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The Effects of Music on Prenatal Babies

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ABSTRACT

A baby in the womb hears many sounds from the outside world, but one type of noise that gets a lot of attention from moms-to-be is music. While the jury is still out on the true impact of prenatal exposure to Mozart and Bach, preliminary research appears to indicate that the unborn child might enjoy and benefit slightly from a daily dose of music. This article attempts to review the effect of music on prenatal babies, the published studies on the theoretical effect and its application in pregnant women.

Keywords: Music therapy, Classical music**,** Mozart effect**,** Infant**,** Newborn

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INTRODUCTION

As humans, we all share one unique feature – the ability to produce and enjoy music. Music is not a new concept though. More than 165,000 years ago, our ancestors have already invented percussion instruments. Today, all societies and cultures have music. With these ancient roots, Music undoubtedly plays a significant part in our lives today. There are reasons for our fondness for music. Music affects our emotions and activates certain brain areas, the same centers of the brain for food and drug addictions. It seems that our appreciation for music is innate. Infants, even as young as two months old, turn to pleasant sounds, but away from dissonant, harsh, sounds. This fascination of music has made many scientists ponder – does Music affect more than our emotions? Does music physically change the brain and affects our intelligence? Etc.

Prenatal studies show that at the beginning of the second month of pregnancy, a fetus' eyes, nose, and ears are clearly visible, and by the fifth month, the baby's hearing has fully developed. This has lead to further research regarding the baby's ability to recognize music and the various benefits that music can have on the unborn child and the mother. This article explores a few of the benefits associated with music in pregnancy and how it may help the unborn child.

Music Reduces Stress Levels during Pregnancy

Pre-natal stress hugely growths the likelihood of a child having attention-deficit hyperactivity disorder, cognitive delay, anxiousness and depression. Stress during pregnancy as well increments the risk of the child being autistic and, in rare cases, schizophrenic. Stressed mothers also produce babies with lower birth weight, which can be an indicator for coronary heart condition in later life.

It is claimed that mothers who played music and read to their babies during pregnancy feel a stronger maternal; bond and reported less symptoms of postpartum depression as compared to mothers who did not use any type of prenatal stimulation.

It is also established that babies recognize the music they are exposed to while in the womb. After their birth, familiar music captures their attention, comforts them, relaxes them and helps them fall asleep faster and sleep longer than babies who didn't hear music at all while in the womb. Playing the same music after birth can further help establish a better sleeping pattern for the baby.

Music and Brain Development

Numerous studies have found that pre-natal exposure to music in the animal model increases neurogenesis, the birth of neurons, in the memory-center of the brain, the hippocampus. The

hippocampus is a major brain structure present in all mammals involved in the consolidation of short-term to long-term memory, and in spatial navigation. Damages to this area of the brain result in memory loss. Alzheimer's disease is an example where the loss of memory is largely attributed to damages at the hippocampus. On the contrary, studies have found that increased neurogenesis at the hippocampus enhances memory. Rats stimulated by music before birth display an increase in the birth of neurons at the hippocampus, and an improvement in spatial memory. At the molecular level, music up regulates the expression of proteins involved in the survival of neurons, such as CREB, p-CREB, and BDNF. Music may stimulate an improvement in memory through the increase in neurons at this brain area. The number of synapses of the neurons also increases at the hippocampus. The synapse is a junction that allows neurons to pass chemical signals to another cell for communication. Thus, a neuron with more synapses would be communicating with more neurons. A higher synaptic density has been correlated with improvement in memory. Having neurons that are talking to other neurons more seem to improve spatial memory. Perhaps pre-natal music stimulation changes the expressions of proteins at the molecular level, which allows more neurons to be born and to communicate with one another, leading to an enhancement in spatial memory.

Music Helps Strengthen the Bond with the Unborn Child

Recent scientific research into the effects of prenatal music stimulation shows that music provides an excellent way for the mother to bond with her unborn child. Prenatal stimulation is a concept that uses stimuli such as sounds (either a mother's voice or musical ones) along with movement, pressure, vibrations, and light to communicate with a developing baby prior to birth. While both music and singing can be used to strengthen the bond with your child, Dr. Michel Odent, M.D., believes that women have a profound need to sing to their babies. Singing to your unborn child is extremely beneficial since the singing voice has a richer frequency range than speech. Frequency is the level of pitch measured in Hertz (Hz.) and varies between 16 to 20,000 Hz. A mother's voice is more clearly heard by the fetus, as there is very little distortion when compared to other external voices, especially in the higher frequencies.

How to use music during pregnancy?

Some experts recommend moms-to-be to play music cautiously to their unborn child during pregnancy:

Moderate use of music as a therapy:

Like all good things in life, music therapy too should be practiced in moderation. Listen to your feelings. Don't listen to music just because it is good for your baby but because you feel relaxed when listening to music or singing. Your baby may feel the same too.

Carefully choose the volume:

Many misconstrue that the baby inside the womb cannot hear music unless it has been turned on loud. It's not necessary to do so as amniotic fluid is a good conductor of sound. Thus the volume chosen should be lower than 70 decibels. It's also suggested to avoid placing headphones or a speaker directly on your abdomen.

Loud, chaotic or disturbing music should be avoided: The choice of music played also matters. Professor of Music Medicine at Brigham Young University in Provo, Utah, Dr Rosalie Pratt, points out to certain animal studies that show how constant exposure to chaotic, discordant music negatively alters the brain's structure

A good choice, according to Dr. Pratt, would be classical music (especially Mozart's symphonies), or any kind of soft, melodious music of your liking other than rap, grunge, metal, or hard rock songs. Babies may get startled which such alarming music of these genres due to their loud and discordant nature. Animal studies claim that brain development is negatively altered when these types of music are played to the fetus. Also, music or songs with 'swear words' are not at all advisable.

It sounds unbelievable to some of us, but classical music could do your baby a lot of good. There are experts who believe that listening to classical music can make a baby happier, healthier and smarter.

Classical Music

The concept of classical music being of help when played to the fetes in the womb is not new. A great deal of evidence supporting the notion has been collected. Intriguingly, there is now quite a bit of data indicating that classical music can enhance the physical development, health and intelligence in babies.

There are many benefits to play classical music for the fetus in the womb. They are:

Positive impact on Physical Health:

Unlike many kinds of music, it is strongly believed that classical songs/music have a calming effect upon the human mind and body. The structure and slow tunes relaxes the mind and the heart. This can positively make an impact on the unborn babies by helping them relax and sleep and thereby improve their mental health. Also infants that have a hard time sleeping and those that have suffered emotional trauma can benefit most from classical music.

Good for Language Development:

There is definitely a strong correlation between music and language development. Babies who listen to classical music when in the womb might learn to talk and read faster. Also helps develop good listening skills and improve memory, which are vital to learning language.

Uplifts Mood and Mental Health: An interesting aspect of classical music is its ability to elevate mood and improve mental health. A study by the American Music Therapy Association revealed that listening to classical rhythms gives a soothing effect to the mind and body stimulating the production of endorphins or natural relaxants in the brain which in turn uplifts the mood, relaxes the body and leads to improved mental health and increased learning abilities.

Develops Complex Neural Pathways:

Some child development experts believe, 'playing classical music to your baby whilst in the womb will stimulate your baby, boost the baby's IQ, enhance creativity later in life, and improve the ability to speak, see, and hear'. Advocates recommend playing music to your baby any time after the 4th month of pregnancy because 'it can stimulate the development of complex neural pathways that allow the brain to process information'.

The Mozart Effect

The best known and most controversial benefit from classical music for babies in the womb and after birth is the Mozart Effect. French researcher Dr Alfred Tomatis, who coined the term, believed that classical music encouraged development of the brain. Animal studies showed rats who listened to Mozart before and after birth were able to find their way to the end of a maze more quickly than those that did not listen.

CONCLUSION

To a pregnant mother, the most important question may be, "Should I listen to music then?" While we do not know whether music directly or indirectly affect the brain in animal studies, music does alleviate prenatal stress, which is at least beneficial for the mother. As of now, there are no studies that demonstrate a correlation between music and negative effects. Music also minimizes the distress of labor. While controversies remain on the effects of prenatal musical stimulation on intelligence, there are no doubts that music benefits the mother. A mother should not listen to music, expecting to increase a child's intelligence, but listen for her own enjoyment and benefits

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