

# Music Therapy in Reducing Dental Anxiety

## A Review Article

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**Abstract:-** Dental anxiety is an important societal issue. To give appropriate and effective therapy, each patient must be treated as an individual, and oral stress must be promptly identified and eliminated. In several medical specialties, music has shown considerable promise as an alternative rehabilitation technique. Music therapy is a painless and non-invasive anxiolytic technique that eases dental anxiety by calming the mind and diverting attention. The use of music in dental offices generates a good environment for both patients and the staff members that work there. The purpose of the article is to discuss potential music therapy uses in dentistry and how it may help those who are afraid of the dentist.

**Keywords:-** Anxiety, Music Therapy, Dental Anxiety, Management of Anxiety.

### I. INTRODUCTION

Music facilitates emotional expression and establishes interactions with others. In old manuscripts of Chinese medicine and Indian Samaveda, the importance of music and its beneficial effects on health date back to a time BC 1500 [1, 2]. The Greek philosopher Pythagoras, who is credited with developing music therapy in the sixth century, held that music had a general, uplifting effect on the body as well as the mind, producing a special harmony between the two [3].

Anxious patients are less willing to cooperate with the dentist. Such a circumstance lengthens and complicates the treatment process. Therefore, reducing patient anxiety may enhance the quality, efficacy, and success of dental care, thereby enhancing patients' general health [1]. It has been demonstrated that anxious patients require 20% more time for dental work than patients who cooperate well [4].

The purpose of this article is to discuss the potential application of music therapy in dentistry and how it might help people feel less anxious about going to the dentist.

### II. MUSIC THERAPY

Pitch, rhythm, dynamics, and sound qualities including timbre and resonance are the four basic components of music as an art form. Music relaxation, audio-analgesia, and audio anxiolysis are common names for the use of music to reduce anxiety [5]. Anxiolytic music, as it is commonly known, is music that has a calming effect. It frequently contains compositions that have a steady pace, predictable dynamics, repeated rhythmic patterns, and consistent harmony [6, 7]. Munro and Mount define active music therapy as the regulated use of music during treatment to promote psychological, physiological, and emotional integrity [8]. Listening to pre-recorded music without the direct engagement of a music therapist is known as passive music therapy. According to certain research, active music therapy in medicine is far superior to passive music listening [9, 10]. This distinction can be linked to active music therapy's individualization of its intervention to suit patients' particular requirements. [11]. In her research, Cook [11] claimed that dentists were among the foremost proponents of music therapy, employing it to encourage patient relaxation and pain management. The effects of audio-analgesic, anxiolytic, or sedative passive music listening may be used alone or in conjunction with pharmacological or non-pharmacological treatment. [12].

### III. EFFECTS OF MUSIC THERAPY

Several underlying systems may be responsible for how music affects anxiety. It has been hypothesized that music eases anxiety on a neurophysiological level by influencing autonomic nerve responses [13]. More precisely, it is thought that music's ability to reduce anxiety is due to its suppression of the sympathetic nervous system, which results in lowered levels of adrenergic activity and neuromuscular activation [14].

Studies have shown that listening to music lowers cortisol and other neuropeptides associated with the hypothalamic-pituitary-adrenal axis [15]. In addition, music causes the limbic system to produce endorphins, which are neurotransmitters that are crucial for boosting feelings of

well-being [16]. The nucleus accumbens (NAc) is regarded as the brain's primary pleasure center. Dopamine is released when the NAc is activated. This controls how one feels and perceives pleasure [17]. Due to its interactions with endogenous opioids, dopamine also has a significant impact on central analgesia [18]. The amygdala, a crucial brain region in the formation and activation of a conditioned fear response, has also been found to decrease activity in response to music [19]. As a result, the amygdala's suppression and the dopaminergic system's activation have significant effects on how anxious and painful dental procedures are.

According to a well-accepted cognitive hypothesis, music can divert listeners from the source of their fear [20]. Anxious patients might require extra support to consciously redirect their attention back to the music. Other types of music may be required for this to occur [21]. To encourage a more active connection with the music, these patients may also require other music-based methods. Listening to music may stimulate the imagination. As it provides a brief diversion from the unpleasant reality, this can be crucial in the management of anxiety [22].

Self-selected music may help lessen the danger of the surroundings. Music offers the patient a positive experience that may be soothing as they wait for and during dental treatment on a psychosocial level. Additionally, when a skilled music therapist conducts a music intervention, the music therapist customizes the live music interactions to the patients' current requirements. For the patient, this frequently offers a reassuring and affirming experience [23].

#### IV. MUSIC THERAPY AND DENTAL ANXIETY

Unpleasant sounds in dental offices such as high-speed drills, ultrasonic scaling handpieces, suction equipment, amalgamators, and autoclave laser equipment frequently trigger dental anxiety, although music can disguise these sounds and directly affect pain relief [24, 25]. Heart rate, blood pressure, body temperature, and salivary cortisol levels are varied when assessed in anxious patients undergoing dental treatment. [26]. Often anxious patients show characteristics such as sweating, palpitations, decreased blood pressure, visible distress, irritability, fainting, and signs of panic [26]. Through the utilization of auditory diversions and the activation of several neurotransmitters, music can serve as a distraction and help people experience less pain and fear [27]. The fear of losing control in an unknown scenario or place is undoubtedly one of the most important elements that contribute to anxiety and terror in dental offices [28]. Patients can restore control by listening to familiar and favourite music [29]. It is thought that pain management may prevent music from reaching brain receptors, which would lessen pain perception and the need for analgesic dosages [30, 31].

#### V. CLINICAL RECOMMENDATIONS

A variety of individual characteristics impact patients' reactions to music. Age, gender, cognitive function, anxiety intensity, familiarity with and affinity for the music, culture, and personal associations with the music are the factors to be considered. [32] Because of those differences, the positive portions of the tune cannot be recommended universally for strain reduction. Furthermore, patients' attention to music, present emotional state, cognitive and emotional interpretation of music, and images elicited by music may all impact the efficacy of specific music selection for anxiety reduction. [33]

##### ➤ *Patient-Favored Music:*

When booking a dental visit, office personnel should suggest patients bring their favorite music with them. Having patients choose from a list of available music at the dentist's office, even if the music selections cover a variety of music genres, is not recommended since this music selection may not contain music that the patient genuinely like. Patients should be advised that they do not have to limit their music choices to calming or relaxing music. Instead, patients should be encouraged to bring music that will raise their spirits and keep their attention. Allowing them to bring their music may assist them in gaining control of difficult circumstances. Using the child's music may also make the atmosphere more familiar and less intimidating. [34]

##### ➤ *Music to Unwind to:*

If patients like to listen to calming music, the following may be helpful for the selection of music. Sedative music may be heard as classical or new-age music. The patient must choose music that he or she enjoys listening to. Sedative music may have the following characteristics:

- Simplicity in structure
- Melody
- Harmonies
- Melodic and harmonic repetition
- The absence of lyrics
- Sluggish tempo
- A lack of harmonic tension
- Instrumentation featuring strings, woodwinds, and piano rather than bass and percussion.

Nature noises like waves and birds may be added to the music. It is critical that the music does not elicit memories or connections that are counterproductive to the purpose of relaxing. [33]

##### ➤ *Volume Adjustment:*

To avoid pain and maximize perceived control, patients should have access to the music's volume control.

##### ➤ *Utilization of Headphones or Free Field:*

Patients should be offered the choice of listening to music through headphones or in the open air. Although headphones might assist cover dental noises, they can also raise patient anxiety by interfering with a conversation with the dental practitioner. When wearing headphones, the

music volume may be maintained low to allow for dialogue; nevertheless, this may hinder the proper masking of dental noises. Aitken [35] suggests using noise-cancelling headphones with a level loud enough to mask dental noises and a microphone for conversation with the dental practitioner.

#### ➤ *Timing of the Music Intervention:*

When feasible, it is vital to begin listening to music before the commencement of dental treatment. This may assist to keep anxiety at bay while the patient waits for therapy to begin. [36]

#### ➤ *Active participation of the Patient in Listening to Music:*

It is advised that patients be told to actively focus on the music rather than simply listening to it. In addition, the patient can be given brief relaxation techniques to employ while listening to music. [36]

## VI. MUSIC THERAPY IN VARIOUS FIELDS OF DENTISTRY

### ➤ *In Pediatric Dentistry*

Children may experience anxiety when visiting the dentist, particularly in the dental waiting room. Management of these young children with dental anxiety is a source of fear for the dentist during dental operations. [37] A regular dental visit can cause severe anxiety in five to six percent of the population. In youngsters, this fraction might reach up to 16%. [38]

Music distraction is said to be an effective means of relaxing. It is generally safe and affordable, and it can be beneficial during brief and unpleasant dental operations in children. [39] Music distraction is used to assist children avoid unpleasant stimuli by helping them focus on the music, which decreases anxiety levels in children. [40]

### ➤ *During Endodontic Procedures*

Endodontic operations need a high level of accuracy and are regarded as one of the most stressful dental procedures for both the dentist and the patient. Di Nasso L *et al* [41] investigated the effect of music as an adjunct on systolic blood pressure, diastolic blood pressure, and heart rate before, during, and after endodontic treatment in a population with varying degrees of anxiety as measured by the Corah Dental anxiety scale. All of the measured vital signs improved in the group of patients who listened to music.

### ➤ *During Tooth Extraction*

Karou *et al* [42] investigated the effect of music on anxiety during the extraction of impacted third molars and proposed that it lowered anxiety by dampening the sympathetic nervous system. Cynthia *et al* [43] investigated the impact of music therapy on anxiety levels and linked it to physiological markers such as salivary cortisol, stimulated salivary flow, blood pressure, heart rate, oxygen saturation, and body temperature. In the music therapy-treated group, there was a substantial drop in salivary cortisol levels, systolic and diastolic blood pressure,

coronary heart rate, frame temperature, and oxygen saturation.

### ➤ *In Periodontics*

Buranavichetkul *et al* [44] investigated the effect of music listening on blood pressure, heart rate, and anxiety level in thirty patients having periodontal surgery and discovered that the heart rate and anxiety level were reduced following music intervention. In a study conducted by Stablotz *et al* [45], they requested the patients to finish the Dental Anxiety Scale (DAS) questionnaire while waiting for the treatment. The results revealed that tooth extraction, periodontal surgery, and scaling caused significant anxiety, with 12.1% of patients referred for periodontal treatment reporting severe anxiety.

## VII. CONCLUSION

This review was to evaluate the effectiveness of music intervention in lowering anxiety during invasive procedures, as well as to provide the current state of knowledge about the use of music intervention as an effective intervention. There was conflicting data about the usefulness of music in decreasing blood pressure, heart rate, and breathing in nervous patients. However, dentists can still use music intervention to create a peaceful, calming environment aimed at lowering both the physiological and psychological signs of excessive anxiety in preoperative patients. Music therapy functions as an exogenous cue in dentistry for nervous patients, as it decreases anxiety while having no effect on pain. Music therapy is a successful, non-pharmacological treatment that complements established clinical methods. In addition, with no considerable financial investment dental visits may be made more attractive by introducing music during treatments.

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