# The effects of music listening on psychosocial stress and maternal—fetal attachment during pregnancy

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**Abstract**

*Objective:* While music listening has been studied as an intervention to help reduce anxiety in pregnant women, few studies have explored the effect of music listening on pregnancy-specific stress relief. This study examines the effects of music listening on psychosocial stress and maternal—fetal attachment during pregnancy.

*Design:* A randomized controlled trial was implemented. A valid sample of 296 pregnant women in their second or third trimester was randomly distributed into an experimental group ($n = 145$) and a control group ($n = 151$).

*Interventions:* The experimental group received routine prenatal care and music listening. The control group received routine prenatal care only.

*Main outcome measures:* Data were collected using a demographic form, Pregnancy Stress Rating Scale (PSRS), Perceived Stress Scale (PSS), and Maternal—Fetal Attachment Scale (MFAS).

*Results:* The post-test results identified a significantly lower level of psychosocial stress in the experimental group than in the control group, particularly in terms of the stresses related to baby care and changing family relationships and to maternal role identification. However, no statistically significant differences in terms of perceived stress and maternal—fetal attachment were found between the post-test results of the two groups.

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*Conclusion:* This study provides evidence in support of using of music in interventions designed to relieve psychosocial stress in prenatal women.

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## 1. Introduction

Pregnancy is an event that has a significant and long-term impact on the life of the expectant mother. The physiological and psychological impacts of pregnancy tend to change as pregnancy progresses. While many women experience various dynamic stresses due to physiological and psychological changes that are directly attributable to the pregnancy event,[1] the effects of the pregnancy experience typically continue to affect a mother for the rest of her life.

Pregnancy is a process that helps women learn and assume their new maternal role and which culminates in the formation of maternal identity.[2–4] Mastering the maternal role, a process known as maternal role attainment, includes mimicry, role-play, fantasy, looking for a role fit, and grief work. Mercer[5] stated that transition is the specifically cognitive process of developing the maternal identity through ''maternal role attainment''. Mercer[6] later suggested replacing the term ''maternal role attainment'' with ''becoming a mother'' in order to better reflect the life-transforming experience of pregnant women. This experience relates to the stresses felt by pregnant women during the transition to motherhood. Pregnancy is the anticipatory stage of becoming a mother and is a natural life event.[6] However, an effective and natural way to reduce the stress of pregnancy is required. Music therapy offers one potential approach.

The use of music in psychological healing has been well documented throughout history. Music therapy is a noninvasive approach to the treatment of psychological symptoms. This approach has minimal or no side effects and is cost effective, convenient, and completely natural. Music has been part of the human experience since the beginnings of history, and history is replete with the belief in the therapeutic and healing powers of music.[7] Music intervention may support emotional, spiritual, and psychological needs of recipients by creating an environment that stimulates and maintains relaxation, well-being, and comfort to reduce or control stress.[8] As noted by Murrock and Higgins,[9] music may produce both psychological and physiological responses that alter the mood of a recipient, leading to improved health outcomes. Chanda and Levitin[10] elaborated the evidence that music facilitates health outcomes through the engagement of neurochemical systems, manifested by several key neurochemicals mediating the stress response. In addition, Solanki et al.[7] articulated that music influences the parasympathetic system prevailing over the sympathetic system and consequently facilitates a relaxation response.

Music has been applied to reduce the stress in surgical settings [11,12] and hospice care.[13,14] Eight studies reveal that music has also been applied to improve the well-being of women during their transition to motherhood. Three of these studies were performed on women during the antenatal stage,[1,15,16] four during labor and delivery,[17–20] and

one during the early postpartum stage.[21] Music listening has been used as an intervention in pregnant women in their second and third-trimester,[1] or during transvaginal ultrasound examinations[15] and tocolysis.[16] Prior studies also showed that music listening significantly reduced pregnancy-related anxiety in subjects.[1,15,16] Although anxiety and stress are different constructs, prior research on the topic of maternal distress has largely used these terms interchangeably.[22,23] In certain contexts, anxiety is a symptom of the physical and psychological responses to stress. Rallis et al.[23] argued the necessity of understanding how the experience of perinatal stress differs from that of perinatal anxiety/depression because related research had demonstrated that a close correspondence between the affective state of stress with the sense of feeling overwhelmed/unable to cope and because the affective state of distress may be a significant precursor of depression and anxiety. Finally, a reduction in the stresses of pregnancy, a cornerstone life event and the bridge to motherhood, is generally perceived as a positive outcome with the potential for widespread benefit.

The therapeutic effects of music listening on maternal/psychosocial stress gathered using a pregnancy-specific stress instrument has not previously been tested scientifically in healthcare studies. Therefore, our aim in this study was to examine the effectiveness of music listening during pregnancy on psychosocial stress, perceived stress, and maternal–fetal attachment. We hope this music treatment will gain greater attention among health-management practitioners and encourage the development of a proper scheme for using music to reduce women's pregnancy-specific stress and, consequently, reduce pregnancy-related depression and anxiety in this vulnerable population.

## 2. Methods

### 2.1. Design

This study is a randomized control trial with two groups. The experimental group received routine prenatal care and music listening. The control group received routine prenatal care only.

### 2.2. Participants

After the institutional review board approved the study protocol, we recruited a convenience sample of 320 participants from the antenatal clinic of a medical center in Tainan, southern Taiwan between December 2009 and May 2010. The inclusion criteria were: (1) pregnant women over 18 years of age; (2) gestational age ≧17 weeks; (3) expected to have