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REVIEW ARTICLE

A Review on Role of Music in Premature Infants Mentioned in Charaka Samhita

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ABSTRACT

Music therapy has been in use since ages in healing various ailments across the globe. As an evidence-based, allied health-care profession, it is flourishing in western world where various programs, bachelor degrees, and foundations are being laid down. In India, music has got its roots from Samaveda where it is being mentioned to be used for various purposes. In Ayurveda, it is described as a *Vajikaraka* (aphrodisiacs), as a *pitta Dosha* pacifier, as a protective measure for new born, for *Nidranasha* (insomnia) treatment, etc. More detailed or evidence-based study should be done on how does the music effect the individual in these conditions. In this article, a possible view on role of music in premature infants is explained. We can use the results extracted to promote health in this form. As evidence-based study has more importance in today's world so there is a need to validate old facts with recent researches.

1. INTRODUCTION

Over time, music has been a part of various rituals, ceremonies, healing customs, spiritual beliefs, and cultural heritages. For many ages, it has been utilized as a healing tool. The utilization of music to alleviate sorrow dates back to ancient times, such as during the era of King David and King Saul.

In ancient Greek mythology, Apollo was worshipped as the deity associated with both music and healing. Aesculapius, his son, was believed to heal mental ailments through the power of song and music. As far back as 5000 BC, music held a role in healing practices of priests-physicians of Egypts. Plato claimed that music had the ability to influence emotions and mold a person's character. Hippocrates, dating as early as 400 BC, utilized music in the care of mentally ill individuals. In the 13th century, Arab medical institutions incorporated music chambers to enhance the overall well-being of their patients.

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Ayurveda, with its origins dating back 5000 years, also recorded the utilization of music for therapeutic objectives. The earliest documented case of official music therapy can be dated to 1789, as it appears in an article titled "Music Physically Considered," authored by an unidentified writer and published in the Columbian Magazine.

The 18th-century study of the nervous system marked the dawn of a new comprehension of the body and mind, leading to a renewed approach to using music for therapeutic purposes. Music therapy as a formal treatment method began to take root and expand during the early to mid-1900s. Throughout the 19th century, numerous publications written by physicians in Europe and the United States delved into the therapeutic use of music for both mental and physical health. From a Western perspective, music therapy as an evidence-based allied health-care profession has evolved into the 20th and 21st centuries, with its foundations solidified following the conclusion of World Wars I and II.

The roots of music therapy in India can be linked to ancient Hindu mythology, Vedic scriptures, and indigenous folk traditions. Among the four Vedas, the Sama Veda represents music. For this reason, Sama Veda has been called the origin of Indian music and is regarded as the most prominent of the four Vedas. Sama Veda involves the melodious

recitation of Rig Vedic Mantras, which are chanted with rhythm and melody.

2. USES

Music therapy offers a wide range of benefits for individuals, both physically and mentally, supported by evidence. Some of the advantages include:

Improved Heart Rate: Music therapy has been shown to have a positive impact on heart rate, promoting cardiovascular health.

Reduced Anxiety: It can help reduce anxiety levels and provide a sense of calm and relaxation.

Brain Stimulation: Music therapy stimulates the brain, engaging cognitive functions and enhancing learning.[1]

Music therapy has also found applications in various medical disorders and conditions:

Autism: It has been used effectively in the treatment of individuals with autism.[2]

Congenital Heart Disease (CHD): Music therapy can be beneficial for individuals dealing with CHD.[3]

Stroke: Stroke patients have benefited from music therapy interventions.[4]

Dementia: Music therapy has been utilized to improve the quality of life for individuals with dementia.[5]

Aphasia: It can benefit from music therapy as a treatment approach.[6]

Cancer: Music therapy is used as a complementary approach to support cancer patients.[7]

Grief and Bereavement: It can be a valuable tool in helping individuals cope with grief and loss.[8]

Music therapy is versatile and can be applied to diverse populations, including adolescents:

Adolescent Mental Health: It is used to address various disorders typically diagnosed during the adolescent stage, including mood disorders, anxiety disorders, eating disorders, and problematic behaviors such as suicide attempts, family withdrawal, social isolation, aggression, elopement, and substance abuse.[9]

For children, music therapy contributes to health maintenance and rehabilitation. Cutting-edge technology capable of monitoring cortical activity provides insights into how music engages the brain and induces alterations during the perception and generation of musical stimuli. Music therapy has shown enhanced results particularly in the areas of sensorimotor development, cognitive function improvement, and communication rehabilitation when used alongside other forms of rehabilitation methods.[10]

In AYURVEDA, music has been mentioned at various places including in the context of *Vajikarana*,[11] for *pitta prakriti* individuals,[12] in treatment of *Rajyakshama*,[13] *Jivadan*,[14] as a protective measure for newborn,[15] etc.

In Charaka Samhita sharira sthana chapter 8 (*Jaatisootriyam shariram)* shlok 47, protective measures are described as a means to ensure the well-being and protection of both the mother and the child which includes *Geet* (music).[15]

Acharya Charaka has specifically mentioned Geet (music) in protective measures for a new born.

Acharya Sushruta in sharir sthana chapter 10 (*garbhini vyakarana*) shlok 7 has mentioned the use of *mangalmaya* objects in *sootikagara*.[16]

Acharya Vagbhata in uttara sthana chapter 1 (*balopcharniya*) shlok 4 has mentioned to recite the hymn near the child's right ear if the child is inactive after birth.[17]

In the realm of modern science, the application of music therapy for premature infants has been validated through rigorous scientific research. Premature infants, born at 37 weeks of gestation or earlier, are notably at a higher risk of experiencing a variety of health complications. These challenges include breathing abnormalities, lower amount of body fat, and reduced muscle tissue development and difficulties with feeding. Premature infants often face underdeveloped coordination between sucking and breathing, which complicates the feeding process.

The favorable developmental advancements and improved behavioral outcomes seen in premature infants on their discharge from the Neonatal Intensive Care Unit (NICU) can be directly linked to the stimulation programs and interventions, they undergo during their hospital stay, including music therapy.

Music is integrated into the NICU through five key techniques aimed at providing benefits to premature infants: [18]

1. Use of Recorded or Live Music: This technique involves live musical performances or playing recorded music to have positive effects on premature infants. It has been effective in fostering respiratory regularity, maintaining optimal oxygen levels, and reducing signs of neonatal distress. Given the sensitivity of premature infants, music is introduced in a gentle and controlled environment.[19]
2. Use of Music Devices/Tools: Music therapists employ innovative tools to enhance the sucking reflex in premature infants. One method is using a pacifier-activated lullaby device, which strengthens sucking reflexes and reduces infant pain perception. Another tool is the Gato box, a small instrument that produces rhythmic prenatal heartbeat sounds. Music therapists use their fingers to create rhythmic patterns that aid in movement during feeding and encourage healthy sucking patterns. Improving sucking patterns is crucial for coordinated breathing, sucking, and swallowing required for feeding, which can lead to earlier hospital discharge.[20]
3. Multimodal Stimulation and Music: This technique combines music, including soothing lullabies, with multi-modal stimulation, incorporating various sensory inputs such as auditory, tactile, vestibular, and visual stimulation. The integration of music and multi-modal stimulation has led to earlier NICU discharges compared to infants not receiving this therapy. It also promotes sleep and conserves vital energy for weight gain in premature infants. Instrument like the Remo ocean disk has shown benefits, including reduced heart rate, improved sleep patterns, lower respiratory rates, and enhanced sucking behavior among premature infants.[21]
4. Parent-infant Bonding: Music therapists work with parents to facilitate bonding through infant-directed singing techniques. Therapeutically, singing has proven effective in increasing oxygen saturation levels for infants in incubators compared to maternal speech alone. This technique helps maintain higher oxygen levels for longer durations.[22]

5. Infant Stimulation: Music therapy provides infant stimulation, using musical stimuli to compensate for the absence of typical sensory experiences in the NICU. This approach helps create a calm environment by masking disruptive auditory stimuli. In addition, it supports parent-infant bonding by enabling parents to communicate and spend quality time with their premature infants, even when they are in incubators. This nurturing environment fosters a vital bond between parents and their premature babies.[23]

Music therapy is also utilized for infants in the Cardiac Intensive Care Unit (CICU) to improve their well-being. Research in this area has shown positive outcomes, with many infants experiencing reduced average heart and respiratory rates. Furthermore, the average blood pressure of these infants tends to decrease following music therapy sessions. Although individual responses may vary, the majority of infants benefit from improved physiological parameters as a result of music therapy interventions.[24]

3. DISCUSSION

The use of music as a therapeutic tool to address various health issues has gained recognition worldwide. It is true that in the Western world, various music genres are employed in conjunction with different forms of therapy and wellness practices. In India, music has ancient roots in the Samaveda, and its therapeutic applications are noted in Ayurveda and other literary works. There is a rich tradition of classical music, which has been explored for its healing potential in various diseases.

Integrating music with Ayurveda is an exciting approach that could offer cost-effective and safe alternatives for addressing health concerns. Leveraging this ancient wisdom and combining it with modern behavioral therapy techniques can create a holistic approach to health and well-being. Further research in this field, including the effects of classical music on newborns, is warranted.

Classical Ayurvedic literature has not always used *geet* (vocal) and *vadya* (instrumental) music as treatments, but it has done so in a variety of settings. Music can be utilized as a criterion for prakriti assessment because *paittika and vaatikaprakriti*, respectively, were thought to be fond of music by Charaka and Vagbhatta. *Rajyakshma* is thought to have an immune deficiency disorder, or *ojokshyaya,* in which the manas, or psychological state of mind, is weak and incapable of focusing on any sensuous items. Hence, depending on the patient's preferences, soulful music may have been employed to restore psychic Vigor. The *sattvika prakriti* category of manas prakriti contains *gandharva* as one of the *prakritis* that is known for its taste in music, dancing, literature, painting, and other creative endeavors.

Almost all three Acharya of Brihatrayee have included *Gandharva sattvaas* likers of music. In condition of *sanyasa* (coma) where all sensual stimuli have minimal/no effect, over those places, Acharya Charak has advised to play music (song and instrument). It might be to reestablish the sensorium. *Vajikara* which is one of the eight branches in Ayurveda has given role of music as a *vajikara* like effect. *Vajikarana* therapy not only leads to increased sexual capability but it is by these that one attains *varna* (lustre), *swara* (sweet voice), *bala* (strength), and psychic strength. *Saumanasya* (peaceful and positive thinking) of mind leads to *garbhadharana* (conceiving of child), thus a soulful music may help as *vajikarana dravya*. A form of *Unmada* (Insanity) *vatika unmada,* that is, one having neuropsychological reasons has manifestations of singing, dancing as its features. Acharya vagbhatta has given music as one of the therapeutic measures to pacify pitta along with other *shita dravyas* (Cool potency drugs) like *chandana (santalum album), ushira*. It may be supposed that music has some *shita* (cool) effect which pacifies *ushnata of Pitta*. It is not justified as seven *swara* which is root of music has different dosha pacifying capacity. Different Indian classical ragas have been told to be sung on fixed duration of time of day and night. It may be correlated with Ayurvedic study of predominance of *Doshas (vata, pitta, and kapha)* in different time of (*purvahna, madhyahn, and aparahan)* as various doshas are said to be predominant during different stages of day and night but it needs scientific evaluation based on qualities and effect. *Yaksha and Gandharvagraha* have been administered to patients who exhibit pathological singing and dancing signs. It is not recommended to drink water after eating, especially if you sing. The etiological causes of *swarabheda* (voice hoarseness), which is frequently observed in musicians, include loud or prolonged singing. Music industry employees may experience various forms of *swarabheda* (hoarseness). Its cause and therapy have been covered. Studies using music therapy have demonstrated benefits for a variety of illnesses, including schizophrenia, cancer, psychological dysfunction, anxiety, and terror. Based on these, it may be concluded that music can be developed as a treatment tool for palliative care, psychosomatic disorders, for relaxation, and reducing anxiety.

4. CONCLUSION

Music therapy cannot only effectively improve preterm infant's heart rate, stable respiratory rate, and attenuate stress level but also exert a positive impact on oral feeding volume. In addition, music therapy also plays a role in reducing maternal anxiety. However, due to the heterogeneity across studies in some outcomes, further studies with larger sample size and more stringent design should be conducted before recommendation. Ayurveda's mention of music as a preventive measure and a treatment modality, along with modern scientific research, highlights the potential of music therapy, particularly in neonatal wards.

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