



Impact of Music Intervention (Listening To Indian Classical Music) On Mental Wellbeing During COVID-19 Pandemic

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ABSTRACTS

Reports show that mental wellbeing may be negatively affected by the COVID-19 pandemic. The ragas of Indian classical music are believed to have therapeutic effects. This study was done to investigate the impact of an Indian raga on mental wellbeing during the COVID-19 pandemic. : It was a one-group before-after design study. A total of 45 adult subjects of Kolkata, recruited online, using convenience sampling during the lockdown, underwent a pre-test via Google forms using Warwick-Edinburg Mental Wellbeing Scale (WEMWBS) to evaluate mental wellbeing before the administration of music intervention. After two weeks of music intervention, that consisted of passively listening to raga Hamsadhvani, a post-test using the same scale and the same medium was done. The results showed that the post-test mean of the total score 51.1 (SD = 3.9) of WEMWBS was significantly ($p < 0.001$) higher than the pre-test mean of the total score 30.9 (SD = 4.6). The same trend was reflected by the mean difference pertaining to all of the components of WEMWBS. It was concluded that raga Hamsadhvani may be effective in improving mental wellbeing in a pandemic situation. There is a need to do more work by improvising the research design employed in the present study. This will help to interpret more accurately and more meaningfully the effects of Indian raga music on mental wellbeing.

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ABSTRAK

Laporan menunjukkan bahwa kesejahteraan mental dapat dipengaruhi secara negatif oleh pandemi COVID-19. Raga musik klasik India diyakini memiliki efek terapeutik. Penelitian ini dilakukan untuk menyelidiki dampak raga India pada kesejahteraan mental selama pandemi COVID-19. : Itu adalah studi desain sebelum-sesudah satu kelompok. Sebanyak 45 subjek dewasa Kolkata, yang direkrut secara online, menggunakan convenience sampling selama penguncian, menjalani pre-test melalui formulir Google menggunakan Warwick-Edinburg Mental Wellbeing Scale (WEMWBS) untuk mengevaluasi kesejahteraan mental sebelum pemberian intervensi musik. Setelah dua minggu intervensi musik, yang terdiri dari mendengarkan raga Hamsadhvani secara pasif, dilakukan post-test dengan skala yang sama dan media yang sama. Hasil penelitian menunjukkan bahwa rata-rata post-test dari total skor 51,1 (SD = 3,9) dari WEMWBS secara signifikan ($p < 0,001$) lebih tinggi dari rata-rata pre-test dari total skor 30,9 (SD = 4,6). Kecenderungan yang sama dicerminkan oleh perbedaan rata-rata yang berkaitan dengan semua komponen WEMWBS. Disimpulkan bahwa raga Hamsadhvani mungkin efektif dalam meningkatkan kesejahteraan mental dalam situasi pandemi. Ada kebutuhan untuk melakukan lebih banyak pekerjaan dengan mengimprovisasi desain penelitian yang digunakan dalam penelitian ini. Ini akan membantu untuk menafsirkan lebih akurat dan lebih bermakna efek musik raga India pada kesejahteraan mental.

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1. INTRODUCTION

As the recently emerged COVID-19 pandemic wears on, the mental health of peoples may become more fragile. Hence, strategies to safeguard mental health are warranted. From ancient times it is thought that music has the power to heal. Recent scientific studies also indicate the same. Although previous studies have shown that different music types may be employed as an effective mood-altering intervention (Aalbers et al., 2017; Chan et al., 2011; Eckhardt and Dinsmore, 2012), the realization of the effects of Indian Classical music on mental wellbeing during the COVID-19 pandemic has not yet dawned.

Music intervention is structured music-related activities, such as listening to music, playing a musical instrument, singing, composing, and so forth (Chlan and Heiderscheit, 2018). Music interventions are being widely employed nowadays to investigate the beneficial role of music on physical health and mental health.

Ragas (melody format) form the central core of Indian Classical music. Ragas are known to elicit distinct emotions/moods. The note by note depiction of the tonal structure of a raga is known as alap, which is not bound by rhythmic pulse. The alap is followed by the jod, a section where the sense of pulse in the music begins. Then comes the jhalla where the beats start to appear in groups. Gat is the rendering of composition at a fast tempo in the presence of accompaniment of a percussion instrument, which bestows a rhythmic cycle. Changes in emotions have been observed when tempo rises from the alap to the gat section. That is, the alap and gat sections of ragas may evoke entirely different emotions, and thus the raga therapy may be effective for emotional healing. In an experimental study, the participants described the alap sections of ragas such as Tilak Kamod and Desh to be soothing/calming. In contrast, the faster rhythmic gat section of the ragas evoked happy emotions within the participants. Likewise, when the study participants were made to hear the ragas like Miyan ki Todi and Shree, they evoked sadness in the alap section and tense

feeling in the gat section. Pure notes (Shuddh Swaras) were associated with happiness and calmness, whereas softer notes (Komal Swaras) were associated with melancholy and sadness (Mathur et al., 2015). Ragas may be useful not only to combat mental illness/behavioural disorders but may even be used to fight different diseases, such as heart diseases, high blood pressure, and others (Chatterjee and Mukherjee, 2020; Chatterjee and Mukherjee, 2019; Sarkar and Utpal 2015). Music therapy professionals have also successfully employed ragas such as Hamsadhwani, Brindavana Sarang, Raag Bhoopali, Desh, and others to fight mental depression, a consistent sorrow feeling, and lack of interest (Akkerla et al., 2014).

World Health Organization (WHO) declared SARS-CoV-2 or COVID-19 as a pandemic on 11 March 2020. Large scale epidemics adversely affecting millions of people around the globe are referred to as pandemic (WHO, 2010). The causative agent of COVID-19 is a novel coronavirus, which is thought to have originated from Wuhan, China. The disease is highly infectious and has caused mass infection and mortality throughout the world. The number of infected peoples has been rising continuously. To prevent transmission of the disease, the Indian Government declared a nationwide lockdown on 25 March 2020. The lockdown was ultimately extended up to 31 May 2020. The lockdown limited the movement of the entire country, and the peoples were required to follow different levels of quarantine. Lockdown induced severe confusion, mental agony, uncertainty, job insecurity, job loss, psychological distress, and fear among peoples. Studies have also shown that the COVID-19 pandemic poses threat to several aspects of mental wellbeing, which encompasses emotional, psychological, and social wellbeing (Garfin et al., 2020; Satıcı et al., 2020).

With this background, the present study primarily aimed to evaluate the mental wellbeing (an aspect of mental health) before and after music intervention using an Indian Classical music raga in a sample of adults during the lockdown period of the COVID-19 pandemic.

2. METHODS

This one-group pre-and post-test research design study started a few days after one month of lockdown. It began on 1 May 2020 and ended on 14 May. A convenience sample of 45 subjects, between 30- 45 years, was recruited for the study from a Facebook group. Informed consent of the participants and approval from the institutional ethical committee was obtained before starting the study. The study was done according to the Declaration of Helsinki. *Inclusion Criteria* - (1) Healthy adults: age >30 to <45 years, (2) Subjects not under medications for any health-related issues, (3) Persons not engaged in music-related activities. *Exclusion Criteria* - (1) Subjects under medical treatment, especially for poor mental health or psychiatric and neurological disorders, (2) Persons engaged in music-related activities.

Warwick-Edinburg Mental Wellbeing Scale (WEMWBS), which contains 14 items or statements to explore mental wellbeing, was administered to all the participants employing Google forms on the first day (Pre-test- **before** music intervention) and upon the completion of two weeks music intervention on the 14th day (Post-test- **after** the music intervention). The forms also collected demographic details of age, gender, and employment status. The participants needed to complete the form and submit it online.

Mental Wellbeing: Against each item in the wellbeing determining scale, the participants indicated a response that best described their

level of agreement over the past two weeks and, depending on that, a score from one (none of the time) to five (all of the time) was assigned (Tennant et al., 2007). The total score was calculated by summing up the scores of each item of the scale. The higher the score obtained using this scale, the higher is the mental wellbeing. WEMWBS has been used earlier on the Indian population (Nandi et al., 2012). The rationale behind the choice of using WEMWBS for investigating mental wellbeing in this present study was its good content validity (Tennant et al., 2007), simplicity, brevity, and wider applicability in different settings.

Music Intervention: Receptive music therapy, which adopts a passive approach was employed in the study. The participants of the study, for two weeks, in the evening hours, at 6 pm were asked to listen to about 25-minute session of Indian Classical Instrumental music - Santoor (Raga Hamsadhvani Gat in Teentaal played by maestro Pandit Shiv Kumar Sharma, having tabla accompaniment) in the comfort of their own home, using headphones. The raga (MP3) file was provided to all the participants on their phone through Whatsapp message before the beginning of the study. The participants were asked to get themselves in a comfortable seated position for 15 minutes before starting to listen to music. They were asked to restrict themselves from all other activities while listening to music. The listening sessions required the participants to remain online in zoom application (a virtual video

communication platform), under the supervision of the investigators. This ensured that all of the participants routinely listened to music without skipping.

The raga Hamsadhvani (evening raga) used on the participants is symmetrical in its ascending and descending scales. It belongs to Bilawal Thaata and has a pentatonic note structure. It is originally a Karanataka raga of South Indian system of music. It has been adopted in the Hindustani or North Indian classical music as well. This raga rejuvenates and creates a feeling of celebration and happiness. It is said to have therapeutic value (Akhera et al., 2014; Sarkar and Utpal, 2015).

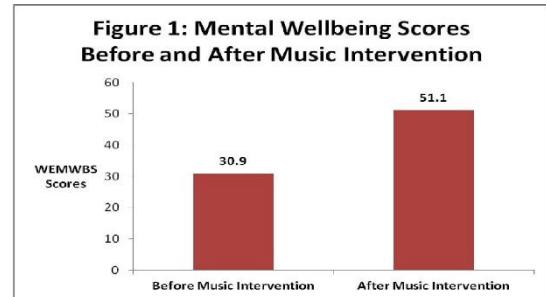
The collected WEMWBS total scores were presented as mean \pm S.D. (standard deviation). Using a t-test, a statistical comparison of the total score was done. The same was done with the scores of individual statements/components of WEMWBS. A p-value of < 0.05 or lower was considered significant.

3. RESULTS AND DISCUSSION

3.1. Results

There were a total of 45 participants in the study. 26 (57.8%) participants were male, and 19 (42.2%) participants were female. All were from Kolkata city. None of the participants had any formal musical training. The mean age of the participants was 36 years. 24 (53.3 %) participants were married, and 21 (46.7%) were unmarried. 28 (62.2%) participants were having postgraduation or higher degrees, and 17 (37.8 %) were having a bachelor's degree. 23 (51.1%) participants were working in the private sector, and 22 (48.9%) were working in the government sector.

The mean of the total score of the WEMWBS before music intervention was 30.9 (SD = 4.6) and after music intervention was 51.1 (SD = 3.9). The mean of the total score of WEMWBS after the intervention was higher than before the intervention. The difference in the mean of the total scores was statistically highly significant ($p < 0.001$) (Figure 1).



It was found that after music intervention there was higher degree of agreement with the statements or components of WEMWBS among the subjects. On the other hand, before music intervention there was lesser degree of agreement with the components of WEMWBS among the subjects. It was noted that the mean values between before and after music intervention on all the components of WEMWBS were highly significant (< 0.001).

(Table 1).

Table 1: Analysis of WEMWBS Statements/Components in the Subjects, Before and After Music Intervention

WEMWBS components	Before music intervention		After music intervention	
	Mean	S.D.	Mean	S.D.
I've been feeling optimistic about the future	2.1	0.81	4.0	0.70
I've been feeling useful	2.5	0.78	4.1	0.76
I've been feeling relaxed	2.1	0.80	3.9	0.81
I've been feeling interested in other people	2.5	0.62	4.3	0.73
I've had energy to spare	2.1	0.83	3.8	0.70
I've been dealing with problems well	1.7	0.84	3.5	0.66
I've been thinking clearly	2.4	0.68	3.5	0.59
I've been feeling good about myself	2.2	0.9	3.4	0.58
I've been feeling close to other people	1.9	0.79	3.2	0.54
I've been feeling confident	2.2	0.70	3.4	0.64
I've been able to make up my own mind about things	2.0	0.81	3.4	0.72
I've been feeling loved	2.3	0.75	3.5	0.62
I've been interested in new things	2.9	0.76	3.9	0.69
I've been feeling cheerful	1.9	0.77	3.2	0.70

Analysis using a t-test to evaluate the differences among the means of before and after music intervention in all the cases indicated a significant p-value (< 0.001).

3.2. Discussion

A comparison of the before music intervention and after music intervention total scores of the participants on the WEMWBS, a psychometric test to explore mental health revealed that the mental wellbeing of the participants improved significantly after exposure to passive music intervention employing raga Hamsadhwani. The same finding was also apparent from the effect of music intervention pertaining to all of the components of WEMWBS. These findings suggested that music intervention may have a significant role in predicting mental wellbeing among the subjects. An earlier Indian study, done using Goldberg Depression Questionnaire, had shown that this raga in combination with other ragas like Desh, Brindavana Sarang, Neelambari, Bhoopali lead to a profound amelioration of depression (Akkerla et al., 2014). However, no studies showing the solo effects of raga Hamsadhwani on mental wellbeing were found in the literature. The findings of the present study fulfil the lacuna, and hence the findings of the study may be considered unique. Published literature shows that on exposure to music there may be reduced sensitivity of the Hypothalamus-Pituitary-Adrenal (HPA) axis leading to the lowering of cortisol hormone secretion in the blood, which induces positive psycho-biological changes (Chanda and Levitin, 2013). An existing study have reported that music may promote expression of emotions by influencing all limbic and paralimbic structures of the brain concerned with the processing of emotional responses (Bella et al., 2009). Music may also attenuate stressful situations by positively affecting psychological health, reducing depression and anxiety (Chatterjee and Mukherjee, 2019). However, conducting physiological/ neurobiological and biochemical investigations to explore the causes behind the improvement in mental wellbeing on exposure to raga Hamsadhwani were beyond the scope of the present study. Non-musical factors, such as some good positive things happening in life, increased quality time at home due to lockdown, and other reasons, may have also contributed to the present study's result. Hence, future studies are needed to be conducted after

controlling for potential non-musical factors that may affect the results.

The WEMWBS focuses on - (cheeriness, optimism, and relaxness), gratifying interpersonal relations, social desirability and different dimensions of positive psychological functionality such as clarity in thinking, energy level, self-acceptance, competency level, autonomy/ self-sufficiency, sense of personal support, self-awareness, adjustability, confidence, decision-making ability, and curiosity (Tennant et al., 2007). It may be said that exposure to music intervention in the present study positively influenced these various dimensions of mental health, and even the expression of emotions was promoted by it. According to WHO, good mental health is essential for the wellbeing of an individual. Wellbeing helps in dealing with stresses in life, developing satisfying relationships, recognizing one's capabilities, working effectively/satisfactorily, etc. and thereby contribute not only to the personal development of an individual but also to the overall development of the community (Nandi et al., 2012).

The low score of WEMWBS in the participants before music intervention indicated the negative impact of epidemics on mental health and corroborated with earlier studies on other population (Jose et al., 2017; Mihashi, et al., 2009 ; Satici et al. 2020). It could also be argued that the observed low score of WEMWBS prior to music intervention simply reflected random factors. Uncertain and continued perception of potential risk, interruption in routine activities of daily life, lack of social contact and support, feeling of being in an uncontrollable situation owing to COVID-19 pandemic may negatively affect the wellbeing of an individual. Anxiety, a feeling of tension and worry for the future, stress (physical, mental and emotional tension) and depression associated with COVID-19 may contribute to chaotic psychological consequences affecting the overall wellbeing of an individual (Satici et al., 2020).

The present study had shortcomings - the data was self-reported, the study included a relatively small sample, and did not have a

control group. The present study being a one-group pre-test post-test study involve the threats to internal validity, and warrants that future studies conducted on similar lines should incorporate a control group for a more accurate interpretation of the observed results. There were also other shortcomings- the study did not control the factors such as gender, age, and other demographic characteristics that may influence the findings. The findings' generalizability is not feasible since the results pertain to those who use smartphones, are conversant in the English language, and spared time for the intervention. The study cannot comment on whether the improvement in mental wellbeing was due to a secular trend (period-to-period variability).

4. CONCLUSION

Although the findings of this study are preliminary, it shows that raga Hamsadhvani of Indian Classical music seems to have therapeutic value in context to mental health. In a pandemic situation, the raga was found to induce positivity, promote psychological functionality, and thereby improve mental wellbeing. Thus the raga may be used as a non-pharmacological intervention for the upliftment of mental health during the COVID-19 pandemic or similar pandemics in the future. It may be expected that the beneficial effects of this raga on mental wellbeing will hold true even in a non-pandemic situation and may favour living a healthy, happy, and well-rounded life. More research is needed to better understand how well the raga music intervention works to bring improvements in the mental health of an individual.

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