Impact of Music Therapy on Fetus and Mother by sonography

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***Abstract*—** Pregnancy is one of the remarkable and noble services imposed by nature for the continuity of species results in birth of children. Music therapy used as Complementary and Alternative Medicine (CAM) now a days. Pregnancy is a condition in which mother have to face various psychological and mood changes activates, gynecologist always trying to handle them without using a drug, because drug in form of chemical can affect growth and development of fetus. Many congenital disorders are the result of the use of various types of drugs such as Ectromelia, Phocomelia etc. use in pregnancy. To avoid such conditions gynecologists are always trying to minimize the use of drugs during pregnancy. The present study is aimed to use the pleasant sounds for emotional regulation, relaxation and pain management, help in parturition, anxiety, stress and facilitate the child's growth and development. Present study prove that if pleasant sounds used scientifically, it will be helpful to control pregnancy mood swing and pain management of mothers and growth and development of fetus. Music increases the unborn child's heartbeat, movement, sound stimulation enhances the brain's maturation, the Mozart effect boosts creativity and cognitive skills, and in utero listening to lullabies improves postnatal sleeping habits. The aim of the study was to evaluate the impact of music therapy on cardiac activity parameters of fetus and movement of fetus through abdominal ultrasonography in antenatal mother in the 8 week to 36(till delivery) through different types of music (Pop, Classical, Folk, Instrumental, Punjabi, Religious).

***Index Terms*—** Pregnancy, Music therapy, Heartbeat, Ultrasonography, Fetal development, Parturition.

I. INTRODUCTION

Pregnancy is one of the remarkable and noble services imposed by nature for the continuity of species results in birth of children. Children's are most valuable gift of nature. A woman face various physiological and psychological problems during pregnancy and child birth. It is a peaceful moment when mother listen and feel fetus heartbeat. Pain, Mood swings are a normal experience during pregnancy. Mother body is going through physical and hormonal changes affecting their day-to-day life. Mother having emotional ups and downs. While mood swings are common, depression is a different matter. There is also a difference between feeling nervous and having anxiety that interferes with mother ability to get through the day. Depression and anxiety aren't the same as "mood swings." In fact, there is high evidence that music exerts a positive influence on the fetal development. However, music should not be considered a sort of "panacea." Even though many musical effects on the developing human psychophysiological system are stunning, we have to be careful not to overestimate the power of music and not to ignore underlying mechanisms. Nonetheless, the more we discover how sound, rhythm, neural maturation, cognitive development, and so forth are interrelated, the more "music in antenatal care" gains in medical and educational importance.

Depression or anxiety during pregnancy can increase the risk of experiencing postpartum depression or anxiety. Both depression and anxiety can have adverse health effects on mother and fetus. Music work as a therapy it's brings variety of experiences such as promoting muscular relaxation, relieving anxiety and depression in mother, even fetus also realized and enjoy music therapy, during therapy fetus movement and heartbeat changes. So music can be used to decrease pain or stress during pregnancy and help growth and development of fetus. This study was planned to identify the

- The effect of music therapy on the cardiac activity of a fetus through abdominal ultrasound examination
- The effect of music therapy on the movement of fetus through USG (Ultra sonography)
- The effect of music therapy on "mood swing" of mother

In obstetrics, midwifery, pre- and perinatal education, and developmental psychology, music has become a topic of concern. In many cases, however, interdisciplinary research and antenatal music application go separate ways. Bridging this gap could help to optimize the benefits of antenatal music activities, to control possible sound-associated risks, and to create scientifically reliable standards for best practice.

This article intends to contribute to a scientific basis of this promising movement and suggests a multidimensional framework for the use of music therapy in controlling pregnancy mood swing of mother and heartbeat, movement of fetus.

II. MATERIAL AND METHODS

- Volunteers are selected form Mohan Swaroop Hospital, Dadari, GB Nagar. The procedure is explained to volunteers and they signed their consent form prior to perform the study.
- During study music is provided through two head phone (Wireless headphones having frequency adjusters, sounds meter and Android phone). One head phone was paced on abdomen/womb of mother and another on the ear of mother as shown in photograph (3,4). To control the sound

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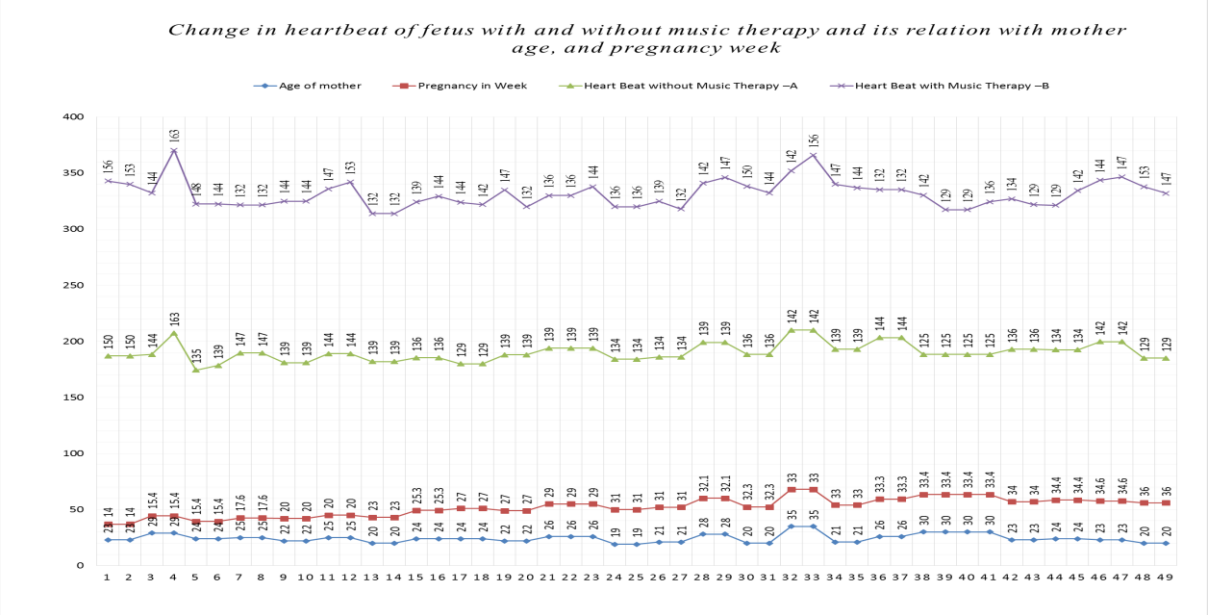
frequency, pitch a third headphone is used by instructor. All the three headphones working thorough a single point

- Selected sounds are given to volunteers through headphone and heartbeat, movements are observed through USG machine and ECG of fetus.
- Toshiba (Model Nemio XG) having antenatal facility (scan movement and position of fetus and E.C.G electro cardiograph of fetus) used for the study.
- The study was conducted on twenty eight subjects (volunteer) with pre and post music therapy treatment and repeated twice with every volunteers.

III. Results

In most of the cases heartbeat and movement of fetus increased significantly by music therapy. Variation of heart beat depend on different types of ragas such as pop hip hop music best choice of fetus, music therapy increased heart rate of fetus 5 to 27 BPM it’s depend on the nature of fetus. 8 to 9 week fetus also realized the rhythm of music.



Graph-1: Showing relationship between mother age (Ist line form bottom), pregnancy week (IInd line form bottom), and heartbeat of fetus with (IIIrd line form bottom) and without (VIth line form bottom) music therapy and it reflects the positive correlation between mother age, pregnancy week and sound therapy.

Research work was conducted on volunteer pregnant women’s to measure cardiac activity of fetus through abdominal ultrasound to give music therapy (different types of ragas). The findings are significant and highly significant.

There are highly valid quality standards for antenatal, perinatal, and postnatal health care. They refer crucially to the control of physiological and mental risk factors such as hypertension in pregnancy or depressive dispositions. From this perspective, we understand music therapy as an add-on intervention, as a way to facilitate health promotion as well as preventive measures, and to improve individual and social well-being. We found variation of heart beat depend on the different types of sounds such as pop, hip hop music is one of the best choice of fetus , the sound of music increase the heart rate of fetus 5-27 bpm it's depend on the nature of fetus. 8 to9 week's fetus also realized the rhythm of music. Fetus react according to the choice of mother (i.e) if mother enjoyed during therapy so murmured of heart beat increased. Mother age & mentality also play a key role in the fetus activity. Some of the mothers are religious in nature so their fetus movement increased through religious music (bhajan or qawwalees). Romantic songs are the second choice of fetus, when mother hear romantic song, the heart rate of fetus have increased at few points but fetus moved faster with the rhythm of hip hop music, mostly fetus shows bicycling movement (of both feet called stepping and stepping) during therapy, which is very important in helping to turn the baby upside down for a normal delivery. So music given during pregnancy will be helpful in parturition. Even few fetus shows half cycling movement through folk dancing songs in advanced pregnancy (32 weeks or more till delivery). 8 to9 week fetus also starting rolling movement during therapy. When antenatal mother and fetus both treated with romantic music, the movement of fetus slow down according to romantic music but the murmured of heart increased magnificently.

The vigorous movement of fetus may have painful in some women’s but maximum women’s admitted in survey that during music therapy pain of vigorous movement of fetus measurably decreased and they feel relaxed during and after therapy . Mostly women admitted that Classical dancing songs play a major role to decrease pain of vigorous half cyclic or rolling movement of fetus. Pain in lower abdomen is a major problem of mostly women's, which is decreased by music therapy in many cases during and after therapy.

A. Significant findings

Fetus moved faster during hip-hop and romantic songs which reflects that fetus enjoying it. Increased blood pressure and fast breath of fetus show during hip hop music (DJ remix songs).

Slow paced music leads to lower heart rate comparison to their baseline values. The soft sound of romantic songs with low rhythm are perfect for fetus or infants. The increase in bicycling movement observed during hip-hop and stepping movement increased in romantic songs. Music positively impact the health of adults or infants but pain or stress during pregnancy have decreased few points by music therapy (i.e music decreased the level of stress during pregnancy), which results to control the pregnancy mood swing of the mother. The mother voice and reactions is one of the most important sensual stimuli for the fetus. Music also help to overcome delivery pain through DCS theory of neuroendocrine stimulation.

B. Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

IV. ACKNOWLEDGMENT

Dr. N.P. Karolia, radiologist of Mohan Swaroop Hospital, Dadari, GB Nagar.

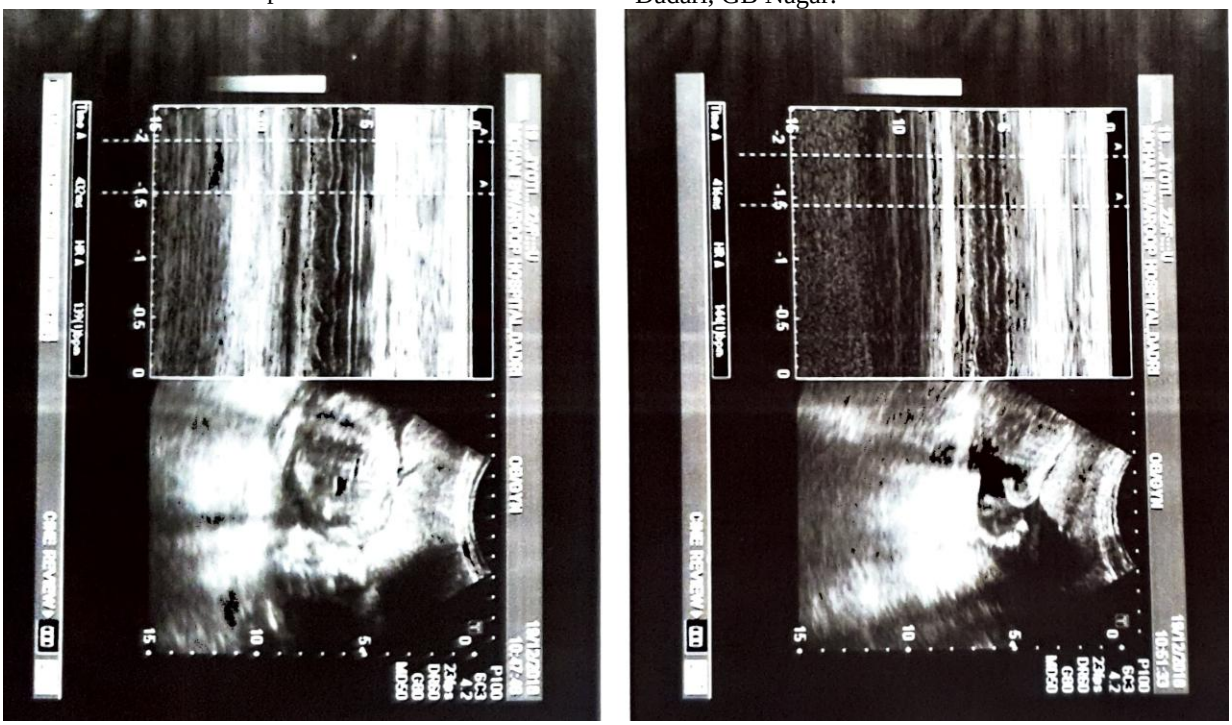


Fig-1: ultrasonography (Pre and post music therapy) of a volunteer in which movement and heartbeat increased and mother feel relaxed.

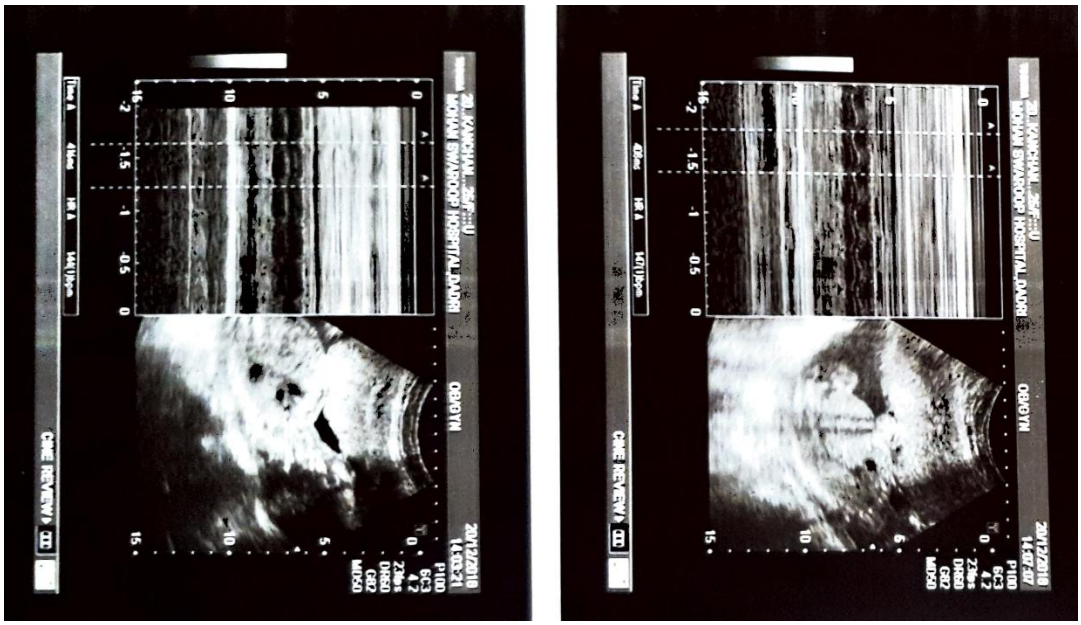


Fig-2: ultrasonography (Pres and post music therapy) of a volunteer in which movement and heartbeat increased and mother feel relaxed.

Fig-3,4: Showing positional placemats during music therapy of volunteers

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