ABSTRACT

**Objective:** In today’s era, due to changing lifestyle and increasing workload, human’s psychosomatic systems seem to be under pressure. It leads to stress, depression, hypertension etc., with increased chances to worsen during pregnancy. Music and creative visualization present as good remedial and preventive measures. The study was done to evaluate the effect of music with creative visualization on psychological health of the pregnant woman by using assessment Scale PSS-10. **Methods:** It was an open randomized control clinical study where 30 singleton pregnant women diagnosed with normal pregnancy were subjected and divided into trial and control group. Subjects of trial group were exposed to music and visualization daily for ½ hour after 20 weeks of gestation up to delivery with routine antenatal care. PSS-10 was evaluated on first visit followed by after 2 month. **Result:** PSS-10 score was found significantly reduced in trial group ($t = -14.52$, $P <0.0001$). **Conclusion:** Prenatal music and creative visualization exposure can considerably reduce maternal stress level and improvise psychological health of to be mother.

**Keywords:** Music, Creative visualization, Pregnancy, PSS-10, Mental health

INTRODUCTION

Pregnancy is the period of a woman’s life where she undergoes through various physiological changes that have the potential of to produce psychological disturbance including mood swings and anxiety. This is the period where she requires extensive care, rest, guidance and assurance. In present scenario due to changes in the lifestyle, professional workload; psychological hazardous effects such as stress, anxiety, depression etc. have increased for pregnant women. It may affect pregnancy and its outcome negatively\(^1\). High pregnancy anxiety levels have been associated with preterm birth and low birth weight\(^2\). Moreover maternal stress
and anxiety can also lead to adverse childhood outcome such as negative emotionality\(^3\), developmental delays\(^4\) and attention deficit hyperactivity disorder\(^5\).

The interventional protocols of Samhita kala insisted upon Nada and Drushya which potentiates the Garbhachaitanya to reform the foetus into the ‘Shreyasi praja’. Nada in form of music provides a spiritual experience to communicate with the foetus-in-utero. Acharya Charaka has advised to listen music during pregnancy\(^6\). Music loaded with positive thoughts (Brahmaghosha\(^7\) etc.) in soothing tunes act as anti-depressant and mood stabilizer. Certain Indian classical ragas are known to reduce stress by calming the mind as they create peaceful environment.

Drushya has strong impact on Jeevachaitanya of the foetus conveyed by maternal visual perception. Acharya Sushruta has recommended that Garbhini should not be subjected to “Durdarshana”\(^8\). Acharya Vagbhatta has supported same view by “Apriyavlokanashravanadya”\(^9\). In other way it can be understood that ‘Sudarshana’ i.e. good and positive visual exposure during pregnancy could be beneficial. Drushya in form of creative visualization is an intellectual exercise by which mind can be dragged towards good thoughts and pleasant atmosphere which can increase power of positivity.

When music and creative visualization are conjoined with each other, it may prove to be more beneficial for reduction of maternal stress and to sustain enlightenment, tranquilisation and creativity, which can ultimately play a pivotal role in the development of healthy progeny.

**AIMS & OBJECTIVES**
- To evaluate psychological stress of expectant mother during pregnancy.
- To study the effect of music with creative visualization on psychological health of the pregnant woman by using assessment Scale PSS-10.

**MATERIALS AND METHODS**
It was an open randomized control clinical study carried out at Prasutitantra & Streeroga Department, S.D.M. Ayurvedic Hospital, Udupi.

**Study design:**
A group of 30 singleton pregnant women, diagnosed as normal pregnancy of 20 weeks to 32 weeks of gestation were selected and categorized into 2 groups – Group A (Control group) and Group B (Trial Group), Where mothers of group B were subjected to music with creative visualization for half an hour in evening daily from first visit up to delivery. Mothers randomized to trial group were given a pre-recorded music audio CD and posters for visualization and demonstration on first visit. Study was carried out until term. Minimum period of study was 2 months. All the mothers received standard antenatal care. PSS-10 test was evaluated on the 1st sitting followed by after 2 months in both Control group and trial group.

**Interventions**
**Music:** Certain Indian Classical Ragas like Raga Kalyana, Raga Kedara, and Raga Bhoopali with antidepressant property were selected in instrumental form and ‘Atmashatakam’ – a composition consisting of 6 fold Shlokas written by Aadi Shankaracharya.
Atmashatakam reminds the soul its true nature i.e. truth (Sat), knowledge (Chit), internal joy (Anand).

**Visualization:** For selection of creative visualization, pictures with positive thoughts like blossoms, natural sceneries and cute babies were used. Patients were provided guidance to create a visual imagery with the help of the pictures and concentrate upon positive thoughts. Pictures were given with the predominance of colours specifically green and blue which gives joy and relaxing effect to the mind.

**Inclusion criteria**
- Primi and multigravida who were undergoing simple antenatal care with normal course of pregnancy.
- Age groups between 18-35 years were selected.
- Pregnant women with gestational age of 20 weeks to 32 weeks.

**Exclusion criteria**
- Previous caesarean section.
- Patients with multiple pregnancy & IUGR.
- Patients with history of ante partum haemorrhage or placenta previa.
- Systemic disorder like hypertension, Diabetes mellitus, tuberculosis etc.
- Grand multigravida.
- Patients with incompetent cervix.
- Patients with previous history of contracted pelvis.
- Severe anaemia, eclampsia, pre-eclampsia.

**Assessment criteria**
Psychological evaluation of the pregnant women was done by using PSS-10 scale.

**Investigations**
Routine Antenatal investigation like Hb%, Blood grouping with Rh type, BT, CT, RBS, Platelet count, HIV, HBsAG, VDRL, Urine routine

**Statistical analysis**
The statistical analysis was carried out by using IBM SPSS (version 20). Baseline variables were compared using T test and Paired t test with 95% confidence intervals (CI).

**RESULT**
A total of 30 pregnant woman including primigravida and multigravida attending antenatal clinic at a gestation of 20 weeks to 32 were the subject of the study. The females of trial group were randomized to receive exposure of music and creative visualization in addition to standard antenatal care (intervention arm, \( n = 15 \)) and female of control group received standard care alone (control arm, \( n = 15 \)). Analysis was done on the basis PSS-10 score between the groups and within the groups (i.e. comparison of score before and after the intervention).

In the study, statistical analysis of PSS-10 test between the group A and group B revealed highly significant result (95% CI, \( T= -11.266, P<0.001 \)) shown in Table no. 1. The statistical analysis of PSS-10 test before and after the intervention of music and visualization revealed highly significant result in the trial group (95% CI, \( t = -14.522, P<0.001 \)) whereas no significant result in control group (95% CI, \( t = 1.540, P>0.05 \)) as per shown in table 2. Baseline comparisons of maternal variables before and after intervention (Table 3) depicted maximal beneficial effects in trial group.
including parameters - Frequency of getting upset (95% CI, \( t = -6.959, P<0.001 \)), Frequency of loss of control (95% CI, \( t = -4.525, P<0.001 \)), Frequency of nervousness and stress (95% CI, \( t = -8.876, P<0.001 \)), Inability to cope with situation (95% CI, \( t = -4.675, P<0.001 \)) and Frequency of getting angry(95% CI, \( t = -4.090, P=0.001 \)). In control group without intervention of music with creative visualization there were no significant result found in any of above parameters before and after 2 months.

**DISCUSSION**

Music is an energy form which leads to spiritual experience and enlightening which affects a person’s physical as well as psychological physiology and emotions. Soothing music such as Indian classical music induces pleasure with a surge in intense emotional arousal, including changes in heart rate, pulse, breathing rate and release of a feel good chemical i.e. dopamine.\(^{10}\) Creative visualization is the cognitive process of purposefully generating visual mental imagery with intent to experience a subsequent beneficial psychological and physiological effect. The process involves intentional sustaining or maintaining of imagery, participation of direct attention across and around the image and increased degree of mental aptitude and physical ability.\(^{11}\)

The limbic system in the core of brain houses a lot of mood-active structures. Amygdala, in the limbic system, is the centre for emotionally charged memories and persistent negative thoughts. It is active during stress, anxiety and depression. It sits conveniently beside the hippocampus, the part of the brain that serves long-term memory. The hippocampus is tightly connected to the hypothalamus, an important area in all sorts of body regulations. When one is stressed, anxious, or depressed, the hypothalamus makes pituitary to release ACTH. This hypothalamus-pituitary-adrenal (HPA) axis is therefore a highway for the stress response as well as for depression and anxiety. Music with creative visualization provides a path of positivity, encouragement, self-esteem and intellectual foetal and maternal bonding. Thus event of Dopamine release occurs while listening music and finally when music combined with creative visualization, it diverts the mother’s mind towards contentment, bestow ability to handle personal problems and cope with situation, reduces frequency of getting upset, nervous, stressed, irritated and angry. It ultimately provides control of mind which indicates intensification of “Dhruti” i.e. self - command in Garbhini.

**CONCLUSION**

The study indicates that Music with creative visualization provides beneficial effect on maternal psychology. Music with creative visualization gives pacification & emotional stability. Thus provides effective intervention for increased positivity and acts as mood stabilizer during pregnancy.

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Accessed on 30 Dec 2017
Accessed on 30 Dec 2017
**Table 1: Evaluation of PSS-10 in Group A and B**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>N</th>
<th>AT-BT MEAN</th>
<th>SD</th>
<th>SE</th>
<th>T test</th>
<th>P</th>
<th>Intervention</th>
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<tr>
<td>Group B</td>
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<td>1.457</td>
<td>0.376</td>
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**Graph 1: PSS-10 in Group A and B**

PSS-10 test in group A and group B

**Table 2: Evaluation of PSS-10 Before and After Music and Visualization**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>N</th>
<th>BT-MEAN</th>
<th>AT-MEAN</th>
<th>DIFF</th>
<th>Paired t test</th>
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</thead>
<tbody>
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<td>Group A (Control)</td>
<td>15</td>
<td>16.066</td>
<td>16.666</td>
<td>0.600</td>
<td>1.502</td>
<td>0.387</td>
<td>1.54</td>
</tr>
<tr>
<td>Group B (Trial)</td>
<td>15</td>
<td>15.866</td>
<td>10.400</td>
<td>-5.466</td>
<td>1.457</td>
<td>0.376</td>
<td>-14.52</td>
</tr>
</tbody>
</table>

**Graph 2: PSS-10 before and after Music and Visualization**

PSS-10 before and after Music and Visualization
Table 3: Baseline comparisons of relevant maternal variables before and after with or without intervention

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>GROUP</th>
<th>N</th>
<th>BT-MEAN</th>
<th>AT-MEAN</th>
<th>DIFF</th>
<th>Paired t test</th>
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<tr>
<td>Frequency of getting upset</td>
<td>Group A</td>
<td>15</td>
<td>1.6000</td>
<td>1.866</td>
<td>0.266</td>
<td>0.703 0.181</td>
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<td></td>
<td>Group B</td>
<td>15</td>
<td>1.733</td>
<td>0.667</td>
<td>-1.066</td>
<td>0.593 0.153</td>
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<td>Frequency of loss of control</td>
<td>Group A</td>
<td>15</td>
<td>1.666</td>
<td>1.600</td>
<td>-0.066</td>
<td>0.593 0.153</td>
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<tr>
<td></td>
<td>Group B</td>
<td>15</td>
<td>2.000</td>
<td>1.066</td>
<td>-0.933</td>
<td>0.798 0.206</td>
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<td>Group A</td>
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<td>1.933</td>
<td>1.800</td>
<td>-0.133</td>
<td>0.833 0.215</td>
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<td>Group B</td>
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<td>2.466</td>
<td>1.000</td>
<td>-1.466</td>
<td>0.639 0.165</td>
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<td>Ability to handle personal problems</td>
<td>Group A</td>
<td>15</td>
<td>2.266</td>
<td>2.066</td>
<td>-0.200</td>
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<tr>
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<td>Group B</td>
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<td>2.666</td>
<td>-0.066</td>
<td>0.703 0.181</td>
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<td>Inability to cope with situation</td>
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<td>2.066</td>
<td>2.000</td>
<td>-0.066</td>
<td>0.798 0.206</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
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<td>0.866</td>
<td>-1.066</td>
<td>0.883 0.228</td>
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<tr>
<td>Ability to Control Irritation</td>
<td>Group A</td>
<td>15</td>
<td>2.533</td>
<td>2.466</td>
<td>-0.066</td>
<td>0.703 0.181</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>15</td>
<td>2.800</td>
<td>2.866</td>
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<td>0.258 0.066</td>
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<tr>
<td>Frequency of getting angry</td>
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<td>1.400</td>
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<tr>
<td></td>
<td>Group B</td>
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<td>0.800</td>
<td>-0.933</td>
<td>0.883 0.228</td>
</tr>
</tbody>
</table>

Group A- Control group, Group B- Trial group, BT- before treatment, AT- After treatment.

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Conflict Of Interest: None Declared