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Effect of Music Therapy on the Overall Well-being and Sense of Coherence of Parents of Children Diagnosed with Malignancy

Anusha PK[1], Sobana.R[*2], Jenita Caren Rajakumari J[3], Baishali Mukherjee[4]

[1]MA Music, MSc. MMT, Music Therapist cum Tutor, School of Music Therapy, Institute of Salutogenesis and Complementary Medicine, ISCM, Sri Balaji Vidyapeeth.

Email ID: anupradeepp@gmail.com / ORCID ID:0009-0009-1991-2409

[*2]MD, PGDMT, PhD*, Prof of Physiology, Admin I/C School of Music Therapy, Institute of Salutogenesis and Complementary Medicine, Sri Balaji Vidyapeeth, Pondicherry, India.

Email ID: shobana234@gmail.com / ORCID ID:0000-0002-6350-4172

[3]BASLP, MSc. MMT, (PhD), Assistant Professor, School of Music Therapy, ISCM, Sri Balaji Vidyapeeth,

Email.ID: jenitacaren@gmail.com / Orcid id:0000-0001-9038-0948

[4]MA, Ph.D, Adjunct faculty, School of Music Therapy, ISCM, Sri Balaji Vidyapeeth

Email.ID: baishalim@yahoo.co.in / ORCID ID:0009-0006-7578-8586

***Corresponding Author:**

Sobana R

Email ID: shobana234@gmail.com

ABSTRACT

Background: Parents of children diagnosed with cancer endure profound emotional and psychological challenges, leading to a decline in their overall well-being. Complementary therapies, such as music therapy, have emerged as promising interventions to provide emotional support for these parents. This study aimed to investigate the impact of music therapy on the well-being and SOC of such parents.

Method: Subjects were 24 mothers of children undergoing cancer treatment within a residential home. Music therapy was administered twice weekly over three months in 45-minute group sessions, involving vocal recreation, song lyric discussion/writing, and relaxation techniques based on their musical preferences. Pre- and post-intervention evaluations of Modified Caregiver Strain Index (MCSI) and Sense of Coherence Scale (SOC) were done. Semi-structured interviews were conducted at the completion.

Results: Significant improvement of SOC in age group 1 (21-30 years, 35%) ($p < .001$) and reduction of MCSI in age group 2 (31-40 years, 47%) post-intervention ($p < .001$) were detected. Emergent themes from the interview were feelings of wellness, motivation, distraction, and improved sleep

Conclusion: Music therapy has proven effective in promoting emotional well-being and resilience among parents of children with cancer. The significant improvements in SOC and reduction in caregiver strain underscore the therapeutic value of music therapy. Tailored interventions are essential for supporting the holistic well-being of such parents. Integrating music therapy into comprehensive support programs for caregivers can empower individuals to cope more effectively with the caregiving process.

Keywords: *Music therapy, Cancer Care givers, Paediatrics cancer, Sense of coherence (SOC)*

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1. INTRODUCTION

Cancer prevalence remains a global concern, with millions of new cases and deaths reported annually. The regional disparities in incidence rates underscore the urgent need for targeted treatment strategies.[1] Cancer not only impacts adults but also affects children, particularly in low- and middle-income countries (LMICs) where access to care is limited. Paediatric cancer presents unique challenges, necessitating global initiatives to improve treatment accessibility and survival rates.[2] Children with cancer face difficulties understanding their diagnosis and coping with treatment outcomes, including pain, which is highly prevalent and distressing.

International initiatives are needed to improve treatment accessibility and survival rates because paediatric cancer presents unique challenges.[3] It can be difficult for young cancer patients to understand their illness and cope with the uncomfortable side effects of their treatment, like discomfort, which is a regular occurrence. The annual reporting of millions of new cases and deaths from cancer remains a global problem. Targeted treatment options are desperately needed, as evidenced by the geographical differences in incidence rates. Children are also affected by cancer, especially in low- and middle-income countries (LMICs) where access to care is constrained.

Parents play a crucial role in caring for children with cancer, facing significant challenges themselves. They experience psychological distress, anxiety, and post-traumatic stress, alongside practical difficulties in managing their child's care in addition to other responsibilities. The burden of caregiving can lead to stress, depression, and family conflicts, impacting the overall well-being of both parents and children.[3] Supportive therapies, including non-pharmacological interventions like music therapy, can alleviate caregiver burden and enhance well-being. Music therapy has shown promise in reducing stress, improving mood, and facilitating emotional expression among caregivers.[4]

Salutogenesis, the study of the origins of aspects that enhance human health and well-being with a focus on the factors of health rather than illness, was proposed by Prof. Aaron Antonovsky. [5] Sense of Coherence (SOC), a concept within the framework of salutogenesis, captures an individual's orientation towards life, influencing psychological well-being, resilience, and health-promoting behaviours. Insufficient SOC among parents exacerbates stress while managing their child's illness, emphasizing the need for focused interventions to improve their mental health.[6]

Despite its potential benefits, research specifically targeting the well-being and SOC of parents of children with cancer remains limited, highlighting a significant gap in the literature. Hence, this study was designed to assess the effect of music therapy on the overall well-being and sense of coherence of parents of children diagnosed with malignancy and to gather the parent's perspective on the effect of music therapy at the end of the session through a semi-structured interview.[7]

2. METHODOLOGY

Study Design: It is a sequential exploratory mixed-method study conducted at a residential home for children diagnosed with cancer situated in South India.

Participant Recruitment

To initiate participant recruitment, the study engaged with the Home for Children with Cancer, a facility in South India tailored for individuals under 18 years of age. During the recruitment process, a meticulous briefing was conducted to elucidate the research objectives and emphasize the importance of parental involvement. A total of 24 parents met the predefined inclusion and exclusion criteria and provided consent for study participation.

Inclusion Criteria: Parents of children undergoing treatment at the above-mentioned residential centre who were willing to participate.

Exclusion Criteria: Parents with hearing impairments and those who do not stay consistently with the child. Parents fulfilling the above-mentioned criteria were selected as a sample for the study. There was a single interventional group recruited for the study. Informed consent was obtained from participants before recruitment. Approval for the study was obtained from the Institutional Human Ethics Committee (IHEC).

Sample Size: The sample size was calculated as n=17, based on a previous study.[8]

sample size was calculated using the following formula:

Population size (for finite population correction factor) (N): 20

Hypothesized % frequency of outcome factor in the population (p):60%+/-10

Confidence limits as % of 100(absolute +/- %) (d): 10%

Design effect (for cluster surveys-DEFF): 1

Sample size n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1) +p*(1-p)]

Where n= sample size,

Z = Z statistic for a level of confidence (for 95% CI, Z= 1.96),

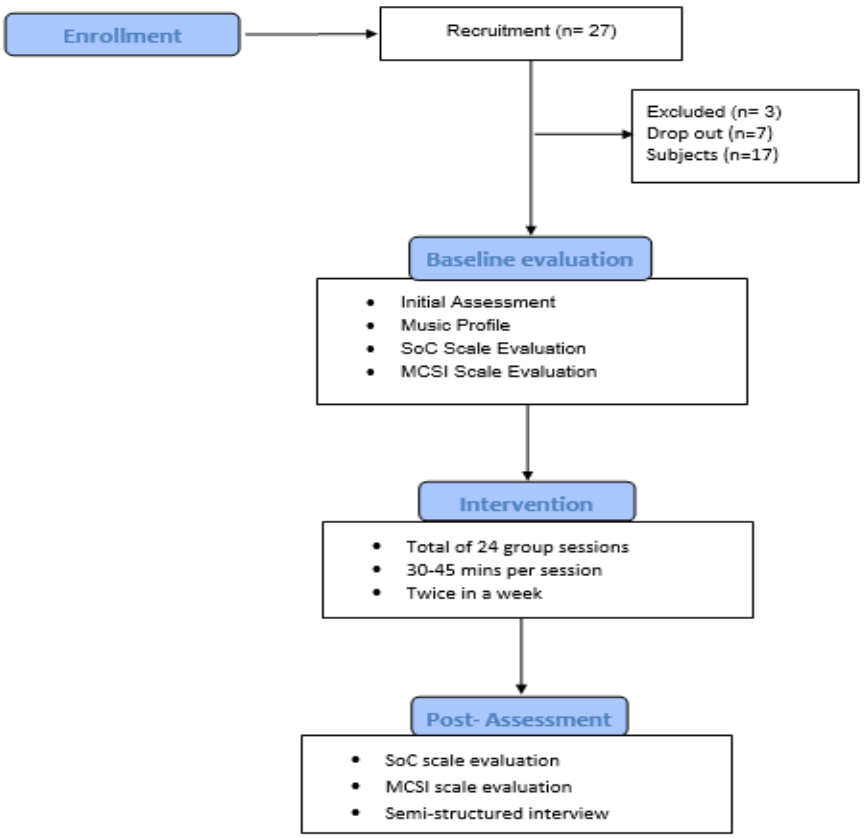
P = 60%,

1 − P = 40%

D = precision (absolute precision of 10 %)

Sample size n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1) +p*(1-p)]

Figure :I Consort Diagram



Music Therapy Interventions

A total of 24 music therapy sessions were conducted over 3 months, three times a week, each lasting for 30 to 45 minutes.

The music therapy sessions were structured employing the following techniques:

- Vocal recreation involved engaging participants in singing songs which was already selected or preferred by the participant or a commonly known song for a crowd to foster self-expression, emotional release, and increases self-esteem and confidence.
- Song lyric discussion/songwriting allowed participants to explore and articulate their emotions by analysing song lyrics which was selected by each participant, thus providing a creative outlet for personal storytelling. Where while writing a song on a topic “how you want your life to be” song writing always helps the participants in understanding and expressing their thoughts and it always gives a message that they want to share with the world.
- Relaxation induction techniques were used to help participants achieve a state of calm and peaceful mind, through methods such as deep breathing exercises, and listening to Relaxing music (Instrumental music that is slow and melodious, featuring flute and other instruments). Together, these techniques offered a comprehensive approach to address emotional, cognitive, and physical needs, creating a supportive and therapeutic environment.

- Prior to the intervention, baseline evaluations were conducted, including:
  - Demographic information: this is where the participant's name, address, level of education, marital status, and other demographic data are gathered.
  - Medical History: the participants' medical history, including any previous hospital stays, emergencies, or medical records.
  - Cognitive and physical evaluations: this is where a participant's cognitive and physical evaluations are conducted.
  - Musical profiles: information about each participant's preferred music is evaluated here.
- Sense of Coherence Scale (SoC): The Sense of Coherence scale consists of 13 questions based on the three core components: manageability, comprehensibility, and meaningfulness. Analysing SOC provides insights into how the intervention impacts participants' ability to find meaning in life, adapt to their environment, and cope with life's challenges.[9]
- Modified Caregiver Strain Index (MCSI): The Modified Caregiver Strain Index (CSI) is an assessment tool used to evaluate the level of stress and burden experienced by caregivers. This index takes into account a range of physical, emotional, financial, and social challenges faced by caregivers. By capturing a broader spectrum of caregiving impacts, the modified CSI enables healthcare professionals and researchers to better understand and address the unique pressures faced by caregivers, fostering more targeted interventions and support services. The scale was translated and validated into the local language by a senior therapist, as it was originally available only in a foreign language.[10]

Post-Intervention Evaluation

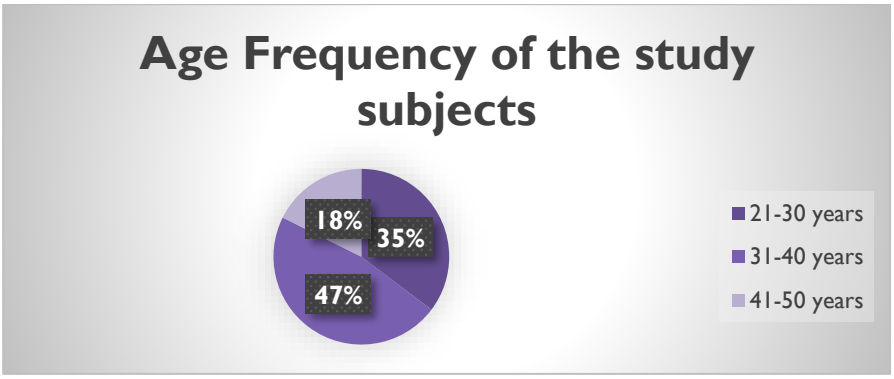
After the 24th session, post-intervention assessments were conducted, including the Sense of Coherence Scale and Modified Caregiver Strain Index. Paired t-tests were used to analyse baseline and post-intervention scores. Additionally, individual semi-structured interviews were conducted with participants to gather insights into the benefits of the music therapy intervention. A qualitative analysis was performed on the responses gathered from the semi-structured interviews conducted at the conclusion of the 24th music therapy session. The interviews aimed to capture participants' experiences and perceptions regarding the music therapy intervention designed to improve their sense of coherence and overall well-being.

3. RESULTS

Demographic Details

For analysis of data participants were divided into three groups based on age,

Figure :2 Age frequency of the subjects



The analysis of age distribution reveals varying frequencies across different age groups. Within the age 31-40 emerges as the most prevalent category, constituting 47.1% of the occurrences, followed by the 21-30 age category with a significant presence at 35.3%. the 41-50, while the least frequent, still contributes notably, representing 17.6% of the dataset.

Analysis of Sense of Coherence

The three components of the Sense of Coherence (SOC) scale pre- and post-intervention were analysed.

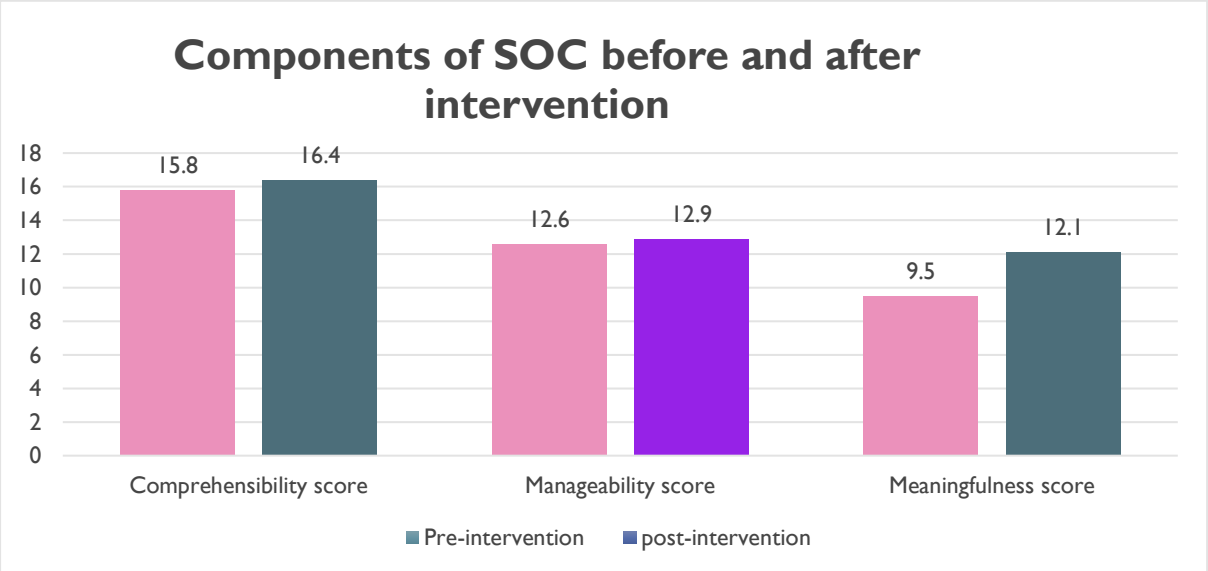
	Mean	SD	SE	Mean difference	Paired samples T-	P value

					Test	
SoC- Pre intervention	37.94	2.27	0.55	3.471	7.92	<.001
SoC- Post intervention	41.41	2.50	0.60			
Comprehensibility-Post intervention	15.8	2.10	0.51	0.64	2.39	0.03*
Comprehensibility-Post intervention	16.41	1.80	0.43			
Manageability- Pre intervention	12.64	1.49	0.36	0.23	0.88	0.38
Manageability – post intervention	12.9	1.16	0.28			
Meaningfulness -Pre intervention	9.52	1.80	0.43	2.58	11.36	<.001*
Meaningfulness-Post intervention	12.11	1.83	0.44			

Table 1: Sense of coherence before and after intervention.

The results of the paired samples t-test revealed a statistically significant increase in the meaningfulness score of the participants from the pre-intervention score ($p < 0.001$) Although there was a numerical increase in comprehensibility scores from the pre-intervention to the post-intervention this was not statistically significant ($p = 0.029$). There was no significant difference in manageability ratings from the pre to the post-intervention ($p = 0.387$).

Figure 3: Components of Sense of Coherence before and after intervention:



Analysis of Caregiver Strain Index

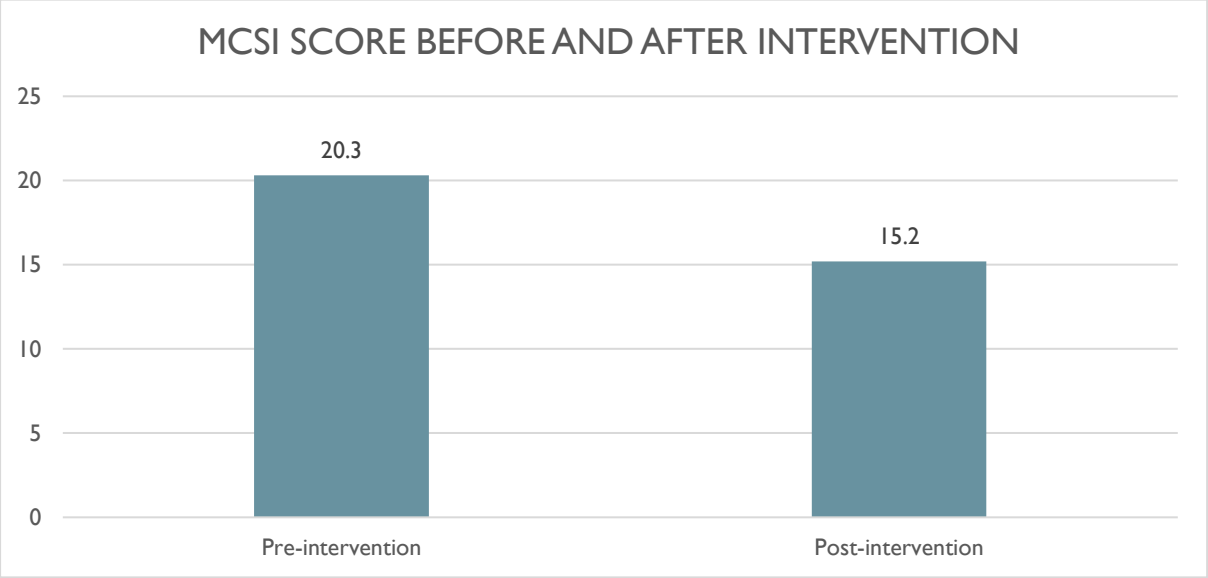
Modified Caregiver Strain Index (MCSI) scores were assessed pre- and post-intervention.

Table 2: Modified Caretaker Strain Index score before and after intervention

	Mean	SD	SE	Mean difference	Paired samples T-	P value

					Test	
MCSI- Pre intervention	20.3	1.92	0.46	-5.11	-14.52	<.001
MCSI -Post intervention	15.17	2.43	0.58			

Figure 4: Modified Caretaker Strain Index score before and after intervention



Participants experienced a significant decrease in caregiver strain, with mean MCSI scores decreasing from 20.294 (SD = 1.929) pre-intervention to 15.176 (SD = 2.430) post-intervention, with statistical significance ($p < 0.001$).

Descriptive analysis of Age in the outcome

The impact of the music therapy intervention on SOC and MCSI across different age groups was analysed. Prior to the intervention, mean Sense of Coherence (SOC) scores exhibited minimal differences across all age groups, with a slight decrement observed in the middle age group (age group 2). However, following the intervention, there was a noticeable increase in SOC scores across all age groups. Young parents of group 1exhibited higher post-assessment SOC scores in comparison to the other age cohorts. Similarly, the mean caregiver strain index was consistent across all age groups before the intervention, with each group reporting an average index score of 20. Following the intervention, there was a reduction in the caregiver strain index across all age groups. Notably, the magnitude of reduction was notably higher in the middle age group (group 2) compared to both the younger and older age groups (age group 1 and 3).

Age group	Sense of Coherence(mean)		Modified care taker strain index(mean)	
	Pre intervention	Post intervention	Pre intervention	Post intervention
1(21-30 years)	38.3	42.3	20.5	15
2(31-40 years)	37.5	41	20.2	14.75
3(41-50 years)	38.3	40.6	20	16

Semi-Structured Interview Analysis

Common themes that emerged from the interview responses provided valuable insights into the participants' feelings, experiences during the musical activities, willingness to continue, perceived benefits of music therapy, factors influencing participation, and potential hindrances. Participants expressed positive emotions following music therapy sessions, attributing their improved mood and motivation to the uplifting music and therapeutic environment. They described the created song as profoundly emotional, akin to a prayer. During the activities, participants felt actively engaged, distracted

from their sorrows, and appreciated the opportunity to reminisce and experience mixed emotions.

Despite facing hindrances such as their child falling sick, participants expressed a strong interest in future music therapy sessions, feeling a sense of camaraderie and belonging within the group. They identified benefits including stress reduction and improved sleep quality, driven by their love for music and healthcare recommendations. Overall, the qualitative analysis highlights music therapy's value in promoting emotional well-being and resilience among parents of children with malignancy.

Table 4: Themes from the semi structured interview

Questions	Responses
How do you feel now? Why you feel so?	• Feeling Better, • Feeling motivated, the song created is like a prayer for me
How did you feel during the musical activity, why did you feel so?	• Felt active, • Distracted from all sorrows, • Felt safe that the kids are safe and we are getting time for ourselves, lots of memories and mixed emotions. • It felt like going back to school life • Escape from tension
Would you like to join few more such sessions?	• Interested, • Sessions were fun and interesting, • Felt like we all are family
How do you feel music would help you to overcome your issues?	• Music helps in cutoff from stressful thoughts. • Music helped all in better sleep,
Can you mention any factor that helped you to be involved in the musical activity?	• Love for music, • Doctors suggested music listening for better mental health and sleep, • Wanted to improve my sleep quality
Was there any hinderance in your participation in the musical activity?	• Child falling sick • Routine medical checkup for kids

4. DISCUSSION

The results of our study demonstrate that music therapy has a beneficial impact on the overall wellness of paediatric caregivers, which aligns with our objectives. The scores of SoC scale showed significant improvement, particularly among younger parents compared to their older counterparts. This finding is groundbreaking, to the best of our knowledge, existing literature document a few of similar findings.[11-14] Currently, there is only one proposed study with a similar objective using music therapy, which aims to explore the impact of music therapy on the SOC among young people during the COVID-19 pandemic.[15]

After analysing the components of SoC scale, our study results indicate that participants attained a better understanding and clarity of their caregiving roles and the challenges they face through the music therapy intervention. Out of the three components of SOC, we observed significant improvement in Meaningfulness ($p < 0.001$) because music therapy intervention use in this study had an effect on meaningfulness.

Music therapy also demonstrated a noteworthy reduction in caregiver strain, especially among middle-aged parents, as evidenced by the significant decreases in the Modified Caregiver Strain Index (MCSI) scores ($p < 0.001$). Previous studies

have shown that yoga therapy can reduce caregiver strain through relaxation techniques.[16] Our study extends this understanding by showing that music therapy, combined with relaxation, provides reduction in MCSI. These diverse outcomes related to MCSI underscore the complex and multifaceted nature of caregiver experiences, influenced by various individual, contextual, and situational factors.

Insights from post-music therapy interviews revealed enhanced emotional well-being, engagement, and a desire for continued participation among participants. Music therapy might have facilitated emotional expression, provided distraction from sorrows, and fostered a sense of connection among caregivers.

Furthermore, the uniqueness of music therapy interventions such as song lyric discussion and therapeutic songwriting emerged as effective modalities, providing a platform for emotional expression and parent-child bonding. This is a valuable observation that has not yet been documented in the literature. These interventions offer valuable support for caregivers, enhancing coping mechanisms and overall holistic wellness amidst the challenges of cancer care. The strength of our study lies in gathering participants' perceptions and adopting active music therapy techniques such as songwriting and song lyric discussion, for which there is evidence supporting their effectiveness.

5. CONCLUSION

Our study demonstrates the significant beneficial impact of music therapy on the overall wellness of paediatric caregivers. The scores of Sense of Coherence (SOC) Scale revealed notable improvements, particularly in the younger age group of parents. The scores of Modified Caregiver Strain Index (MCSI) showed significant reductions, especially among middle-aged parents.

Our study underscores the value of music therapy interventions such as song lyric discussion and therapeutic songwriting, which foster emotional expression, parent-child bonding, and holistic wellness. These findings highlight the complex and multifaceted nature of caregiver experiences and the importance of tailored interventions.

Future research may focus on identifying specific components of music therapy that contribute to caregiver well-being and developing targeted strategies to address caregiver strain comprehensively. Overall, this study provides strong empirical evidence supporting the integration of music therapy into caregiver support programs, promoting resilience and improved quality of life in paediatric palliative care settings.

6. LIMITATIONS

The study's limitations include a narrow participant pool—parents of children with cancer. While offering valuable insights, a deeper investigation into factors such as education level, geographic location, duration of residential stays, and cultural background could enhance understanding. The brief 3-month study duration may hinder observing long-term effects or evolving experiences. The study was additionally limited by a smaller participant count and the absence of a control group. There were very a smaller number of participants who was eligible based on the inclusion criteria and because of the difficulty we didn’t have a control for the study.

7. FUTURE IMPLICATIONS AND RECOMMENDATIONS

The findings underscore the potential of music therapy as a supportive intervention for parents of children with cancer. Further research is warranted to explore the long-term effects and sustainability of music therapy interventions, as well as to tailor approaches to individual needs and preferences.

Declarations:

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

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Ethical Approval and Informed Consent Statements

This study was approved by the Institutional Human Ethics Committee (IHEC) of Sri Balaji Vidyapeeth, Puducherry, India, under approval number MGMCRI/2023/IRC/20/01/IHEC/56]. All participants provided written informed consent after being informed of the study’s purpose, procedures, and their right to withdraw at any time without consequences.

Data Availability Statement

The data supporting the findings of this study are presented in the Results section of the article. For any further details or

clarifications, readers can contact the corresponding author via email at shobana234@gmail.com

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