Research Article

RESPONSE TO NORTH INDIAN CLASSICAL MUSIC OF WOMEN WITH BREAST CANCER DURING FIRST LINE CHEMOTHERAPY TREATMENT– CASE SERIES

[1]Uthpala Gajamanne, [2]Bhuvaneswari Ramesh

[1]School of Music Therapy (SMT), Institute of Salutogenesis and Complementary Medicine (ISCM), Sri Balaji Vidyapeeth, Pondicherry, India.
[2]Assistant Professor, School of Music Therapy, ISCM, Sri Balaji Vidyapeeth, Pondicherry, India.

ABSTRACT

Breast cancer is identified as the most prevalent type of cancer among women, worldwide accounting to 11.7% of all cancer cases. Patients with breast cancer mostly require multimodal treatment within which conventional chemotherapy is commonly used. A multidisciplinary treatment strategy is encouraged for cancer patients in order to address various side-effects and distress factors during chemotherapy procedures. Music Therapy (MT) is an effective adjuvant treatment which has proven effects on physical, psychological and physiological parameters in cancer patients. North Indian Classical music is impactful for various physical and psychological symptoms and had been highly beneficial for the overall wellbeing of the cancer population. Eight women diagnosed with breast cancer, pre and post-surgery with no previous exposure to North Indian classical music were selected for intervention. A short relaxation induction was done, followed by 15 minutes of live sitar music. Physiological parameters (Pulse Rate, Respiratory Rate, and Systolic/Diastolic Blood Pressure), level of anxiety and cooperation towards the procedure were assessed with the patient's verbal feedback. Pulse Rate, Respiratory Rate and anxiety significantly reduced while the level of cooperation increased post the MT intervention. Most patients indicated moderate interest on the music and willingness to listen to similar music in future. The positive impact of music and the therapeutic relationship is further discussed. North Indian Classical music may be used with breast cancer patients undergoing chemotherapy to regulate physiological parameters, reduce anxiety and enhance cooperation towards procedure while inducing positive thoughts/feelings and providing a relaxing experience.

Keywords: Music Therapy, Breast cancer, Indian classical music, chemotherapy.

INTRODUCTION

Cancer is a disease with altered signaling and metabolism, and a leading cause of death [1]. Cancer cases are expected to hit 21.7 million new cases and 13 million deaths by 2025 [2] India is the third highest in terms of prevalence of cancer and mortality in Asia. Year 2020 recorded 1.32 million cases expected to rise by another 12% until 2025 [3] and doubled by 2040.26 The World Health Organization (WHO) describes breast cancer as the most prevalent cancer in women worldwide, accounting for approximately 11.7% of all cancer cases [4]

Multiple treatment modalities for cancer are available prior to, and after surgical treatment which includes chemotherapy, radiotherapy and immunotherapy. Chemotherapy (CT), the most common form of treatment has increased patient survival rates and reduced likelihood of both local and systemic recurrence of cancer [5] [6] yet has side-effects and associated stressors [27]. Chemotherapy regimens vary upon the type, stage, genetic characteristics of the tumor, age, functioning of organs and previous treatment modalities followed.10,11 Women diagnosed with breast cancer are treated with adjuvant chemotherapy (AC) or Neo Adjuvant Chemotherapy (NACT) depending on their operative status.

DOI: https://doi.org/10.62502/Healing/kv3sn709 | Publication Date: 24/02/2025
Corresponding Author: Uthpala Gajamanne | E-mail: musictherapy.uthpala@gmail.com

Treatment for cancer has evolved into a multidisciplinary treatment strategy where an array of non-pharmacological treatment is included [7] [12] Music Therapy (MT) is an effective adjuvant treatment strategy, providing multiple benefits to various patient populations. Cancer patients have been greatly benefitted with music through diagnosis, treatment as well as follow up phases, [13] acting upon physical, physiological and psychological parameters [14] Western classical music had been useful in reducing anxiety, depression, incidence of vomiting, varying stress levels and fatigue, also enhancing Quality of Life [16]. However, self-selected music is found to be the most effective in MT interventions, especially with the cancer population who often fight with fear of death and many more distress factors [18].

Indian Classical Music has been an important part in the country's rich culture and heritage also providing therapeutic benefits alleviating physical and mental ailments. Even though the use of Carnatic and Hindustani Ragas is yet to be broadly experimented, [17] modern scientific research findings validate the impacts of Indian Classical music on pain, anxiety, sleep disturbances, hyperthermia and more symptoms in the cancer population [17], [30]. Even though the common people's preference might lie on genres such as movie, folk and devotional music, integrating Indian Classical music in MT interventions can be highly beneficial in enhancing the overall wellbeing of patients- specifically to evoke emotions.

This case series aims to observe the response of eight South Indian women with breast cancer, during their first exposure to North Indian classical music.

METHODOLOGY

The series presents eight women (4 pre-operative and 4 post-operative) between 30 and 60 years of age diagnosed with breast cancer undergoing the first cycle of first line AC and NACT chemotherapy. MT sessions were conducted during chemotherapy in the Medical Oncology in-patient ward of a tertiary care hospital in Tamil Nadu, India [19]. This report records patient's responses during the first session of a series of MT interventions which was their first exposure to Hindustani classical music.

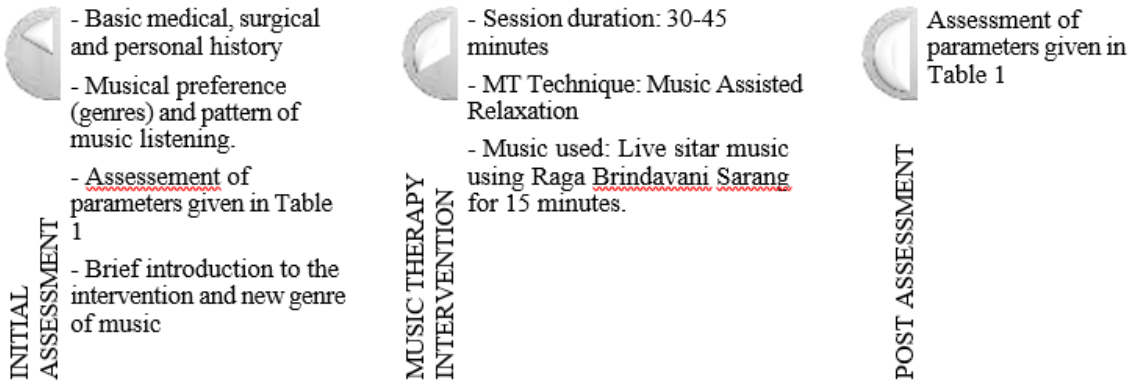


Fig. 1: Music Therapy process (Methodology followed).

ASSESSMENT CRITERIA

Table 1.1. Assessment criteria.

Parameter	Measure	Pre-session	Post-session
1. Physiological parameters			

1.1 Pulse Rate (PR)	bpm	Yes	Yes
1.2 Respiratory Rate (RR)	/min	Yes	Yes
1.3 Systolic/Diastolic Blood Pressure (SBP/DBP)	mmHg	Yes	Pre-operative subjects*
2. Level of Anxiety	Likert Scale (10)	Yes	Yes
3. Overall Cooperation towards the chemotherapy procedure – by nursing staff	Likert Scale (5)	Yes	Yes
4. Verbal feedback of the patient	Verbal	No	Yes

MUSICAL INTERVENTION

MT intervention commenced with a short relaxation induction accompanied by Tanpura music using 'Pitch Pro – Indian Tampura' mobile application. Fifteen minutes of live sitar music was administered in the bedside based on a standard pattern as follows: Starting with slow Alap, Raga was gradually carried through lower to higher octaves for five minutes. Next, Jog Alap; a style of Alap rendered with a rhythm, was played in the same Raga for 8-10 minutes [20]. The jog Alap was brought to an end with no tempo, allowing the notes to resonate. Post the intervention, discussion was done with the patient providing the space to express thoughts about the music.

Case Descriptions

Table 1.2: Demographics and diagnostics of subjects.

Patient	CT regimen	Age	Diagnosis	Intent
A	NACT	39	CA left breast	Curative
B	NACT	52	CA Right breast	IV
C	NACT	55	CA Left Breast	II Curative
D	NACT	56	CA Left breast	II-B Curative
E	AC	34	Carcinoma Left Breast | Non-regional nodal metastasis	II Curative
F	AC	42	CA left breast | Post MRM	III-A
G	AC	50	CA Right breast | Post MRM	II Curative
H	AC	51	Carcinoma Left breast |Triple-negative breast cancer (TNBC)	II Curative

The initial assessment revealed symptoms related to the physical, psychological and emotional wellbeing of patients.

- Pre-operative subjects: Tiredness, lack of energy, procedural anxiety, worry about CT treatment and possible side-effects i.e. hair loss
- Post-operative subjects: Lack of appetite, pain on the surgical site, nausea, vomiting.
- Common symptoms: Sleeping difficulty, lower back pain (physical)| Feeling tense,
- worrying (financial/family burdens), nervousness and despairing about the future (psychological).
- All subjects had a liking towards music; devotional music, melody songs and folk songs.
- All except one reported to listen to music daily - Three while doing household chores and one specifically at night, before sleep.

OUTCOMES

1. Physiological parameters

1.1. Pulse Rate

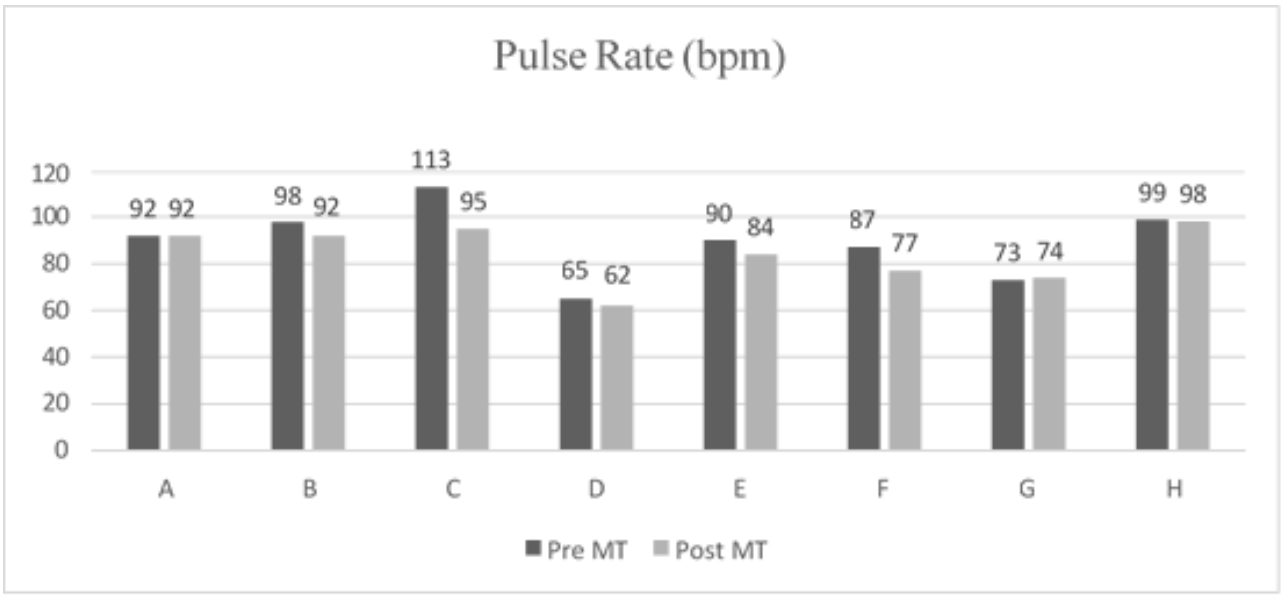


Fig. 2: A reduction was observed in six subjects, with no change in one and a slight increase in patient G

1.2. Systolic and Diastolic Blood Pressure

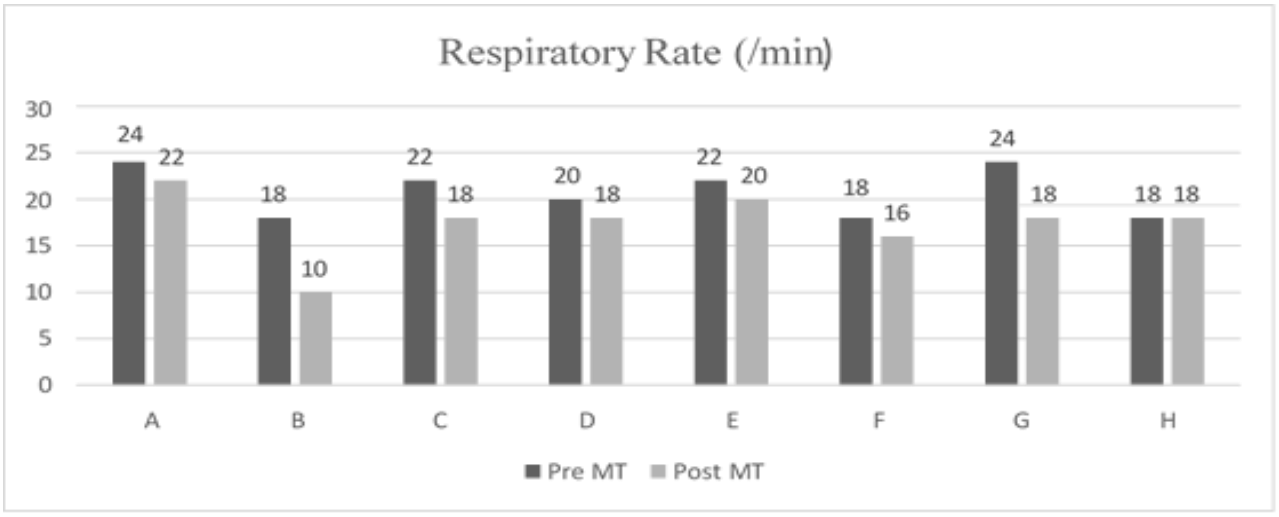
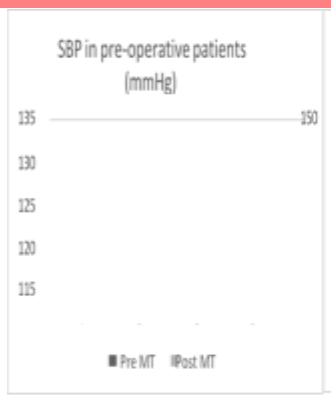


Fig. 3: Respiratory Rate reduced in all subjects except patient H.

1.3. Respiratory Rate

Two of post-operative women were in altered sleep during the intervention also with the influence of Avil and Dexamethasone injections given as premedication, and therefore SBP and DBP could not be measured. Hence the analysis was done using the data of pre-operative women, as shown below:



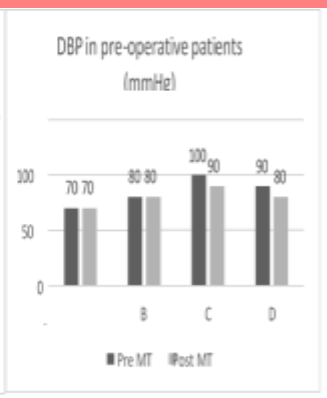


Fig: 4.

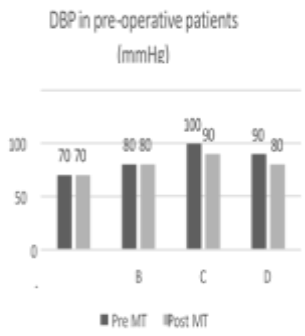


Fig: 5.

Fig. 4 & 5: Variation in Systolic and Diastolic Blood Pressure Pre and Post MT Intervention- SBP reduced in one subject where all others' remained the same. A reduction of 10mmHg can be seen in the DBP of two patient

The overall outcome of physiological parameteres displayed a regulation, except in some patients. The direction of anxiety towards the procedure and other life stressors are as follows:

2. Anxiety

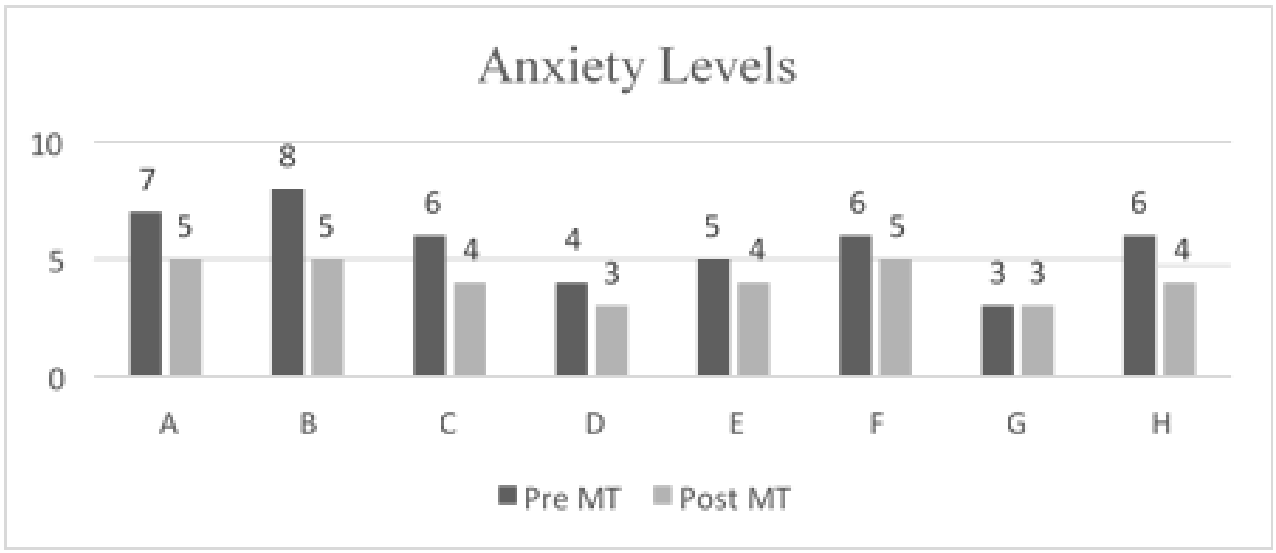


Fig. 6: Variation in overall perceived anxiety pre and post MT intervention - eduction in anxiety in all except patient G.

The pre surgical patients discussed here commenced chemotherapy treatment soon after the diagnosis and high levels of anxiety was reported, except in one patient The anxiety levels were lower in post-operative patients compared to pre-operative for which they reasoned financial burden and responsibilities towards family as major.

3. Overall levels of Cooperation towards procedure.

In general, we can observe pain on site, reduction of chemotherapy side-effects such as nausea, vomiting, hair loss, diarrhoea and anaemic situations due to loss of blood in post-operative patients [21] [22]. Physiological parameters varied as presented in figures 2, 3, 4 and 5. Interestingly, a pattern was observed in the reduction and increase in these parameters, which will be explained further.

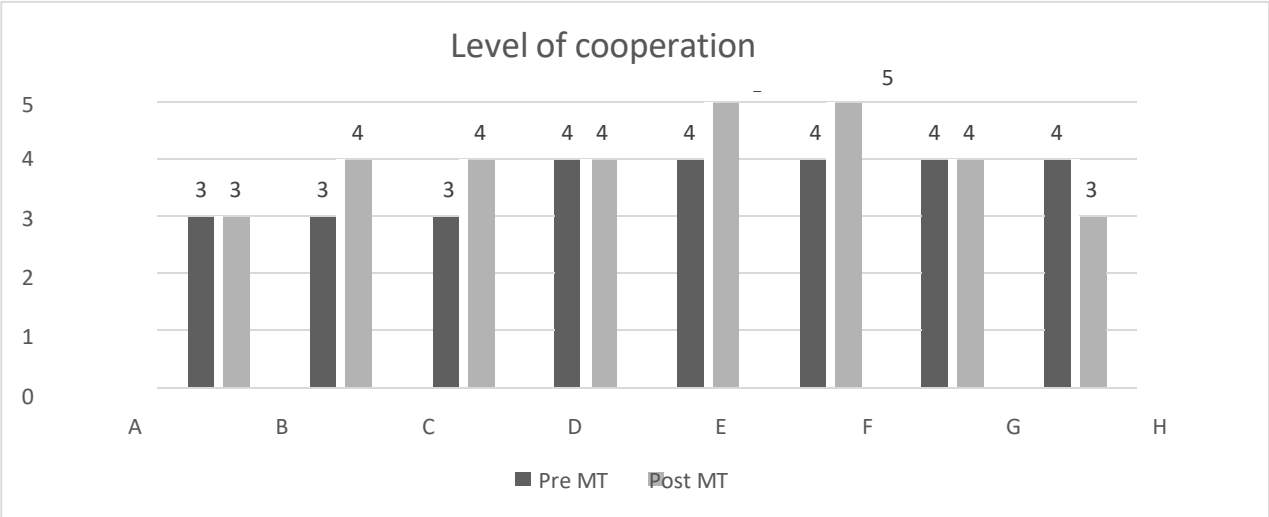


Fig. 7: Variation of Levels of cooperation towards the procedure pre and post MT intervention - 4 patients showed increased cooperation post MT.

Table: 1.3. elation between PR, RR, Anxiety and Level of cooperation preband post MT intervention.

PR pre	PR post	RR pre	RR post	Anxpre	Anx post	Coop. pre	Coop.post
113 bpm	95 bpm	22/min	18/min	6/10	4/10	3/5	4/5

Table: 1.3. Indicates the pre and post scores of a randomly selected patient for further analysis, where a relation between parameters could be observed. Patient C reports a reduction of PR, RR and anxiety with increasing levels of cooperation. Similarly, the same relation was observed in the majority of patients as well [23]. Hence it shows a relational movement in a positive manner with MT intervention, having an effect on the parameters assessed. Cooperation levels were enquired from the attending staff nurse, and therefore may differ based on the perception in comparison with their experience [24]. The bias of data was reduced by taking objective data (PR, SBP, DBP, and RR), subjective data (verbal feedback of the patient) and the perceptions of the patient (anxiety) and healthcare provider (level of cooperation). As the response, it is possible to see that the direction of data is conclusive and positive.

4. Outcomes based on the verbal processing and verbal feedback

The data below indicates patient's individual responses about the interest on this particular genre of music and willingness to listen to the same in future sessions, as per acquired during verbal processing. Table: 1.3. Response of patients towards Hindustani Classical Music; Among the eight patients, three expressed high satisfaction with the new music, while five indicated a willingness to listen to similar music in future sessions [25]. The remaining patients were uncertain, citing unfamiliarity with the genre as the primary reason for their indecision.

Patient	Interest Satisfaction			Future Application		
	Minimal	Moderate	High	No	Maybe	Yes
A		✓			✓	
B		✓			✓	
C		✓				✓
D			✓			✓
E			✓			✓
F		✓				✓
G		✓			✓	
H			✓			✓

DISCUSSION

All cases presented in this case series were diagnosed with Breast cancer and undergoing the Cycle 1 of their first line chemotherapy treatment regardless of the operative status or stage of cancer. The authors attempt to highlight the similarities and differences based on the surgical status, in physiological parameters, anxiety, level of cooperation and verbal feedback during their first exposure to the new genre of music. Anxiety is common during procedures, especially those related to diseases such as cancer which may lead to mortality. Both pre and post-operative patients can have more or less anxiety which will be subjective [26]. The pre-surgical patients discussed here commenced chemotherapy treatment soon after the diagnosis and reported higher levels of anxiety during the initial assessment, except one patient. On the contrary, post-operative women also reported relatively low levels of anxiety, which may relate to aesthetic concerns [27]. Anxiety can be reflected in higher PR and RR. However, both patients reasoned financial burden and responsibilities towards family as major causes, and the level of anxiety recued in seven out of eight patients post MT intervention.

In analysis of the results, it is observed that the tendency of pre-operative patients to focus on the present scenario was low; an interesting fact to look upon. The lack of focus may also have attributed to the patient's preoccupation with physical discomfort and anxiety about the upcoming treatment coupled with numerous side effects. This raises the question whether music therapy may be more effective when patients' immediate physical concerns are prioritized and managed before the intervention is introduced. The keywords presented in Figure 6 are derived from patients' verbal feedback, classified into two primary categories. The first category encompasses the impact of music, reflecting the therapeutic and emotional effects experienced by the patients during the intervention. The second can be categorized as therapeutic relationship between the therapist and the patients, highlighting the interpersonal dynamics and rapport established through the music therapy sessions. Most patients appreciated the presence of the therapist to support them at their time of need and were excitedly looking forward to witness the live administration of music in the hospital ward using an instrument which is foreign to their culture. This highlights the importance of the therapeutic relationship that is built between the Music Therapist and the patient which is an exclusive practice in MT22, when compared to other modalities that evolve around music such as Music Medicine and listening to music by patients on their own. The figure 6 indicates an overview of the thematic understanding of the subjective verbal responses of patients to the music administered:

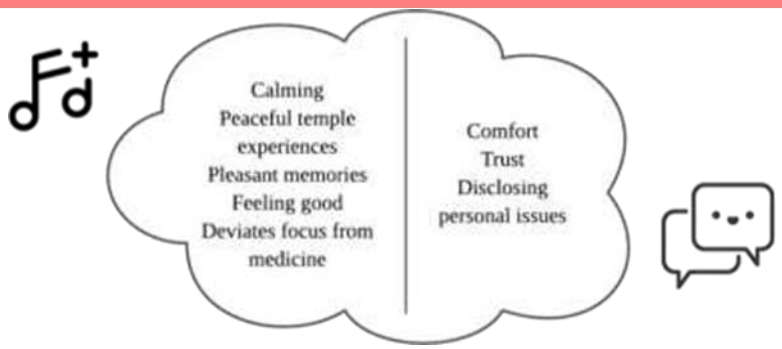


Fig. 8: Themes identified as verbal response for the music.

CONCLUSION

The quantitative data and qualitative feedback together, fairly discusses the bio-psycho-social impact of MT on pre and post-operative women with breast cancer undergoing chemotherapy. Through the findings and the literature available, it may be concluded that certain Ragas in Indian Classical music can be used for relaxation as well as inducing memories/feelings with Music Assisted Relaxation techniques with cancer patient populations during chemotherapy for objectives such as deviating focus, regulating physiological parameters, reducing anxiety and enhancing levels of cooperation towards chemotherapy procedure. Based on the data, a study methodology was created where a number of MT sessions were planned for each patient during chemotherapy.

ACKNOWLEDGEMENT

We sincerely thank the patients for their cooperation and consent towards published work. Our gratitude extends to Dr. Karthiyeyan K.(Assistant Professor) Dr. Vishva (Junior resident) and the department of Medical Oncology in Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth (SBV), Puducherry, India for providing support and environment to conduct sessions. Our gratitude to Dr. Ananda Balayogi Bhavanani, Director, Institute of Salutogenesis and Complementary Medicine (ISCM)-SBV, Dr.Sobana R., the Administrative-in-charge of School of Music Therapy-ISCM, Dr. Baishali Mukherjee, external faculty of School of Music Therapy for their unwavering support and guidance towards patient care and academic publications.

REFERENCES

1. Upadhyay A. Cancer: An unknown territory; rethinking before going ahead. Genes Dis. 2020;8(5):655-661. doi:10.1016/j.gendis.2020.09.002.
2. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin. 2021;71(3):209-249. doi:10.3322/caac.21660.
3. Köhler F, Martin Z-S, Hertrampf R-S, Gäbel C, Kessler J, Ditzen B, Warth M. Music Therapy in the Psychosocial Treatment of Adult Cancer Patients: A Systematic Review and Meta-Analysis. Front Psychol. 2020;11. doi:10.3389/fpsyg.2020.00651.
4. Jones M, Subramanian S, Jose R. Cancer screening behaviors and preferences among women in southern India. J Cancer Policy. 2023 Mar;35:100401. doi: 10.1016/j.jcpo.2023.100401. Epub 2023 Jan 8. PMID: 36632974.

5. World Health Organization. Breast cancer. [Internet]. 2021 [cited 2024 Aug 09]. Available from: https://www.who.int/news-room/fact-sheets/detail/breast-cancer.
6. DeVita VT Jr, Chu E. A history of cancer chemotherapy. Cancer Res. 2008;68(21):8643-53.
7. Corti C, Batra-Sharma H, Kelsten M, Shatsky RA, Garrido-Castro AC, Gradishar WJ. Systemic Therapy in Breast Cancer. Am Soc Clin Oncol Educ Book. 2024 Jun 1;44(3):e432442. doi: 10.1200/EDBK_432442. PMID: 39013124.
8. Senkus E, Kyriakides S, Ohno S, Penault-Llorca F, Poortmans P, Rutgers E, Zackrisson S, Cardoso F; ESMO Guidelines Committee. Primary breast cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. Ann Oncol. 2015;26 Suppl 5. doi: 10.1093/annonc/mdv298. PMID: 26314782
9. Schwartzberg LS, Aapro MS, Cortes JE, Rapoport BL, Chawla SP, Helwig C, et al. Efficacy and safety of rolapitant for prevention of chemotherapy-induced nausea and vomiting (CINV) in patients receiving moderately emetogenic chemotherapy or regimens containing an anthracycline and cyclophosphamide: A randomized, active- controlled, double-blind, phase 3 trial. Lancet Oncol. 2015;16(9):1071-1082. doi:10.1016/S1470-2045(15)00135-3.
10. Vichaya EG, Chiu GS, Krukowski K, Lacourt TE, Kavelaars A, Dantzer R, Heijnen CJ, Walker AK. Mechanisms of chemotherapy-induced behavioral toxicities. Front Neurosci. 2015 Apr 21;9:131. doi: 10.3389/fnins.2015.00131. PMID: 25954147; PMCID: PMC4404721.
11. Timman R, Gopie JP, Brinkman JN, Kleijne A, Seynaeve C, Menke-Pluymers MB, Ter Kuile MM, Tibben A, Mureau MA. Most women recover from psychological distress after postoperative complications following implant or DIEP flap breast reconstruction: A prospective long-term follow-up study. PLoS One. 2017 Mar 27;12(3):e0174455. doi: 10.1371/journal.pone.0174455. PMID: 28346508; PMCID: PMC5367706
12. Chemotherapy and You: Support for People With Cancer. NIH Publication No. 10- 7156. Bethesda, MD: National Institutes of Health, U.S. Department of Health and Human Services; 2010. Available from: https://www.cancer.gov/publications/patient-education/chemotherapy-and-you.
13. Duléry R, Mohty M. Management of chemotherapy-induced diarrhea and hyperammonemia. Curr Opin Oncol. 2021;33(5):469-476. doi:10.1097/CCO.0000000000000780.
14. Guerra-Martín, M. D., Tejedor-Bueno, M. S., & Correa-Casado, M.(2021). Effectiveness of Complementary Therapies in Cancer Patients: A Systematic Review. International Journal of Environmental Research and Public Health, 18(3), 1017. doi:10.3390/ijerph18031017
15. Bojorquez GR, Jackson KE, Andrews AK. Music therapy for surgical patients: Approach for managing pain and anxiety. Crit Care Nurs Q. 2020;43(1):81-5.
16. Chen SC, Chou CC, Chang HJ, Lin MF. Comparison of group vs self-directed music interventions to reduce chemotherapy-related distress and cognitive appraisal: An exploratory study. Support Care Cancer. 2018;26:461-469. doi:10.1007/s00520-017- 3850-1.
17. Owonikoko TK, Ragin CC, Belani CP, Oton AB, Gooding WE, Taioli E, et al. Lung cancer in elderly patients: An analysis of the Surveillance, Epidemiology, and End Results database. J Clin Oncol. 2007;25(35):5570-5577. doi:10.1200/JCO.2007.12.7843.
18. Lima TU, Moura ECR, Oliveira CMB, Leal RJDC, Neto JN, Pereira EC, et al. Impact of a music intervention on quality of life in breast cancer patients undergoing chemotherapy: A randomized clinical trial. JCO Glob Oncol. 2020;6:614-622. doi:10.1200/GO.20.00072.
19. Garcia GX, Gibbons AC. Patient-preferred music and anxiety reduction during chemotherapy. J Music Ther. 2017;54(4):419-442. doi:10.1093/jmt/thx020

20. Chakraborty S, Prasad A, Chakraborty A, Singh P. Impact of Hindustani ragas in stress management: A statistical study. J Art Music [Internet]. [cited 2024 Dec 14];1(1). Available from: http://dx.doi.org/10.59400/jam.v1i1.143
21. Bharathi P, Jaiganesh K, Sobana R, Parthasarathy S. International Journal of Current Scientific Research. Int J Cur Sci Res. 2012;2(1):243-5.
22. Burns DS, Meadows AN, Althouse S, Perkins SM, Cripe LD. Differences between supportive music and imagery and music listening during outpatient chemotherapy and potential moderators of treatment effects. J Music Ther. 2018;55:83-108. doi:10.1093/jmt/thy001.
23. Krishnaswamy P, Nair S. Effect of Music Therapy on Pain and Anxiety Levels of Cancer Patients: A Pilot Study. Indian J Palliat Care. 2016 Jul-Sep;22(3):307-11. doi: 10.4103/0973-1075.185042. PMID: 27559260; PMCID: PMC4973492.
24. Valla JM, Alappatt JA, Mathur A and Singh NC (2017) Music and Emotion—A Case for North Indian Classical Music.Front. Psychol. 8:2115. doi: 10.3389/fpsyg.2017.02115
25. Mathur A, Vijayakumar SH, Chakrabarti B and Singh NC (2015) Emotional responses to Hindustani raga music: the role of musical structure. Front. Psychol. 6:513. doi: 10.3389/fpsyg.2015.00513
26. Timman R, Gopie JP, Brinkman JN, Kleijne A, Seynaeve C, Menke-Pluymers MB, Ter Kuile MM, Tibben A, Mureau MA. Most women recover from psychological distress after postoperative complications following implant or DIEP flap breast reconstruction: A prospective long-term follow-up study. PLoS One. 2017 Mar 27;12(3):e0174455. doi: 10.1371/journal.pone.0174455. PMID: 28346508; PMCID: PMC5367706.
27. Wigram T, Pedersen IN, Bonde LO. A comprehensive guide to music therapy: Theory, clinical practice, research, and training. London: Jessica Kingsley; 2002.