



The Impact of Music Therapy on ASD, Depression and Dementia: A Review

Ashnoor Kaur

The British School, Dr Jose P Rizal Marg, New Delhi, Delhi, India 110021

Abstract: Music therapy is a promising area for both physical and mental health conditions. Its impact on stress and even cancer is well-studied. However, its usefulness in other mental health areas is relatively under-studied and diffused. Hence, this paper reviews findings about the extent of music therapy in treatment of autism spectrum disorder, depression and dementia. For the former, music therapy is most helpful in improving social and communication skills. In clients with depression, such interventions can improve sense of self and help form engaging relationships. Additionally, communication through music is often easier for those who have dementia. It also improves their behaviour, mood, and acts as a non-pharmacological treatment for eliciting memories. Thus, the addition of such interventions in treatments for certain mental health conditions can help improve the prognosis. This review shows that music therapy is an area with scope for future research and mental health treatments.

IndexTerms: Music therapy, depression, autism spectrum disorder, dementia

INTRODUCTION

Music Therapy, as defined by the World Federation of Music Therapy (WFMT), is the professional use of music and its elements as an intervention in medical, educational, and everyday environments with individuals, groups, families, or communities who seek to optimise their quality of life and improve their physical, social, communicative, emotional, intellectual, and spiritual health and wellbeing. Research, practice, education, and clinical training in music therapy are based on professional standards according to cultural, social, and political contexts (WFMT, 2011). The earliest known reference to music therapy is an article in the Columbian magazine titled ‘Music Physically Considered’ in 1789. In the early 1800s, more writings appeared with two medical dissertations about the therapeutic value of music. The first was published in 1804 by Edwin Atlee, the second was published in 1806 by Samuel Mathews. The first recorded music therapy intervention and the first recorded systematic experiment in music therapy were also held in the 1800s. During the early 1900s, music therapy continued to be a topic of interest and gained support, this led to some short-lived associations. The National Society of Music Therapeutics was founded by Eva Augusta Vescelius in 1903. The National Association for Music in Hospitals was founded by Isa Maud Ilsen in 1926 and The National Foundation of Music Therapy was founded by Harriet Ayer Seymour in 1941. These associations were only able to contribute to the first journals, books and courses on music therapy; there was no development of an organised clinical profession.

In the 1940s, Ira Altshuler MD, Willem van de Wall and E. Thayer Gaston were significant in the developing music therapy as an organised clinical profession. Michigan State University offered the first academic program in music therapy in 1944 and multiple universities followed (American Music Therapy Association, n.d). Music therapists use music as a whole and the several aspects of music to help improve and maintain the health of a patient. The aspects of music being physical, emotional, mental, social, spiritual, aesthetic. It is clinically proven that the quality of life, cognitive functions, motor skills, emotional development, behaviour and social skills are all improved by music therapy (Chang Chung Memorial, n.d)). The power of music to reduce illness and stress has been seen and recognised for centuries, however it is only in this century that systematic research for it has begun (Bunt, 1994). Listening to music or performing music is something more than entertainment, it achieves something that maintains and/or restores the health of one’s mind and body (Horden, 2000). Music Therapy is an important non-pharmacological method used in treatment for behavioural disorders (Lekarski, 2019). Music Therapy has been used in medical hospitals, cancer centres, schools, alcohol and drug recovery programs and psychiatric hospitals. Music Therapy can be useful for all age groups (Chang Chung Memorial, n.d)). It also helps with multiple health conditions, some of these may be, Alzheimer’s Disease, anxiety and stress, ASD, cardiac conditions, chronic pain, depression, diabetes, difficulties with verbal and nonverbal communication, emotional dysregulation, low self-esteem, headaches, impulsivity, PTSD, rehabilitation after an injury, respiration problems, substance use disorders, surgery-related issues, traumatic brain injury, trouble with movement or coordination, insomnia, and OCD (Wong, 2022).

There are multiple types of music therapy as well. Analytical Music Therapy allows a person to use “musical” dialogue and improvisation (through singing/playing an instrument) as a way to express one’s unconscious thoughts. These thoughts can be reflected on with the music therapist. Benenzon Music Therapy consists of a person’s “musical sound identity”, this describes the external sounds that closely match with a person’s internal psychological state. Cognitive Behavioural Music Therapy uses music to reinforce certain behaviours and modify other behaviours. This form of music therapy is not improvisational but structural, it can include listening to music, dancing, singing, playing an instrument. Community Music Therapy uses music to enable change on a community level. This method consists of high engagement from each member and is done in a group setting. Nordoff-Robbins music therapy (more commonly known as creative music therapy) involves playing an instrument (usually a percussion instrument like cymbals or drums) while the music therapist accompanies with another instrument. This helps with self-expression. The Bonny method of guided imagery and music uses classical music as a way to facilitate imagination by explaining the emotions, imagery, sensations and memories one experiences while listening to the music. Vocal psychotherapy uses multiple vocal exercises, breathing techniques and natural sounds to connect with one’s impulses and emotions. This helps an individual create a deeper sense of self (Wong, 2022).

Thus, it is clear that music therapy, in its different forms, can be useful in numerous aspects of health and wellbeing. Most papers look at singular or isolated benefits of music therapy especially in the area of mental health. Hence, this paper reviews the impact of music therapy on three specific mental health conditions. These are autism spectrum disorder, depression and dementia.

2.0 MUSIC THERAPY AND AUTISM SPECTRUM DISORDER

Autism or Autism Spectrum Disorder (ASD) refers to a wide range of conditions entailing challenges with social skills, speech, repetitive behaviours, non-verbal communication. There are multiple types of Autism and these subtypes are impacted by genetic and environmental factors. Autism is a spectrum disorder meaning that each person who has ASD has a different set of limitations and strengths (Autism Speaks, n.d). There are three levels of ASD- Level 1 which requires support, level 2 which requires substantial support and level 3 which requires very substantial support. As said earlier, children on the ASD spectrum have difficulty with social interaction behaviours. Some of these include, creating and maintaining relationships, reciprocating social interaction and communication with others (LaGasse, 2017).

ASD is one of the first and one of the most important areas of application for music therapy. One of the features of ASD is the impairment of social communication and it was found early on, that people with ASD can communicate through music even if verbal communication is limited or not possible (Gold, 2011). People on the ASD spectrum commonly show a significant interest in music and the different aspects of music, for example rhythm, pitch, harmony or timbre. Music interaction or interaction through sounds seems to be easier than some other kinds of interaction like tactile contact (Dimitriadis & Smeijsters, 2010). The stimulus of music gives children with ASD to work towards nonmusical social outcomes such as social interaction, verbal communication and socioemotional reciprocity.

Effective treatment of individuals with ASD can be difficult because of the spectrum nature of ASD. Individualised treatment is important as children with ASD show a wide range of skills in social communication and behaviours. Many different treatments and practices are directed towards social skills in children with ASD. The “established” practices, as categorised by The National Autism Council’s National Standards Report in 2015, consist of peer training, joint attention and behavioural package interventions. Music Therapists develop music-based interventions that assist with social, communicative, sensory, emotional, cognitive and music skills in an individual.

There is a music therapy assessment process and it helps establish a person’s current level of functioning and how appropriate music therapy would be a treatment. The process consists of the application of intentional and developmentally appropriate music experiences. After this process, the music therapists design a treatment plan that outlines interventions to target the areas of need.

Many children have responded in a positive way to music experiences, this makes music a safe stimulus for social engagement and the practice of social skills. Music has been shown to activate neural networks that are involved in similar musical and non-musical tasks. For example, the left inferior frontal gyrus is activated by both singing and speech. Music also has the ability to enhance target behaviours by synchronised neural firings. Furthermore, adults with ASD are shown to have unimpaired processing of musical emotions and the mechanisms of musical stimuli may provide a foundation for learning of social skills. A lack of neural organisation in children with ASD may prevent children with ASD from responding to their environments in an appropriate way. This is because of the difficulties with sensory overload, planning, initiation and completing motor sequences. This lack of organisation could affect a person’s ability to socially engage because social interaction requires the ability to plan, initiate and follow through with complex motor plans. The rhythmic and structural aspects of music provide an external anchor to further help children with ASD to organise, predict and respond. Music stimuli are also very predictable. Musical experiences can be structured and created to provide clear clues for the planning of a response, which assists social interaction. These music cues can also help with waiting and impulse control during a social experience, the music structure can outline the social response time of the other person. Music stimuli is also flexible as musical improvisations can have different harmonies, melodies, phrase lengths, etc. Strict structure can help with back-to-forth communication and improvisation and different melodic themes can help with creativity (LaGasse, 2017).

2.1 MUSIC THERAPY AND DEPRESSION

Depression is a mood disorder, it is also referred to as major depressive disorder or clinical depression. It can affect how an individual thinks, and feels and can lead to various emotional and physical issues (Mayo Clinic, 2022). Some of the well known symptoms of depression nearly occur every day and most of the day. These symptoms include but is not limited to- feelings of sadness, emptiness, hopelessness, angry

outbursts, irritability and frustration (even over small matters), loss of interest and pleasure in most or all daily activities and hobbies, trouble with sleep - insomnia or sleeping too much, lack of energy (even for small tasks), reduced or increased appetite leading to weight loss or weight gain, agitation and restlessness, anxiety, slow pace in thinking, speaking or body movements, feelings of worthlessness and guilt, fixation on mistakes and self-blame, difficulty in thinking, concentrating, making decisions and remembering things, frequent suicidal thoughts as well as suicidal attempts, unexplained physical problems such as body aches and headaches (Mayo Clinic, 2022).

Including elements of music therapy into the existing treatment plan is more effective than just the usual treatment alone (Aalbers, Fusar-Poli, Freeman, Spreen, Ket, Vink, Maratos, Crawford, Chen & Gold, 2017). It has been reported that the playing of musical instruments with music therapists is a meaningful way of coping with issues that are related to depression. This is also called 'active doing' in music therapy. 'Active doing' in music therapy has three dimensions, aesthetic, physical, and relational. When a person is diagnosed with depression, their lack of pleasure and meaningfulness is reduced. Playing a musical instrument with a music therapist and engaging in that relationship, while eventually achieving a satisfying aestheticism, causes psychological relief and expresses strong emotions. It also provides development as it allows a withdrawn person to take a risk to do things differently with other people. Playing a musical instrument also requires physical movement and engagement. Physical activity averts depression and alleviates its effects, at least to some extent. However, the physical aspect of 'active doing' is to get a person to move physically and to experience themselves as beings. When physically and musically participating with others, one can get a sense of themselves with others. This leads to the relational aspect, the first experience of relation to the music therapist is entirely musical. The music therapist's role is to musically nurture the patient to ease into a process of self-discovery and sense of self according to the relation with other people. The music itself invites this as the different parts of playing a musical instrument, such as a harmonic progression or a melodic riff, naturally engage a person to participate. Playing music and making music allows a relationship that differs from how a person can relate through words and verbal communication (Maratos, Crawford & Procter, 2018).

2.3 MUSIC THERAPY AND DEMENTIA

Dementia is a term for a set of symptoms and conditions characterised by one's impairment of brain functions such as memory loss and judgement. These symptoms interfere with daily life. Dementia can affect many functions such as emotional state and perception, cognition memory and linguistic capacities, level of anxiety and agitated behaviours. These impairments also influence one's interaction and communication with one's surroundings (Spiro, 2010).

The use of music-based interventions in care for dementia is popular, however, the reasons for why people with dementia benefit from these music-based interventions are not entirely known. Interviews conducted found that music was enjoyed and valued as a social activity, even as cognitive functions are limited, the ability to engage with music remains intact (McDermott, Orrell & Ridder, 2014). There are many different types of music memory and these are differently impaired in the different types of dementia.

Recently music activities have been developed as a way of non-pharmacological treatment for dementia. It has been seen previously that music activities can improve behaviour, mood and cognition in someone with dementia. Music activities are able to elicit memories and emotions. However, large scale randomised studies have questioned the accuracy of the effect of music as music can be found as beneficial as any other pleasant activity as well. Music has the powerful ability of eliciting memories and emotions as it can provide a link to a person's past and it can also act as a way of nonverbal communication with one's caregiver, this makes it a stimulus for a person with dementia (Baird & Samson 2015). Since music, music activities and music therapy are gaining popularity, it is important to understand how individuals with dementia perceive and process music and the effect of music on one's psychological and neurological processes (Spiro, 2010).

Individualised music is 'music that is based on personal preference and has been integrated into one's life.' Gerdner (1993) developed the theory that individualised music could be used as an alternative intervention for the management of agitation in a person with Alzheimer's Disease. The music involved in this intervention must be carefully selected, based on one's preferences before the onset of cognitive impairment. Gerdner states that even during advanced stages of Alzheimer's Disease when an individual has an impaired ability to understand and communicate verbally and a decreased ability to interpret environmental stimuli, music can still be used as a way of communication. Individualised music might also help stimulate remote memory. The focus of attention is shifted and stimulus that can be interpreted is provided, this overrides any stimuli in the environment that is confusing or hard to interpret. This will help prevent agitated behaviours as the elicitation of memories along with the positive feelings will have a calming effect on a person with dementia. The theory of individualised music is also said to be most effective when it is implemented before the height of agitated behaviours has been reached (Gerdner 2012).

CONCLUSION

Music therapy is a developing field of research and has contributed to treatment options of multiple mental health issues, it has also contributed to improve the well-being of patients who are struggling with physical health issues.

Music therapy has been applied in supportive cancer care. During the treatment process, music therapy has been an effective form of supporting cancer care for patients, interactive music therapy activities like singing or instrumental improvisation and receptive music therapy activities like listening to live/recorded music and music and imaginary activities helps with improving mood, decreasing stress, pain, anxiety levels and enhancing relaxation (Stanczyk, 2011).

Over the last 20 years, the use of technology in music therapy has increased as a range of digital music therapy tools help music therapists with treatment plans that suit each patient best. These tools increase inclusivity as patients with impairments can take part in music therapy using tools that aren't traditional instruments. Some examples of these tools are Adaptive Use Musical Instruments and Brain Computing Music Interference (Agres, Foubert & Sridhar, 2021).

Music Therapy has been used for stress reduction for years as listening to music has been shown to reduce levels of cortisol (a stress hormone), it also helps reduce respiratory rate and heart rate. It has also been shown that music helps with maintaining attention and focus. Furthermore, it has been proved that music therapy reduces anxiety, reduces epileptic seizures and improves sleep quality (Rahman, Gedeon, Caldwell, Jones & Jin, 2020).

Despite these advancements, music Therapy is an area of research and practice that is still being developed in the context of different health issues. However, there is not enough research to determine its possible limitations in mental health conditions. But as demonstrated in the above paragraphs and reviews the implications and applications are manifold.

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