

Music Therapy, As an Adjunct Therapy to Conventional Treatment Modalities in the Management of Fear Factor and Anxiety in COVID-19

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| Received: 29.03.2021 | Accepted: 08.05.2021 | Published: 14.05.2021

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Abstract**Review Article**

The emotion of fear and anxiety is the body's basic mechanism to deal with the feeling of threat, danger or motivational conflict. In COVID-19, the main risk factors for fear and anxiety are uncertainties, updates from world bodies on health, the unknown reality, new practices, social isolation, lack of healthcare facilities and the hype around the pandemic created by the media. Drug therapy, Cognitive behavioural therapy and some non-pharmacological approaches help to treat the anxiety created by the pandemic. However, most of them are expensive and have side effects. In comparison, use of an intervention in the form of music could have advantages. Music could be administered as a 'music medicine' without a trained therapist or as a therapy with a therapist. Music therapy helps to improve the coping abilities, reduces the feeling of psychological distress and imbibes positive thoughts. In COVID-19, patients spend a long time in self-isolation and these periods of social isolation could trigger anxiety or fear. Music therapy could be a useful approach here. However, there is still a paucity of data on the possible role of music as an adjunct therapy for reducing fear and anxiety in COVID-19. The present article discusses some key aspects of the role of music in reducing COVID-19 related fear and anxiety.

Keywords: Music therapy, COVID-19, Stress, Anxiety, Fear, Psychological disturbance, Mental wellbeing.

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INTRODUCTION

The human emotions were defined by French neuroanatomist as 'passions of short duration'. These emotions including fear and anxiety influence the interactions between peripheral nerves and brain. [1] COVID-19 pandemic is one of the most challenging health problems in recent times [2]. Fear is defined as 'motivational state aroused by specific stimuli that give rise to defensive behavior or escape' [3]. Anxiety is on the contrary considered as a 'generalized response to an unknown threat or conflict. [4] Fear could be a precursor for this anxiety. It is believed that fear develops or progresses to anxiety if not addressed at the right time [5, 6]. The feelings of anxiety and fear is a physiological response and we have certain systems in the body which are responsible for activating these feelings. For example, the feelings of anxiety are organized around the locus ceruleus which is part of the ascending noradrenergic system, while, the feeling of fear is processed by the amygdala. Similarly, another system that influences vulnerability to anxiety is the septohippocampal behavioural inhibition system. Activation of this system could trigger anxiety [7].

In the current Pandemic, studies have identified a strong link between fear of COVID-19 and anxiety. Apart from mortality, COVID-19 has socially as well as psychologically impacted people [7]. The psychological damage caused by the pandemic is especially alarming and studies indicate the presence of psychological distress among people [8]. People involved in patient care are vulnerable to this damage and prone to suffer from 'mental health burnout' [9]. The mental health disturbance in the case of COVID-19 could manifest in many forms including agoraphobia, post-traumatic stress disorder, anxiety, substance-related addiction, obsessive-compulsive behaviour and phobia or fear [6]. The feelings of anxiety and depression have been more common during the pandemic [10]. COVID-19 has also triggered a feeling of fear called 'coronaphobia' which exists at three levels: physiological, cognitive and behavioural [7]. The physiological fear involves the fear of contracting the virus, cognitive involves a threat provoking feeling and behavioural is characterized by avoidance behaviour with a tendency to avoid places where one could contract the disease [11,12]. The fear of COVID-19 has resulted in a feeling of hopelessness and suicidal ideation, while, the health anxiety or hypochondriasis

associated with the disease can make people experience a high level of mental anguish [12]. Therapies that reduce stress and mental anguish without any adverse effects could greatly benefit patients and improve the prognosis of the disease. The present review evaluates the role of one such approach- the use of music therapy in reducing COVID-19 triggered fear and anxiety in patients.

Fear, Anxiety and the Pandemic

The emotion of fear and anxiety is the body's basic mechanism to deal with the feeling of threat, danger or motivational conflict [6]. Anxiety is more based on internal factors whereas fear is influenced by external factors. Fear in the case of coronavirus is more influenced by external factors and is designated as 'coronaphobia'. This fear is a response triggered by excessive concern about contracting the virus and is believed to cause 'physiological symptoms, significant stress about personal and occupational loss, increased reassurance and safety-seeking behaviours, and avoidance of public places and situations, causing marked impairment in daily life functioning [12].' The prime risk factors for this fear includes, uncertainties associated with the pandemic, statements from the world bodies on health, unforeseen reality, acquiring new practices and avoidance behaviour, lack of adequate healthcare facilities and constant flow of information regarding the progress of the pandemic in the media[13].

The main risk factors for fear and anxiety in COVID-19 are uncertainties associated with the pandemic, statements from the world bodies on health, the unforeseen reality, acquiring new practices, avoidance behaviour, lack of adequate healthcare facilities and constant flow of information regarding the progress of the pandemic in the media [12]. Other factors that have triggered anxiety and fear include pay cuts, unemployment, uncertainty, violence and abuse [14.] In such a scenario, it is important to take preventive and curative measures to curb the spread of infection and prevent the decline of mental health.

Traditional Approaches in Treatment of Fear and Anxiety in Pandemic

Fear and anxiety can be reduced using several approaches, which include Pharmacological and non-pharmacological approaches. Traditionally, life style changes like staying active, giving up on caffeine, smoking and alcohol, sleeping meditating, having a healthy diet and meditating have been found to be useful approaches in reducing stress[15]. Besides these lifestyle changes, cognitive behavioural therapies are also explored in treatment of anxiety in patients. The pharmacological approaches include the use of benzodiazepines, selective serotonin and norepinephrine reuptake inhibitors [16]. The selective serotonin and norepinephrine reuptake inhibitors are considered as the first line treatment for anxiety. These

agents mainly work by inhibiting the reuptake of serotonin or norepinephrine and though they are beneficial, atleast 30-50% patients who take this drugs experience side effects [17]. Cognitive-behavioral include the use of mindfulness and meditation techniques with the help of a therapist [18]. Several metanalysis have established the effectiveness of cognitive behavioural therapies in anxiety disorders. These methods use 'problem focused intervention strategies' where patients through a therapist are helped to change or alter their thinking and behavioural patterns [19]. One approach as part of this therapy could be counselling of patients to first understand their perspective and then decide the probable solutions. Thus, this approach involves assessment of the 'State of the mind' to treat the patient. Studies have shown that the positive effects of cognitive and behavioural therapies are long and these approaches are more cost effective as compared to the Pharmacological treatments. The only possible challenge could be that for execution of certain therapies there is need of a trained therapist. Some of the non-pharmacological methods include vagal nerve stimulation, repetitive transcranial magnetic stimulation, surgery and deep brain stimulation. These methods are very effective in treating anxiety and reducing fear, however, most of these approaches are expensive and have several side effects [16]. Also, the risks involved in the therapy are high and therefore, there is need of an 'adjunct' therapy which could not only treat the basic 'fear' or 'anxiety' but also improve the quality of life of the patient. Music therapy could be useful here and can be considered as an 'adjunct therapy' in not only anxiety and fear but also depression and other behavioural disorders.

What is Music Therapy?

Music therapy thus can be defined as 'the intervention where the therapist helps the client to promote health using music experiences and the relationships developing through them' [21]. Music could be administered as a 'music medicine' without a trained therapist or with a therapist in the form of music therapy [22]. Music listening has been described as a powerful relaxation technique in ancient texts [23]. Music therapy, however, not just involves listening to music but also composing, songwriting and interacting with the music. Music therapy as a whole helps to improve the coping abilities, reduces the feeling of psychological distress and imbibes positive thoughts [21]. Generally, in healthcare, the music based interventions could be of three types, music medicine, music therapy and other music based interventions. The three involve completely different approaches, though all involve music. In the first approach, the patient is exposed to a pre-recorded music to meet the therapeutic objectives and this exposure could be through a healthcare professional. In the second approach, there is use of 'tailored music experiences' with the help of the therapists to meet the patient's treatment needs. The last approach involves, use of music activities for promoting

health related needs. The four core steps in a music therapy are: improvising, listening, recreating and composing [24]. Research in music therapy has found that music therapy not only offers emotional support but also promotes physical rehabilitation and increases people's motivation to take a treatment [25]. The history of music in improving health is not new and can be traced back to the contemporary society where, music was a routine for pain management, relaxation, psychotherapy and personal growth [26]. The ability of music to influence mood and the vital parameters however can vary from person to person or is subjective in nature. Quite often, it is difficult to confirm if the improvement in health is due to music itself or some confounding factors which act along with music. Therefore, there is still a lot of scope to investigate the 'emotional dimensions' in a music therapy. Considering the positive impact of music in improving the immune function, reduce stress and improve the response in post-operative patients, music therapy could be considered as an adjunct therapy to the Pharmacological treatment. Also, in addition to being a therapy the use of music should be made as a 'life style change' rather than as a treatment to improve the overall prognosis of a disease.

How Music Therapy could benefit in COVID-19?

In COVID-19, patients spend a long time in self-isolation. At the same time, their family members and close acquaintances are quarantined for brief periods as a preventive measure. These periods of social isolation could be traumatic and may trigger mental health disturbances like anxiety or fear in people. Music therapy, therefore, could be a useful approach here and studies have found positive outcomes in COVID-19 patients who were exposed to music therapy [27, 28]. Music as a therapy utilises the music experiences in a disease condition to meet the patients emotional and cognitive needs [24]. Music therapy was found to alleviate the psychological distress caused by the pandemic. A study by Giordiono F et al. among clinical staff in Italy found that, in a very stressful situation during COVID-19, the use of music therapy as an intervention is beneficial [28]. They observed a reduction in the feelings of sadness, anxiety, tiredness, fear and worry among the healthcare workers who were exposed to music therapy [27]. Music is believed to produce this positive effect through suppression of the activity along the hypothalamus-adrenal-pituitary axis and by decreasing the cortisol production [1]. Also, music stimulates the release of chemicals like dopamine, serotonin and oxytocin, which produce a sense of wellbeing in the body [29]. The ability of music to produce relaxation is through an effect on the alpha waves and in a deep state on the theta waves. It was found that these waves increased under the effect of the relaxing music [30]. Stress is one of the important trigger factors that lead to anxiety and music helps to reduce stress by promoting inner calmness, activation of the auto therapeutic potential and psychosomatic

rebalancing [31]. A metaanalysis by Pelletier et al. found that music can significantly reduce stress levels in humans [32]. Similarly, a study by Seinfeld et al. found that music has the potential to alleviate anxiety triggered out of fear [30].

Reduction in stress and anxiety was observed in many studies including the one conducted by Giordiono F et al. among clinical staff in Italy during COVID-19 [28]. Music interventions were also effective in patients who were mechanically ventilated due to COVID-19. It was observed that music-based interventions reduced treatment cost, cortisol and prolactin levels and blood pressure in mechanically ventilated patients exposed to the music [33]. This is consistent with the results obtained by a Cochrane meta-analysis which found that music listening can have a large anxiety reducing effect on mechanically ventilated patients. This included a decrease in the respiratory rate and systolic blood pressure producing a relaxing effect [22].

The use of music therapy was found to be especially useful in the process of weaning among mechanically ventilated patients during COVID-19. Weaning involves a gradual reduction in the ventilation needs of the patient based on an improvement in the respiratory parameters. It has been found that music reduces anxiety, blood pressure, heart rate and helps in the rapid weaning [34]. A Spanish population survey about the use and perception of people regarding the use of music in lockdown revealed that overall a majority had a positive perception about the role of music in mental wellbeing [35].

Additionally, music can also help stabilize mood. This mechanism is mainly due to its ability to influence the levels of glutamic acid and GABA. Thus, music could be effective in improving coping abilities in affected patients. This role of music therapy could be especially important for vulnerable groups like children. Lockdown for a prolonged duration and school closures may trigger stress in children. This stress is quite often manifested in their behaviour and approach. Music therapy could be beneficial here as it can help hostile children affected by the pandemic by developing empathy in them [27].

The utility of music was not just limited to improving psychological wellbeing but also physical fitness. A study by Jeong HC et al. that assessed the development and implementation of a musical beeps program to promote fitness in adolescents found that the use of musical notes as per individual capabilities helped improve their declining physical activity during the covid-19 pandemic [36].

Factors Influencing Outcome in Music Therapy: How to Get Maximum Benefit during the Pandemic?

The maximum benefit of a music-based intervention, however, cannot be derived without the control and monitoring of several variables like delivery of the music, stimuli characteristics and environmental context. Maintaining these variables is crucial to ensure the success of the music based intervention [37]. The music consists of pitch, rhythm and timbre and when used as an intervention use of wall-mounted speakers, portable stereos or mp3 player could be made. The use of headphones was particularly found to increase the focus of the patient. A Cochrane review of 14 controlled trials for mechanically ventilated patients found that music listening has a relaxing effect on these patients. In COVID-19 patients on mechanical ventilation, the use of soothing and relaxing music was also recommended by the Maharashtra State Council for Occupational Therapy and Physiotherapy [38].

Music can be administered by either a trained therapist or by a healthcare provider or it could be self-administered. Studies have found that the type of music also plays a significant role in reducing the level of stress. For eg: it was observed by Labbe et al. that participants who were exposed to calm and relaxing music had a greater reduction in stress relative to those who were exposed to heavy metal music[39]. This was corroborated in another study where it was observed that participants exposed to horror music had increased skin conductance test as compared to those who listened to documentary music. Live music reduced stress better than prerecorded music, while music without lyrics produces a more profound decrease in stress as compared to the one with lyrics [40]. Listening to classical and relaxing music produced a greater decrease in anxiety as compared to heavy metal music [39]. The manner in which music therapy is administered is therefore, very crucial. While delivering music, the tempo of the music is an important factor and music with a low tempo [60-80 bpm] is found to produce more relaxation. Hence, music administered through a trained therapist or a properly guided music therapist is found to be most effective.

In such a case, conducting studies using music-based interventions could be challenging in COVID-19 wards. Due to the spread of infection from in person contacts, conducting in house sessions with a therapist is a challenge. Some organizations like the American Music therapy association recommended live virtual sessions to ensure that patients are not denied the benefits of music due to the social isolation protocol of the pandemic [25].

What are the Benefits and Methods for Self-administration of Music Therapy?

Considering the nature of infection in COVID-19, self-administration of music therapy could be useful

approach. A study by Castilli- Perez S et al. which compared the effect of self-administered music therapy to psychotherapy in alleviating depression, found a better response in music therapy group [41]. Similarly, another study by Hanser SB et al. found that older patients who received a self-administered music therapy (with moderate help from a therapist) performed better relative to the control groups for test on depression [42]. These studies offer a positive hope for administration of music therapy to patients who may not be able to avail the services of a therapist. Recently, home based music interventions have also proved useful [43] and this approach could be helpful for people who are home quarantined during COVID-19.

Conventionally, music therapy administration is by two methods: receptive listening and active method which involves playing the instrument. The receptive technique is more useful for anxiety, depression and cognitive disorders whereas the active technique could be an adjunct during psychotherapy. When the music is self-administered, some common techniques which could be used are: drumming, listening to live or recorded music, singing familiar songs, writing song lyrics, creating art for music, writing choreography for music, discussing one's emotional reaction to a particular type of music and dancing or moving to live and recorded music [44]. Broadly speaking, music therapy is not confined to only listening and playing but it involves as active interaction with music which could be at emotional or physical level. The most important benefit of this approach is that it is cost effective and can be implemented and customized as per patient needs.

Final Thoughts

The COVID-19 pandemic has affected a significant number of people psychologically. Given the positive outcomes of some research studies on the role of music in mental wellbeing, music therapy can be useful approach to improve the mental wellbeing during the pandemic. Currently, there is a lack of adequate research to show the impact of music therapy in improving the prognosis of the disease in patients diagnosed with COVID-19. However, music-based interventions could be considered as an adjunct therapy along with the standard of care during treatment of COVID-19 patients.

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