2024).

Alzheimer's and Dementia

Music therapy can stimulate memories and improve the quality of life for individuals with Alzheimer's and dementia. Familiar music can evoke positive emotions and reduce agitation, while group singing and musical activities can enhance social interaction (Northwestern Medicine, 2022).

Mechanisms of Action

Emotional Expression

Music offers a medium for expressing complex emotions that might be difficult to articulate verbally. Engaging with music allows individuals to process and express feelings in a supportive environment.

Stress Reduction

Music therapy promotes relaxation and stress reduction through physiological changes such as lowered heart rate and blood pressure. Listening to soothing music can activate the parasympathetic nervous system, reducing stress responses.

Social Connection

Group music therapy sessions can foster social interaction and build a sense of community. Shared musical experiences can enhance feelings of belonging and reduce social isolation.

Limitations

Despite its benefits, music therapy faces several challenges. Research limitations include small sample sizes and variability in intervention protocols, which can affect the generalizability of findings. The field requires more robust research to address methodological limitations, such as small sample sizes and lack of control groups, to strengthen the evidence base. Cultural considerations are also crucial, as music preferences and responses can vary widely across different cultural contexts. Ensuring culturally sensitive approaches in music therapy is essential for its effectiveness. Music therapists must be culturally sensitive and adapt interventions to suit the cultural backgrounds of clients. Accessibility remains a significant issue, with many individuals lacking access to music therapy services due to financial, geographical, or institutional barriers. Expanding access and integrating music therapy into mainstream mental health services could enhance its reach and impact.

Future of Music Therapy

The future of music therapy holds exciting possibilities with advancements in technology, such as virtual reality and AI, potentially enhancing therapeutic experiences. Integrating music therapy with other treatment modalities could provide more comprehensive care for individuals with mental health conditions. Moreover, increased policy support and funding are essential to expand the availability and recognition of music therapy services.

Conclusion

Music therapy offers a powerful and versatile tool for addressing a wide range of mental health conditions. By engaging the brain's emotional and cognitive systems, music therapy can promote emotional well-being, reduce stress, and enhance social connection. While challenges remain, ongoing research and technological advancements hold the potential to further integrate music therapy into mental health treatment, making it more accessible and effective for diverse populations.

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