PSYCHOLOGICAL INTERVENTIONS – HOlistic APPROACH TO CANCER

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ABSTRACT:

Aim: The present aim of the study is the role of Psychological interventions like guided imagery, mindfulness based narrative therapy mindfulness based stress reduction therapy and adjunctive psychological therapy in preventing growth and progression of cancer. By following these psychological interventions along with the adjuvant therapy there is more likelihood of surviving from cancer.

Methods: Articles regarding telomeres, endorphins and their therapeutic application in cancer were searched on PubMed and Google scholar. The study includes reviews, key findings and clinical trials which are included in the manuscript. The study is based on the descriptive research which aims to accurately and systematically describe the population, situation or phenomenon.

Result: Beta endorphin is an endogenous morphine helps for natural holistic preventive, promotive, therapeutic and palliative treatment of cancer without adverse effects. Researchers in Canada have found that telomeres play a key role in altering the cellular activity of the cancer survivors.

Keywords: Cancer and Psychological interventions

INTRODUCTION
Cancer is a disease in which some of the body’s cells grow uncontrollably and spread to other parts of the body. Cancers are caused due to external environmental factors such as chewable and non-chewable form of tobacco, alcohol consumption, chemical ingestion and dietary factors and viruses such as HPV (Human Papilloma virus). When the orderly process of cell division breaks down it may lead to abnormal multiplication of cells which form tumors, (lumps of tissue). Tumors can be malignant (cancerous cells) or benign (non-cancerous cells).

TYPES OF CANCER
Carcinoma
The form of cancer in which the epithelial cells lining the internal vital organs of the body gets affected. Lung cancer, ovarian cancer, prostate cancer are some of the manifestations of this form. Adenocarcinoma is a form of carcinoma in which the cells producing mucus are affected. Cancers of breast, colon are adenocarcinomas. Squamous cell carcinoma is form of cancer that affects the epithelial cells that lie beneath the outer surface of the skin. Cancers of stomach, intestines, lungs, bladder, and kidneys are squamous carcinomas.

Sarcoma
The form of cancer that is formed in the bones and soft tissues, fibrous tissues like tendons and ligaments. liposarcoma, and dermatofibrosarcoma protubersans are some common types of sarcoma.

Leukaemia
Cancers that are formed in the bone marrow where the white blood cells undergo abnormal division and makes the normal blood cells harder to fight against the infections.

Lymphoma
The form of cancer that affects the lymphocytes .abnormal lymphocytes accumulate in the lymph nodes and lymph vessels. The kinds of lymphoma are Hodgkin lymphoma starts in the lymphocytes and grow as cancer that are formed from the b cells. Non-Hodgkin lymphoma starts in the lymphocytes and grow as cancers that are formed from the B cells or T cells.

Psychological interventions
Interventions are the strategies that help the individual to adapt to the situations and helps to lead to enhance the quality of life. The interventions helps in alleviating the symptoms and also understand the root cause of the symptom. Interventions helps individual in different domains like behavioural emotional. Some of the interventions are cognitive therapy, rational emotive behavioural therapy, mindfulness based stress based reduction therapy, and mindfulness based narrative therapy. In cancer patients these interventions help to reduce the comorbidities like anxiety, depression stress which further helps the patients to have a better quality of life.

In Cognitive therapy the negative and automatic thought patterns of the individual are worked upon. the cognitive distortions can be overcome by training the individual and also by restructuring which helps to build constructive thought process.

In rational emotive behavioural therapy, clients are helped to discover the irrational thoughts and worked on the alternative and rational beliefs. in this therapy the irrational beliefs are identified and are replaced with the more positive beliefs.
Mindfulness based therapies focus on the current situation which help the individual in relaxing and not worrying about the future which in turn leads to anxiety and stress. In Mindfulness based narrative and stress reduction therapies individual develops self-esteem, the stories which we say about ourselves shape our identities. This allows our access to the state of awareness and control the free floating anxiety, stress, depression and regulate the emotions.

**REVIEW OF LITERATURE**

1. Tami Peretz, Phina Ever Hadani, Uwe Koch et.al, (2001) conducted a study entitled “Psychological intervention in cancer patients: a randomized study”. The present aim of the study examined the long-term effects of a behavioral intervention on the psychological distress of patients who have been recently diagnosed with the localized cancer at Hadassah University Hospital. The researcher used 116 patients for the current study who met the inclusion criteria (49 men and 67 women). They were divided into a randomized intervention group and a control group and the intervention chosen for the study was Progressive Muscle Relaxation with Guided Imagery, which is intended to decrease psychological distress and increase the patient’s sense of internal control. The researcher used 2 scales (The Brief Symptom Inventory (BSI) and the Impact of Events Scale) to assess psychological distress within 1 month of diagnosis, 3 months later and 6 months later. Finally it is has been evidently proved that the effect of the behavioral intervention on psychological distress was found to be positive. Finally the researcher also concluded that the results might be more meaningful if the cancer patients are first screened for psychological distress to exclude those with a low distress level and then randomized for participation in the study.

2. PanelBarbara L. Andersen, William B. Farrar, Deanna Golden-Kreutz conducted a study entitled on “Distress reduction from a psychological intervention contributes to improved health for cancer patients”. The purpose of the current study was to examine whether Psychological interventions are efficacious in reducing emotional distress for cancer patients. The researcher used clinical trial tests and identified two routes to achieve better health: (a) reducing patients’ Emotional Distress, and/or (b) enhancing their functional immunity. The following Methods have been processed in the research Post-surgery, 227 breast cancer patients were randomized to intervention or assessment only Study Arms. The study has been conducted in small groups, intervention sessions were offered for 4 months and 8 months. The study also included psychological (distress), biological (immune), and health outcomes (performance status and evaluations of patient’s symptomatology, including toxicity from cancer treatment, lab values) collected at baseline, 4 months, and 12 months. Finally the researcher concluded a convergence of bio behavioral effects and health improvements were observed. It has also been proved that behavioral change than immunity change was influential in achieving lower levels of symptomatology and higher functional status.

3. Yiyi Liang, Huimin Li, Yu Gan& Hong Tu (2021) conducted a study entitled on “Shedding Light on the Role of Neurotransmitters in the Microenvironment of Pancreatic Cancer”. The objective of the study was to determine that the pancreatic cancer not only triggered by the malignant behavior of the cancer cells, but also by the surrounding tumor microenvironment (TME), consisting of various cellular and non-cellular components. The results concluded that the pleiotropic effects of neurotransmitters on the initiation and progression of pancreatic cancer. In the current study it has also been evident that the emerging mechanisms of how neurotransmitters influence the innate and adaptive immune responses in the TME in an autocrine or paracrine manner. Finally it has been found that the interplay between neurotransmitters and the immune cells in the TME might facilitate the development of new effective therapies for pancreatic cancer.

4. Sarah E. Rush and Manoj Sharma (2017) conducted a study entitled on “mindfulness-Based Stress Reduction as a Stress Management Intervention for Cancer Care”. The purpose of this study was to investigate the studies from October 2009 to November 2015 and also to examine whether mindfulness-based stress reduction can be utilized as a viable method for managing stress among cancer patients. When the cancer rates continue to increase along with diagnosis related distress, the need for stress reduction techniques among cancer patients remains a critical concern and MBSR serves as a promising stress reduction technique. It has been found around 13 interventions from October 2009 to November 2015 overlooked at the mindfulness based stress reduction therapy and its efficacy in decreasing stress in individuals with a new cancer diagnosis or having received cancer treatment.

5. Emiliano Santaremeci, Sicilía D’Arista, Eutizio Egiziano, et.al; (2014) conducted a study entitled on “Interaction between Neuroanatomical and Psychological Changes after Mindfulness-Based Training”. The present aim of the study was analyzed that the several morphometric indexes at both cortical and subcortical brain level, as well as multiple psychological dimensions, before and after an 8 weeks Mindfulness Based Stress Reduction training program. The major findings of the research proved that there is a significant impact on brief MBSR training on brain structures, mindfulness based stress reduction has also been used as a valuable tool for alexithymia modulation, it has also been overlooked as a plausible neurobiological evidence of a major role of right insula into mediating the observed psychological changes.

6. B Rodríguez Vega, C Bayón Pérez, A PalaoTarrero, A FernándezLiria (2013) conducted a study entitled on “Mindfulness-based narrative therapy for depression in cancer patients”. The objective of the study was to find out whether Mindfulness-based narrative therapy (MBNT) is a therapeutic intervention for the treatment of depression in cancer patients. Based on the previous study using randomized controlled trial, Mindfulness Based Narrative Therapy was found to ameliorate anxiety and depression, improve functional dimensions of quality of life, and enhance treatment. The current study proved that the needed adjustments to other narrative approaches and clinical modifications tailored to the needs of cancer patients that are intended to encompass the client's initial depressive narrative. Finally from the research it has been evidently seen that the Mindfulness Based Narrative Therapy makes use of linguistic interventions, promotes mindfulness and emotional regulation with cancer patients.
7. Dipak K. Sarkar, Sengottuvelan Murugan, Changqing Zhang et al., (2012) conducted a study entitled on “Regulation of Cancer Progression By B-Endorphin Neuron”. The purpose of the study is to investigate that the process by which stress may potentiate carcinogenesis and reducing body stress may prevent cancer growth and progression. The cancer-preventive effect of β-endorphin is mediated through the suppression of sympathetic neuronal function, which results in increased peripheral natural killer cell and macrophage activities, elevated levels of anti-inflammatory cytokines, and reduced levels of inflammatory cytokines. β-endorphin inhibition of tumor progression also involves alteration in the tumor microenvironment, suppression of catecholamine and inflammatory cytokine production alter DNA repair, cell-matrix attachments, angiogenic process, and epithelial–mesenchymal transition.

8. S. Greer, S. Moorey, J. D. Baruch, M. Watson (1992) conducted a study entitled as “Adjuvant Psychological therapy for patients with cancer: A prospective randomized trial”. The objective of the study was to examine whether the effect of adjuvant psychological therapy on the quality of life of patients with cancer. The research design used was Prospective randomized controlled trial comparing the quality of life of patients receiving psychological therapy with that of patients receiving no therapy, before therapy and the follow up session after eight weeks and four months. The Adjuvant psychological therapy especially cognitive-behavioral treatment programme has been specifically designed for the needs of individual cancer patients. It has been evidently proved that following Adjuvant psychological therapy produces significant improvement in various measures of psychological distress among cancer patients.

9. StirlingMoorey, Steven Greer, Judith Bliss, Matthew Law (1998) conducted a study entitled on “A Comparison of Adjuvant Psychological Therapy and Supportive Counselling in Patients with Cancer”. The present aim of the study was to compare the effectiveness of two psychological treatments in a group of 57 patients at Royal Marsden Hospital. Patients referred for psychiatric assessment who met criteria for an abnormal adjustment reaction were randomly allocated to either 8 weeks of Adjuvant Psychological Therapy (APT) or 8 weeks of a comparison treatment of supportive counselling. In the 8 weeks it has been evidently proved that the adjuvant psychological therapy had produced a significantly greater change than the counselling intervention on fighting spirit, helplessness, coping with cancer, anxiety, and self-defined problems. Later, in 4 months Adjuvant psychological therapy had produced a significantly greater change than counselling on fighting spirit, coping with cancer, anxiety and self-defined problems. The major findings of the study concluded that Adjuvant Psychological Therapy produces greater change in anxiety; adjustment to cancer and use of coping strategies than a non-directive, supportive intervention over an 8 week period of treatment.

10. Danielle L. Feros, Lisbeth Lane, Joseph Ciarrochi, John T. Blackledge (2011) conducted a study entitled on “Acceptance and Commitment Therapy (ACT) for improving the lives of cancer patients: a preliminary study”. The objective of the study was to examine the effectiveness of an Acceptance and Commitment Therapy (ACT) intervention. From the major findings of the research it has been concluded that the Acceptance commitment therapy effect sizes were comparable to those obtained in studies examining the effectiveness of other psychological therapies for improving quality of life among individuals with cancer.

11. Carlson, Linda E., Speca, Michael & Patel, Kamala D. (2003) conducted a study entitled on “Mindfulness-Based Stress Reduction in Relation to Quality of Life, Mood, Symptoms of Stress, and Immune Parameters in Breast and Prostate Cancer Outpatients”. The present aim of the study was to investigate the relationship between mindfulness-based stress reduction program in early stage breast and prostate cancer patients and quality of life, mood states, stress symptoms, lymphocyte counts, and cytokine production. The researcher involved Forty-nine patients with breast cancer and 10 with prostate cancer participated in an 8-week Mindfulness Based Stress Reduction program that incorporated relaxation, meditation, gentle yoga, and daily home practice. The researcher collected the Demographic details and health behavior variables, quality of life (EORTC QLQ C-30), mood (POMS), stress (SOSI), and counts of NK, NKT, B, T total, T helper, and T cytotoxic cells, as well as NK and T cell production of TNF, IFN-γ, IL-4, and IL-10 were assessed in the pre- and post-intervention. From the major findings of the research it has been concluded that the Mindfullness Based Stress Reduction was associated with enhanced quality of life and decreased stress symptoms in breast and prostate cancer patients.

RESULTS AND DISCUSSION
Beta endorphins are secreted by the pituitary gland when we are under stress or in pain. They have anti-inflammatory, immunostimulant anti-pain regulatory properties and euphoric activity. They are released in response to the pain, and pleasure activities of the body. When prone to stress, our sympathetic nervous system activates leading to the release of cortisol, ACTH (Adrenocortico tropic hormone), and non-adrenaline. Excessive activation of the sympathetic When these hormones are released in cancer patients, as the immune system is already low, this will further increase the cancer cells to proliferate as these stress hormones will activate the transcription factors like NF-κB and STAT-3 in the tumor microenvironment. When Mindfullness stress-based intervention is given stress levels will reduce thereby tumor progression will be inhibited.
Neurotransmitters play a key role in the progression of cancer. GABA signalling pathway (Gamma amino butyric acid) inhibition has proved to elicit an anti-tumor response in colon cancer. Every immune cell in our body has its neurotransmitter receptors. The receptors of Dopamine on our immune cells are attacked in cancer. The increase in the levels of dopamine leads to the increase in
the dopamine receptors and the GABA receptors which inhibits the further proliferation of the cancer cell. The dopamine levels also help in the increase of the oxygen levels to the tumor cells and help the patient to respond effectively to the chemo and radiation therapies. This helps the cancer patient to overcome distress and anxiety. Evidence from the research also explains that guided imagery along with muscle relaxation therapy helps in inhibition of the tumor cell growth. In guided imagery, the pain, anxiety, and other comorbid factors can be hooked and help the patient to have a better quality of life. Telomeres also play a major role in the protection of the normal cell to be attacked by the cancer cell. They are cap-like structures that protect the chromosomes. The shortened length of the telomeres is an inclination to cancer. Based on the evidence from Study on Telomeres in Canada mindfulness meditation helps in maintaining the size of the telomeres.

SUGGESTIONS
Evidence from previous research elucidates that mindfulness stress-based intervention, psychotherapy, and mindfulness narrative therapy are effective in dealing with comorbidities of cancer. Additional possibilities interventions may be interpersonal psychotherapy to maintain the telomere length as social and environmental factors play a key role in maintaining the length of the telomeres. Hypnotic therapy helps in alerting the mind when the body is in a trans mode which may be a possible kind of instruction to the mind to rewire itself and helps like a self-healing mechanism for cancer patients.

CONCLUSION
In cancer patients co-morbidities like depression, anxiety, and stress leads to the proliferation of cancer cells with psychological interventions, the levels of these comorbidities maybe decreased and therefore prevents the further progression of cancer. When the mind and body are healed together, the effectiveness of the treatment increases.

REFERENCES