



Overview of Cancers and Impact of Music Therapy in Intervention: A Literature Review

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Article History	Abstract
Received: 06 June 2023 Revised: 05 Sept 2023 Accepted: 16 Oct 2023	<p>Cancer is taken under consideration as a fatal disease. It's caused by a spread of things including unhealthy lifestyles, pollution, stress, radiation exposure, infection, tobacco consumption, and unhealthy food choices. There are several varieties of cancer that affect the chassis and their growth varies depending on the type. Cancer could be a major reason for death after a heart condition. There are 10 million new cases of cancer and approximately 5 million deaths in 2020 were caused by cancer (World Health Organization, 2018)¹, and deaths from cancer worldwide are projected to still rise to over 20 million by 2025 (Stewart and Wild. 2014)². There are several intervention modes to treat cancer patients. Besides medical intervention, there are prominent psychosocial concerns that have a very noticeable impact on intervention in the case of cancer patients. Cancer treatment facilities in India have incorporated psychosocial services into cancer care by routinely assessing patients' levels of distress. For that Music therapy can improve their quality of life by addressing the emotional, spiritual, and physical needs that will arise during this point. Furthermore, music therapy also can be applied to assist relationships throughout the grieving process by providing comfort, continuity, and opportunities for specific feelings of loss (Rossetti et al., 2017)³. Hence, there's a greater need and justification for exploring the scope of using music therapy with cancer patients, especially in low-income countries, including India.</p>
CC License CC-BY-NC-SA 4.0	Keywords: Cancer, Music therapy, Quality of life, lifestyle, Intervention, Radiation exposure

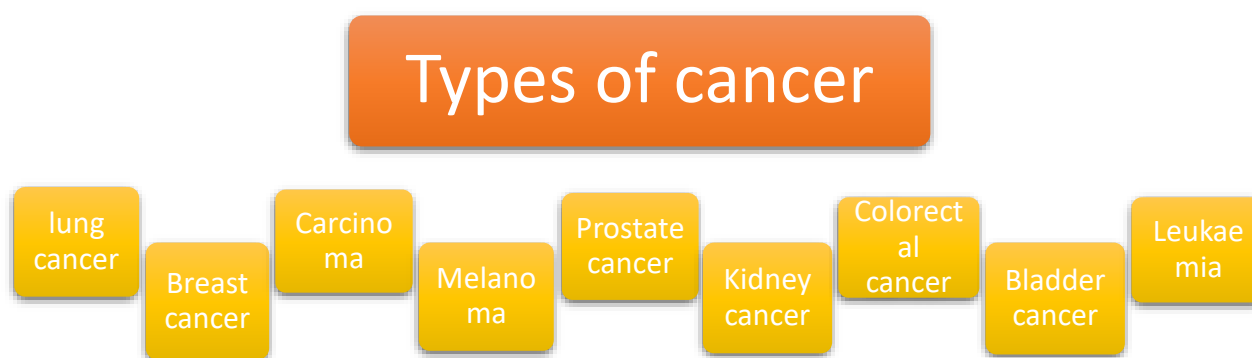
1. Introduction

Cancer is taken under consideration as a lethal disease. It's caused by a spread of things including unhealthy lifestyles pollution, stress, radiation exposure, infection, tobacco consumption, and unhealthy food choices. There are several varieties of cancer that affect the chassis and their growth varies depending on the type. Cancer could be a major reason for death after a heart condition. There are 14 million new cases of cancer once a year (Stewart and Wild. 2014)² 8.8 million deaths in 2015 (or nearly 1 in 6 deaths) were caused by cancer (World Health Organization, 2018)¹, and deaths from cancer worldwide are projected to rise to over 20 million by 2025 (Stewart and Wild. 2014)².

Types Of Cancer

There are over 100 varieties of cancer found, among them 10 types are more prominent.

Fig.-Types of Cancer⁵



1. Lung cancer: This sort of cancer occurs within the cells inside the liner of the lungs. There are mainly two types of carcinomas. These are small cell and non-small cell carcinoma. Some common symptoms of carcinoma include projection blood, difficulty breathing, pain and weight loss.

2. Breast cancer: This type of cancer is most common in women. However, men may additionally develop carcinoma. Early symptoms of this kind of cancer include a lump within the breast, fluid discharge from the nipples, and changes within the form of the breast.

3. Carcinoma: Carcinoma is one all told the foremost common forms of cancer. It affects over 1,000,000 people once a year. It can form skin cells in any part. This can be often mainly due to prolonged exposure to the sun. Skin cancers are divided into different categories like basal cell carcinoma which occurs within the round cells inside the outer layer of the skin and vegetative cell carcinoma which occurs within the flat cells on the very best of the skin.

4. Melanoma: This will be another kind of carcinoma that forms within the melanocyte cells of the skin. It produces the brown pigment melanin and is taken into consideration the foremost dangerous kind of carcinoma. It's going to be found within the parts described because the intestines and eyes.

5. Prostate cancer: This happens in men over the age of fifty. It develops within the tissues inside the secretor. This gland can be a component of the male system. While adenocarcinoma grows slowly, some can grow relatively quickly. Cancer cells can spread from the prostate to other parts of the body.

6. Kidney cancer: This happens within the tubules of the kidney. The two common forms of kidney cancer are renal cell carcinoma (RCC) and transitional cell carcinoma (TCC). Kidney cancer usually develops in people over the age of 40. However, there's another sort of kidney cancer that mostly affects young children.

7. Colorectal cancer: Complications of colon and rectal cancer are increasing. The colon is part of the large intestine and helps with digestion while the rectum is found at the tip of the large intestine.

8. Bladder cancer: Bladder cancer is also a type of bladder cancer characterized by cancerous cells that develop within the tissues of the bladder. Of the rear Lower back pain, pain in urination and blood in urine are variety of the symptoms of bladder cancer.

9. Leukaemia: There are basically four major types of leukaemia. There is leukaemia, acute cancer of the blood, chronic leukaemia and chronic cancer of the blood. This sort usually occurs inside the bone marrow or tissues that are an element of the blood cells and is known as blood cancer.

10. non-Hodgkin lymphoma: This includes different types of cancer involving the white blood cells. It always causes swollen lymph nodes, weight loss, and fever. It can happen in several parts of the body.

There are an estimated 18.1 million new cancer cases globally, and cancer remains the second-leading reason for death within the U.S., where quite 1.7 million people are diagnosed with cancer annually. Cancer can develop during a very form of alternative routes, because of a spread of varied factors. It should be categorized into many alternative diseases supported by the cells within which it arises. And when each patient's genetic background is taken into consideration, no two cases are identical.

Incidence and Prevalence

Cancer could be a major reason behind death after cardiopathy. There are 14 million new cases of cancer once a year (Steward and Wild, 2014)² Over 8.8 million deaths in 2015 (or nearly 1 in 6 deaths) were caused by cancer (World Health Organization, 2018)¹ and deaths from cancer worldwide are projected to still rise to over 20 million by 2025 (Stewart and Wild, 2014)².

Significantly, the incidence and mortality rates of cancer are higher in men (57%) than in women (53%). Cancers of the lung, breast, prostate and colorectum are seen in countries with a high or very high Human Development Index.

The Human Development Index could be a summary measure of average achievement in key dimensions of human development: an extended and healthy life, being knowledgeable and have an honest standard of living. The Human Development Index is that the mean value of normalised indices for every of the three dimensions (United Nations Development Programme, 2018)⁵. In countries with a coffee or medium Human Development Index, cancers of the colorectum, breast and lung are common, though one may find cancers of the stomach, liver, cervix and esophagus in region plagued by poverty (Stewart and Wild. 2014)².

Further, approximately 70% of deaths from cancer are reported from low- and middle-income countries. Around one third of deaths from cancer are caused due to behavioural and dietary risks, like high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use (World Health Organization, 2018)¹. The consumption of tobacco is that the most vital risk factor for cancer, and is to blame for approximately 22% of cancer deaths (Global Burden of Disease 2015 Risk Factors Collaborators, 2016)⁶. Cancer-causing infections like hepatitis and human papilloma virus are chargeable for up to 25% of cancer cases in low- and middle-income countries (WHO, 2018)¹. Late-stage presentation and inaccessible diagnosis and treatment are common. Quite 90% high-income countries reported that that they had available treatment services available compared to but 30% of low-income countries. About 30% of deaths caused by cancer may be avoided by a change of life style and more healthy behaviours (WHO, 2018)¹.

The majority of the cancer cases in low-income countries (including India) are diagnosed within the advanced stages, whereas the bulk of such cases are diagnosed in early stages in developed countries, including the USA and Europe: this is often because of their effective screening programmes (Perappadan, 2018)⁷.

Based on the info available with the National Cancer Registry Programme of the Indian Council of Medical Research (2016)⁸, approximately 2.3 million of the population were reported to possess various kinds of cancer within the years 2012-2014. Uttar Pradesh had 674,386 cases, followed by Maharashtra (364,997) and Bihar (359,228). In South India. Tamil Nadu recorded 222,748 cases, Karnataka (202,156). State (159,696), Telangana (115,333) and Kerala (115,511) cases of cancer. The five commonest sites of cancer diagnosed among men were lung, colorectal, pharynx, stomach, head and neck and liver, whereas the five most typical sites of cancer diagnosed among women were breast, ovary, lip and oral fissure, lung and cervix (National Cancer Registry Programme of the Indian Council of Medical Research 2016)⁸.

To save more lives from cancer, therefore, it'll be necessary to cope with this complexity. Through basic research into cancer biology and immunology, we are ready to improve our understanding of how cancer develops and therefore the way it interacts with the system. During this manner, it could enable us to urge new, more practical ways to treat cancer.

Cellular Definition of Cancer: Cancer begins when cells acquire the facility to grow uncontrollably and ultimately invade and damage the body's normal tissues. Cancer development happens in multiple stages, from precancerous changes to malignant tumours. However, not all cancers form tumours, and different cancers can develop at different rates. Sometimes cancer cells spread from their original site to other places within the body through the bloodstream or lymphatic system—a process called metastasis.

Point of Origin: Cancer can affect many different parts of the body, from the skin, bone, blood vessels, and muscle, to the lungs, kidneys, and plenty of other organs. Cancer can also affect the system, which plays a key role during both the event and progression of cancer.

Causes of Cancer

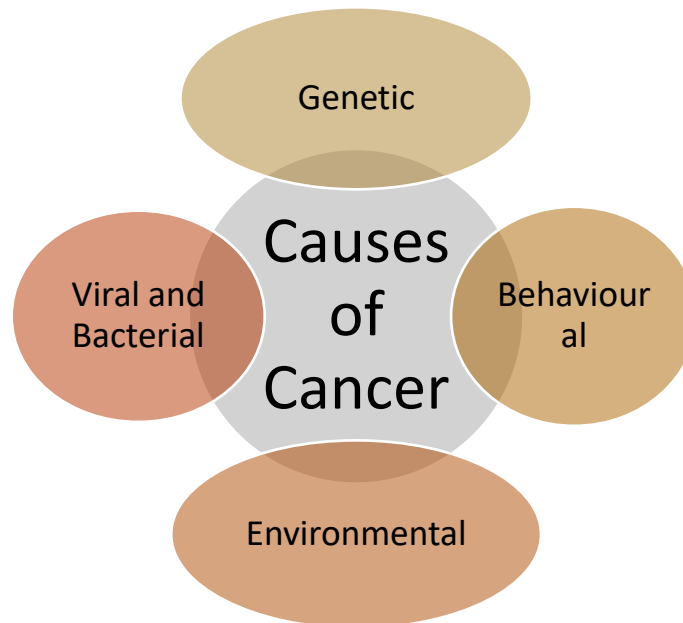


Fig.-2 Causes of Cancer⁹

Genetic Causes of Cancers: Genes are segments of DNA located on chromosomes, and might mutate over time to become cancerous. These mutations may find yourself from a variety of causes, including diet and lifestyle choices yet as exposure to certain environmental factors. Overall, only 5 to 10 percent of all cancers are genetically inherited, although these are the cancers that tend to occur earlier in life. One such inheritable genetic defect that's associated with increased cancer risk is Lynch syndrome, which prevents cells' ability to repair their DNA when damage occurs. This could cause cancers of the colon and uterus at an early age. Another such genetic factor is the BRCA family of genes, certain kinds of which are linked to breast and ovarian cancer.

Today, scientists and clinicians are using and developing new tests to travel searching for biomarkers, which could help determine risks and appropriate treatment options supported by a private patient's genetic profile.

Behavioural Causes of Cancer: There is kind of behavioural factors which can end in genetic mutations and, as a result, cause the event of cancer.

- Tobacco
- Tanning (excessive exposure to ultraviolet light)
- Diet (red, processed meats)
- Alcohol
- Unsafe sex (leading to viral infection)
- Inflammatory conditions, like inflammatory bowel disease or obesity

An example of a behavioural risk factor is smoking, which could lead to carcinoma, or excessive exposure to the sun's ultraviolet (UV) rays, which can cause carcinoma. Some dietary choices, including meat and alcohol, have also been linked to certain types of cancer, while obesity is expounded to higher rates of cancer similarly, a link that CRI investigators Harvard Medical School's Lydia Lynch, Ph.D., and the University of California, San Diego's Zhenyu Zhong, Ph.D., are independently exploring further. One's diet may affect the bacteria that reside within our intestines, called the gut microbiome,

and up to now research by scientists, like Johns Hopkins University's Cynthia Sears, M.D., have revealed that certain bacteria can impact the likelihood of colorectal cancer development similarly as patient responsiveness to treatment with immunotherapy.

Environmental Causes of Cancer: Exposure to certain factors within the environment, like chemicals like asbestos and benzene, similarly as toilet powder and various sources of radiation (including excessive X-rays), might also cause cancer. These substances capable of damaging DNA and triggering cancer are named as carcinogens.

Excessive sun exposure (UV)

- Chemical carcinogen exposure
- High-dose chemotherapy and radiation (mainly in children being treated for existing cancers)
- Hormonal drugs
- Immune-suppressing drugs (taken by transplant recipients)
- Radioactive materials, e.g., radon

In addition to other factors associated with aging and senescence, older individuals are more likely to have had exposure to environmental risk factors and are therefore diagnosed with cancer far more frequently than teens. When it involves children with cancer, new immunotherapy approaches are providing for the chance of treating them not only more effectively, but also without a variety of damaging side effects which can accompany conventional treatments.

Viral and Bacterial Causes of Cancer: Theories surrounding bacterial causes of cancer start over 100 years, put forth by the daddy of Cancer Immunotherapy, Dr. William B. Coley. A person's behavior and surroundings can expose them to bacteria and viruses known to cause cancer.

- Human papillomavirus (HPV)
- Hepatitis B (HBV) and hepatitis (HCV) viruses Epstein–Barr virus (EBV)
- Human T-lymphotropic virus
- Kaposi's sarcoma-associated herpesvirus (KSHV)
- Merkel cell polyomavirus
- Helicobacter pylori

Exposure to the B and C strains of the hepatitis virus may find you in disease, and sexual transmission of certain strains of the human papillomavirus (HPV) may find you in cervical cancer, anal and penile cancers, and variety of other head and neck cancers. A vaccine that protects against viral hepatitis virus has been available since 1982; in spite of everything, this vaccine was the first preventive cancer vaccine living. The Cancer Research Institute funds research into both preventive and therapeutic cancer vaccines, including Dr. Ian Frazer's ground breaking work on the event of Gardasil, the first preventive vaccine against cervical cancer.

Diagnosis

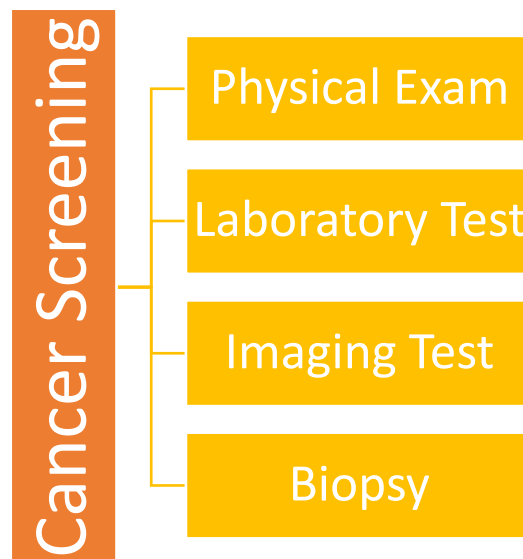


Fig.-3 Diagnosis of cancer (Screening)¹⁰

Every cancer patient deals with his or her own illness in an exceedingly unique, subjective way looking at his or her own inner capacity. A cancer diagnosis is often linked with the fear of death, pain, physical disabilities, and other negative consequences. This can be why a patient diagnosed with cancer usually experiences extreme stress following changes in daily routine, the likelihood of losing their job, moderation of social networks, fatigue, pain, and uncertainty in the long run. Of these things evoke psychological stress and its level of intensity depends on the patient's personal perception of the disease. The importance of perception is crucial because it might strengthen, or on the contrary, reduce a patient's motivation for rehabilitation.

Cancer Screening: Diagnosing cancer at its earliest stages often provides the most effective chance for a cure. With this in mind, talk together with your doctor about what forms of cancer screening could also be appropriate for you.

For some cancers, studies show that screening tests can save lives by diagnosing cancer early. For other cancers, screening tests are recommended just for people with increased risk.

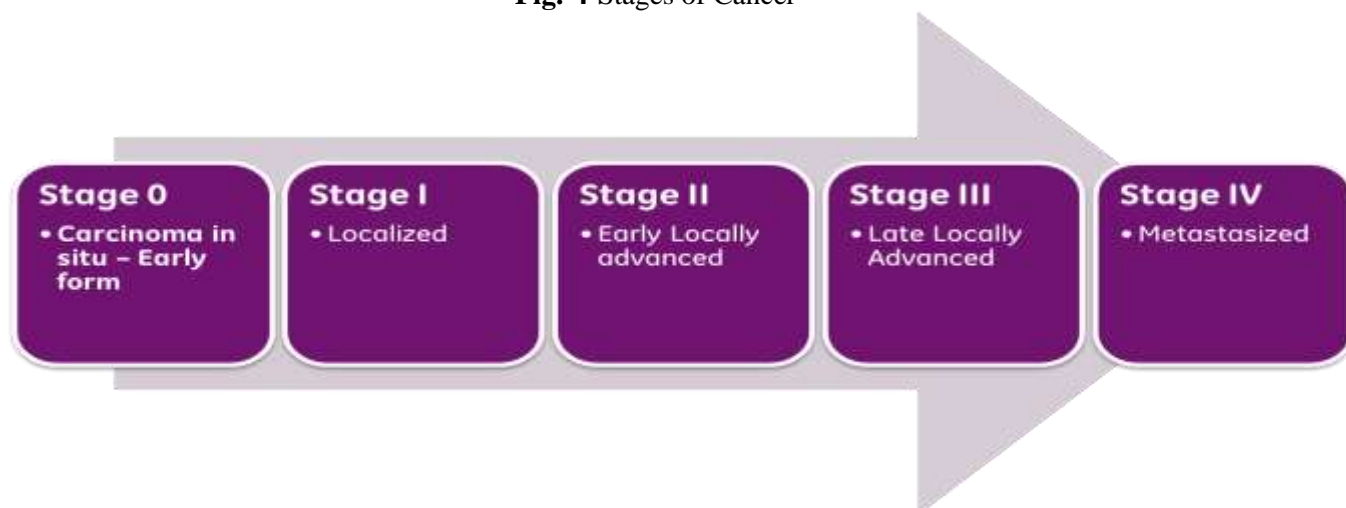
A variety of medical organizations and patient advocacy groups have recommendations and guidelines for cancer screening.

- Physical exam. The clinician may feel areas of your body for lumps which will indicate cancer. During a physical exam, the clinician may rummage around for abnormalities, like changes in color or enlargement of an organ, that will indicate the presence of cancer.
- Laboratory tests. Laboratory tests, like urine and blood tests, may help your doctor identify abnormalities that may be caused by cancer. As an example, in people with leukemia, a standard biopsy called complete blood count may reveal an unusual number or sort of white blood cells.
- Imaging tests. Imaging tests allow your doctor to look at your bones and internal organs in a very non-invasive way. Imaging tests employed in diagnosing cancer may include a computed tomography (CT) scan, bone scan, resonance imaging (MRI), positron emission tomography (PET) scan, ultrasound, and X-ray, among others.
- Biopsy. During a biopsy, clinicians collect a sample of cells for testing within the laboratory. There are several ways of collecting a sample. Which biopsy procedure is correct for you depending on your variety of cancer and its location? In most situations, a biopsy is the only test to definitively diagnose the cancer patient.

In the laboratory, the clinicians have a look at cell samples under the microscope. Normal cells look uniform, with similar sizes and orderly organization. Cancer cells look less orderly, with varying sizes and without apparent organization.

Cancer Stages: Once cancer is diagnosed, the clinician will work to see the extent (stage) of your cancer. They use the cancer stage to see your treatment options and your chances for a cure. Staging tests and procedures may include imaging tests, like bone scans or X-rays, to work out if cancer has spread to other parts of the body. Cancer stages are indicated by the numbers 0 through 4, which are often written as Roman numerals 0 through IV. Higher numbers indicate more advanced cancer. For a few sorts of cancer, the cancer stage is indicated using letters or words.

Fig.-4-Stages of Cancer¹¹



Examples of blood tests to diagnose cancer include:

- Complete blood count (CBC). This common biopsy measures the number of assorted styles of blood cells during a sample of your blood. Blood cancers could also be detected using this test if too many or too few of a sort of vegetative cell or abnormal cells are found. A bone marrow biopsy may help confirm a diagnosis of a blood cancer.
- Blood protein testing. A test (electrophoresis) to look at various proteins in your blood can aid in detecting certain abnormal system proteins (immunoglobulins) that are sometimes elevated in people with myeloma. Other tests, like a bone marrow biopsy, are wont to confirm a suspected diagnosis.
- Tumor marker tests. Tumor markers are chemicals made by tumor cells that may be detected in the blood.

But tumor markers are produced by some normal cells in the body, and levels are also significantly elevated in noncancerous conditions. This limits the potential for tumor marker tests to assist in diagnosing cancer. Only in extremely rare circumstances would such a test be considered enough to form a firm diagnosis of cancer. The best thanks to using tumour markers in diagnosing cancer hasn't been determined. Also, the use of some tumor marker tests is controversial.

Examples of tumor markers include prostate-specific antigen (PSA) for glandular carcinoma, cancer antigen 125 (CA 125) for ovarian cancer, calcitonin for medullary thyroid cancer, alpha-fetoprotein (AFP) for liver disease, and human chorionic gonadotropin (HCG) for sex cell tumors, like carcinoma and ovarian cancer. Circulating tumor cell tests. Recently developed blood tests are being used to detect cells that have broken aloof from a clever cancer site and are floating within the bloodstream. One circulating tumor cell test has been approved by the Food and Drug Administration to watch people with breast, colorectal, or glandular carcinoma. This test isn't commonly utilized in a clinical setting.

What the results mean: Test results must be interpreted carefully because several factors can influence test outcomes, like variations in the body or maybe what we eat. In addition, confine mind that noncancerous conditions can sometimes cause abnormal test results. And, in other cases, cancer is also present although the biopsy results are normal.

What happens next?

Though blood and urine tests can assist in giving clues, other tests are usually necessary to form the diagnosis. For many varieties of cancer, a biopsy procedure to get a sample of suspicious cells for testing is sometimes necessary to create a definitive diagnosis.

In most cases, after completion of treatment, using cancer blood tests isn't helpful for looking forward to a return of cancer.

Treatment

We have lot of treatment option for cancer patients, that include medical surgical and chemotherapy etc; Apart from medical intervention, some of the therapy techniques be helpful for treating cancer cases. Among them, music therapy could be one of the treatment options for cancer cases. Along with medical treatment cancer cases also should be motivated psychologically through different therapy modes. In our study and literature review, it is evident that music therapy may be helpful for cancer patients.

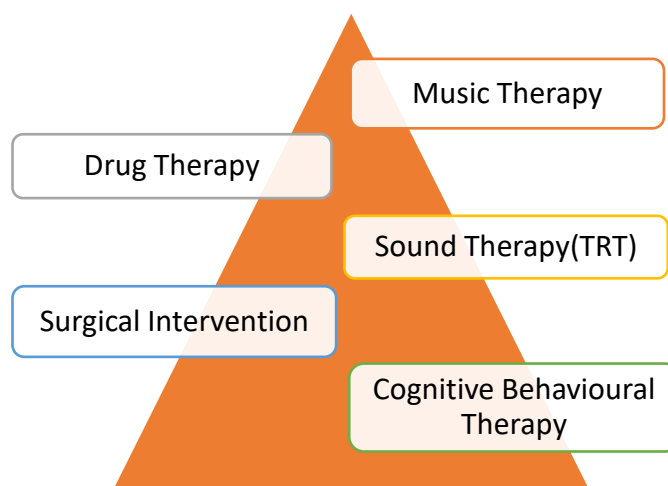


Fig.-5-Intervention of Tinnitus¹²

Impact Of Music Therapy

Music therapy is the practice of applying music to handle the physical and emotional needs of patients in a very therapeutic environment. It should be accustomed to help alleviate emotional, physical, and social stresses caused by cancer, or to spice up the morale of the cancer patient and help through treatment and recovery (Bailey, 1984)¹³; (Daykin et al. 2006)¹⁴; (Gimeno, 2010)¹⁴; Li et al, 2011¹⁵; Boyde et al, 2012¹⁶; McClean et al, 2012¹⁷; Jasemi et al, 2013¹⁸; Puctz et al: 2013¹⁹; Bradt et al, 2015²⁰; Domingo et al, 2015²¹). Music therapy may include creating, singing, moving to or being attentive to music to release negative emotions express inner feelings, reduce stress and relax the mind and body, and permit a way of normalcy during uncertain times (Bunt & Pavlicevic, 2001)²². One of the best ways to experience the positive effects of music is to concentrate to music. Other ways to include music into existence may include playing an instrument, singing a song, and participating in a group class.

Within the USA, the bulk of National Cancer Institute-designated Comprehensive Cancer Centres offer music therapy for patients, and lots of community cancer centres do so (Pavlicevic and Ansdell, 2004)²². The utilization of non-secular music can provide spiritual comfort, and reassurance and support the individual's faith (Zeighamy and Sadeghi, 2016)²³ Thus, music has historically been related to health and healing in cultures around the world.

Psychosocial support is as important in the cancer pathway as other kinds of treatment like surgery or chemotherapy. Supportive care is required after intense treatment because after leaving hospital, patients typically start feeling psychologically and socially weak, confused and powerless. Music therapy can help cancer patients reduce their level of stress and strengthen their level of self-confidence. Music therapy not only empowers the patient to require a full-of-life role in higher cognitive process processes, liberates the emotions, but also it reduces the stress level, anxiety, stimulates the sleep, activates body, improves memory and perception (Brown and Gerbarg, 2012)²⁴. However, the impact of music therapy varies and should not be achieved in an exceedingly short time. It depends on each patient's personal characteristics, and the amount of the perception of the disease.

There are various kinds of music therapy, but therapists use receptive music therapy with cancer patients because it involves a range of listening options and health objectives (Kohler et. al, 2020)²⁵. When it's utilized in oncology, the task for the patient is to consider the sounds coming into his/ her consciousness and follow the inner experiences caused by the mixture of the musical sounds.

In the case of terminal cancer patients, music therapy can improve their quality of life by addressing the emotional, spiritual, and physical needs that will arise during this point. Furthermore, music therapy may be applied to assist relationships throughout the grieving process by providing comfort, continuity, and opportunities for precise feelings of loss (Rossetti et al., 2017)³. However, despite the actual fact that one may find a plethora of research studies conducted in Western countries (especially the USA, UK, Canada, and Germany) Van et. al, 2019)²⁶. The potential benefits of music for cancer patients, there's an occasional level of data or awareness of using music therapy for the treatment of cancer patients in India. Hence, there's a greater need and justification for exploring the scope of using music therapy with cancer patients, especially in low-income countries, including India.

4. Conclusion

Cancer could be a major reason for death after a heart condition. There are 14 million new cases of cancer once a year (Steward and Wild, 2014)². Quite 8.8 million deaths in 2015 (or nearly 1 in 6 deaths) were caused by cancer (World Health Organization, 2018)¹ and deaths from cancer worldwide are projected to still rise to over 20 million by 2025 (Stewart and Wild. 2014)².

There are several intervention modes to treat cancer patients. Besides medical intervention, there are some psychosocial issues that are prominent just in case of cancer cases. For that Music therapy can improve their quality of life by addressing the emotional, spiritual, and physical needs that will arise during this point. Furthermore, music therapy also can be applied to assist relationships throughout the grieving process by providing comfort, continuity, and opportunities for specific feelings of loss (Rossetti et al., 2017)³. The benefits of music for cancer patients, and usages of music therapy for the treatment of cancer patients in India are limited, but as we know we are the father of music and yoga of the whole world. So, the implication of music therapy should be recommended to all cancer patients based on their choice Hence, there's a greater need and justification for exploring the scope of using music therapy with cancer patients, especially in low-income countries, including India.

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