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Promoting A Health Pregnancy With Sound

Abstract

The purpose of this paper was to conduct a comparison of literature review on the subject of sound perceptions in the womb and its relationship to promoting a healthy pregnancy for mother and her unborn child with sound.

Introduction

Sound is an important aspect of a child's life from before the time they are born. From birth, infants appear to come into this world biologically ready to perceive and respond to subtle differences in pitches, scales, and melodies as well as to remember familiar tunes. (Illari & Polka, 2006, Saffran, Loman, & Robertson, 2000, Trainor et al., 2004, Werker & Tees, 1999). In the early stages of development, the unborn child will experience sound enculturation through their parents, family and community environment. Dr. Verny and others' research into the life of the unborn child has found that the child in the womb “can see, hear, experience, taste, and, on a primitive level, even learn in utero.”

The fetus' environment is one of sound, of breath and heartbeat, of rhythm and vibration. At first singing and other sounds are felt as a vibration. The baby begins to develop an auditory system between 17 and 19 weeks. Although, according to one study, some babies can respond to loud low-pitched sounds as early as 16 weeks. Uterine sounds form a “sound carpet” over which the mother's

voice in particular appears very distinct and which the fetus gives special attention because it is so different from its own amniotic environment. The baby can detect different moods and emotional responses to speech and music at around 36 weeks old, which leads to distinguishing between happiness, sadness, anxiety and peace.

Recent research involving hydrophones (a microphone designed for underwater use) (Deliege & Sloboda, 1996) has revealed that there is very little distortion of the mother's voice as heard by the fetus. A segment of *The Music Instinct* featured Sheila C. Woodward of the University of Southern California, who has studied fetal responses to music. A camera and hydrophone were inserted into the uterus of a pregnant woman, and Woodward sang a lullaby. The hydrophone picked up two sounds: the "whooshing" of the uterine artery and the unmistakable sound of a woman singing a lullaby. Then an extraordinary thing happened. Upon hearing the woman's voice, the unborn child *smiled*.

Sound Exposure for the Fetus and Preterm Infant

Exposure to sound can have both beneficial and harmful effects on the developing fetus and preterm infant. The maternal abdomen and uterus filter out most high-frequency sounds and lessen dB levels. Over the past several years new scientific research has overwhelmingly shown that there are many benefits to playing music, singing or toning while pregnant, including; positive affects on fetal brain development, prenatal learning, reducing stress levels during pregnancy, improving a baby's sleeping habits after birth, and providing a wonderful bonding opportunity in utero.

Studies in humans and nonhumans have demonstrated that exposure to intense and sustained sounds outside the dB and frequency range normally heard by the fetus is harmful and may be related to hearing deficits, chromosomal abnormalities, elevated cortisol levels, decreased lactogen levels, and abnormal social behavior following birth. The normal frequency range that can be heard by an adult is between 20 and 20,000 Hertz (Hz) (Gray, 2000); however, the younger fetus (up to 27 weeks gestation)

hears predominantly lower frequencies (below 500 Hz) and probably cannot detect frequencies above 500 Hz until 29 weeks due to filtering by the maternal tissues (Gerhardt & Abrams, 2000). Studies strongly suggest that women should avoid prolonged exposure to low-frequency sound levels (<250 Hz) above 65 dB during pregnancy and sound devices, including headphones, should not be placed directly on the abdomen. Directing sounds straight into the abdomen can disrupt sleeping patterns and agitate the fetus. A study of 131 children ages 4-10 from Quebec showed a 3-fold increased risk of high-frequency hearing loss in children whose mothers had been exposed to 85-95 dB, particularly if these exposures involved a strong component of low-frequency noise. Research suggests that after the third trimester, the fetus may become agitated and kick strongly when exposed to loud sounds in their environment. The fetus echoes the mother's response to the quality of the music. Even if only the mother hears music — if she has headphones on, and it is music that she finds soothing — the baby's heart rate lowers while the mother is listening. If the mother finds a certain piece of music stressful, the baby's heart rate goes up.

A six month old child in my Suzuki ECE music class attended weekly music classes with his 2 year old brother as a prenate and listened to the CD of lullabies and nursery rhymes as well as his mother singing them to him and his brother on a daily basis. Both mother and I noticed that the 6 month old becomes very enthusiastic and smiles when hearing his mother or teacher sing. The child is calm, bright-eyed, has keen concentration, kicks his feet in perfect timing to the beat of the rhythm, and grasps instrument mallets and smiles when playing instruments with his mother or teacher in music class.

Singing and Toning

Many women believe that they can't sing or are tone deaf. The truth is that the more we sing and use our voice, the better we become. Singing is one of the first gifts a mother gives to her baby. Toning is another option for women who are not yet comfortable with their singing voice. The mother may sound out the vowels A, E, I, O, U and make them sound for as long as possible. The benefits of singing or toning include; bonding, calming and relaxing the baby, giving the baby a 'sound massage', increasing oxygen flow, assisting with speech development and decreasing the mother's chance of catching minor infections.

Trained sound therapists who specialize in prenatal sound therapy offer sessions for expecting mothers. The therapist 'bathes' the expecting mother and her baby in gentle sounds. The therapist may use Tibetan Bowls, Crystal Bowls, toning, overtoning, intuitive singing, drumming and gentle percussions. It is common practice not to give treatments to pregnant women during the first trimester as it is the most delicate time in the growth of the baby.

Choosing Music

According to research, prenates prefer slow passages of Baroque music such as Vivaldi, Telemann, and Handel, rather than Beethoven, Brahms and Rock. (Satt, 1987)

Expecting mothers are recommended to make a recording compilation of favorite music during pregnancy, including music that matches their resting heart rate. CDs designed for pregnancy include lullabies and nursery rhymes, or collections of classical music such as *Love Chords* by Dr. Thomas Verny. The CD can later be used as a tool for 'soothing emergencies' when the parents don't feel like singing.

The father of a 6 month old student in my Suzuki ECE music class recounted a tense moment during a family trip. They were on the airplane when his daughter became very uncomfortable and started crying loudly. He began singing a familiar song over and over, resulting in his daughter calming down and regaining her former peaceful state.

Benefits of Sound, Singing and Toning during pregnancy

- Calming environment and relaxing for the mother and baby – reduces tension and stress.
- Reinforcing bonding and a sense of deep connection
- Increasing oxygen flow to baby
- Stimulating for the baby – helps brain development, speech development
- Raising endorphins of mother improves mood and baby via the placenta
- Calming, relaxing, balancing, promoting peace and happiness
- Immune booster
- Energizing, positive energy
- Releasing stuck energy
- Preventing post-natal depression
- Healing trauma

Benefits of Sound, Singing and Toning During Birth

- Effective tool for pain relief during labor and means of staying calm and relaxed.
- Alpha and Theta state, necessary to maintain maximum oxytocin flow.
- Transitioning from womb to earth – (lessen trauma of bright lights, noises, strange environment, confusion and frustration)
- Listening to familiar music during birth to maintain a familiar environment

"The ultimate objective of using sound during pregnancy is to help create a child well integrated in his/her physical, emotional, intellectual and spiritual self." (Chevda, 2014)

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