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Therapeutic Effect of Vedic Chant and Indian Classical Raag on Anxiety of University Students: Protocol of a Randomized Controlled Study

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Abstract

Background: Traditional music therapy practices like *Raag Chikitsa* and *Vedic Chanting* have been used in Indian culture for centuries. Studies supporting the therapeutic effects of both could serve as preventative tools against psychological disorders. Students facing academic and social pressures often risk their mental health issues impairing well-being, leading to dropout or suicide. The choice and mindful exposure of music can reduce anxiety. Background music may boost attention, efficiency, and productivity indirectly, too. Vedic Chants may modulate neurotransmitter activity by inducing specific frequencies and vibrations. However, research comparing Vedic Chant and Raag effects on anxiety among university students is lacking.

Objective: This study aims to compare the effectiveness of Vedic Chant and Indian classical Raag on the anxiety level of University Students.

Methods: It is an open-label, three-arm, parallel-group, randomized controlled study. Participants will be university students aged 18 to 45 years. Two types of interventions, compared to a control group, will be conducted among university students with moderate to high anxiety levels on STAI (Spielberger's State–Trait Anxiety Inventory). The sessions will last 10 days, with three time points: a baseline assessment on day 1 and a post-assessment on week 2, to compare the effectiveness of both Interventions with a control group. The third point of assessment will be done after four weeks.

Conclusion: The interventions involving Vedic Chant and Indian Classical Raag are expected to lower university students' anxiety scores from moderate and high levels. A comparative study will help explore different options and modalities for future music therapy efforts.

Key Messages:

- Research evidence suggests that the therapeutic effect of music enhances emotional and psychological well-being.
- Both Vedic Chant and Indian Classical Raag are interventions that can have therapeutic value, particularly in dealing with non- clinical populations.
- Indian Classical Raag intervention is a secular therapy and may be applied irrespective of religion and community.
- Vedic chant intervention may be more effectively used in the Hindu/ Buddhist population due to the religious element.

Introduction

Music as an intervention can affect human emotions. Music can enhance cerebral cortex function by stimulating the release of neurotransmitters, such as acetylcholine and norepinephrine, thereby improving cognitive function.[1]

Music can also regulate emotional tension, which is responsible for some pathological changes in centers of the brain, such as the hypothalamus and the limbic system of the brain. Music can directly act on the emotional centers of the human brain, such as the hypothalamus and limbic system. It can regulate human emotions and relieve the above symptoms. **[2]** Music stimulates the auditory center and has an interactive inhibitory effect on pain. According to domestic and foreign research and some physiological experimental reports, music therapy has a positive effect on the improvement of anxiety and depression symptoms. [3]

It has been found in some studies that Vedic Chant and Indian classical music can prove to be very effective tools to manage anxiety, regulate skills and promote creative expression. Therapy may be helpful for improving mental health and well-being by activating many areas of the brain to promote overall Physical, Psychological, and cognitive development. Many studies are being done in medical settings to study the effect of music therapy on the anxiety of patients before undergoing surgery or a procedure. [4] But there is a lack of any comparative study on the anxiety of university students with respect to different modes of Music Therapy, like Vedic chant or Indian Classical Raag. Anxiety can affect the learning capabilities and capacity of university students, causing distraction and negatively impacting their concentration and focus. In general, higher education places high demands on student performance, which can lead to excessive stress, anxiety, and even depression, and negatively impact their academic performance and personal well-being. [5] [6]

Mental health problems in students can lead to severe impairment of psychological, social, and emotional functioning, and then increase the risk of dropout, lower educational attainment, and suicidal behavior.[3]

Khambaty & Parikh (2017) have explored the approach towards the treatment of anxiety disorders in India influenced by cultural factors with a diversified range of options, including faith healers, ayurveda, psychopharmacology, Unani medicine, homeopathy, yoga, meditation, and mindfulness and concluded that Indian cultural factors have a profound influence on the presentation, diagnosis, and treatment of anxiety disorders.**[7]**

One of the studies conducted in 30 universities from 9 states of India has revealed the prevalence of depressive and anxiety symptoms among university students, with 23.2% of the students having moderate to severe symptoms of anxiety. The study found academic pressure and stressful life events as everyday stressors, and the need for crisis support services was expressed by the students. [8]

Although many studies have been done to study the effect of Vedic Chant and Indian Classical Raag on Stress, anxiety, and depression, most of these studies have been done on non-clinical populations. There are no or few studies that have been done so far, to the best of our knowledge, to compare the effect of Vedic Chant and Indian Classical Raag on the anxiety of university students, including both the Medical and Non-Medical students.

In previous studies, Vedic chant has been compared with the Indian classical Instrumental Music. In the present study, alaap as *Swar - Vistaar* for *Raag Bhimpalasi* [9] has been used in the same voice to avoid any confounding effects. The recordings have been done at the same scale with the same standardized recording parameters, with minimal ambient noise. The selected Vedic Mantras have been traditionally classified under "*Shanti Karnam*" and "*Swasti Vachan*" in the text Sanskar Chandrika, suggesting an association of Shanti Karnam mantra with peace and mental calmness, whereas *Swasti Vachan* helps in invoking peace and well- being, as described in Sanskar Chandrika.[10] To date, no randomized controlled trials have examined the Psychological impact of these specific Vedic mantras. Multiple Mantras have been selected to maintain thematic congruence between lyrical content and melodic structure.

The Aim

The study aims to compare the effectiveness of two modalities of Music therapy in reducing the anxiety levels of university students using a control group.

Objectives

- To study the effectiveness of Vedic chant in reducing the anxiety level of university students.
- To study the effectiveness of Indian Classical raag in reducing the anxiety of university students.
- To compare the effectiveness of both modalities in reducing the anxiety level of university students.
- To compare the effectiveness of the two modalities with the control group.

Method

It is an open-label, three-arm, randomized controlled Study. In this study, we will be enrolling two active interventions (Vedic chanting intervention and Indian Classical Raag intervention) and will be comparing these two interventions with each other and the third group of controlled participants who will be receiving the tanpura musical intervention. This study will follow an open – label randomized controlled design, as blinding of participants is not feasible because the intervention will be provided by the researcher. Allocation concealment will be using the standard Sequentially Numbered, Opaque, Sealed Envelopes (SNOSE) technique.

Participants include University Students with a moderate level of anxiety, aged 18 and above. The study consists of two types of Interventions, one based on Raag Intervention and the other on Vedic Chant Intervention, each session lasting about 30 minutes for 10 days, with a baseline assessment on the first day and a second assessment on week 2. the third assessment will be done at week 4,—using State- Trait- Anxiety Inventory.[11] Both audio materials related to Raag and Vedic chant has been standardized prior to administration under the guidance of Music and Vedic Chant experts. This study included Population: University students experiencing moderate to severe anxiety; Intervention: Indian classical raag, Vedic chant, & Tanpura music based intervention; Comparator: Students receiving tanpura music will act as comparators for the other two forms of intervention; Outcome: Improvement in the state and trait anxiety; Time frame: Short course intervention over ten days and follow up assessments at week 2 and 4 (Figure 1).

Sample Size

Sample size estimation has been done by using the software G Power version 3.1.7.9. After the consider-

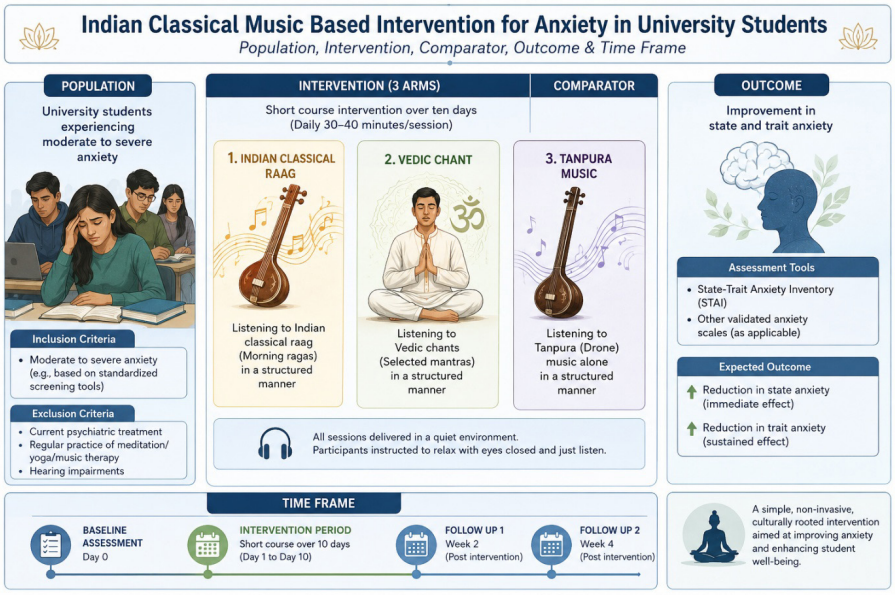

Figure 1: Population, intervention, comparator, outcome, time frame of the study

ation of ANOVA repeated measures within-between interactions for three groups, three measures, effect size (f) = 0.25, α error of 0.05; power = 0.95, and assumption of correlation among repeated measures 0.5 and non – sphericity correction 1, the sample size should be kept 54. But a dropout of 20% was considered, which makes a final sample size of 64.8, which rounded off to 66 for the three groups (22 in each group).

As we are planning for block randomization and a block size of 6 will be taken, and four blocks will be included in each group, a total of 72 participants will be recruited to the study.

Intervention

Eligibility Criteria

The University students, including both male and female aged between 18 and 45 years, have moderate to high anxiety and are willing to volunteer for the study. The subjects should have no hearing impairment or any diagnosed medical or psychiatric conditions. The consent form would be signed by them regarding their approval of being included in clinical trials, as Vedic chant has a religious element.

Participants will be Recruited in Three Arms

- The experimental groups will receive the intervention through Vedic chant and Indian Classical Raag Meditative session for 10 minutes for 10 days, including pre- and post-assessment on the first day and after 2 weeks.
- The intervention will be given in the seminar hall of the Psychology/Psychiatry department of the university campus between 12 and 3 PM, as it is based on *Raag Bimpalasi, which is more effective during the afternoon hours*) by allotting slots to the participants assigned to the particular randomized group. The attendance would be monitored.
- The control Group will be implemented with a meditative session with Tanpura used as a base in the recording of both interventions. It will be played to listen and meditate, as in the other two interventions, for 10 minutes for 10 days.
- The initial session with baseline (week 0) assessment will consider only those fulfilling the inclusion criteria. Then, subsequent sessions will be scheduled for 10 days with week 2 as a post-assessment and then week 4 for follow-up.
- Participants will have to attend a minimum of 6 days of sessions; otherwise, it will be considered a drop–out.

Study Instruments

A semi-structured proforma will be used to collect information regarding Sociodemographic data, including Age, Gender, Educational information, occupation, religion, and clinical data related to any Diagnosed Psychological Disorders or history of the same. Any previous experience in learning Classical Music and/or exposure to listening to or chanting Vedic Mantra in daily life and/or meditating daily.

Tools used for Screening and Assessment Include STAI

The State-Trait Anxiety Inventory (STAI) is a widely used self-report measure of anxiety, assessing both current feelings (state anxiety) and a general tendency to be anxious (trait anxiety). It consists of 40 items, 20 per subscale, and is used in clinical settings and research to assess and differentiate anxiety from other conditions.

The State–Trait Anxiety Inventory is a valid and reliable tool with excellent Psychometric properties. It is used in Clinical settings to diagnose anxiety and differentiate the symptoms from depressive syndromes. On the other hand, it is also used in various research contexts as well. It is a self – report measure of anxiety including both current feelings (State anxiety) and a general tendency to be anxious (Trait anxiety). Participants rate each item on a scale from 0 to 4, indicating absence of anxiety to much anxiety. Both the state and trait anxiety forms contain 20 questions each. The total score of both the State and Trait anxiety ranges from 20 to 80. Low Range comprises scores between 20 and 37, Moderate comprises scores between 38 and 44, and High level between 45 and 80 for both State and Trait Anxiety. It evaluates both current feelings and relatively stable aspects of anxiety. The new version of STAI was published in 1983 as STAI – Y.

Validation of Tool

The State–Trait Anxiety Inventory is a widely used standardized tool and validated instrument for assessing state and trait anxiety in both clinical and non – clinical populations. It has strong internal consistency with strong concurrent, convergent and construct validity. It has been extensively used in Indian populations, supporting its applicability in the present study.

Validation of Audio Intervention

The audio interventions have been recorded by the researcher, trained in music/Music Therapy and meditation. The content was finalized after an extensive review of literature and expert consultation to ensure its appropriateness.

Expected Outcomes

Primary Outcome

The study will allow us to evaluate the therapeutic effect of Vedic Chant and Indian Classical Raag as an intervention on the anxiety of university students.

Secondary outcome

The study will allow us to compare the therapeutic effect of both the interventions, that is, Vedic Chant and Indian Classical Raag Intervention, on the anxiety of University Students.

Research Ethics Approval, Protocol Amendments, and Consent

The Institutional Ethical Committee approved the study. The principal investigator used study information material to inform participants about the contents of this research before their participation. The researcher will briefly describe the advantages of participating in the study before obtaining informed consent. It will be informed to the participants that their participation is totally voluntary and might be terminated at any moment of the study if required.

Procedure

All the participants fulfilling the inclusion criteria for the study and willing to provide the signed consent form will finally be allowed to participate in the study.

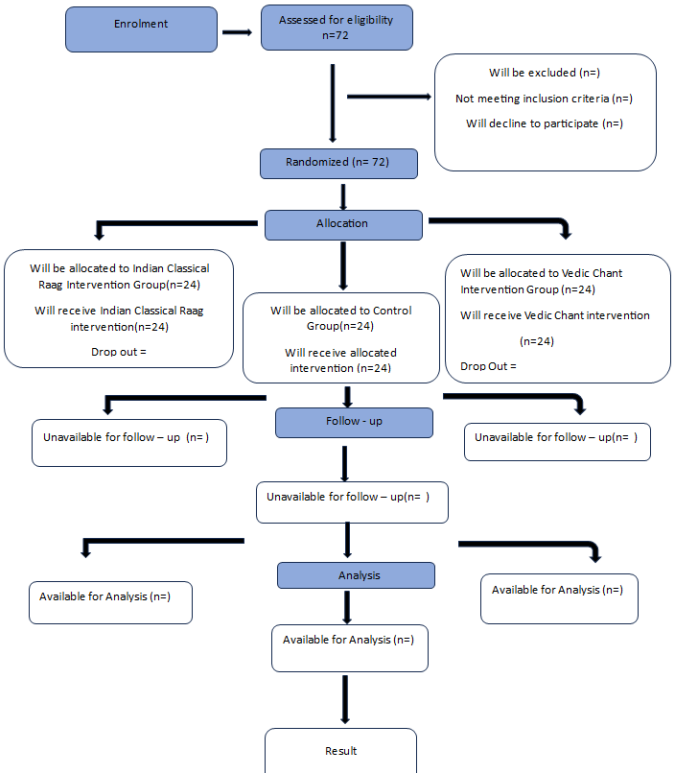

Figure 2: Consort flow diagram

The participants will be randomly allocated either to the "Control Group" or the "Intervention Group" with the help of a computer–generated permuted block randomization process. The information of the group will be kept in opaque, sequentially numbered, and sealed envelopes. The investigator will be aware of the type of intervention given to the participants.

The intervention timeline is shown through Table 1, displaying the Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT) template. While the flow of the participants during the intervention is displayed through the Consolidated Standards of Reporting Trials (CONSORT) diagram in Figure 1.

Confidentiality

The confidentiality will be ensured by the principal investigator to ensure all study – related data securely. The documentation of each participant will be kept separately. The electronic database will be stored together with the screening materials in an Excel file, which will be secured through password

Table 1: Description of interventions for experimental groups and control group

Experimental group 1	*Experimental group 2*	*Control group*
• Day 1: Baseline- Assessment • Day 2: • Students will be allowed to settle down properly. • Maintaining Silence and following the protocols while sitting in the hall would also be assured. • Students would be told to follow the instructions properly. • Simple breathing session of 2 minutes for relaxation would be conducted based on counted breathing used in Starting of Sudarshan Kriya of Art of living. • It would be followed by the session of 10 minutes of Listening to recording with eyes closed. • 1 minute of simple Breathing session would also be conducted at the end of the 10 minutes session before dispersal. • Recording of Vedic Chant would be allowed to listen in different time slots between 12 to 3 PM. • Estimated time for conducting the session is at least 30 minutes for each intervention. • Day 3: Same as above. • Day 4: Same as above. • Day 5: Same as above. • Day 6: Same as above. • Day 7: Same as above. • Day 8: Same as above. • Day 9: Same as above. • Day 10: Post – Assessment.	• Day 1: Baseline- Assessment • Day 2: • Students will be allowed to settle down properly. • Maintaining Silence and following the protocols while sitting in the hall would also be assured. • Students will be told to follow the instructions properly. • Simple breathing session of 2 minutes for relaxation would be conducted based on counted breathing used in Starting of Sudarshan Kriya of Art of living. • It would be followed by the session of 10 minutes of Listening to recording with eyes closed. • 1 minute of simple Breathing session would also be conducted at the end of the 10 minutes session before dispersal. • Recording of Indian Classical Raag would be allowed to listen in different time slots between 12 to 3 PM. (Time slot meant for *Raag Bhimpalasi)* • Estimated time for conducting the session is at least 30 minutes for each intervention. • Day 3: Same as above. • Day 4: Same as above. • Day 5: Same as above. • Day 6: Same as above. • Day 7: Same as above. • Day 8: Same as above. • Day 9: Same as above. • Day 10: Post – Assessment.	• Day 1: Baseline – Assessment. • Day 2: • Base of Tanpura with scale C used in the background of recordings of the Vedic Chant and Indian Classical Raag Interventions would be used for the Control group. • Day 3: • Day 4: • Day 5: • Day 6: • Day 7: • Day 8: • Day 9: • Day 10: Post – Assessment.

protection. The electronic database would not contain any information about the identity of the participant. The computer not connected to the Internet would be employed for data entry.

Support Services and Follow-up Care

A week after participation, Participants will still be able to get in touch with the researchers.

The audio recordings will also be provided to the participants on demand once the study is complete.

Statistical Methods

The data obtained from all the assigned participants will be used for Univariate Statistical test interpretation applied to clinical variables.

To compare the groups, a repeated measures ANOVA will be used to compare the groups, and to analyze the association, Pearson's/Spearman test will be used. To compare changes in anxiety scores across time (pre- and post – intervention) and between the study groups, repeated measures ANOVA will be used, as it allows the assessment of both within-group and between – group differences simultaneously. Pearson's or Spearman's correlation analysis will be conducted to examine associations between variables depending on the normality of data distribution.

The *p-value* of less than 0.05 will be used to indicate statistical significance. Data will be recorded on Microsoft Excel, and analysis will be done using SPSS, version 24.

For data cleaning, we will look for any kind of missing values, and corrections in coding will be ensured with respect to gender and group assignment. The proper allocation of assigned S participants for each type of study through computer-generated randomization will be done. Homogeneity will be checked for equal variances across groups using Levene's test. Shapiro wilk test within each group will be done to test normal distribution. Extreme values violating normality will be detected, and a decision will be taken whether to consider it or not. If assumptions of normality and variances are not met, the Kruskal–Wallis test will be used as a non – parametric alternative. Within-group comparison will be done by comparing the score before and after intervention through STAI to look for any reduction in anxiety level. Between–group comparison will be done to look for which intervention is more effective with respect to the control group. Both with – in and between – groups comparison will be done with the help of ANOVA. Descriptive assessment will be done for gender, anxiety score, number of students of different streams, and residential background. Chi- Square test will be done to see a significant relationship between anxiety score for different genders, streams, and types of residence (urban or rural) population as well.

Discussion

Students avoid seeking formal professional health-care due to the stigma associated with mental health services. There is also a need for early intervention before symptoms of anxiety or psychological distress go unnoticed. Indian studies also indicate a need for non-intrusive methods to address the high levels of depression, anxiety, and psychological distress among both medical and non – medical university students of different streams.[3,5,6]

In a diverse nation like India, cultural beliefs, personal preferences and cultural influence significantly affect the way of addressing the mental health concerns. It could have broad applications addressing multiple issues of mental health and versatile settings, including both clinical and non-clinical populations. [12,13]

This study is unique in employing a distinctive methodology by using the same human voice to perform both Vedic Chants and Indian Classical Raag. The chanting has been done in their simplest form using three specific swars: Uddata, Annudata, and Swarit and the raag has been presented as alaap. The study considers and highlights a research gap in making a comparison of Vedic Chant and Indian Classical Raag.

Conclusions

The research aims to provide a cost - effective crisis support system tailored to individual preferences for high success rates. Interventions can be integrated into clinical and educational settings as mindfulness tools to enhance the psychological well – being.

Limitations

Success would depend on strict time management as the intervention period has to align with the specific raag time period, including small group implementation. It is limited to a single city, which needs a broader application for its applicability. Constant motivation would be needed to ensure consistent attendance to minimize drop–outs.

Declaration of Conflicting Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Disclosure of Delegation to Generative AI

The authors declare the use of generative AI in the research and writing process. According to the GAIDeT taxonomy (2025), the following tasks were delegated to GAI tools under full human supervision:
Visualization: The GAI tool used was: ChatGPT 5.5
Responsibility for the final manuscript lies entirely with the authors.
GAI tools are not listed as authors and do not bear responsibility for the final outcomes.
Declaration submitted by: SK Kar

Ethical Approval

Ethical approval was taken from the Institutional Ethical Committee at King George Medical University No. 394 /Ethics/2025 dated 17/05/25, Ref. code: 143rd ECM IIA/P6.

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Informed Consent

Informed consent will be taken from all the participants at the time of data collection.

Trial Registration

Clinical Trials Registry- India (CTRI): CTRI/2025/06/089152.

Supplemental Material

None.

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