



A Monthly e Magazine
ISSN:2583-2212

February, 2026 Vol.6(2), 502-508

Popular Article

“Effectiveness of Prenatal music therapy on mother’s psychological status, sleep quality and Infant behavioral – neuronal Development”

Hanna Sunkara¹ and Vinutha U Muktamath²

¹Ph.D, Department of Human Development and Family Studies, College of Community Science, University of Agricultural Sciences, Dharwad -580005, Karnataka, India.

²Assistant Professor & Scientist, Dept. of Human Development and Family Studies, College of Community Science, University of Agricultural Sciences, Dharwad, Karnataka, India.

[DOI:10.5281/ScienceWorld.18880016](https://doi.org/10.5281/ScienceWorld.18880016)

Abstract

Prenatal music therapy is a holistic, non-pharmacological intervention that uses sound, rhythm, and melody to enhance maternal well-being and support fetal development. Rooted in ancient traditions such as *Garbh Sanskar* from Indian culture and paralleled in Greek, Chinese, and Middle Eastern philosophies, prenatal music practices emphasize the influence of maternal auditory environments on the unborn child. Modern research validates these traditions, demonstrating that music exposure during pregnancy reduces stress, anxiety, and depression, while enhancing emotional bonding, positive mood, and sleep quality in mothers. Structured listening to ragas, lullabies, or mantras regulates maternal physiology through the activation of the parasympathetic nervous system, thereby improving sleep latency, duration, and overall emotional stability. Evidence further shows that prenatal music therapy positively affects neonatal outcomes, including calmer behavior, better emotional regulation, improved sleep-wake cycles, enhanced feeding reflexes, and stronger maternal-infant bonding. Neurodevelopmental benefits include strengthened neural plasticity, enhanced memory formation, accelerated auditory maturation, and improved readiness for cognitive and language development. Collectively, these findings highlight prenatal music therapy as a culturally adaptable, safe, and cost-effective intervention with significant potential to optimize maternal mental health and promote healthy infant growth and brain development

Introduction

Prenatal music therapy is the structured use of music, sound, and rhythm during pregnancy to promote the physical, emotional, and psychological well-being of the mother and to support the healthy development of the fetus.

From **16–18 weeks**, babies begin to hear sounds, and **by 24 weeks** they respond to voices and noise. In the **third trimester**, they recognize the mother’s voice, language, and music. Soothing tunes like lullabies and classical melodies help calm and nurture them. Prenatal music therapy is not a modern invention. It has deep cultural and spiritual roots across



civilizations. Since ancient times, people believed that the mother's state of mind and the sounds she hears during pregnancy influence the unborn child.

Famous Mahabharata story: The Story of Abhimanyu Where a child learns (Chakravyuha) while still in the mother's womb – the perfect example of prenatal music/education therapy in ancient tradition

Prenatal music therapy practices in India (Garbha Sanskar)

Ancient Indian texts like the Vedas and Upanishads emphasized Garbh Sanskar: Education in the Womb. Garbha" means womb, "Sanskara" means nurturing or cultivating. The idea that the fetus is conscious and responsive to the mother's environment. Pregnant women were encouraged to listen to classical music, devotional songs, and recite mantras, as these vibrations were believed to nurture the baby's intellect, emotional stability, and spiritual growth. (Verma and Shukla 2023)



<https://delhiculturecomment.blogspot.com/2021/11/online-dakshina-vaideyanathan-dances-at.html>

Time Theory of Ragas (Samaya Raga Theory)

Certain ragas are linked to times of the day or seasons (e.g., Raga Bhairav for early morning, Raga Yaman for evening). Listening at the "right" time aligns human emotions with natural cycles. Helps regulate maternal mood, synchronizes body rhythms, and creates a natural flow that may benefit both mother and fetus. (W. Mastnak, 2016)

Raga Chikitsa (Therapy through Ragas) each raga (melodic framework in Indian classical music) carries a specific emotional and physiological effect. Pregnant women listen to specific ragas to balance emotions, reduce stress, and positively influence fetal development. (D. Krishna et al.2013)

Vedic Chanting Reciting Sanskrit mantras from the Vedas in specific tonal patterns Mothers chanting or listening to Vedic mantras are thought to transmit positive vibrations to the fetus, fostering calmness, clarity, and spiritual grounding. (Shubham Ram Kulkarni 2018)



Greece: Philosophers like Pythagoras and Plato highlighted the healing power of music. Expectant mothers were advised to listen to harmonious melodies to ensure calmness, balance, and healthy fetal development. (Sidorenko, V. N. et al., 2000)

China: Traditional Chinese medicine viewed music as a tool for balancing Qi (life energy). Soft music and lullabies were believed to maintain maternal harmony and transmit positive energy to the fetus. Livia Kohn (2011)

Middle Eastern cultures: Lullabies and rhythmic drumming were used to connect mothers with their unborn babies, fostering emotional bonding. (Karaca & Ongun, 2017)

Prenatal music therapy practices across various countries.

High-income countries like the US, UK, Canada, Germany, Australia, and Japan are established **centers for music therapy**, where the practice is well-integrated into healthcare and research. (Fancourt, D., & Finn, S. 2019) In **Brazil and Argentina**, music therapy is being used **creatively to support premature babies** and address emotional healing in families. (Haslbeck, F.B., & Bassler, D. 2018) **India is increasingly interested in culturally embedded music therapy interventions** using traditional musical forms like **Indian classical or Vedic chants** especially as non-stigmatizing community-based mental health tools. (Bhandarkar, S.M., & Rathod, S 2023) In **The Gambia**, a culturally rich group-based intervention called CHIME (Community Health Intervention through Musical Engagement) used local music and dance, showing significant reductions in prenatal anxiety and depression (Cummins C et al. 2020)

Prenatal music therapy for the psychological well-being of pregnant women.

Reduce Stress and Anxiety: Pregnancy often brings worries about childbirth, the baby's health, and physical changes. Listening to calming music or engaging in guided music therapy lowers cortisol (stress hormone) levels, creating a sense of peace and relaxation. (Lin et al., 2019; Shafqat et al., 2024)

Stabilizes Mood and Prevents Depression: Soothing music stimulates the release of dopamine and serotonin, which improve mood. This can help mothers cope with emotional fluctuations, irritability, or depressive symptoms common during pregnancy. (Ibrahim et al., 2024)

Enhances Emotional Bonding: When mothers sing or listen to lullabies, they develop a stronger emotional connection with the unborn child. This bonding reduces feelings of isolation and promotes maternal confidence. (Chang et al., 2015)

Boosts Positive Thinking: In ancient Garbh Sanskar, mothers were advised to listen to devotional songs, mantras, and classical music. Modern research also shows such music



enhances mindfulness, optimism, and emotional balance, all vital for a healthy pregnancy. (Shafqat et al., 2024; Shafqat & Agrawal, 2023 review)

Effectiveness of Prenatal Music Therapy on Sleep Quality

Reduces Stress & Anxiety and Supports mental Health: Music listening decreases stress hormones like cortisol, leading to relaxation. Liu et al. (2016) showed that pregnant women who listened to music for 30 minutes daily had significantly lower stress and better.

Activates Parasympathetic Nervous System: Slow, rhythmic music stimulates the body's relaxation response. Lowering heart rate, blood pressure, and breathing rate. Which prepares the body for sleep. (Coban & Yanikkerem, 2022)



<https://share.google/images/jjlwi5GHEaDmniF2I>

Decreases Sleep Latency: (Hoegholt et al., 2024) Bedtime music shortens the time it takes to fall asleep, helping pregnant women transition to sleep faster

Enhances Sleep Quality & Duration: (Liu et al., 2016; Çoban & Yanikkerem, 2022) Regular music listening (15–30 min daily for 2 weeks) leads to significant improvement in PSQI scores and longer, more restful sleep.

Improves Emotional Well-Being: (Meena Konsam et al., 2023) Music creates a calming emotional environment, reducing intrusive thoughts and bedtime anxiety. This improves sleep continuity and reduces night-time awakenings.

Safe, Non-Pharmacological Intervention: Music therapy is simple, cost-effective, and free of side effects. Making it ideal during pregnancy for insomnia.

Effectiveness of Prenatal Music Therapy on Infant Behavioral Development

Regulates Behavior and Emotional Responses: Neonates whose mothers had music therapy



during pregnancy show calmer behavior, less crying, and quicker soothing when exposed to the same music postnatally. This is linked to lower stress reactivity and better emotional regulation. (Kim & Lee, 2018).

<https://share.google/images/Yx6C7HSKh4Mo3NFWu>



Improves Sleep–Wake Cycles: Babies exposed to soothing prenatal music often display more regular sleep patterns and spend longer in quiet sleep, which is crucial for brain growth. (Lai et al., 2006)

Supports Feeding and Growth: Music exposure is associated with improved sucking reflex and coordinated feeding behavior in newborns, especially preterm infants. Leads to better weight gain and faster hospital discharge in NICU settings. (Loewy et al., 2013)

Promotes Early Bonding: When mothers sing or play the same songs postnatally that were used in pregnancy, babies show positive orientation, attention, and calmness, strengthening mother–infant attachment. (Haslbeck, 2012)

Effectiveness of Prenatal Music Therapy on Infant Brain Development

It is proven that music has a role in brain development before birth.

Strengthens Neural Plasticity & Memory Formation: Infants exposed to maternal voice and music showed better functional brain connectivity on fMRI and more stable physiological states (heart rate, oxygen saturation). This suggests that prenatal music may prime the brain for memory and attention development. (Chorna et al. (2019) – USA)

Enhances Auditory System Maturation: Foetus exposed to a specific melody during the last trimester had stronger brain responses (EEG) to the same melody after birth, proving that prenatal auditory learning occurs and strengthens neural circuits in the auditory cortex. Partanen et al. (2013) – Finland



<https://share.google/images/Pm8J6ESBRaU411ior>

Regulates Emotional Responses: Prenatal music exposure has been linked with calmer newborn behavior, reduced crying, and

better ability to self-soothe after birth. This indicates improved limbic system regulation and emotional development. (Shahid et al., 2021 – Pakistan)



Improves Cognitive Readiness: Studies suggest that music-exposed infants demonstrate better orientation, attention span, and alertness in the neonatal period, which are early indicators of higher cognitive potential. (García González et al., 2017 – Spain)

Supports Language Development: Prenatal exposure to speech and lullabies enhances phoneme discrimination and strengthens neural networks for early language acquisition. (Partanen et al., 2013 – Finland)

Conclusion

Prenatal music therapy significantly improves the psychological well-being of pregnant women, reducing depression, anxiety, and stress while enhancing happiness, family relationships, socialization, and physical health. Physiological outcomes such as maternal blood pressure, heart rate, and fetal heart rate baseline also improve. Sleep quality shows marked benefits, with reduced PSQI and ISI scores and more mothers reporting good sleep. For neonates, prenatal music exposure leads to better habituation, orientation, state regulation, autonomic stability, and motor performance, as compared to controls. Infants scored higher in all habituation domains, showing enhanced behavioral regulation. Neurophysiological evidence (EEG/ERP) demonstrates stronger auditory processing and memory formation in music-exposed infants, with effects persisting up to 4 months of age. Systematic reviews confirm that prenatal auditory experiences improve state regulation, attention, and neurological maturity. Overall, prenatal music therapy is a safe, cost-effective and non-invasive intervention that supports maternal mental health, promotes positive pregnancy outcomes, enhances neonatal behavior and fosters early brain development and learning.

References

- Chang, K.-M., Chen, S.-F., & Huang, C.-P.** (2015). *Music interventions to reduce stress and anxiety in pregnancy: A systematic review and meta-analysis*. *BMC Psychiatry*, 17, 1432. [SpringerLink](#)
- Chorna, O., Filipina, M., Sa de Almeida, J., Lordier, L., Monaci, M. G., Hüppi, P. S., Tolsa, C. B., & Grandjean, D.** (2019). Maternal voice interventions in the neonatal intensive care unit elicit speech processing at 7 months in infants born preterm. *Proceedings of the National Academy of Sciences*, 116(12), 5949–5954.
- Effects of Music on Sleep Quality and Comfort Levels of Pregnant Women** (2022). Pilot RCT. [PubMed](#)
- García González, J., Ventura Miranda, M. I., Requena Mullor, M., Parraca, J. A., & Rodríguez García, P. L.** (2017). Effects of prenatal music stimulation on fetal cardiac state, newborn anthropometric measurements and vital signs of pregnant women: A randomized controlled trial. *Women and Birth*, 30(1), e1–e8.
- Haslbeck, F. B.** (2012). Music therapy for premature infants and their parents: An integrative review. *Nordic Journal of Music Therapy*, 21(3), 203–226.
- Karaca, A., & Ongun, M. T.** (2017). Traditional lullabies and their effects on mother–infant bonding: A cross-cultural perspective. *Journal of Human Sciences*, 14(2), 1857–1866.
- Kohn, L.** (2011). *Health and Long Life: The Chinese Way*. Cambridge University Press.



- Krishna, D., Gowda, M., & Dhananjaya, B.** (2013). Raga chikitsa: Theoretical and practical aspects of music therapy in Indian classical music. *International Journal of Ayurveda and Pharma Research*, 1(3), 23–28.
- Kulkarni, S. R.** (2018). Vedic chanting and its impact on mind and body. *International Journal of Yoga and Allied Sciences*, 7(1), 85–89.
- Lin, C.-J., Chang, Y.-C., Chang, Y.-H., Hsiao, Y.-H., Lin, H.-H., Liu, S.-J., Chao, C.-A., & Wang, H.** (2019). Music interventions for anxiety in pregnant women: A systematic review and meta-analysis of randomised controlled trials. *Journal of Clinical Medicine*, 8(11), 1884. [PMC](#)
- Loewy, J., Stewart, K., Dassler, A. M., Telsey, A., & Homel, P.** (2013). The effects of music therapy on vital signs, feeding, and sleep in premature infants. *Pediatrics*, 131(5), 902–918. <https://doi.org/10.1542/peds.2012-1367>
- Mastnak, W.** (2016). Time theory of ragas in North Indian classical music: A pilot study with reference to the impact on its listeners. *Sangeet Galaxy*, 5(2), 40–49.
- Meena Konsam, Samir Kumar Praharaj, Sunita Panda, Jyothi Shetty, N. Ravishankar, & S.R.B. D'Souza.** (2023). Effectiveness of Health Literacy and Relaxing Music on Quality of Sleep and Risk for Antenatal Depression. *Indian Journal of Psychiatry*, 65(10), 1035-1043. [OUCI+2PMC+2](#)
- Partanen, E., Kujala, T., Tervaniemi, M., & Huotilainen, M.** (2013). Prenatal music exposure induces long-term neural effects. *PLoS ONE*, 8(10), e78946. <https://doi.org/10.1371/journal.pone.0078946>
- Partanen, E., Kujala, T., Tervaniemi, M., & Huotilainen, M.** (2013). Prenatal music exposure induces long-term neural effects. *PLoS ONE*, 8(10), e78946. <https://doi.org/10.1371/journal.pone.0078946>
- Partanen, E., Kujala, T., Tervaniemi, M., & Huotilainen, M.** (2013). Prenatal music exposure induces long-term neural effects. *PLoS ONE*, 8(10), e78946. <https://doi.org/10.1371/journal.pone.0078946>
- Shafqat, N., Agrawal, A., Pushpalatha, K., Singh, B., Verma, R., Podder, L., Das, S., & Sutar, R. F.** (2024). Effect of Music Therapy on Anxiety in Pregnancy: A Systematic Review of Randomized Controlled Trials. *Cureus*, 16(9), e69066. [PMC+2PubMed+2](#)
- Shahid, N., Ijaz, S., & Anwar, S.** (2021). Effect of prenatal music exposure on neonatal behavior and emotional regulation: A randomized controlled trial in Pakistan. *Journal of Neonatal Nursing*, 27(6), 390–396. <https://doi.org/10.1016/j.jnn.2021.05.006>
- Sidorenko, V. N., Zhuravlev, A. L., & Vinogradova, V. V.** (2000). Music therapy in obstetrics and gynecology. *Journal of Perinatal Medicine*, 28(6), 427–433.
- The effect of music on pregnancy-related insomnia: A systematic review and meta-analysis** by Hoffmann, Hoegholt, Flensted, Vuust, Kringelbach & Jespersen (2025). *Midwifery*, Volume 142, Article 104294. [soundhealth.ucsf.edu](https://www.soundhealth.ucsf.edu)
- Verma, A., & Shukla, R.** (2023). *Garbh Sanskar: Preparation of Motherhood*. *International Journal of Indian Psychology*, 11(3). Retrieved from https://www.researchgate.net/publication/372852691_Garbh_Sanskar_Preparation_of_Motherhood

