Chapter One

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Cancer is a generic term for a large group of diseases that can affect any part of the body. Other terms used are malignant tumours and neoplasms. One defining feature of cancer is the rapid creation of abnormal cells that grow beyond their usual boundaries, and which can then invade adjoining parts of the body and spread to other organs. This process is referred to as metastasis. Metastases are the major cause of death from cancer. Cancer may affect people at all ages, even fetuses, but risk for the more common varieties tends to increase with age (World Health Organization, 2009). Cancer begins when a single cell begins to proliferate abnormally. This altered cell divides to form two abnormally proliferating cells, which in turn divide to form four abnormal cells and so on (Geoffrey, M.C. 1993).

Cancer is a group of diseases in which cells are aggressive (grow and divide without respect to normal limits), invasive (invade and destroy adjacent tissues), and sometimes metastatic (spread to other locations in the body). These three malignant properties of cancer differentiate them from benign tumors, which are self-limited in their growth and do not invade or metastasize (although some benign tumor types are capable of becoming malignant) (Matteo, Ci. 2008).

There are many kinds of cancer. It is really a family of over one hundred different diseases. Not only these are numerous kinds of cancer, but also individual differences among cancer patients i.e individuals with cancers of the same type sometimes behave very differently from each other (Geoffrey, M.C. 1993).

Chemotherapy (also called chemo) is a type of cancer treatment that uses drugs to destroy cancer cells. Depending on the type of cancer and on how advanced it is, chemotherapy can cure cancer, control cancer, or ease cancer symptoms. Chemotherapy works by stopping or slowing the growth of cancer cells, which grow and divide quickly. But it can also harm healthy cells that divide quickly, such as those that line patient’s mouth and intestines or cause their hair to grow. Damage to healthy cells may cause side effects. Chemotherapy can cause damage to patients’
nervous system. How long side effects last depend on patients’ health and the kind of chemotherapy patients get. Most side effects go away after chemotherapy is over. But sometimes it can take months or even years for them to go away. Chemotherapy affects people in different ways. How patients feel depends on how healthy they are before treatment, the type of cancer, how advanced it is, the kind of chemotherapy they get, and the dose (National Cancer Institute, 2007).

**Epidemiological indicators of cancer:** According to WHO (2009) Cancer causes about 13% of all deaths. Apart from humans, forms of cancer may affect other animals and plants also. In the U.S. and other developed countries, cancer is presently responsible for about 25% of all deaths. On a yearly basis, 0.5% of the population is diagnosed with cancer. Cancer can also occur in young children and adolescents, but it is rare about 150 cases per million yearly in the US (Jemal. A. *et al*, 2005).

A diagnosis of cancer is by no means a death warrant. Rather, it depends completely on the nature of the malignancy whether the patient will die of the disease (as in mesothelioma) or with the disease (as in most cases of prostate cancer). At present, 50% of all newly diagnosed malignancies are being cured (WHO, 2009).

Urbanization, industrialization, changes in lifestyles, population growth and ageing all have contributed for epidemiological transition in INDIA (Murthy, N.S. & Mathew, A.2004). Indian Council of Medical Research (ICMR) initiated a network of cancer registration through the National Cancer Registry Programme (NCRP) in 1982 to set up cancer registries in different regions of the country. The ICMR network of registries now consists of 6% population based cancer registries (PBCRs) located at Bangalore, Bhopal, Chennai, Delhi and Mumbai (5 urban) and Barshi (rural). Although the population covered by the above registries is very limited, to the extent of only 5%, it gives some idea of the extent of the cancer problem in the country (Mathew, A. 2003).

**Psychological Correlates of Cancer:** Cancer presents far more than a physical challenge. The psychological and medical problems encountered by cancer patients are numerous and unique. There is considerable evidence suggesting that cancer patients suffer from substantial and long-term psychological distress associated with different forms of cancer and its medical treatment. These psychological problems
can, in fact, be more challenging to some cancer patients than the physical aspects of
the disease, and contribute significantly to the overall suffering of the patients

There is an association between certain psychological factors, such as feeling
helpless or suppressing negative emotions, and the growth or spread of cancer
(Garssen, B. 2004). Whipp, (1986), reported that high doses of radiation can cause
malaise, depression, nausea, diarrhea, loss of appetite, skin reactions, mouth and
throat reactions and hair loss. Antoni, M.H. et al (2006) reported that stronger
relationships have been found between psychological factors and cancer growth and
spread than between psychological factors and cancer development. According to
Zimmerman, L., Story, K. T., Gaston, J.F., Rowles, J. (1996), there was a relationship
between pain intensity and psychological status.

Anticipatory nausea and vomiting is thought to be the result of classical
conditioning in which cancer patients associate various stimuli of the chemotherapy
setting with chemotherapy induced nausea and vomiting (Kutz, I., Borysenko, J.Z.,
Come, S.E., Benson, H. 1980). The chemotherapeutic agent is an unconditioned
stimulus. The chemotherapy induced nausea and vomiting are unconditioned
responses. Environmental cues become associated with chemotherapy and become
conditioned stimuli. Anticipatory nausea and vomiting become conditioned responses.
The cancer patient then develops anticipatory nausea and vomiting when
environmental cues associated with chemotherapy are presented (Parkin, D.M.; Bray,

As a life-threatening and life-altering disease, a cancer diagnosis produces an
emotionally jarring experience accompanied by multiple stressors, challenges, and
disruptions (Simonton, S., & Sherman, A. 1998). Existential distress and its effect on
the individual’s sense of well-being often continue beyond completion of the
prescribed medical treatment (McKinley, E.D. 2000). Tedeschi, R. & Calhoun, L.
(1995) have suggested that clinical intervention can help foster growth after major
stressors or trauma.
The notion that psychology could apprise our understanding of cancer was first introduced in the 1954. Classic articles by Stephenson, J. H. & Grace, W. J. (1954) and Bard, A. & Sutherland, A.M. (1955) suggested a role for stress in cancer incidence and provided the first description of psychological adaptation to cancer (Wendy, M., Jamie, L. S. 1999).

Clinical psychology aims to reduce psychological distress and to enhance and promote psychological well-being by the systematic application of knowledge derived from psychological theory and data (British Psychological Society, 2001). Slade, M. (2002) argues that the widespread adoption of this model by psychiatry should not blind us to the fact that mental health teams generally understand emotional disorders primarily in biological terms, with the psychological and social factors receiving consideration only when biological factors fail to account for all phenomena. Slade contends that clinical psychologists have a duty to challenge biological explanations of human distress that have a weak evidence base and have a further duty to undertake research to extend the relevant evidence base. According to Chan, Y.M. et al (2005), to improve emotional adjustment and prevent negative psychological effects, among cancer patients, various components may be included, such as providing information or psycho-education, peer discussion, coping strategies, biofeedback, relaxation, emotional expression, and cognitive behavioral therapy.

Many cancer patients use psychological therapies because they expect them to cure their cancer or to improve their recovery. Despite these high expectations, both patients and oncologists report to being moderately to very satisfied with the results of psychological therapies. Previous reviews of the literature have concluded that psychological therapies may help cancer patients in various ways, ranging from reducing the side effects of cancer treatments to improving patients’ immune function and longevity (Sallie,A.N.; Rob,W.S. & Nina, J.S.2002). It is important to attend to quality of life and health in population with a history of cancer, and to develop effective interventions to address psychosocial and physical concerns across the course of the cancer trajectory (Annette, L. S.2006). Miller, M. et al. (1998) reported up to 25% of participants expected the psychological therapy to cure their cancer, and 75% to 100% expected it to assist their traditional therapies.
The study of cancer and related issues of psychological concerns have attracted Clinical Psychologists as a separate discipline called ‘Psycho-oncology’. Psycho-oncology has come of age as one of the youngest subspecialties of oncology, as one of the most clearly defined subspecialties of Clinical Psychology and consultation-liaison Psychiatry, and as an example of the value of a broad multidisciplinary application of the behavioral and social sciences. The formal beginnings of psycho-oncology dates to the mid-1970s, when the stigma making the word “cancer” unspeakable was diminished to the point that the diagnosis could be revealed and the feelings of patients about their illness could be explored for the first time. However, a second stigma has contributed to the late development of interest in the psychological dimensions of cancer: negative attitudes attached to mental illness and psychological problems, even in the context of medical illness. Links between psychological and physiological domains of relevance to cancer risk and survival are being actively explored through psycho-neuro-immunology. Research in these areas will occupy the research agenda for the first quarter of the new century. (Holland, J.C. 2002).

Sleep-related difficulties in cancer patients have been linked to fatigue, and distress (Ancoli, I. S., Moore, P.J.& Jones, V.2001), and also because of disruption in neuro-endocrine and immune factors associated with tumor progression (Sephton, S., Spiegel, D.2003). An analysis of psychological symptoms indicates that there are different correlates such as Anxiety, Stress, Fear, Depression, etc, which can be handled by suitable interventions.

(a) Anxiety and cancer: Anxiety is also associated with cancer, which is a normal reaction to cancer (www.medicinenet.com). Anxiety symptoms are common in cancer patients. Anxiety is a response to threat. Cancer is threatening, and so many patients are anxious. Screening by questionnaire seems to assess anxiety symptoms adequately but discriminates abnormal anxiety inadequately. To improve this, we may need to use criteria such as disruption from anxiety, as illustrated by the impact of anxiety disorders on quality of life. There seem to be few oncologic variables that could target screening for anxiety disorders. Anxiety disorders are the most common psychiatric disturbances (Stark, D.et al..2002). Prevalence rates are high, yet less than 30% seek treatment (Pollock, R. & Kuo, I. 2004). Prevalence studies that have looked specifically at anxiety in patients with
cancer have found that they tend to have a higher rate of anxiety disorders than the general population (Thielking, P.D. 2003). Anxiety in cancer care is illustrated by the wide range of prevalence estimates of abnormal anxiety in cancer patient populations. This varied from 0.9% to 49% in one review of the literature (Spijker, V. A., Trijsburg, R.W., Duivenvoorden, H.J. 1997).

Patients with early identification and treatment of anxiety reactions, especially those involving low self-efficacy and high tendency to catastrophize, are likely to have the potential to enhance cancer treatment compliance, recovery, and survival (Ruth, H. S. 2009).

(b) **Stress and cancer:** During the late eighteenth century stress denoted ‘force, pressure, strain, or strong effort’, referring primarily to an individual, or to the individual’s organs or mental powers (Hinkle, L. E. 1973).

Increased psychological distress has been shown to correlate with disease progression and poorer health (Cohen, S., Williamson, G. 1991). Psychological distress has been distributed to cancer. Studies have indicated that stress can affect tumor growth and spread, but the precise biological mechanisms underlying these effects are not well understood. Scientists have suggested that the effects of stress on the immune system may in turn affect the growth of some tumors (Andersen, B.L., Farrar, W.B., Golden-Kreutz, D. 1998). Research conducted by Thaker, P.H., Han, L.Y. & Kamat, A.A. (2006) using animal models indicates that the body’s release of stress hormones can affect cancer cell functions directly. A wide variety of stressors can alter the stress response. The same stressor is perceived differently by different individuals in a population (Leslie, J. C. 2007). Thus, stress and cancer are intimately related.

(c) **Complementary and Alternative Medicine (CAM):** Biofeedback, relaxation techniques, meditation, hypnosis, prayer, music and dance therapy are all considered to be forms of Complementary Alternative Medicine (CAM) interventions. Many peer reviewed articles have documented the value of behavioral and relaxation techniques in patients with psychiatric morbidity. The problems, which respond favorably to these techniques, include chronic pain,
insomnia, stressful situations and headaches. Evidence is also available for their usefulness in improving the prognosis of patients with cardiovascular disease and in enhancing the immune functioning (Vickers, A. & Zollman.C. 1999).

Biofeedback is a form of complementary and alternative medicine that involves measuring the responses of a patient, such as the blood pressure, heart rate, or skin temperature, to provide patients with feedback about their awareness and their conscious control of physiological activities. This has gradually been expanded to deal with perspiration and muscle tension (Corfield, J. 2008). Biofeedback and neurofeedback are ideal approaches for those individuals seeking complementary and alternative medicine (CAM) therapies (Lake, J. & Donald, M. 2004).

Biofeedback is founded on the mind-body connection hypothesis. Our body's physiological functioning is constantly changing in response to thoughts and feelings, and conversely, how patients think and feel is conditioned by how their body is (Vickers, A. & Zollman.C. 1999). Biofeedback and biological monitoring are useful in creating readiness for self exploration, reducing therapeutic resistance, and enabling the patient to recognize mind-body linkages. Display of physiological signals enables therapist and patient alike to identify maladaptive and stereotypic responses to stress, and to retrain more flexible and adaptive responding. Biological monitoring during the course of psychotherapy can provide a “window into the soul” – alerting both patient and therapist to attune to specific topics and life situations which activate somatic threat and distress reactions (Donald, M. 2005).

Caregivers of cancer patients: Any disability or disease is always accompanied by some people who will be responsible for taking care of the patient/victim. One of them who are mainly responsible could be called primary caregiver. It could be the spouse, sibling, friend, relative etc. In many studies patients get attention by researchers and these caregivers get neglected. Researchers in psychology need to pay special attention to it. Keeping in view this in mind caregivers are included in the present study.

Need and justification: Psycho-oncology is an area which has developed since 35 years. Psychology is still to a lot in the area of cancer and its related fields. Cancer is such a disease, the name itself creates tension and anxiety among common public. The anxiety begins once there is a suspicion that it could be a cancer, and continues
with the conformation, treatment sessions and even when some one survives, the threat of anxiety continues for the rest of one’s life. In such a situation, psychologists in general and clinical psychologists in particular have a very important role to play in enabling them to reduce their anxiety and stress. Parallely, many more interventions can be planned, tested and introduced. Therefore, any number of studies in the area of psycho oncology is needed. In this light, the present research becomes important.

**Statement of the problem:** Cancer patients and their care givers both are vulnerable to anxiety and stress. This is as established fact by researchers. In such a situation, it becomes necessary for psychologists to work towards reducing their anxiety and stress. In this context, the present researcher wishes to study how effective is the biofeedback in reducing anxiety levels and stress degrees. In the present study, the researcher is attempting to study the how biofeedback of a specified design is capable of reducing the anxiety levels and stress degrees among cancer patients and their caregivers. Efforts are made to study both the cancer patients as well as the primary caregivers of cancer patients by design.