TITLE- Sound as A Therapeutic Element

Anjani Rathore

Aayojan School of Architecture, Jaipur

Abstract

It explores the concept of the therapeutic power of sound in improving emotional and physical well-being in the context of hospice care. It emphasizes that weather patterns, seasonal, and biological processes correspond to the rhythmic flow of music. Therefore, sound must be exploited to our advantage as a therapeutic element.

Diving into the influence of different pitches on living tissue that leads to several physical responses, including movement or even an emotional response. This kinaesthetic relationship is helpful in finding that our bodies actually absorb vibrations caused by sounds that can be applied for recuperation of body and mind.

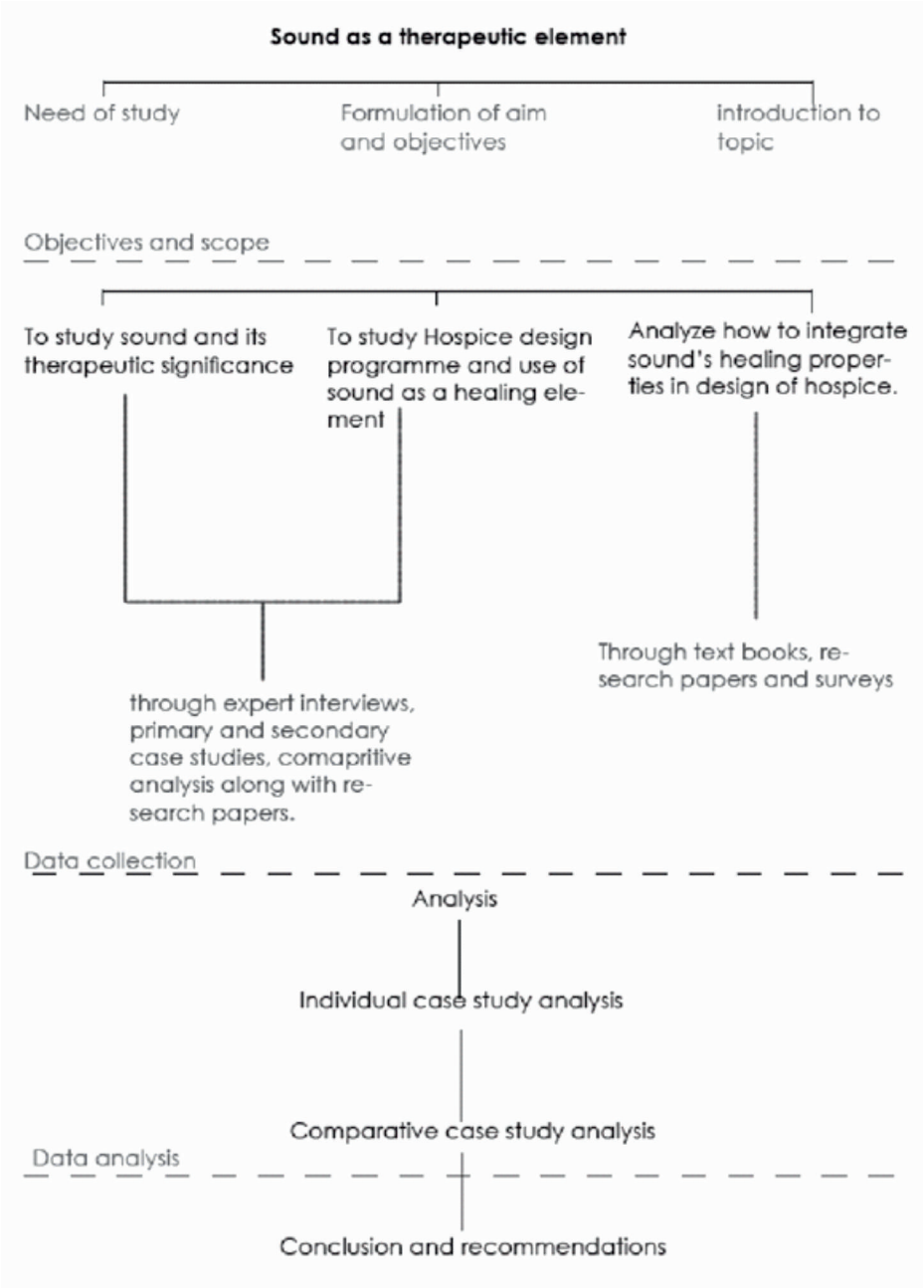
The study posits that our cells resonate with sound, opening new avenues for sound therapy as a complementary treatment in healthcare. By integrating sound therapy into traditional care practices, there is potential to improve the quality of life for patients facing end-of-life challenges. In summary, the results highlight the use of sound as a healing factor and support its further application in the health sector to create comfort and peace for patients in the resurgence centre.

Hypothesis- *Incorporating sound as a healing element within built environments can lead to improved quality of life.*

Aim- To explore the role and effectiveness of sound therapy in enhancing the quality of life for patients in hospice care, focusing on care goals, therapeutic benefits, and emotional well-being.

Components of hospice program

Set of characteristics developed which universally describes the essential components of a hospice program. These 10 characteristics have been a necessary part of every hospice.


Sound as a therapeutic element
Need of study
Formulation of aim and objectives
introduction to topic
Objectives and scope
To study sound and its therapeutic significance
To study Hospice design programme and use of sound as a healing element
Analyze how to integrate sound's healing properties in design of hospice.
through expert interviews, primary and secondary case studies, comapritive analysis along with research papers.
Through text books, research papers and surveys
Data collection
Analysis
Individual case study analysis
Comparative case study analysis
Data analysis
Conclusion and recommendations

1.Patient-centered: Focuses on the patient and their family.

2. Home-based: Offers care in the patient's preferred setting.

3. Symptom management: Prioritizes pain and symptom relief.

4. Holistic approach: Addresses physical, emotional, spiritual, and practical needs.

5. 24/7 availability: Provides continuous care.

6. Interdisciplinary team: Includes various healthcare professionals.

7. Physician-directed: Guided by a physician.

8. Volunteer support: Involves volunteers for companionship and care.

9. Financial assistance: Available regardless of financial ability

10. Bereavement support: Offers grief counselling and support to families.

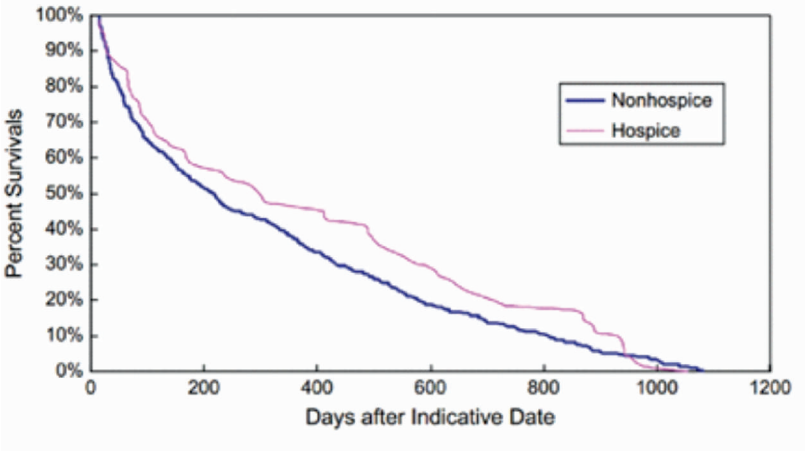


Fig1- survival curve for patients with CHF source: journal of pain and symptom management

fig2- Chladni experiment.

Behaviour of sound *The image shows fine sand arranged in intricate patterns on a vibrating surface, demonstrating the visual impact of sound waves. As different frequencies are played, the vibrations cause the sand to settle into unique geometric shapes, offering a stunning display of how sound can create visible forms. source: first experiment,2017*

Experiencing Sound

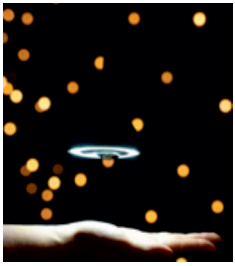


Fig3- Rafael Lzano-Hemmer's Pulse Topology in Miami source:designboom

- Custom-made pulse sensors capture the individual heartbeats of visitors. Each then powers a light display and a sonic landscape that constantly evolves as people enter and leave the space.

- The asphalt has a ridge on the road, where the friction between the road and tires plays the melody as you drive through at 80 km/h. If you go faster or slower, the melody will be imperfect or distorted.

fig4- Hungary's musical road

Sound as therapy

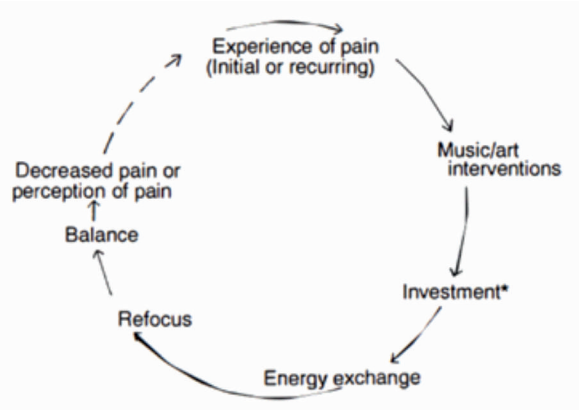


fig 5: the process of pain modulation

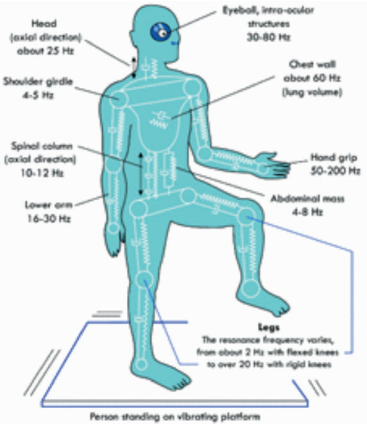


fig7-The resonant frequencies of the human body

Table1: Frequency Table of Body Organs [13]

S.N.	Name of Body Organs	Frequency (MHz)
1	Brain Frequency	72-90
2	Normal Brain Frequency	72
3	Human Body	62-78
4	Heart Frequency	67-70
5	Liver Frequency	55-60
6	Pancreas Frequency	60-80
7	Disease Start at	58

fig6- frequency table of body organs

- 174 Hz relieves pain and stress
- 285 Hz heals tissues and organs
- 396 Hz liberates the listener from fear and guilt
- 417 Hz facilitates change
- 528 Hz for transformation and DNA repair (known as the 'miracle frequency')
- 639 Hz reconnects relationships
- 741 Hz helps provide solutions and self-expression
- 852 Hz brings the listener back to a 'spiritual order'
- 963 HZ encourages a sense of oneness and unity

Fig. 8

Findings and discussions- Sound Therapy in Clinical Care

Sound therapy is a revolutionary approach to clinical care with massive emotional and physical therapeutic benefits. The following in-depth analysis, supported by scientific research, case studies, and practical applications, demonstrates its importance, effectiveness, and outcomes.

1. Effectiveness of Sound Therapy

The basis of sound therapy is the principle of resonance, where vibrating sound modulates and harmonizes the body's own frequencies, which can provide relaxation and emotional healing. The treatment demonstrates the following:

Decrease in Emotional Problems: Sound therapy helps decrease emotional problems in patients who are close to the end of life, reducing fear, sadness, and loneliness.

Induced Relaxation: Technologies such as vibrational sound therapy use sound waves to relax muscles, reduce pain, and improve sleep quality.

Scientifically Backed: Studies have shown that sound vibrations can positively affect cellular

structure, promote balance, and reduce stress.(refer fig 8)

2. Patient-Centered Approach

Research emphasizes tailoring sound therapy to each individual's emotional preferences, as a one-size-fits-all approach may not produce the best results.

- Individualized Treatment: Patients react differently to sounds - some like it when they use nature sounds or instrumental music while others like sound guided meditation.

- Case Study: A structured combination of sound therapy like constant water sound due to site being located at the banks of Ganga river coupled with bird friendly landscaping was used in the treatment for patients at Ganga Prem Hospice in Rishikesh to improve physical and mental well-being.

-Evidence: Studies conclude that structured sound therapy is effective than generic procedures in reducing stress and promoting relaxation.

3. Sound Quality and Treatment Outcomes

The quality of the sound used in treatment determines its effectiveness. The study found three primary approaches:

-Active Music Therapy: The patient is an active participant in the creation of music, such as singing, playing an instrument, or dancing. It encourages people to move from pain to creativity and joy.

- Transient Music Therapy: Patients listen to pleasing music that relaxes them and induces positive emotions. It is particularly effective for stress relief and improving sleep.

- Vibroacoustic Therapy: This technology involves sound waves transmitted through a surface such as a bed or chair, which provides targeted body relaxation.

-Scientific Support: Hans Jenney's work on acoustics has demonstrated how vibrating sounds create visible patterns that reflect harmony and balance in the body.(refer fig 2)

4. Noise Control in Hospital Settings

Noise in healthcare settings can interfere with recovery, increase stress, and affect employee performance. Research describes the intentional control of noise:

Soundproofing: Sound-absorbing materials include sound barriers, curtains, and carpets. Safe areas and spatial planning can enhance a quiet environment.

Study - Karunasre Ashram (Bangalore): Built on biophilic principles, this hospice includes green spaces with water features to block out external noise and create a calming environment.

Evidence-Based Design (EBD): In healthcare environments, EBD advocates for single-bed, low-level ventilation, and noise-reducing rooms for better recovery and patient satisfaction rates.

5. Nature and Sound incorporation (through case studies)

Ganga Prem Hospice (Rishikesh): It has private balconies with stunning views of grounds, a

circular veranda, and a central circular chapel, which serves as a peaceful center.

Aavedna Hospice (Jaipur): The healing environment is provided with water features and pergolas to create a soothing and visually stimulating environment.

Effect: The natural sounds such as water or birdsong in a controlled sound environment create a restorative environment for the patient.

6. The relationship between length of hospital stay and survival rate

Studies have shown a direct correlation between length of hospital stay and patient survival:

Statistic: For every day a patient survives, their average survival is 0.8 days longer, as compared to non-hospice settings. (refer fig 1)

Case Study: Statistics from hospice like Ganga Prem and Karunashray reveal that patients react better to environments that are designed for comfort and emotional support than the outcomes in a traditional hospital.

7. The Science Behind Sound Therapy

Resonance: Human beings vibrate at certain points. Disruptions to these rhythms resulting from stress or disease can be corrected through sound therapy(refer fig6)

Chladni Patterns: Ernst Chladni and Hans Jenni's experiments explain how the vibrations of sound can create geometric patterns by exhibiting visible effects.(refer fig2)

Life Effects: New research confirms that sound reduces cortisol, quietens the nervous system, and improves heart rate variability.

8. Cultural issues and impacts/ Limitations

The effectiveness of sound therapy could depend on:

Cultural Factors: Patients who belong to a different culture could react differently toward sound and forms of therapeutic treatments.

Patient Characteristics: Age, illness severity, and individual preferences will determine outcomes.

Integrated Care: In response to these changes, home care providers are involving patients, as in the case of Aavedna Hospice's community cultural integration.

9. Implementation Tips

Sound Design: Use sound separation to analyze and enhance the environment. The design of sound-absorbing materials improves the treatment space.

Education and Research: Educate clinicians about the benefits and uses of sound therapy to ensure effective implementation.

Future Research: It is essential to continue researching so that methods could be perfected, long-term effects measured, and new technologies applied, such as spatial audio and binaural beats.

Conclusion

It has advanced end-of-life care to a significant level and made the experience of dying comfortable, peaceful, and dignified. By combining therapeutic sound therapy with patient-centered care, hospitals can respond to emotional and physical needs, thereby improving the general well-being of the patients. Its practical research and scientific evidence also back its effectiveness and pave the way for wider adaptation and innovation in healthcare.

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