Stress, Coping and Quality of Life in Patients with Cancer

A thesis submitted to the University of Hyderabad for the Degree of **Doctor of Philosophy** in Psychology



By

BARRE VIJAYA PRASAD

August - 2013

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This is to certify that I, Barre Vijaya Prasad have carried out the research embodied in the present thesis for the full period prescribed under the Ph.D. ordinance of this University.

I declare to the best of my knowledge that no part of this thesis was earlier submitted for the award of research degree of any University.

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Director, Centre for Health Psychology

DECLARATION

I Barre Vijaya Prasad hereby declare that this thesis entitled "Stress Coping and Quality of life in Patients with Cancer" submitted by me under the guidance and supervision of Dr. G. Padmaja is a bonafide work. I also declare that it has not been submitted previously in part or in full to this University or any other University or Institution for the award of any degree or diploma.

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Abstract

Cancer is a demon which threatens the life of many both by its presence and likelihood of arrival in the present day world marked by stressful living. The main objectives of the proposed research were, to explore the level of stress, coping strategies, and quality of life of patients with cancer and to find out the relationship between the stress, coping strategies, quality of life, ECOGPS and the age of the patients with cancer pre- and post-medical intervention (Part A); to develop psychological intervention package based on Part A results; and to test the effectiveness of the developed package on a new sample of patients with cancer by measuring the same variables as in Part A, pre- and post-medical and psychological intervention (Part C). The study is a quasi-experimental design conducted in three parts. During the Part A, 105 patients and in Part C 30 patients with cancer between the ages of 28 - 65 years were included in the study with equal distribution of subjects from three types of cancer viz. lung, breast and head-neck-cancer in both Part A and Part C. The tools used were Questionnaire on Stress in Cancer Patients-Revised Version (QSC-R23) to measure stress level, Brief COPE for coping, European Organization for the Treatment and Research of Cancer Quality of Life Questionnaire-QLQ-C30, version 3.0 to assess the quality of life, during pre- and post- Medical Intervention Assessment (pre- and post-MIA) in Part A. A psychological intervention package was developed during Part B with psychoeducation, relaxation, and Cognitive Behaviour Therapy modules which were applied along with medical intervention in Part C. The impact of psychoeducation was measured using Cancer Information Scale, impact of relaxation by using Visual Analogue Scale and impact of cognitive behaviour therapy was measured by using Triple Column Technique pre- and post-MPIA in

Part C. Again the tools to measure stress, coping and quality of life were used preand post- Medical and Psychological Intervention Assessment (pre- and post-MPIA). Statistical procedures used were descriptive statistics, paired and independent t test, Pearson r, Wilcoxon signed rank test (to measure the effect of relaxation) and ANCOVA (to find out whether treatment response of the patients varies according to the variation in intervention) with help of SPSS 16.0. The results indicated that the impact of medical and psychological intervention was clearly found on following parameters. There were differences in levels of stress, coping strategies and General Health Status/Quality of life (GHS/QoL) in functional and symptom scales during Part C i.e. pre- and post-medical and psychological intervention assessment. Whereas, no differences were found in GHS/QoL during Part A i.e. pre- and post-medical intervention assessment. Findings of part C indicated a change in myths and misconceptions, minimal changes in negative automatic thoughts and it was seen that the impact of relaxation was felt by the patients. These significantly seemed to have helped to significantly show the difference viz. reduce stress, fostering coping strategies and enhancing their quality of life when used alongside medical intervention. The psychological intervention when combined with medical intervention showed better results. This signifies the effectiveness of psychological intervention for the patients with LC, BC and HNC. Findings of the present study indicated that there is a wide scope/ importance of psychological intervention alongside medical intervention in the field of psychooncology. Limitations of the study and implications are also discussed.

Key words: cancer, coping strategies, medical intervention, psychological intervention, psychoeducation, quality of life, stress

S. No		Page No.
	Declaration	i
	Acknowledgements	ii
	Abstract	ν
	List of Tables	x
	List of Figures	xii
	List of Appendices	xiii
	Abbreviations	viv
1	CHAPTER - 1	1-29
	INTRODUCTION	
	Incidence and prevalence	3
	Types of cancer	6
	Cancer and psychological factors	13
	Stress	14
	Coping strategies	16
	Quality of life and cancer	19
	Interventions	22
	Rationale of the study	28
2	CHAPTER - 2	30-72
	REVIEW OF LITERATURE	
	Stress and Cancer	30
	Coping and Cancer	37

CONTENTS

S. No		Page No.
	Quality of Life and Cancer	44
	Relation between stress, coping strategies and quality of	48
	life	
	Research Questions	69
	Objectives	70
	Hypotheses	71
3	CHAPTER - 3	73-85
	METHOD OF STUDY	
	Plan and design	73
	Participants	74
	Description of the research tools	77
	Procedure	82
4	CHAPTER - 4	86-167
	RESULTS	
	Part A: Impact of medical intervention on Stress,	87
	Coping and Quality of life in cancer Patients	
	Impact of psychological intervention	108
	Part C: Impact of medical and psychological combined	130
	intervention package on stress, coping strategies and quality	
	of life in patients with cancer	

S. No		Page No.
	A comparison between the assessment of stress, coping	151
	and GHS/QoL pre- and post-medical intervention (Part A)	
	and pre- and post-medical and psychological intervention	
	(Part C)	
	Interview with Oncologists	166
5	CHAPTER - 5	
	DISCUSSION	130-169
	Part A: Impact of medical intervention on Stress,	169
	Coping and Quality of life in cancer Patients	
	Impact of psychological intervention	180
	Part C: Impact of medical and psychological combined	185
	intervention package on stress, coping strategies and	
	quality of life in patients with cancer	
	A comparison between the assessment of stress, coping	200
	and GHS/QoL pre- and post-medical intervention (Part A)	
	and pre- and post-medical and psychological intervention	
	(Part C)	
	Interview with Oncologists	205
	Major findings of the study	206
7	References	210
8	Appendices	273

LIST	OF	TA	BI	ES

Table No.		Page No.
Table 1	M, SD and t values for stress scores of patients	88
	with cancer during pre- and post-MIA	
Table 2	M, SD and t values for coping strategies scores of	91
	patients with cancer pre- and post-MIA	
Table 3	M, SD and t values for GHS/ QOL of patients with	96
	cancer pre- and post-MIA	
Table 4	Relationship between stress, coping strategies,	101
	GHS/QoL, age and ECOGPS of the patients with	
	cancer pre-medical intervention.	
Table 5	Relationship between stress, coping strategies,	105
	GHS/QoL, age and ECOGPS of the patients with	
	cancer during post-medical intervention.	
Table 6	M, SD and t values for Cancer Information Scale	109
	(CINFOS) of patients with cancer pre- and post-	
	MPIA	
Table 7	Wilcoxon signed rank test for impact of relaxation	110
	technique used with patients with cancer pre- and	
	post-MPIA	
Table 8	The number of patients with LC, BC & HNC	111
	showing negative automatic thoughts	
Table 9	M, SD and t values for stress scores of patients	132
	with cancer in pre-and post-MPIA	

Table No.		Page No.
Table 10	M, SD and <i>t</i> values for coping strategies scores of	136
	patients with cancer pre- and post-MPIA	
Table 11	M, SD and <i>t</i> values for GHS/ QOL of patients with	142
	cancer pre- and post-MPIA	
Table 12	The Relationship between stress, coping strategies,	148
	GHS/QoL, age and ECOGPS of the patients with	
	cancer pre-MPIA	
Table 13	The relationship between stress, coping strategies,	149
	GHS/QoL, age and ECOGPS of the patients with	
	cancer post- MPIA	
Table 14	Estimated M and SD and results of One-way	152
	ANVCOVA done on Stress and its component	
	scores	
Table 15	Estimated M and SD and results of One-way	156
	ANVCOVA done on coping strategies and its	
	component scores	
Table 16	Estimated M and SD and results of One-way	162
	ANVCOVA done on GHS/ QoL and its	
	component scores	

Figure No.		Page No.
Figure 1	Mean stress scores of patients with cancer pre-	88
	and post-MIA	
Figure 2	Mean coping strategies scores of patients with	92
	cancer pre- and post-MIA	
Figure 3	Mean Global health status/QOL scores of	97
	patients with cancer pre- and post-MIA	
Figure 4	Mean CINFOS scores of patients with cancer	109
	pre- and post-MPIA	
Figures 5-23	Patient wise analysis of pre- and post-MPI	112-130
	variation of negative automatic thoughts	
Figure 24	Mean stress scores of patients with cancer pre-	132
	and post-MPIA	
Figure 25	Coping strategies scores of patients with cancer	137
	pre- and post-MPIA	
Figure 26	Mean GHS/ QOL scores of patients with cancer	143
	pre- and post-MPIA	

LIST OF FIGURES

LIST OF APPENDICES

Appendices	Title	Page No.
Appendix 1	Consent Form (Part A) & (Part C)	
Appendix 2	Development of Psychological Intervention	
Appendix 3	Demographic Data Form (DDF)	
Appendix 4	Eastern Cooperative Oncology Group -	
	Performance status (ECOGPS)	
Appendix 5	The Questionnaire on Stress in Cancer Patients-	
	Revised Version (QSC-R23)	
Appendix 6	Brief COPE inventory	
Appendix 7	European Organization for the Treatment and	
	Research of Cancer Quality of Life	
	Questionnaire-QLQ-C30, version 3.0.	
Appendix 8	Cancer Information Scale (CINFOS)	
Appendix 9	Visual Analogue Scale (VAS) to measure the	
	state of relaxation	
Appendix 10	Triple Column Technique (TCT)	
Appendix 11	Semi Structured Interview Schedule	

LIST OF ABBREVIATIONS

BC	Breast Cancer
CBT	Cognitive behaviour therapy
ECOGPS	Eastern Cooperative Oncology Group Performance
	Status
EORTC	European Organization for the Treatment and Research
	of Cancer
GHS/QoL	Global Health Status/ Quality of life
HNC	Head-and-neck cancer
LC	Lung cancer
NATs	Negative Automatic Thoughts
Post-MIA	Post- medical intervention assessment
Post-MPIA	Post- medical and psychological intervention assessment
Pre-MIA	Pre- medical intervention assessment
Pre-MPIA	Pre- medical and psychological intervention assessment
QLQ C-30	Quality of Life Core Questionnaire, version 3, C-30
TCT	Triple Column Technique

INTRODUCTION

Cancer is a demon which threatens the life of many both by its presence and likelihood of arrival in the present day world marked by stressful living. While there are many who have been successfully treated and are leading lives normally, stress that the term evokes is multidimensional- biologically, psychologically, financially and socially. Cancer is not just one disease, but a large group of almost one hundred diseases. Its two main characteristics are uncontrolled growth of the cells in the human body and the ability of these cells to migrate from the original site and spread to distant sites. If the spread is not controlled, cancer can result in death.

Cancer (medical term: malignant neoplasm) is a class of diseases in which a group of cells display uncontrolled growth (division beyond the normal limits), invasion (intrusion on and destruction of adjacent tissues), and sometimes metastasis (spread to other locations in the body via lymph or blood). These three malignant properties of cancers differentiate them from benign tumors, which are self-limited, and do not invade or metastasize. The branch of medicine concerned with the study, diagnosis, treatment, and prevention of cancer is oncology. Cancer is, as we know, a life changing experience for the cancer sufferer, their friends and families (Gritz, Wellish, & Siau, 1998; Barard, & Boermeester, 1998). From the physical health point of view, cancer is a chronic health problem that leads to a possibility of several changes in cognitive and behavioural functions of the patients too.

Psycho-oncology is an area of multi-disciplinary interest and has shared boundaries with the major specialities in oncology including medical oncology, haematology and radiation oncology and the clinical disciplines (surgery, medicine, paediatrics, and radiotherapy), epidemiology, immunology, endocrinology, biology, pathology, bioethics, palliative care, rehabilitation medicine, clinical trials research and decision making, as well as psychiatry and psychology (Holland, 1992).

Psycho-oncology is concerned with the psychological, social, behavioural, and ethical aspects of cancer. This sub-speciality addresses the two major psychological dimensions of cancer: the psychological responses of patients to cancer at all stages of the disease (and that of their families and caretakers); and the psychological, behavioural and social factors that may influence the disease process (Holland & Watson, 1992). The domain of Psycho-oncology includes the formal study, understanding and treatment of the social, psychological, emotional, spiritual, quality of life and functional aspects of cancer; as applied across the cancer trajectory from prevention through bereavement. It seeks to develop and integrate new knowledge and techniques of the psychosocial and biomedical sciences as it relates to cancer care (Canadian Association of Psychosocial Oncology [CAPO], 1999).

Cancer is associated with many psychological and physical complications and presence of pain has a negative impact on the psychological and physical wellbeing of cancer patients. Cancer patients experience a range of physical symptoms such as pain, weight loss, ulceration of cancer sites, swelling, bleeding and impaired sexual functioning. Others exhibit psychological symptoms of anxiety disorder, adjustment disorder, post-traumatic stress disorder, depression and organic mental disorder. A diagnosis of cancer is regarded as a potential stressor, and a common consequence is that patients become overly aware of all bodily functions. This leads to excessive anxiety, avoidable discomfort and sometimes inappropriate medication. It follows, then, that individual differences in stress, quality of life and coping styles are likely to affect the course of treatment and its outcome. Cancer and cancer treatment both have rather drastic psychological and physiological effects on the sufferer. Nearly all cancers are caused by abnormalities in the genetic material of the transformed cells (Kinzler, Kenneth, Vogelstein, & Bert, 2002). These abnormalities may be due to the effects of carcinogens, such as tobacco smoke, radiation, chemicals, or infectious agents. Other cancer-promoting genetic abnormalities may be randomly acquired through errors in DNA replication, or are inherited, and thus present in all cells from birth.

Diagnosis usually requires the histological examination of a tissue biopsy specimen by a pathologist, although the initial indication of malignancy can be symptoms or radiographic imaging abnormalities. Most cancers can be treated and some cured, depending on the specific type, location, and stage. Once diagnosed, cancer is usually treated with a combination of surgery, chemotherapy and radiotherapy. As research develops, treatments are becoming more specific for different varieties of cancer.

Incidence and prevalence in cancer

Cancer may affect people at all ages, even fetuses, but the risk for most varieties increases with age (Cancer Research UK, 2007). According to the American Cancer Society (ACS), 7.6 million people died from cancer in the world during 2007 (ACS, 2007). Globally the burden of new cancer cases in 2000 was estimated to be around 10 million with more than half of these cases originating from the developing world population. Although estimates vary, it is estimated that by the year 2020 there will be almost 20 million new cases. It is not only the number of new cases that will increase, the proportion of new cases from the developing world will also rise to around 70%. The magnitude of the problem of cancer in the Indian sub- Continent is

alarming. From the population census data for India in 1991, 609,000 new cancer cases were estimated to have been diagnosed in the country. This figure had increased to 806,000 by the turn of the century. The estimated age standardized rates per 100,000 were 96.4 for males and 88.2 for females.

The incidence of lung cancer is slowly decreasing among men in developed countries, and rapidly increasing among women (Finnish Foundation for Cancer Research [FFCR], 1989; Levi, Franceschi, La, Randimbison, & Te Van-Cong, 1997). According to Manju's (2008) report, there are nearly 1.1 billion smokers across the world and 80 percent of them in the developing countries. India has a total of 240 million smokers; 194 million of these are male and 45 million are females (The Hindu, June 01, 2003). Lung cancer is the most common cancer amongst men in India with approximately 33,000 new cases every year. However, there is not sufficient information available in India and more epidemiological studies from India are still needed. Patterns of lung cancer in India vary from that of the Western European / U.S.A population. In India squamous cell carcinoma is the most common variety as compared to the adenocarcinoma in the West, and the disease tends to occur early in India (51-60 years). Almost 90% of patients coming forward with lung cancers are smokers with the male to female ratio of approximately 10:1 (Pathak et al., 2003). The increase of new cancer cases is being observed at the ground level. According to Dr. Behera, compared to 1973 when only about 85 lung cancer patients came to his hospital, the number had now increased to 250 (Radhika & Khan, 2003). The disease is associated with a lot of fear and stigma in the country.

Breast cancer is the most common malignancy type diagnosed in women in developed countries and the second most common type diagnosed in developing countries. Breast cancer has been described as an alarmingly increasing health problem in India (Yeole & Kurkure, 2003). According to the reports, breast cancers have badly attacked women population in India. A survey carried out by Indian Council of Medical Research (ICMR) in the metropolitan cities *viz*. Delhi, Mumbai, Bangalore and Chennai from 1982 to 2005 has shown that the incidence of breast cancer has doubled. Over the years, the incidences of breast cancer in India have steadily increased and as many as 100,000 new patients are being detected every year (Yip, Taib, & Mohamed, 2006; Michael & Jernal, 2003). A 12% increase has been registered by cancer registries from 1985 to 2001, which represented 57% rise of cancer burden in India (Yip & Mohamed, 2006; Hadjiiski et al., 2006).

Head and Neck Cancers (HNC) are major forms of cancers in India, which account for nearly 23% and 6% in males and females, respectively (Indian Council of Medical Research [ICMR], 1992). The five year survival of the disease varied from 20-90% depending on the sub-site of origin and the clinical extent of the disease (Meharotra, Mamta, Kishore, Manish, & Kapoor, 2005). India is known to have the world's largest reported incidences of HNC in women (Sankaranarayan, Masuyer, Swaminanthan, Ferlay, & Whelan, 1998). Nearly 0.2 million head and neck cancer cases are diagnosed in the country annually and approximately 4.5 million globally.

India officially recorded over half a million deaths due to cancer in 2011 - 5.35 lakhs as against 5.14 lakh (2009) and 5.24 lakh (2010). UP recorded 89,224 deaths due to cancer, while Maharashtra saw 50,989 fatalities. The Union health ministry reports that there are about 28 lakh cases of cancer at any given point of time in India, with 10 lakh new cases being reported annually. World Health Organization (WHO), reports the estimated cancer deaths in India are projected to increase to 7 lakh by 2015 (Times of India, 2012)

Research shows that worldwide the most common diagnosis for women is breast cancer and for men, prostate cancer, and lung cancer is number one killer for both (Parker, Bolden, & Wingo, 1997). In India head- neck- cancer appears to be more prevalent without much of a gender difference. The incidence of tongue and other intraoral cancer for women is, however, greater than or equal to that for men in high prevalence areas such as India, where chewing and smoking are also common among women. Present study considers lung cancer (more prevalent in men), breast cancer prevalent in women (Singh & Verma, 2007), head and neck cancer prevalent across the genders in India (ICMR, 1992) to balance the gender difference in the sample aiming to involve patients with three types of cancers in the study.

Types of cancer

Lung cancer (LC): Lung cancer is a disease of abnormal cells multiplying and growing into a tumor. Cancer cells can be carried away from the lungs in blood, or lymph fluid that surrounds lung tissue. Lymph flows through lymphatic vessels, which drain into lymph nodes located in the lungs and in the center of the chest. Lung cancer often spreads toward the center of the chest because the natural flow of lymph out of the lungs is toward the center of the chest. Metastasis occurs when a cancer cell leaves the site where it began and moves into a lymph node or to another part of the body through the bloodstream.

Lung cancer is the leading cause of cancer deaths in the world (WHO, 1997 & 2007). Approximately 80-90% of cases are caused by cigarette smoking (FFCR, 1989;

Levi, Franceschi, La Vecchia. Randimbison, & Te Van-Cong, 1997). Never having smoked or giving up smoking are the only effective means of prevention (Risser, 1996). Lung cancer is usually only detected at an advanced stage of development, and is almost invariably already disseminated at diagnosis. The prognosis has not been improved by chemoprevention or by sputum cytology or by chest radiography screening of patients at risk, mainly because of a lack of an effective systemic treatment (Fontana et al., 1991; Omenn et al., 1996). It is alarming to note that the number of elderly people, who are at the greatest risk of developing lung cancer, because of the cumulative effects of a lifetime of smoking, is increasing in the population.

Types of lung cancer: There are two main types of lung cancer and they are treated differently. a) *Small cell lung cancer (SCLC), b) Non-small cell lung cancer (NSCLC).* If the cancer has features of both types, it is called mixed small cell/large cell cancer.

SCLC: About 10% to15% of all lung cancers is the small cell type. Other names for SCLC are oat cell carcinoma and small cell undifferentiated carcinoma. This cancer often starts in the bronchi near the center of the chest. Although the cancer cells are small, they can divide quickly, form large tumors, and spread to lymph nodes and other organs throughout the body. This is important because it means that surgery is rarely an option and never the only treatment given. Treatment must include drugs to kill the widespread disease.

NSCLC: NSCLC is a disease in which malignant (cancer) cells form in the tissues of the lung. About 8 to 9 out of 10 cases of all lung cancers are the non-small

cell type. There are three main sub-types of NSCLC. The cells in these sub-types differ in size, shape, and chemical make-up.

Squamous cell carcinoma: About 25% to 30% of all lung cancers are this kind. They are linked to smoking and tend to be found in the middle of the lungs, near a bronchus.

Adenocarcinoma: This type accounts for about 40% of lung cancers. It is usually found in the outer part of the lung.

Large-cell (undifferentiated) carcinoma: About 10% to 15% of lung cancers are this type. It can start in any part of the lung. It tends to grow and spread quickly, which makes it harder to treat (ACS, 2007).

When lung cancers have already spread, or metastasized, the following symptoms may occur: Pain in the bones, headache or dizziness, numbness or weakness in limbs, seizures, yellowing of eyes and skin, skin-surface masses in the neck or collarbone area, caused by the lung cancer spreading to the skin or lymph nodes.

Many of the symptoms of lung cancer (bone pain, fever, and weight loss) are nonspecific; in the elderly, these may be attributed to comorbid illness (Vaporciyan, Nesbitt, & Lee, 2000). In many patients, the cancer has already spread beyond the original site by the time they have symptoms and seek medical attention. Common sites of metastasis (The spread of cancer from its primary site to other places in the body) include the brain, bone, adrenal glands, contralateral (opposite) lung, liver, pericardium, and kidneys (Greene, 2002). About 10% of people with lung cancer do not have symptoms at diagnosis; these cancers are incidentally found on routine chest radiograph (Minna & Schiller, 2008).

The main causes of any cancer include carcinogens (such as those in tobacco smoke), ionizing radiation, and viral infection (Vaporciyan, & Lee, 2000). Asbestos can cause a variety of lung diseases, including lung cancer. There is a synergistic effect between tobacco smoking and asbestos in the formation of lung cancer (O'Reilly, Mclaughlin, Beckett, & Sime, 2007).

Breast Cancer (BC): Breast cancer (malignant breast neoplasm) is cancer originating from breast tissue, most commonly from the inner lining of milk ducts or the lobules that supply the ducts with milk (Sariego, 2010). Cancers originating from ducts are known as ductal carcinomas; those originating from lobules are known as lobular carcinomas. Prognosis and survival rate varies greatly depending on cancer type and staging. With best treatment and dependent on staging, 5-year relative survival varies from 98% to 23.4%, (overall survival rate is 85%), (World Cancer Report [WCR], 2008). Worldwide, breast cancer comprises 22.9% of all non-skin cancer incidences among women, making it the most common cause of cancer death. In 2008, breast cancer caused 458,503 deaths worldwide (12.5% of cancer deaths), (WCR, 2008). Breast cancer is more than 100 times more common in women than in men, although males tend to have poorer outcomes due to delays in diagnosis. Some breast cancers are sensitive to hormones such as estrogen and/or progesterone, which make it possible to treat them by blocking the effects of these hormones in the target tissues. Radiation is usually added to the surgical bed to control cancer cells that were missed by the surgery, which usually extends survival, although radiation exposure to the heart may cause damage and heart failure in the following years (Buchholz, 2009).

The first noticeable symptom of breast cancer is typically a lump that feels different from the rest of the breast tissue. More than 80% of breast cancer cases are discovered when the women feels a lump (Merck Manual of Diagnosis and Therapy, [MMDT] 2003). The earliest breast cancers are detected by a mammogram (ACS, 2007).

Indications of breast cancer other than a lump may include changes in breast size or shape, skin dimpling, nipple inversion, or spontaneous single-nipple discharge. Pain ("mastodynia") is an unreliable tool in determining the presence or absence of breast cancer, but may be indicative of other breast health issues. Inflammatory breast cancer is a special type of breast cancer which can pose a substantial diagnostic challenge. Symptoms may resemble a breast inflammation and may include pain, swelling, nipple inversion, warmth and redness throughout the breast, as well as an orange-peel texture to the skin referred to as peau d'orange (MMDT, 2003).

Another reported symptom complex of breast cancer is Paget's disease of the breast. This syndrome presents as eczematoid skin changes such as redness and mild flaking of the nipple skin. As Paget's advances, symptoms may include tingling, itching, increased sensitivity, burning, and pain. There may also be discharge from the nipple. Approximately half of women diagnosed with Paget's also have a lump in the breast (National Cancer Institute, 2004)

Breast cancer is diagnosed in terms of various stages, which also help in the prognosis and in decision for treatment required. Stage 0 in the breast cancer is used to describe noninvasive breast cancer without evidence of cancer cells invading normal tissues. Stage I depicts invasive breast cancer consisting of tumor measured up to 2 centimeters, and no lymph nodes are involved. Stage II describes invasive breast

cancer in which tumor measures between 2 and 5 centimeters, or the cancer has spread to the lymph nodes under the arm on the same side as the breast cancer affected lymph nodes have not yet struck to one another. Stage III is divided into subcategories known as IIIA and IIIB. Stage IIIA describes invasive breast cancer in which the tumor measures more than 5cms or the tumor has spread to lymph nodes and nodes are sticking to one another or surrounding tissue. Stage IIIB depicts breast cancer in which tumor of any size has spread to the breast skin, chest wall, or internal mamalary lymph nodes and includes inflammatory breast cancer. Stage IV is known as advance stage as it includes invasive breast cancer in which the tumor has spread beyond the breast and internal mamalary lymph nodes. Diagnosis of breast cancer involves the use of general medical examination and some specific laboratory techniques such as palpation, mammography, ultrasonography, fine needle aspiration, needle biopsy, and surgical biopsy. The prognosis of breast cancer depends on how early it is detected and its location (ACS, 2000; Williams, 1990).

Head-neck-cancer (HNC) : The term head and neck cancer refers to a group of biologically similar cancers originating from the upper aerodigestive tract, including the lip, oral cavity (mouth), nasal cavity, paranasal sinuses, pharynx, and larynx. 90% of head and neck cancers are squamous cell carcinomas (SCCHN), originating from the mucosal lining (epithelium) of these regions. Head and neck cancers often spread to the lymph nodes of the neck, and this is often the first (and sometimes only) manifestation of the disease at the time of diagnosis. Head and neck cancer is strongly associated with certain environmental and lifestyle risk factors, including tobacco smoking, alcohol consumption, UV light and occupational exposures, and certain strains of viruses, such as the sexually transmitted human papillomavirus (Ridge, Glisson, & Lango, 2008). Head and neck cancer is highly curable if detected early, usually with some form of surgery although chemotherapy and radiation therapy may also play an important role. The 2009 estimated number of head and neck cancer in the US is of 35,720 new cases. Whereas in India the estimates for head-neck- cancers for the year 2010 for males and females are 122,643 and 53,148, which by the year 2020 will rise to 153,636 and 64,785 cases (Ramnath, Deenu, & Nandakumar, 2010)

General classification: Head and neck squamous cell carcinomas (HNSCC's) make up the vast majority of head and neck cancers, and arise from mucosal surfaces throughout this anatomic region. These include tumors of the nasal cavities, paranasal sinuses, oral cavity, nasopharynx, oropharynx, hypopharynx, and larynx.

Throat cancer usually begins with symptoms that seem harmless enough, like an enlarged lymph node on the outside of the neck, a sore throat or a hoarse sounding voice. However, in the case of throat cancer, these conditions may persist and become chronic. There may be a lump or a sore in the throat or neck that does not heal or go away. There may be difficult or painful swallowing. Speaking may become difficult. There may be a persistent earache. Other possible but less common symptoms include some numbness or paralysis of the face muscles.

Causes: Alcohol (Spitz, 1994) and tobacco use are the most common risk factors for head and neck cancer in the United States. Alcohol and tobacco are likely to be synergistic in causing cancer of the head and neck (Murata, Takayama, Choi, & Pak, 1996). Smokeless tobacco is an etiologic agent for oral and pharyngeal cancers [Oropharyngeal cancer] (Winn, 1992). Other potential environmental carcinogens include occupational exposures such as nickel refining, exposure to textile fibers, and woodworking. In one large, controlled study, marijuana use was shown to be

associated with oral squamous cell carcinoma (Rosenblatt, 2004). Cigarette smokers have a lifetime increased risk for head and neck cancers that is 5- to 25-fold increase over the general population (Andre, Schraub, Mercier, & Bontemps, 1995). The exsmoker's risk for squamous cell cancer of the head and neck begins to approach the risk in the general population twenty years after smoking cessation. The high prevalence of tobacco and alcohol use worldwide and the high association of these cancers with these substances make them ideal targets for enhanced cancer prevention. The diagnosis of cancer is a crisis in a person's life, confronting him /her with changes in identity, role, and social interactions and presenting them with an uncertain future thus resulting in a variety of psychological and social repurcurssions.

Cancer and psychological factors

The term "psychological factors" refers both to internal characteristics, such as personality, attitude and reactions, as well as to external non-physical factors that affect internal characteristics (e.g. stressful life events, social support).

Stressful life events have been defined as those external events that make adaptive demands on a person. The concept of a change in the condition of daily life (stressful life events) is distinct from the psychological and physiological demands made on the individual by the chronic demands of poverty, long term illness or adverse social environment. Life events that upset patterns of individual behaviour are likely to produce the sort of anxiety and unresolved stress that are associated with diminished immune functions, altered hormonal levels, and other potentially negative physiological outcomes (Bloom, 1985; Kiecolt-Glaser, Stephens, & Glaser, 1991). The relation of potentially stressful life events to cancer has been examined in several epidemiologic studies (Forsen, 1991). The association between stressful events or recent life changes and subsequent onset of almost all types of illness has been extensively studied (Kune, Kune, Watson, & Rahe, 1991). Surprisingly few controlled studies however have investigated the association between recent life changes and cancer. These studies have found an association between stressful life events and gastric cancer, breast cancer, colorectal cancer and lung cancer (Kune, Kune, & Rahe, 1991; Forsen, 1991). An association between recent life changes and cancer has been found for different sites and different cell types, and the effect of stressful life events are therefore unlikely to be specific or unique to cancer.

Stress: Stress has been defined as "a psycho-physiological arousal response occurring in the body as a result of a stimulus which becomes a stressor by virtue of the cognitive and emotional interpretation of the individual" (Selye, 1956). The widely accepted definition of psychological stress is "the particular relationship between the person and the environment that is appraised by an individual, as taxing or exceeding his or her resources and endangering his or her well-being (Lazarus & Folkman, 1984).

Stress is a term in psychology and biology, first coined in the 1930s, which has in more recent decades become a commonplace of popular parlance. It refers to the consequence of the failure of an organism – human or animal – to respond appropriately to emotional or physical threats, whether actual or imagined (Selye, 1956). Stress is how the body reacts to a stressor, real or imagined, a stimulus that causes stress. Acute stressors affect an organism in the short term; chronic stressors over the longer term. Signs of stress may be cognitive, emotional, physical or behavioral. Signs include poor judgment, excessive worrying, irritability, inability to relax, aches and pains, diarrhea or constipation, nausea, dizziness, chest pain, sleeping too much or not enough, social withdrawal, procrastination or neglect of responsibilities, increased alcohol, nicotine or drug consumption.

Extension of the result can manifest itself in obvious illnesses such as ulcers, depression, diabetes, trouble with the digestive system or even cardiovascular problems, cancer along with other mental illnesses. In other words, primary appraisal also includes the perception of how stressful the problem is. Realizing that one has more than or less than adequate resources to deal with the problem affects the appraisal of stressfulness. This leads us to realize the importance of coping resources, leading to the utilization of various relevant strategies. Further, coping is flexible in that the individual generally examines the effectiveness of the coping on the situation; if it is not having the desired effect, s/he will generally try different strategies (Aldwin, 2007).

Stress is a part of our lives, how we handle that stress can have an impact on our health. Every day, we hear more and more about the harm it may cause to our minds and bodies, from chronic diseases to anxiety attacks. Studies show that cancer and stress have a relationship at various stages. 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, Farrar, & Golden-Kreutz, 1998). Scientists know that psychological stress can affect the immune system, the body's defense against infection and disease (including cancer); however, it is not yet known whether stress increases a person's susceptibility to disease (Segerstrom & Miller, 2004). Studies by Glaser et al. (1987) and Kiecolt-Glaser, Stephens, Lipetz, Speicher, and Glaser (1985), have shown that many different types of stress trigger changes in the immune system.

Coping strategies: Coping strategy is defined as "a response aimed at diminishing the physical, emotional and psychological burden that is linked to stressful life events and daily hassles" (Snyder & Dinoff, 1999). According to their definition, coping strategies are characterized by effectiveness in reducing an undesirable 'load' (i.e., the psychological burden). Their effectiveness rests on their ability to reduce immediate distress.

Under threat, their common intention is to preserve a psychological status of contentment, which is known as regulation (Snyder & Dinoff, 1999). The coping concept has its origin in stress theory, coping with life events and psychoanalytical theory of defence mechanisms (Snyder & Dinoff, 1999; Livneh & Martz, 2007). In spite of the central role that the coping concept captures there is no standardized definition (Aldwin, 1994; Zeidner & Endler, 1996; Snyder & Dinoff, 1999). In general, cognitive, behavioural and affective coping reactions are distinguished.

Lazarus and Folkman (1984) have preferred a distinction between problemfocused and emotion-focused efforts for classification of coping strategies. Problemfocused coping efforts are designed to manage the external demand by solving the problem or doing something to alter the source of the stress (e.g., information seeking, seeking instrumental support, problem-solving efforts). Emotion-focused coping strategies are aimed at reducing or regulating the emotional distress that is associated with or directly initiated by the situation (e.g., acceptance, positive reappraisal, and distancing, cognitive or behavioural avoidance, seeking emotional support).

Coping is said to play a central role in managing stress (Holahan, Moos, & Schaefer, 1996; Selye, 1978; Selye, 1982). Stress, as physiological fact, ensues when existing coping modes and available external resources are inadequate in dissipating increased tension. For a long time, external stimuli have been considered as a determining factor for the sequence of alarm reaction, resistance phase, and exhaustion phase. With the Lazarus and Folkman model, this perspective of stress coping was revised (Lazarus & Folkman, 1984). It emphasizes that coping processes are situational and contextual. According to this model, distress develops when the environment's demands (external) or those of the individual (internal) are a strain on the person's resources or even exceed them.

Perspectives differ in looking at illness and coping. Antonovsky (1984) argues that when too much attention is given to the pathological view, the human being is ignored, and this leads to overlooking the potential illness presented by the person's life situation, as one only sees the person's immediate presenting medical illness. The pathological orientation focuses on why people become "patients", whereas the salutogenic approach seeks to discover why certain people are situated on the positive side of the health ease/disease continuum. While the pathogenic paradigm seeks to treat disease, the salutogenic approach takes the view that disease and stressors are inevitable and that the individual human being must actively pursue adaptive strategies (Antonovsky, 1982; Antonovsky, 1993). Psychodynamic models of coping emphasize the role of ego defences and typically specify a hierarchy of mature and primitive coping responses (Menninger, 1954; Vaillant, 1992). Emanating from the term 'defence', in psychoanalytic literature the different forms of coping have been described as a concept of automatic mobilization of varying defence mechanisms (Freud, 1936, Freud, 1926). The DSM-IV identified seven main types of defence mechanisms (DSM-IV, 1994). They are hierarchically ordered on a continuum regarding their adaptation to external reality (Aldwin & Yancura, 2004). The investigation of coping has indeed evolved from its original focus on intra-individual, trait-like, psychodynamic defence processes to include a more interactive view of coping as a process which inevitably includes an individual's perception of events, as well as "extra-individual" influences, such as social support and environmental factors (Manne, 2007).

In view of all the above, it is felt that oncology and psycho-oncology researchers should attempt to assess coping usage as a more dynamic approach that includes appraisals of coping effectiveness, evaluations of the degree of choice in the usage of coping strategies, and an examination of changes in the use of coping strategies over the course of dealing with different stressors (Manne, 2007).

People who experience cancer pain typically develop and use a number of coping strategies to cope with, deal with, or minimize the effects of pain (Keefe, Abernethy, & Cambell, 2005). These might involve behavioral coping strategies (e.g., resting, applying moist heat, moving to a different position, pacing one's activities, or using relaxation methods) or coping strategies that change one's thinking (e.g., focusing on something distracting, repeating calming self-statements, or practicing meditation or prayer).

Clinical observations suggest that cancer patients often report using coping strategies to manage their pain (Bishop & Warr, 2003). Cancer patients report that

these strategies are helpful not only in reducing their pain but also in enabling them to remain active and manage their psychological distress. Research on pain coping strategies in cancer patients has not identified a particular coping strategy or set of strategies that works consistently. However, there is growing evidence that cancer patients who are confident in their own abilities to cope with and control cancer pain do experience less pain (Bishop & Warr, 2003). Furthermore, studies show that cancer patients who cope with pain by catastrophizing (i.e., who ruminate about their pain and feel helpless about it) are much more likely to experience higher levels of pain, anxiety, and problems with pain interfering with their daily activities (Bishop & Warr, 2003). In this context over the years, a great deal of research and theory has focused on the ways people deal with difficulties they encounter in their day to day lives (Christine, Scott, & Loretta, 2005).

Quality of Life (QoL): For the purpose of the study, quality of life has been defined as a descriptive term that refers to "people's emotional, social and physical wellbeing and their ability to function in the ordinary tasks of living" (Ebbeskog, 2001; Smith, Guest, Greenhalgh & Davies, 2000). Quality of life is a broad, subjective, and multidimensional concept that includes physical health and symptoms and functional status and activities of daily living.

The term quality of life refers to the physical, psychological and social domains of health, seen as distinct areas that are influenced by person's experience, belief, expectations and perceptions. Each of these domains can be measured in two dimensions: objective assessment of functioning or health status, and more subjective perception and expectations that translate objective assessment into the actual quality of life (Testa & Simonson, 1996).
Quality of life is a broad, subjective, and multidimensional concept that includes: Physical health and symptoms and functional status and activities of daily living (Mohan et al., 2005).

Quality of life can also be simply defined as the effect of an illness and its therapy upon a patient's physical, psychological, and social well being as perceived by the patient himself (Roila & Cortesi, 2001). However, being a highly subjective variable, there can be no universal consensus over this definition. The intra- and interobserver variation can be large, and more importantly, may even vary at different points of time. Since it is impossible to define any universally agreed standard for comparison, the subject and observer usually have different perceptions of the same outcome. Furthermore, significant subjective variability may exist within the same patient regarding his problems. For example, he may endure pain for a short while without compromising his daily activities, but over an extended period, this pain may dominate his life and cause significant impairment of various activities.

Two broad approaches to health related quality of life (HRQoL) measurements have been - generic and disease specific approach. The generic approach involves use of measures applicable across health and illness groups whereas illness specific quality of life measures can focus on the specific problems posed by an individual illness (Rubin & Peyote, 1999). The concept of 'QoL' as an important measurable end-point for evaluating treatments is applied now in so many branches of medicine but was developed first among cancer patients (Fallowfield, 1990).

The assessment of a patient of cancer broadly includes two sets of endpoints cancer outcomes and patient outcomes. Cancer outcomes measure the response of a patient to treatment, duration of response, symptom free period, and early recognition of relapse. Patient outcomes, on the other hand, assess the survival benefit attained after treatment as measured by the increase in life span, and the QoL before and after therapy. Unfortunately, physicians tend to concentrate on the cancer-related outcomes only. Consequently, assessment of quality of life remains a neglected area (Mohan et al., 2005).

Cancer is one of the most widely studied life-threatening diseases that cause significant psychological distress (Baum & Anderson, 2001). Distress occurs across all types and stages of cancer (Zabora et al., 1997), underscoring the need for psychological support as an important goal for patients and families (Levy, 1993). Some areas where psychologists are useful are dealing with stress, anxiety, and depression caused after the diagnosis and through disease progression. Studies show that among the most common psychological symptoms for which psychologists may intervene are depression, anxiety, and fatigue (Jacobsen & Weitzner, 2003). Depression for example in cancer patients can be successfully treated with a combination of supportive psychotherapy, cognitive behavioral techniques, and antidepressant medications (Breitbart, Chochinov, & Passik, 1998; Holland, & Chertkov, 2001). Similarly, Nonpharmacological stress-management approaches for managing symptoms such as pain and anxiety can be taught to patients and integrated into the plan of care, providing increased comfort and a sense of control (Jacobsen et al., 2002). Interventions designed to support patients at various stages of disease as well as treatment thus seem to help them in dealing with various resultant psychological outcomes.

Psychologists can make substantial contributions when the life-limiting illness strikes. The time of diagnosis can be difficult and uncertain for patients, associated with a range of emotional reactions. Psychologists can assist individuals in managing these feelings, making sense of their diagnosis, communicating their treatment preferences to their medical providers and family, using effective coping responses, and mobilizing social support and other services. They can also play a role of facilitation such that physicians attend to patients' and caregivers' psychosocial distress, via didactic instruction, informal clinical consultation, and modeling during joint meetings with patients and families (Baum & Andersen). Psychologists' responsiveness to psychological and emotional issues can decrease the distress and suffering of patients and families (Jacobsen et al., 2002).

In view of the above, interventions designed to give psychological support to the cancer patients appear to be very important.

Interventions

A certain component of the emotional distress occurring at diagnosis is due to the anticipation of treatment. Current therapies include surgery, radiotherapy and radioactive substances, chemotherapy and hormonal therapy, immunotherapy, and combination regimens and procedures (e.g., bone marrow transplantation, intraoperative radiotherapy). Some patients also undergo difficult diagnostic or treatment monitoring procedures (e.g., bone marrow aspirations), and all treatments are preceded or followed by physical examinations, tumor surveys, and or laboratory studies. Thus, the diagnostic process of selecting the appropriate therapy and subsequently treatment events can represent multiple medical stressors. Intervention may be considered on primary or secondary level, in addition to being purely biomedical adding modules with psychosocial perspectives, and thus a combination of these may be beneficial.

Medical Treatment Interventions

Biological (Physical) interventions: Treatment generally consists of surgical removal of cancerous tissue, radiation therapy and/ or chemotherapy (Bishop, 1994). Often combination of all three methods are utilised depending on what is termed the ' staging' process of the particular cancer, in other words, how far the cancer has spread into the surrounding tissue (National Cancer Institute, 2004).

Surgical interventions: According to Jafthe and Brainers (1995), there are five categories of surgery:

- 1. Definitive: used inorder to diagnose and identify the spread of cancer
- 2. *Staging: Staging* of the disease during surgery enables prognosis and treatment decisions to be made
- 3. *Curative:* When individuals present in early stages of disease, where it has not spread beyond regional lymph nodes, surgery will remove tumor and lymph nodes, placing the person in remission.
- 4. *Palliative*: Where disease has spread and the tumor is surgically removed in order to help make the person more comfortable and enhance his/her quality of life
- 5. Combination: Two or more of the above

Whilst surgery is often a mandatory procedure, the psychological implications of surgery cannot be underestimated particularly where radical surgery results in mutilation and disfigurement, for example, in mastectomy operations.

Radiation therapy: Radiation therapy is delivered under a variety of circumstances. It may be administered on its own, or in combination with surgery

and /or chemotherapy accoring to a wide variety of criteria. Engel-Hills (1995) describe radiotherapy utilized as an adjuvant treatment (in combination with surgery and/or chemotherapy) under the following four broad headings:

1. Pre-operatively: where a course of radiotherapy is given before surgery where local control and survival rates are expected.

2. *Post-operatively:* this is a frequent treatment strategy where a known or suspected residual tumor is likely to reoccur.

3. In combination with chemotherapy: radiotherapy may be prescribed before chemotherapy with aim of treating a primary tumor site whilst chemotherapy is used to treat residual disease and/or metastases. It is more frequently given concurrently with or after chemotherapy, in which case chemotherapy is used to shrink the tumor mass and high dose radiation is directed to a smaller volume area. Sometimes chemotherapy and radiotherapy are aimed at different sites.

4. Surgery, radiation therapy and chemotherapy: some patients will be treated with combination of all three modalities.

Chemotherapy: As the name suggests chemical agents (drugs) are used in the treatment of malignant disease either as an initial treatment (e.g. leukaemia), or in conjunction with surgery and/or radiotherapy; or it is prescribed where surgery or radiotherapy is not possible. Knowledge of cell growth kinetics and how various drugs interact at differing cycle of the cell growth is a necessary prerequisite in delivering chemotherapy. The main principle behind modern combination chemotherapy is to apply differing agents at particular stages of growth of tumor cells in order to 'maximise cell kill whilst minimizing host toxicities,' (Takimoto & Calvo, 2004).

Psychological interventions: There is a very strong body of opinion, some of it coming from medically trained professionals, which holds that psychological factors are of overwhelming importance in the management of cancer patients. People who are more "positive" may seek out and then complete onerous treatments; they may eat and sleep better and have healthier activities.

Part of the importance of psychological factors in dealing with cancer has to do with the idea that medical treatment, and the body's own defences, may be assisted by optimising one's psychological state. Psychological state is mirrored in the biological state. The converse is also true. The diagnosis and course of cancer and some medical treatments often lead to great psychological distress. People who are less distressed can complete treatments better and cope better in a variety of ways.

Some people with cancer need a great deal of emotional support, and that support may not be readily available through normal health systems. Support might come in the form of assistance and love from within the family, counseling and stress management help from a professional or just meeting with others in the same problem and sharing some useful experiences together.

Alder and Bitzer (2003) found when examining the treatment experience of patients with breast cancer that there was an association between a patient's negative experience of all treatment phase and an impaired adjustment process manifesting in high anxiety and depression scores. They stated that the women in this study most frequently expressed the need for relaxation training; a quarter of the participants also requested the need for "additional counselling for body image changes and sexuality, creative therapy and group which focuses on anxiety reduction and coping strategies in general," (Adler & Bitzer, 2003). Interestingly, the group that requested additional

counselling also exhibited higher scores in terms of the coping modes of hedonism, religiosity and regression. In essence, the study pointed to the fact that whilst there are many differences in coping with the diagnosis and treatment of cancer, there is a need to be aware of a certain high risk group who are likely to present with increased anxiety, depression and adjustment difficulties in coping with the disease process. The difficulty in much reported research appears to be the effectiveness of psychological and social interventions for the treatment of cancer patients. It is well-known that distress is common in recently diagnosed patients and is a time when emotional support is highly indicated (Watson, 2001).

Sheard and Maquire (1999) carried out two meta-analyses on the effect of psychological interventions on anxiety and depression in cancer patients where they found that these had a moderate clinical effect on anxiety but not on depression. Conventional treatments do not always relieve the symptoms and side effects such as pain, fatigue, anxiety and mood disturbances. As a result, patients and professional are increasingly turning to complementary therapies to provide symptom relief and even improve physical and mental well-being (Deng & Cassileth, 2005). Some of these therapies include acupuncture, hypnosis and relaxation techniques, massage, and dietary supplements. Controlled studies of adult patients with cancer have shown that informational programs can significantly reduce depression (Pruitt et al., 1992) or both anxiety and depression (Jacobs, Ross, Walker, & Stockdale, 1983). Lack of information may cause increased distress and anxiety, as well as dissatisfaction with care (Fallowfield, Ford & Lewis, 1995). It has been shown, for radiotherapy patients that there is a strong correlation between patients satisfaction with information provided and low depression and anxiety scores during treatment (Montgomery,

Lydon, & Lloyd, 1999). Even minor informational programs can be effective in reducing patients' distress.

Several investigators have examined the impact of an orientation program on reducing psychological distress of adult cancer patients. For example, a brief orientation program with new patients was effective in reducing self-reported anxiety and mood symptoms, compared to patients in a standard care group (Wells, McQuellon, Hinkle, & Cruz, 1995). Another study examined the effects of a brief orientation at patients' initial clinic visit, including a clinic tour, general clinic operation information, and a question and answer session with an oncology counselor. At follow-up, the orientation group reported lower overall distress and psychological symptoms than a control group that had not received the orientation intervention. The orientation group also demonstrated significantly more knowledge and satisfaction with care (McQuellon et al., 1998). Informing patients by print media has also been shown to be effective in reducing treatment related anxiety (Mohide, Whelan, & Rath, 1996).

A few studies have assessed whether using video to inform patients about their disease and treatment affects psychological states. For example, a study that examined the value of adding a video presentation to handouts of print media found that only the group receiving the video showed significant decreases in psychological distress (Rainey, 1985). In a related study, a take-home video informing patients about chemotherapy and radiation therapy was found to result in reduced anxiety and depression during treatment (Thomas, Daly, Perryman, & Stockton, 2000).

Various psychosocial interventions tailored to meet the needs of cancer patients exist. These include, for example, supportive-expressive group therapy such as developed by Spiegel and Yolam (1978), psychoeducational interventions as described by Fawzy, Canada and Fawzy (2003). Side effects of chemotherapy, as well as anticipatory nausea and vomiting may be positively treated with cognitive behavioural therapies including progressive muscle relaxation, hypnosis and guided imagery (Bishop, 1994).

In view of the above, present study attempts to develop a psychological intervention which may be used alongside medical intervention and apply the same. In the present study psychological intervention involves three types of intervention strategies were adopted viz psychoeducation, relaxation (guided imagery) and cognitive behaviour therapy.

An attempt was made in present study to see if psychological intervention has an effect when used along with medical intervention or the change observed may be attributed to the chance factor. For this, response to treatment which is depicted based upon the evaluation of target lesions into four categories viz complete reponse (CR), partial response (PR), stable disease (SD) and progression disease (PD) is taken into consideration. This is based upon the Response Evaluation Criteria in Solid Tumor (RECIST), which is a set of published rules that define when cancer patients improved (response), stay the same (stabilize), or worsen (progression) during treatment (American Psychosocial Oncology Society [APOS], (2012); Therasse et al., 2000).

Rationale of the study

Cancer in itself is a major health-related stressor and demands adequate and appropriate coping strategies. Numerous researches have reflected the psychological consequences of cancer and the way patients adapt to this chronic illness. There is evidence that patients experience psychological distress at different points during the course of cancer. The most common types of cancer are found to be lung, breast and head & neck cancers. Over recent decades cancer treatments have become more complex and intense. While these resulted in increasing survival rates, invasive therapies have also led to adverse psychological impact. This led to the emphasis on need for higher awareness of psychosocial needs and interventions as an essential part of cancer therapy as pointed out by various studies. Quality of life is the only aim of palliative care, all doctors view QoL as the primary aim of palliative care. Hence, there is a need to deliver research-tested interventions to help patients deal with their psychological stress and cope effectively and maintain their quality of life.

Considering the above, it is felt that stress, coping strategies and quality of life in patients with cancer are the dimensions which need to be explored. Also, to deal with stress, improve coping and to enhance the quality of life in patients with cancer, a need for a combined package of medical and psychological interventions appears to be essential. Review of literature does not indicate any such study which focuses on this type of a combined approach on patients with LC, BC and HNC. Hence, in the present study, an attempt has been made to explore the level of stress, coping strategies and quality of life in patients with cancer, and to develop a psychological intervention package that needs to be administered simultaneously with medical intervention for the wellness of the patients.

REVIEW OF LITERATURE

Cancer is one of the leading causes of cancer death worldwide. Newer perspectives and therapies to for cancer in addition to the medical treatment are widely explored today as cancer shows a psychosocial impact on an individual as well. The topic selected for the present study is "Stress, Coping and Quality of Life in Patients with Cancer". Review of literature has been done to explore relevant recent research and developments in the area of psychooncology in the above area, and presented in the following section.

Stress and cancer: Research in psychooncology is a fertile area despite numerous challenges. Stress in specific reference to cancer has been defined as 'an unpleasant emotional experience of a psychological (cognitive, behavioural, emotional), social, and/or spiritual nature that interferes with the ability to cope effectively with cancer and its treatment. It extends along a continuum, ranging from common normal feelings of vulnerability, sadness and fears, to problems that can become disabling, such as depression, anxiety, panic, social isolation, and spiritual crisis' (National Comprehensive Cancer Network, Standards of Care and Management of Distress Panel, 2000).

New studies in psycho-oncology have focused on the relationship between psychosocial factors and cancer, such as detection of distress and psychiatric morbidity, intervention and coping methods used by survivors (Chaturvedi & Venkateswaran, 2008). The physical symptom distress of patients with cancer is rooted in the tumor and side effects of the treatment. On the other hand evidence towards psychological distress has been studied in patients with various types of cancer. Patients with lung cancer often seek medical attention for symptom distress, such as difficulty in breathing, increased sputum, or hemoptysis. Consequently, their emotional distress increases (McCorkle & Quint-Benolie, 1983). Psychological distress, anxiety and depression were found to be common among breast cancer patients' even years after the disease diagnosis and treatment (Montazeri, Milroy, Gillis, & McEwen, 2008).

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, Farrar, & Golden-Kreutz, 1998). However, recent research using animal models indicates that the body's release of stress hormones can affect cancer cell functions directly (Thaker et al., 2006).

A review of studies that evaluated psychological factors and outcome in cancer patients suggests an association between certain psychological factors, such as feeling helpless or suppressing negative emotions, and the growth or spread of cancer, although this relationship was not consistently seen in all studies (Garssen, 2004). In general, stronger relationships have been found between psychological factors and cancer growth and spread than between psychological factors and cancer development (Antoni, Lutgendorf, & Cole, 2006). Certain studies have been done related to presence of distress in cancer patients. For example, Pandey, Ramdas, and Nandmohan (2006) conducted a study to measure distress and contributory factors in 103 cancer patients undergoing treatment with curative intent. Findings suggested that influential factors on stress were lower income, being single/widowed or divorced and large commuting distance ie.150 and 350 km (3-6 h commuting distance) from the cancer centre, where these were in addition, patients who felt the presence of pain and patients with advanced tumors at presentation showed higher distress. The intensity of the disease and unpleasant symptoms associated with it has an impact on psychological distress.

Similar study was carried out by Bianca, Holger, Axel, Rolf, and Jochen (2010) where 478 ward cancer patients were assessed to see the distress during the acute treatment phase. Results demonstrated that a substantial proportion of cancer patients in acute care are psychosocially distressed.

Cancer patients suffer not only from physical symptoms but also from the psychological and social stress associated with both diagnosis and treatment of their disease (Bultz & Carlson, 2006). Unfortunately, psychological distress may remain unrecognized in some cancer patients. Patients either do not communicate their feelings or they may be unaware of their distress (Mehnert, Lehmann, Cao, & Koch, 2006). Apart from the fear of dying, patients feel threatened by interventions like chemo- or radiotherapy, and they worry about losing their bodily integrity, independence, and social roles (Holland & Rowland, 1989; Faller, Olshausen, & Flentje, 2003).

Akechi et al. (2006) investigated longitudinal changes and predictive factors for psychological distress among 85 newly diagnosed advanced non-small cell lung cancer (NSCLC) patients. Their findings demonstrated that most types of psychological distress experienced by advanced NSCLC patients are likely to persist during the subsequent clinical course. The findings also suggested that initial psychological distress itself after cancer diagnosis is the most important predictor for subsequent psychological distress and that early intervention beginning immediately

32

after the disclosure of a diagnosis of cancer is one way to prevent and/or reduce subsequent psychological distress in advanced NSCLC patients.

Cancer patients experience a wide variety of psychosocial stresses which greatly influence their quality of life. Steinberg et al. (2009) investigated the prevalence and associated symptoms of distress in ninety eight consecutive patients with newly diagnosed Non Small Cell Lung Cancer (NSCLC) or Small Cell Lung Cancer (SCLC). Their findings revealed that the prevalence of distress in lung cancer patients is high. Koopman et al. (2001) conducted a randomized psychoeducational intervention study, and then again three months later a follow-up assessment. Their findings revealed that women with breast cancer considered diagnosis of breast cancer to be among the four most stressful life events that they had ever experienced. Also, women on average reported a high level of helplessness/hopelessness in coping with their cancer. On average, women felt that they "often" (but not "very often") received instrumental assistance, emotional support, and informational support.

Ugalde, Aranda, Krishnasamy, Ball, and Schofield (2012) conducted a study where cross-section survey methodology was employed using baseline data from a randomised controlled trial designed to evaluate a supportive care intervention on 108 lung cancer patients at the start of treatment. Their study findings indicated that out of 108 people with lung cancer 43 (39.8%) patients who were participated and classified as distressed had more unmet needs.

Although the fear of cancer recurrence is present to varying degrees almost universally in cancer survivors, few studies have been carried out specifically on this issue partly because of the complexity and the heterogeneity of the phenomenon. According to Simard, Savard, and Ivers (2010) there are different profiles of fear of cancer recurrence, which vary according to its severity and the type of coping strategies used.

Lung cancer represents a major public health problem worldwide with approximately 80% of patients presenting with locally advanced or metastatic disease (Borthwick, Knowles, McNamara, Dea, & Stroner, 2004). Treatment is essentially palliative; therefore, symptom management is important. Tanaka, Akechi, Okuyama, Nishiwaki, and Uchitomi (2002) investigated factors correlated with dyspnea in cancer patients among a broad range of medico-psycho-social factors. A total of 171 consecutive outpatients with advanced lung cancer participated in the study. Their findings confirm that dyspnea is multifactorial and that a beneficial therapeutic strategy might include intervention for psychological distress and pain. Castenzo et al. (2007) examined psychological adjustment during the three months following treatment among 89 women with stages 0-III breast cancer. The findings demonstrated that while breast cancer survivors demonstrate good adjustment on general distress indices following treatment, some women are at risk for sustained distress. Moreover, significant cancer-related concerns are prevalent and may be important intervention targets. Schneider et al. (2010) examined whether effects of psychosocial interventions on psychological distress in cancer patients are conditional upon pre-intervention distress level and reported that psychosocial interventions may be most beneficial for cancer patients with elevated distress.

According to the results of a study by Andersen, Kiecolt-Glaser, and Glaser (1994), cancer diagnosis and treatment induce acute and chronic stress, which may be accompanied by negative health behaviors as well. In a study by Mehnert, and Koch (2008) 1080 patients were recruited through a population-based cancer registry at an

average of 47 months following diagnosis (66% response rate). Their findings showed the long-term impact of breast cancer and indicate need for patient education, screening for psychosocial distress, and implementation of psychological interventions tailored in particular for older women. Schover et al. (1995) in their retrospective study on 146 breast cancer patients found that women who had undergone chemotherapy had more psychological distress.

Animal work demonstrates that stress-induced neuroendocrine and immunologic changes may contribute (directly and synergistically) to local and metastatic disease progression (Thaker et al., 2006; Ben-Eliyahu, Page, & Yamura, 1998). Andrykowski, Lykins, and Floyd (2008) developed a conceptual framework for understanding factors associated with psychological health in cancer survivors. Psychological health in cancer survivors is defined by the presence or absence of distress, the presence or absence of positive well-being and psychological growth, by the balance between two classes of factors: the stress and burden posed by the cancer experience and the resources available for coping with this stress and burden.

How adaptations to the distress and other psychological effects on cancer patients can be modulated by psychosocial interventions that improve individuals' outlook, coping skills and social support have been of interest to clinical researchers for several years (Antoni, 2003). Reviews based on intervention studies conducted in the past 10 years have revealed that psychosocial and relaxation-based interventions are helpful in terms of improving emotional adjustment and quality of life in cancer patients undergoing medical treatments (e.g., Luebbert, Dahme, & Hasenbring, 2001; Meyer & Mark, 1995). In one meta-analysis, methods were used to synthesize published, randomized intervention control studies aiming to improve acute nonsurgical cancer patients' treatment-related symptoms and emotional adjustment. Relaxation training programs including progressive muscle relaxation, imagery, autogenic training and other techniques were found to be especially effective in reducing anxiety, tension, depression, and overall negative mood (Luebbert Dahme, & Hasenbring, 2001). Cognitive behavioral interventions have been shown to be effective in improving depression, anxiety, and quality of life in cancer patients, with anxiety reductions showing the largest effect sizes (Kissane, Boloch & Smith, 2003; Edmonds, Lockwood, & Cunningham, 1999; Larson, Duberstein, Talbot, Caldwell, & Moynihan, 2000; Trask, Paterson, Griffith, Riba, & Schwartz, 2003). Studies suggest the value of identifying stressed surgical cancer patients during the vulnerable perisurgical period who might benefit from stress reduction interventions to improve health outcomes (Shakhar & Ben-Eliyahu, 2003).

A study by Iconomou et al. (2008) showed that standardized and timely screening of emotional distress across all phases of cancer will help to effectively identify patients whose symptoms warrant attention. Their conclusions emphasized the need to develop and evaluate rapid measures for detecting significant emotional distress in cancer patients, and to devise appropriate interventions to treat distress and enhance patients' quality of life.

Some studies have shown that a diagnosis of breast cancer and treatment are psychologically stressful events, particularly over the first year after diagnosis (Michael, Antoni, Carver, Blomberg, & Lechner, 2009). Psychosocial interventions that promote psychosocial adaptation to these challenges may modulate physiological processes (neuroendocrine and immune) that are relevant for health outcomes in breast cancer patients. Carlson and Bult (2004) conducted a study with a large representative sample of diagnostically heterogeneous group of a total of 3095 cancer patients with self-reported clinical levels of distress, including anxiety and depression, across the disease continuum. The study which concluded that distress is very common in cancer patients across diagnoses and across the disease trajectory. Many patients who report high levels of distress are not taking advantage of available supportive resources.

Newell, Ziegler, Stafford, and Lewin (2004) made an attempt to describe the common themes in the experiences and expressed information needs of patients undergoing head and neck surgery using a sample of 29 patients. Patients who suffer head and neck cancers and undergo surgery often report considerable psychological distress and impaired social functioning. To optimize survival, the decision about what treatment option to follow is often made quickly, with little support in terms of counseling or the provision of information.

Coping and Cancer: Coping is an individual's attempt to manage stress and adapt to the demands of added problems. Use of coping strategies alleviates the effects of stress on an individual's physical and psychological symptom distress. Besides management of stress, coping strategies can also alleviate unhappy feelings caused by stress. The extent to which physical and psychological stress is reduced and social function is restored indicates the effectiveness of the coping strategies used to alleviate the stress. Coping, hence plays a major role at every stage of treatment.

Fawzy et al. (1990) evaluated the immediate and long-term effects on psychological distress and coping methods on postsurgical patients with malignant melanoma. in a 6-week, structured, psychiatric group intervention for the experimental subjects (n = 38), and found that while not without some distress, they exhibited higher vigor and greater use of active-behavioral coping than the controls (n = 28).

The intervention consisted of health education, enhancement of problem-solving skills, stress management (eg, relaxation techniques), and psychological support. The intervention-group patients showed significantly lower depression, fatigue, confusion, and total mood disturbance as well as higher vigor. They were also using significantly more active-behavioural and active-cognitive coping than the controls. The results indicated that a short-term psychiatric group intervention for patients with malignant melanoma effectively reduces psychological distress and enhances longer-term effective coping. A descriptive and correlational study was conducted by Gaston-Johansson, Ohly, Fall-Dickson, Nanda, and Kennedy (1999) on a convenience sample of 83 female patients with breast cancer scheduled for auto transplantation. Their findings indicated that coping strategies used most frequently by breast cancer patients to deal with pain included positive coping statements, diverting attention, praying and hoping, increasing activity level, and ability to control and decrease pain. Social stress, psychological distress, and psychosocial support affect the adjustment of breast cancer patients, influence their experience of and adherence to medical treatment, and may affect the course of the disease. In a review by Spiegel's (1997) indicated that levels of distress, depression, and anxiety are substantially elevated among patients with breast cancer. According to him in many but not all studies, serious life stress adversely affects medical outcome.

Effective coping methods allow a patient to face the disease and treatment with an active and positive attitude, which can alleviate symptoms. Inappropriate coping strategies can worsen the degree of symptom distress and affect the patient's physical and emotional health (Ali & Khali, 1991; Krause, 1991). Kuo and Ma (2002) conducted a study to understand the correlation of symptom distress and coping strategies of 73 patients with non small cell lung cancer. Their results indicated that, after accounting for physical symptom distress, greater frequency of use of emotionfocused coping was associated with higher psychological distress. Patients with lung cancer facing symptom distress often rely on religion, obey treatment regimens, seek social support, and distract their attention from their symptoms. When a patient believes that he or she can do nothing because of the negative feelings brought on by the illness and treatment, he or she may be inclined to use more emotion-focused coping strategies and be less inclined to use problem-focused coping strategies (Ali & Khali, 1991; Lazarus & Folkman, 1984; Tasi, 1995).

Researchers have shown that cancer patients who rely on maladaptive pain coping strategies, such as pain catastrophizing, report high levels of pain and psychological distress, whereas those who rely on more adaptive strategies report much less pain and psychological distress. (Gaston-Johansson, Ohly, Fall-Dickson, Nanda, & Kennedy,(1999); Orr, (1986) found avoidance of information to be related to poorer social functioning, while denial of feelings was found to be related to better social functioning. Denial can be adaptive, but also harmful.

Coping efforts predict psychological adjustment to cancer (Walker, Zona, & Fisher, 2006; Henoch, Bergman, Gustafsson, Gaston- Johansson, & Danielson, 2007), and most studies suggest that active rather than avoidant forms of coping are associated with better adjustment (Austenfeld & Stanton, 2004; Stanton & Snider, 1993).

Coping strategies

Several coping strategies have been discussed by researchers as being helpful in effective coping in cancer patients.

Problem- focused coping: These strategies typically include: (a) Active Coping (b) Planning (c) use of instrument support. This category refers to coping efforts directed at problem (e.g., stressful situations) resolution via focused planning and direct action taking. The available literature suggests that this strategy is frequently used by patients with breast and cervical cancer (Gotay, 1984; Heim, et al., 1987); Hilton, (1989). Kim et al. (2002) in their study on patients with cancer showed that in a sample of 257 women those who were in stage – III of cancer showed higher stress and less coping. Stress was negatively correlated with both problem focused coping and emotion focused coping strategies.

Active coping: It may be described as involving acceptance of diagnosis of cancer while optimistically challenging, tackling, confronting, and recovering from cancer (Greer, 1991; Nelson, Friedman, Baer, Lane, & Smith, 1989; Watson et al., 1988). It has been implicated as a factor contributing to longer survival among people diagnosed with cancer (Greer, 1991; Morris, Pettingale, & Haybittle, 1992).

Faller and Bulzebruck, (2002) in a study using a cohort of 103 patients newly diagnosed with cancer followed it upfor 10 years, and studied whether style of coping was predictive of survival in lung cancer. In their study a depressive coping style, assessed by patients' self-reports, was linked with shorter survival and an active coping style, as assessed by interviewers' ratings, was linked with longer survival.

Bettencourt, Schlegel, Talley, and Molix (2007) reviewed four broad themes, including access to treatment and treatment type, medical providers and health information, psychosocial adjustment and coping, and social support and psychological support services. A few of the findings of the review indicated that rural women may have greater difficulty negotiating their traditional gender roles during and after treatment, that rural women desire greater health-related information about their breast cancer.

Compas et al. (1999) suggested that age is a salient factor to consider in the psychological adjustment of women with breast cancer near the time of initial diagnosis, with younger women exhibiting greater affective distress and a tendency to engage in less adaptive ways of coping. The use of emotional ventilation coping remains associated with poorer adjustment, independent of patients' age.

Positive reframing: This group of coping strategies has surfaced under a number of different and, at times, slightly variant names such as: cognitive restructuring, cognitive (re)appraisal, positive growth, focus on the positive, positive thinking, and reframing. This coping, among survivors of cancer, has been studied extensively and is reported to be used frequently (Berckman & Austin, 1993; Jarrett, Ramirez, Richards, & Weinman, 1992). It has been linked to higher scores on measures of mental health and psychological well-being (Ell, Mantell, Hamovitch, & Nishimoto, 1989), positive affect (Manne et al., 1994), lower psychological or emotional distress (Carver et al., 1993; Dunkel-Schetter, Feinstein, Taylor, & Falke, 1992; Ell et al., 1989; Schnoll Mackinnon, Stolbach, & Lorman, 1995), lower psychiatric symptomatology (Chen et al., 1996). This strategy, along with seeking social support, problem solving, and self-controlling, is also adopted more by those with high threat of cancer reoccurrence and high sense of control (Hilton, 1989).

Acceptance: Acceptance of one's condition, including the reality of its implications, learning to live with it, and at times, its irreversible course, has been found to be a common coping strategy among people with cancer (Berckman & Austin, 1993; Carver et al., 1993). It has been linked to lower psychosocial distress in

one study (Carver et al., 1993) but more frequently, though, it has been linked to higher short-term mood disturbance and state anxiety (Watson et al., 1984), increased depression and anxiety (Parle & Maguire, 1995), and increased psychosocial distress (Miller, Manne, Taylor, Keates, & Dougherty, 1996).

Religious coping: Seeking comfort in, or actively relying on, religion and praying for reversal of the disease course has been reported to be more common among late stage cancer groups (Gotay, 1984). It has been found to be related to: (a) higher scores on mental health and psychological well-being (Ell et al., 1989) and (b) better adjustment to the medical aspects of cancer (Merluzzi & Martinez-Sanchez, 1997). However, it has also been related to poorer perceived quality-of-life (Wagner, Armstrong, & Laughlin, 1995). Vachon (2008) made an attempt to explore the concepts of meaning, spirituality, and wellness in cancer survivors. Cancer survivors often rely on their religious and spiritual beliefs as a way of deriving meaning during their illness experience and survivorship, as well as a way of coping with and coming to terms with the concept of death.

Humour: Carver et al. (1993) in their study on 59 breast cancer patients reported on their overall optimism about life; they found that the use of humor prospectively predicted lower distress among people with cancer. Aarstad, Aarstad, and Olofsson (2008) conducted a study to investigate to what extent personality and choice of coping predicted self-reported quality of life in successfully treated head and neck squamous cell carcinoma patients. It showed that a high tumor stage, high neuroticism, coping by humor and coping by problem solving directly predicted low quality of life whereas neuroticism was also associated with quality of life through avoidance coping.

Behavioural disengagement: As a specific form of the behavioural disengagement coping mode, social withdrawal has been seldom studied; it was, however, found to be linked to increased psychiatric symptomatology (i.e., higher GHQ scores) in a study (Chen et al., 1996).

Mental disengagement (self-distraction): This coping strategy, conceptually related to denial, seeks to diminish negative feelings by resorting to fantasy, diversion, and distraction of thoughts from the problem at hand. This strategy has been linked to greater psychosocial distress (Quinn, Fontana, & Reznikoff, 1986; Stanton & Snider, 1993).

Self-blame: Attribution of blame (e.g., attributing cancer to smoking, poor nutrition etc.) as a coping strategy has been only sporadically studied. Available studies suggest, however, that it may be associated with: (a) greater emotional distress (Berckman & Austin, 1993; Faller, Schilling, & Lang, 1995; Quinn, Fontana, & Reznikoff, 1986), (b) increased level of depression (Faller et al., 1995), and (c) decreased general psychosocial adjustment (Heim Valach, & Schaffner, 1997).

Denial: This extensively researched coping (or defensive) modality implicates cognitions and behaviors that seek to ward off anxiety, minimize threat, and alleviate related distressing emotions. This has been found to be prevalent among survivors of cancer (Cooper & Faragher, 1992; Cooper & Faragher, 1993). It has also been linked to higher levels of psychosocial distress (Carver et al., 1993; Quinn et al., 1986); and poorer adjustment to health care (Friedman Baer, Lewy, Lane, & Smith, 1988). On the other hand, it has also been linked to increased feelings of well-being and psychological adjustment (Ferrero Barreto, & Toledo 1994; Filipp, Klauer, Freudenberg, & Ferring, 1990; Heim et al., 1997). Denial was even found to be

associated with shorter term survival in one early study (Derogatis, Abeloff, & Melisaratos, 1979).

Carver et al. (1993) conducted a study on a sample of 163 early stage breast cancer patients to find out how coping mediates the effect of optimism on distress. Their findings revealed that acceptance, positive reframing, and use of religion were the most common coping reactions; denial and behavioral disengagement were the least common reactions. Acceptance and the use of humor prospectively predicted lower distress; denial and disengagement predicted more distress. Path analyses suggested that several coping reactions played mediating roles in the effect of optimism on distress.

Quality of life and Cancer: The term 'Quality Of Life' refers to the physical, psychological and social domains of health, seen as distinct areas that are influenced by person's experience, belief, expectations and perceptions. Quality of life is a concept that traditionally has been used in oncology to cover the functional effects of cancer and its treatment, as perceived by the patient. Being diagnosed and living with a life-threatening illness such as cancer is a stressful event that may profoundly affect multiple aspects of an individual's life.

A review of literature by Chandu, Smith and Rogers (2006) reported that a number of different patient and treatment factors were identified that affect Healthrelated quality of life. These include age, gender, site, stage, emotional status, smoking and alcohol, marital status and income, performance status, method of reconstruction, access, mandibular resection, neck dissection, percutaneous endoscopic gastrostomy, and post-operative radiotherapy.

44

Cancer patients suffer from multiple physical symptoms such as fatigue and pain (Miaskowski et al., 2006), and also from psychological changes such as fear of death and fear of progression or recurrence of disease, and changes in the quality of life. There are many causes of cancer-related fatigue including preexisting conditions, physical and psychological symptoms caused by cancer, and the consequences of cancer treatment. High levels of fatigue decrease quality of life, physical functional status, and symptom management (Visovsky & Schneider, 2003). Summers (2005) reported that fatigue is one of the most frequently reported symptoms of cancer and is also a consequence of cancer treatment. According to Madden and Newton (2006) cancer-related fatigue is a "persistent, subjective sense of tiredness related to cancer or cancer treatment that interferes with usual functioning". Unlike other fatigue, Cancer related fatigue is not relieved by sleep or rest. Borneman et al. (2012) studied total of 252 patients with breast, lung, colon, and prostate cancers in a quasiexperimental study to test the effects of a clinical intervention on reducing barriers to symptom management in ambulatory care. They suggested that overall, cancer-related fatigue had a significant impact on physical, psychological, social, and spiritual well-being. The negative impact of cancer-related fatigue on patients' overall well-being alters the meaning and suffering related to the cancer experience.

Over the past few years, increasing attention is being paid to the evaluation of quality of life in various diseases, including cancer. Studies have shown that quality of life in patients with cancer is a significant predictor of survival and therefore it should be considered as a treatment responsethat has to be established by physicians before treatment starts (Montazeri, Jarvandi, Haghighat, & Vahdani, 2001). Quality of life is closely linked to symptom burden and severity in lung cancer. Loss of physical functioning, psychological events such as depression, and reduced overall quality of life is associated with uncontrolled symptoms (Montazeri, Milroy, Gillis, & McEwen, 1996; Gridelli, Perrone, Nelli, Ramponi & De Marinis, 1996). It has been suggested that pain and malaise are the most useful symptoms for assessing general well being in lung cancer. Likewise, nausea, vomiting, and hair loss are proposed to be the most suitable symptoms for evaluating treatment-related side effects (Buccheri & Ferrigno, 1994).

List and Stracks (2000) in their review of literature on head and neck cancer patients suggested that impaired function does not necessarily lead to poor quality of life. Frick, Tyroller, and Panzer (2007) found that there was no association between psychopathological comorbidity and the requirement for psycho-oncological support. Conversely, patients who report difficulties in accepting help had a significantly lower quality of life.

In advanced lung cancer, quality-of-life issues have become an integral part of making decisions about various treatment options (Sarna & Riedinger, 2004). Quality of life is a multidimensional construct, and several psychosocial and medical factors can predict a patient's quality of life. Lehto, Ojanen, and Kellokumpu-Lehtinen (2005) in their study findings reported that psychosocial factors were the strongest predictors of quality of life, not cancer type or treatment. In a study Lu et al. (2007) used multiple linear regression models to analyze the associations of QoL outcomes with medical and socio-demographic factors on 2,236 Chinese women with newly diagnosed breast cancer. Patients showed significantly worse overall QoL and perceived health status than healthy women, reflected mainly by lower QoL scores in physical and psychological well-being domains. Completion of radiotherapy, even use of tamoxifen, being underweight, having an increased number of chronic diseases, and

low household income were significantly associated with lower overall QoL scores after adjusting for other factors. Age at diagnosis was inversely associated with physical well-being, positively associated with material well-being, and had minimal influence on overall QoL. Stage of disease, chemotherapy, and education were only associated with certain domains, but had no influence on overall QoL. Estrogen receptor/progesterone receptor status and type of surgery or immunotherapy did not appear to be associated with QoL. Among cancer patients, distress strongly correlated with QoL and functional status (Sarna, 1993).

According to Lue, Huang, and Chen (2008), symptoms of physical distress play an important role in quality of life perception. Findings of a study by Nishiyama et al. (2007) suggest that the quality of life score is an independent factor in both response to chemotherapy and survival in general practice; and cognitive functioning is the most important factor. Cao, Wang, and Ma (2011) conducted an experimental study to observe the impact of chemotherapy on quality of life and emotion among 40 lung cancer patients. Their findings revealed that some patients have symptoms relieved, but during the chemotherapy, the patients have significant depression, and the quality of life decreased.

Health professionals need to identify the pattern of changes to provide supportive care to these new LC, BC and HNC patients throughout the treatment process. The researches cited so far related to stress, coping and quality of life in patients with cancer point to the need for relevant psychological interventions and supportive care.

Relation between Stress, coping strategies and Quality of life

Danhauer, Crawford, Farmer, and Avis (2009) conducted a longitudinal investigation of coping strategies and quality of life among 267 women with breast cancer. Their Findings indicated that positive cognitive restructuring was the most frequently used strategy followed by use of seeking social support and spirituality. According to a study by Lauver, Connolly-Nelson, and Vang (2007), women patients with cancer used acceptance, religion, and distraction as primary coping strategies.

Ali and Khali, (1991) made an attempt to identify stressors, level of stress, coping strategies, and coping effectiveness in a total of 64 Egyptian female mastectomy patients. Findings indicated that participants reported five stressors: hope for cure, treatment effectiveness, fear of the unknown, progression of the disease, and pain. Coping strategies reported were categorized into four groups: faith, compliance with the medical regimen, seeking information and social support, and self-distraction. Coping effectiveness was significantly and positively correlated with age and time since mastectomy, which accounted for 35% of the variance in coping effectiveness.

Health related quality of life (HRQL), mood disorders and coping abilities have been evaluated in a prospective study by Rolke, Bakke, and Gallefoss (2008) where all patients were diagnosed with primary lung cancer in Southern Norway from 2002 to 2005. HRQL was assessed according to EORTC, it was found that anxiety and depression are common in lung cancer and are clearly related to reduction in quality of life. Coping style has been shown to predict distress among lung cancer patients. Walker, Zona, and Fisher (2006) examined coping style and social support as predictors of depressive symptoms one week after surgery among 119 patients with non-small cell lung cancer. Results extend previous findings by showing that adaptive coping methods are related to severity of distress.

Numerous studies have demonstrated an association between coping strategies and better quality of life after breast cancer. Manuel et al. (2007) in their crosssectional study used quantitative and qualitative methods to examine coping strategies used by 201 women who were aged 50 years or younger at diagnosis and were 6 months to 3.5 years post-diagnosis. Quantitative results from a modified version of the Ways of Coping scale revealed that the most frequently used coping strategies were positive cognitive restructuring, wishful thinking, and making changes. Their findings also suggest that clinicians should identify patients' particular stressors and help with coping techniques targeting particular concerns. Breast cancer patients with poor cognitive coping skills and a negative outlook (Carver et al., 1993; Stanton & Snider, 1993) and fewer social resources (Alferi, Carver, Antoni, Weiss, & Duran, 2001) experience greater anxiety and distress during the stressful period of treatment. According to Kenne Sarenmalm, Ohlén, and Gaston-Johansson, (2007) patients with lower coping capacity report higher prevalence of symptoms, experience higher levels of distress, and experience worse perceived health, which in turn may decrease their Health Related Quality of life (HRQOL). Al-Azri, Al-Awisi, and Al-Moundhri (2009) in their review of the available literature on the impact of breast cancer diagnoses and the strategies used by women to cope with this disease, found that women who were diagnosed with breast cancer are at risk of developing several psychological morbidities such as depression, anxiety, fatigue, negative thoughts, suicidal thoughts, fear of dying, sense of aloneness, sexual and body image problems, as well as an overall decrease in the quality of life.

High levels of fatigue decrease quality of life, physical functional status, and symptom management according to a study by Visovsky and Schneider (2003). Feelings of fatigue-inertia were the most common psychological distress reported by subjects in this study. Although they used a combination of problem-focused and emotion focused coping strategies, problem-focused coping strategies were used more frequently.

The prevalence of self-reported fatigue in cancer patients ranges from 17% to 95% in different studies (Curt, 2000; Okuyama et al., 2000; Cella, Davis, Breitbart, & Curt, 2001). Presence of ongoing fatigue is associated with greater symptom distress and worse performance status and is a prognostic factor associated with overall survival in univariate but not multivariate models (Vogelzang, Breitbart, & Cella, 1997; Chow et al., 2002; Luoma et al., 2003). Psychosocial conditions that predispose to fatigue include the presence of anxiety and depression, inadequate coping skills, and a lack of social support. Other associations of significant fatigue include female gender, higher cancer stage, and smaller size of household, higher education level, and full-time employment status (Akechi, Kugaya, Okamura, Yamawaki, & Uchitomi, 1999).

Symptoms of physical distress play an important role in quality of life perception (Lue, Huang, & Chen, 2008). Social stress, psychological distress, and psychosocial support affect the adjustment of breast cancer patients, influence their experience of and adherence to medical treatment, and may affect the course of the disease. The literature indicates that levels of distress, depression, and anxiety are substantially elevated among patients with breast cancer. These problems persist in a sizable minority of patients even years after diagnosis. Coping styles are related to adjustment and, in some studies, survival time. In many but not all studies, it was seen that serious life stress adversely affects medical outcome. Social support in general and structured psychotherapy in particular have been shown to positively affect both adjustment and survival time. Clear and open communication, expression of appropriate emotion, and collaborative planning and problem-solving enhance adjustment and improve outcome. Conversely, influences that isolate breast cancer patients from others or undermine support can have adverse medical and psychological consequences (Spiegel, 1997).

Aarstad, Aarstad, Bru, and Olofsson (2005) in their study done on <80 years patients who had been diagnosed with head-neck cancer, reported that level of problem focused coping style was associated with the tumor stage and whether or not the patient was given neck radiotherapy. Their findings revealed that level of avoidance coping was inversely associated with the health-related quality of life, and level of emotional coping was associated with health-related quality of life in a complex manner.

Role of Psychological interventions

A quasi-experimental study was carried out by Paivi Astedt-Kurki et al. (2009) to examine the effectiveness of a telephone support intervention one week after surgery on the quality of life (QOL) of 228 patients with breast cancer allocated to an intervention group (n = 120) and control group (n = 108). Their findings revealed that the self-reported quality of life of patients with breast cancer was considered moderately high. The intervention group showed significantly better body image; they worried less about the future and had less postoperative side effects than the control group did.

Psychological factors also were found to predict subsequent quality of life or even overall survival in breast cancer patients. Supportive care-clinical treatments to control emesis, or interventions such as counseling, providing social support and exercise could improve quality of life.

A study by Safaee, Moghimi-Dehkordi, Zeighami, Tabatabaee, and Pourhoseingholi (2008) on 119 breast cancer patients demonstrated the strength of the relationship between clinical and sociodemographical factors and breast cancer patients' quality of life. Their findings showed that psychological support for women experiencing breast cancer diagnosis may improve quality of life. According to Scharloo et al. (2010) the identification of cognitive factors provides possible targets for counseling strategies to assist patients in long-term adjustment to head and neck squamous cell carcinoma.

Van de Wiel, Geerts, and Hoekstra-Weebers (2008) assessed quality of life, avoidance, intrusion, and total cancer-related distress in 83 women at 3, 6, 9, and 12 months after mastectomy. Social functioning and role limitations improved over time; physical functioning, general health, and mental health did not change; vitality initially improved followed by a decrease to a below initial level; physical pain initially improved followed by a decrease to an above initial level. Cancer-related distress remained high during follow-up. Individual variation in QoL as assessed across the four measurement times was associated with individual variation in intrusion but not with individual variation in avoidance. Kurtz, Kurtz, Stommel, Given, and Given (1999) in thier study focuses on how cancer site, age and comorbid conditions of elderly women cancer patients influence their reporting of symptoms. Their study revealed that a systematic and comprehensive approach to self-care management of symptom distress provided by oncologists and other health care professionals may enable patients, especially elderly patients with comorbid conditions, to successfully alleviate or reduce the impact of symptoms on their lives.

Previous sections of this chapter reveal the abundance of studies reporting distress, fatigue, maladaptive coping and lowered quality of life in patients with cancer this leads us to the questions of possible psychological interactions and strategies to deal with the same. Numbers of studies have explored the application of several such interventions. The forth coming paragraphs portray such attempts.

Many reviews and meta-analyses have demonstrated substantial evidence that moderate training, in combination with relaxation techniques, as well as body awareness help reduce subjective fatigue levels and improve patients' quality of life. Information and education should help patients understand cancer-related fatigue, as a result of cancer, and its treatment (Weis, 2011).

Recognizing that emotional distress is highly correlated with fatigue, psychoeducational interventions and counseling focus on coping strategies to optimize the patient's ability to deal with anxiety, depression and psychosocial distress. Some of these intervention programs include relaxation techniques (Kim & Kim, 2005) or meditation, (Carlson & Garland, 2005) which may target underlying biologic mechanisms and reduce cancer-related distress by diminishing activation of the hypothalamic–pituitary–adrenal axis. Other reviews have pointed out that among psychosocial treatment approaches, cognitive behavioral interventions have been proven as being most effective against cancer-related fatigue (Jacobsen, Donovan, Vadaparamil, & Small, 2007). In addition, it has been demonstrated that exercise

53

training combined with psychoeducational interventions shows better effects than using only one type of intervention (Jocobsen et al., 2007).

Several types of psychosocial interventions have been found to be beneficial in cancer related fatigue in 220 patients with malignant melanoma. It was found that CBT given during curative cancer treatment proved to be an effective intervention to reduce fatigue at least two months after cancer treatment (Goedendorp, Gielissen, Verhagen, & Bleijenberg, 2009). Similar improvement was seen in a follow-up study that was designed as a randomized trial (Boesen et al., 2005). In another randomized trial, in 262 patients with primary cutaneous malignant melanoma about to start chemotherapy, self-administered stress management training was reported to be superior to professional training or no intervention (Jacobsen, Meade, Stein, Chirikos, Small, & Ruckdeschel, 2002). Group support was reported to improve mood states and coping response in a randomized trial in patients with metastatic breast cancer (Gielissen, Verhagen, Witjes, & Bleijenberg, 2006). A comprehensive coping strategy program comprising of preparatory information, cognitive restructuring, and relaxation with guided imagery improved nausea and fatigue in a randomized trial in 112 women with breast cancer undergoing autologous stem cell transplantation (Fall-Dickson et al., 2000).

Multiple studies have shown that insomnia is prevalent particularly in patients with lung and breast cancer (Graci, 2005; Parker et al., 2008; Vena, Parker, Cunningham, Clark, & McMillan, 2004). Insomnia and subsequent sleep disturbances can lead to fatigue, mood disturbances, and contribute to immunosuppression, which can have a profound impact on quality of life and perhaps affect the course of disease. A study report has shown that sleep hygiene and cognitive-behavioral therapy with prescription of hypnotic medications can help relieve the symptoms of insomnia in cancer patients and improve their quality of life (O'Donnell, 2004).

Pain is one of the most common, burdensome, and feared symptoms experienced by patients with cancer. American Pain Society standards for pain management in cancer recommend both pharmacologic and psychosocial approaches. Gorin et al. (2012) conducted a meta-analysis of psychosocial interventions to reduce pain in patients with cancer to obtain a current, stable, and comprehensive estimate of the effect of psychosocial interventions on pain. They reviewed 1,681 abstracts, with a systematic process for reconciling disagreement, yielding 42 papers, of which 37 had sufficient data for meta-analysis. Their review revealed that psychosocial interventions had medium-size effects on both pain severity and interference. These robust findings support the systematic implementation of quality-controlled psychosocial interventions as part of a multimodal approach to the management of pain in patients with cancer

In a study by Trask, Paterson, Griffith, Riba, and Schwartz (2003), 48 patients who had Global Severity Index scores ≥ 60 two months after their initial visit to the multidisciplinary melanoma clinic were randomized to receive either standard care or four sessions of a cognitive-behavioral intervention (CBI). Findings showed that a four-session cognitive-behavioral intervention significantly reduced distress and improved health-related quality of life in patients with melanoma who had medium-tohigh distress, with improved general health evident 6 months after the intervention.

Davidson has suggested that CBT is emerging as the most therapeutic and cost-effective approach for adult patients with cancer with psychological morbidity (Davidson, 2001). Fawzy alluded to the quest for interventions to help individual
patients with cancer to cope with this life crisis (Fawzy, 1999; Marks, 2000). Also, clinicians and researchers have highlighted the need for psychosocial intervention for patients with head and neck cancer (Baile, Gibertin, Scott, & Endicott, 1993; Bjordal, Freng, Thorvik, & Kassa, 1995).

It is important to note that standard CBT is not directed at helping the average patient to cope; it is aimed at those individuals whose unhelpful beliefs and negative attitudes are actually impeding adaptive coping (Lovejoy and Matteis, 1997). It is about changing thoughts and behaviours which are increasing distress or undermining recovery. Those promoting this treatment sometimes describe it as a means of teaching patients better coping skills. In treating patients with medical conditions, cognitivebehaviour therapy (CBT) is used as an adjunct, an optional treatment, for patients who have become and are likely to become very distressed. There have been a number of studies assessing CBT for both metastatic and cancer. For instance, Larcombe and Wilson (1984) selected 20 depressed metastatic patients and randomly allocated them to either CBT or a waiting list control condition. Therapy sessions (90 minutes for six weeks) examined unhelpful thoughts and beliefs. Assessments were conducted prior to treatment, after treatment and four weeks later. The patients in the CBT group showed significant improvements on most measures (e.g. BDI and Hamilton Rating scale). These results were maintained at follow-up. Another study, by Evans and Connis (1995) compared 8 weeks of Group CBT (one hour sessions focused on learning coping skills, challenging dysfunctional beliefs and establishing a supportive network) with 8 weeks of socially supportive counselling (encouraging members to describe their feelings, identifying shared problems, discussing how these issues were handled and adopting supportive roles towards the other group members). A comparison group received no treatment. All patients had stage II cancer as well as depression. The results showed that both types of therapy relieved depression and reduced "maladaptive somatic preoccupation" after treatment. In short, CBT can help in the treatment and perhaps prevention of some depression and mood disturbances in patients with metastatic and cancer. However, the effects may be limited and it is unclear whether it is more effective for cancer patients than broad-based interventions e.g. social support and counselling (American Psychiatric Association, 2000).

According to Neises (2008) around one third of all patients reveal signs of stress disorder and adaptation difficulties following breast cancer or during the course of the illness, often manifested clinically as fear and depression. Supportive treatment should be made available to all patients in the form of psycho-educative group sessions introducing information and assistance to help overcome the illness. In general, the various intervention programmes have proved to be beneficial for patients with cancer. These include relaxation therapy and stress management as well as behavioural therapy and supportive psychotherapy.

Steginga, Wilson, Occhipinti, and Dunn (1998) conducted a descriptive and exploratory study to describe difficulties experienced by 245 women after treatment for primary breast cancer. Their findings revealed that the informational support is integral to a patient's satisfaction with treatment decisions and is likely to predict adjustment. A multi-site randomized study was conducted by Dolbeault et al. (2009) to evaluate the effects of a psychoeducational group intervention on 203 patients with breast cancer. Their findings demonstrated the feasibility and effectiveness of a psychoeducational intervention, which can accelerate the reduction of negative affects which are present at the end of treatment. Llewellyn, McGurk, and Weinman (2006) conducted a longitudinal study to explore how satisfied head and neck cancer (HNC) patients were with information provided about their illness and treatment. Before treatment (n=82), one month after the end of treatment (n=68) and 6-8 months later (n=50). Their study highlights the need for tailored information provision and the impact on longitudinal outcomes of satisfying patient's needs for information prior to treatment. A study was done by Katz, Irish, and Devins (2004) on the development, validation and pilot-testing of a psychoeducational intervention for 19 oral cancer patients. The results of the pilot data from the subjects (10 psychoeducation, nine standard care) indicate that the intervention is feasible and highly acceptable. At follow-up the intervention group showed a gain in knowledge, less body image disturbance, lower anxiety and a trend toward higher wellbeing.

A study by Aranda et al. (2005) investigated the quality of life and support and information needs of urban women with advanced breast cancer. A consecutive sample of 105 women with advanced breast cancer completed a questionnaire that contained the European Organization of Research and Treatment of Cancer Quality of Life Q-C30 and the Supportive Care Needs Survey. Their study findings demonstrated that the highest unmet needs of women who suffer breast cancer were in the psychological and health information domains. Girgis, Boyes, Sanson-Fisher, and Burrows (2000) surveyed a random sample of women with newly diagnosed with breast cancer during 1995-96. The sample comprised of 235 eligible rural women, out of them 129 (55%) returned completed surveys, and 196 eligible urban women, out of them 100 (51%) returned completed surveys. The researchers concluded from the findings that unmet needs, particularly in the information and psycho-social domains, are reported by both rural and urban women with breast cancer. In a similar study by

Sanson-Fisher et al. (2000) it was seen that patients' perceived needs were highest in the psychological, health system and information, and physical and daily living domains. Sharon et al. (2010) reported that a large majority of patients experience unmet supportive care needs across multiple domains, and having unmet supportive care needs is associated with dissatisfaction with health-care providers and mood disturbance.

Hill, Amir, Muers, Connolly, and Round (2003) conducted on explorative study to see whether providing clear, relevant information and addressing patients' concerns can make a worthwhile difference to patients or not. The study was conducted on 80 patients with primary lung cancer shortly after diagnosis. Their study supports previous findings that there is a need for health professionals to provide emotional support and respond to the psychosocial needs of patients by eliciting their concerns and attempting to address them in the early stages of the disease process.

According to Borneman et al. (2008) attention to barriers of symptom management, early referral to supportive care services and coordination of interdisciplinary care are essential to supporting the quality of life of patients with lung cancer. Borneman et al. (2011) also say that a clinical intervention was effective in reducing patient barriers to pain and fatigue management, increasing patient knowledge regarding pain and fatigue, and is feasible and acceptable to patients. In a study by Hammerlid, Persson, Sullivan, and Westin (1999) it was suggested that head and neck cancer patients can benefit from different psychosocial interventions. Two studies of psychosocial interventions in head and neck cancer patients at different stages of their disease were performed by Gandel, Hammeler, and Lordick (2007) on 13 patients with head-neck-cancer. The findings demonstrated that ten sessions of psychoeducation in the context of interdisciplinary cancer therapy can be an effective intervention at moderate cost.

Allison et al. (2004) in their study used a prospective non-randomized design to test the feasibility of providing a psycho-educational intervention for people with head and neck (H&N) cancer. Of 128 people invited to participate, 66 agreed, 59 completed the intervention and 50 had outcomes data. Following the intervention, they showed significant improvements in physical and social functioning and global qualities of life, and reduced fatigue, sleep disturbance and depressive symptoms. Their study suggests that the intervention may have some beneficial effects, although an appropriately designed study is required to confirm this. Gundel et al. (2003) prospectively evaluated the effects of a six-session psychoeducational intervention held by medical doctors or psychologists in a German acute cancer center setting. A cluster randomization was used to assign n=108 oncologic patients (55 female, 53 male; mean age=58.5) to the intervention or the control group. Their findings provide evidence that even short interdisciplinary psychoeducational interventions can at least improve the level of cancer-related information while hardly denting the budget of any healthcare system.

Mental imagery and visualization are techniques that can help cancer patients manage their responses to the illness and help them mobilize inner psychological resources (Thomas, 2009). Guided imagery, as other nonpharmacologic strategies, has been demonstrated to be useful for some patients. However, no tested method exists to identify which patients are likely to benefit from this pain management strategy.

Relaxation and guided imagery are useful strategies for cancer pain. Kristine Kwekkeboom, Britt, and Molly (2008) conducted post-study interviews with 26 hospitalized patients with cancer-pain who had completed trials of guided imagery and PMR. In their study cognitive-behavioural strategies like guided imagery and progressive muscle relaxation were found useful in treating cancer pain for some patients. A majority of participants perceived that the interventions worked for their pain and, in fact, many reported a clinically significant change in pain with the interventions.

According to Eller (1999), there is preliminary evidence for the effectiveness of guided imagery in the management of stress, anxiety and depression, and for the reduction of blood pressure, pain and the side effects of chemotherapy. A controlled clinical trial by Syrjala, Donaldson, Davis, Kippes, and Carr (1995) on 94 patients with cancer to see whether cognitive-behavioral training would reduce pain during cancer treatment or not, showed that relaxation and imagery training reduces cancer treatment-related pain; adding cognitive-behavioral skills to the relaxation with imagery does not, on average, further improve pain relief.

The diagnosis and treatment of breast cancer are stressful, and stress may be associated with a poorer response to chemotherapy. There is a need, therefore, to develop and evaluate interventions that might enhance quality of life and, possibly, improve treatment response. Simple, inexpensive and beneficial interventions should be offered to patients wishing to improve quality of life during primary chemotherapy (Walker et al., 1999).

Stress, anxiety, and depression in patients who are undergoing treatment of cancer significantly compromise the quality of their lives. According to Decker, Cline-Elsen, and Gallagher (1992) relaxation training substantially improves several psychological parameters associated with quality of life in ambulatory patients who are undergoing radiation therapy.

There seems to be a growing literature on the use of psychological interventions to improve the cancer patient's quality of life. The effectiveness of these interventions is robust, as they have reduced distress and enhanced the quality of life of many cancer patients differing on disease stage as well as disease site (Anderson, 1992). One such study was that by Telch and Telch (1986), where they compared the effectiveness of coping skills instruction vs. supportive therapy for a heterogeneous sample of 41 cancer patients on follow-up. Their results demonstrated a consistent superiority of the coping skills intervention over supportive group therapy. The study hence recommended that psychologically distressed cancer patients should be provided with multifaceted coping skills training.

A study was done by Saatci, Akin, and Akpinar (2007) on 100 breast cancer patients who attended the Oncology Outpatient Clinic in Cukurova University between April and June 2001 to find out the relationship between unmet needs and the quality of life of breast cancer patients. Their findings emphasized the need to assess patients psychologically and to make interventions taking care of their psychosocial needs which affect quality of life.

A Meta analysis of randomized controlled trials of CBT and patients education were conducted by Osborn, Demoncada, and Feuerstein, (2006) on a sample of 1,492 adult cancer survivors with an age range of 18-84. 790 were randomly assigned to intervention groups and 702 to control groups. The findings revealed that cognitive behavioral therapy is related to short-term effects on depression and anxiety and both short and long term effects on quality of life. Individual interventions were more effective than group. Various cognitive behaviour therapy approaches provided in an individual format can assist cancer survivors in reducing emotional distress and improving quality of life.

Tatrow and Montgomery (2006) reviewed twenty studies that used CBT techniques with breast cancer patients, whose results overall support the use of CBT techniques administered individually to manage distress and pain in breast cancer patients. Overall, the results support the use of CBT techniques administered individually to manage distress and pain in breast cancer patients. In a study by Espie et al. (2008), four experienced oncology nurses were trained to provide CBT to 150 post-treatment patients with breast, prostate, colorectal, and gynecologic cancers. Significant positive effects on physical and functional quality of life, fatigue, and daytime well-being were reported. In addition, Berger et al. (2009) demonstrated the effectiveness of the CBT based Individualized Sleep Promotion Plan on sleep quality over time and better sleep per diary in 219 patients with breast cancer undergoing adjuvant chemotherapy treatment. Savard, Villa, Simard, Ivers, and Morin (2010) examined patients' satisfaction with self-help CBT for insomnia comorbid with cancer and gathered some preliminary data on its effect on sleep and associated features. They used a six-week self-help CBT treatment (consisting of a 60-minute animated video and six booklets) in 11 patients with breast cancer. Findings indicated moderateto-large effect sizes from pre- to post-treatment, and statistically and clinically significant differences were found on most sleep variables, as well as overall quality of life, patients were also satisfied with the treatment received.

Cognitive-behavioral interventions now are recommended as "likely to be effective" according to Oncology Nursing Society's Putting Evidence Into Practice (ONS PEP) criteria for patients with cancer based on the results of four randomized, controlled trials conducted during the past five years (Berger et al., 2009). Those randomized, controlled trials confirmed the promising results of several earlier quasi experimental studies testing CBT in patients with breast cancer, most notably Berger et al. (2002 & 2003); Quesnal, Savard, Simard, Ivers, and Morin (2003); and Savard, Simard, Ivers, and Morin (2005). Cognitive behaviour therapy in lung cancer patients with insomnia could improve quality of life, lung cancer symptoms as well as improve mood disturbances (Rumble, Keefe, Edinger, Porter, & Garst, 2005).

Ferguson et al. (2007) conducted a single arm pilot study of a brief cognitivebehavioral treatment aimed at helping to manage cognitive dysfunction associated with adjuvant chemotherapy. Memory and Attention Adaptation Training [MAAT] was given to 29 women who were at an average of 8 years post-chemotherapy for stage I and II breast cancer. Their findings revealed that the treatment appears to be a feasible and practical cognitive-behavioral program that warrants continued evaluation among cancer survivors who experience persistent cognitive dysfunction.

Sharon and Andrykowski (2006) in their review suggested that there is sufficient evidence to conclude that cognitive-behavioral interventions are effective in reducing and managing psychological distress in cancer patients and are accepted by these patients. Semple, Dunwoody, Kernohan, and McCaughan (2009) suggested that head and neck cancer patients with post-treatment psychosocial dysfunction can benefit from a problem-focused psychosocial intervention. According to Carlsen, Jensen, Jacobsen, Krasnik, and Johansen (2005), the degree of depression can be reduced by psychosocial interventions. A review of study carried out by Rueda, Solà, Pascual, Subirana, and Casacuberta (2011) focused on randomized or quasi-randomized clinical trials assessing the effects of non-invasive interventions in improving well-being and quality of life in patients diagnosed with lung cancer. Their findings revealed that psychotherapeutic, psychosocial and educational interventions can play some role in improving patients' quality of life. According to Degi (2006) psychotherapy and psycho-social interventions in oncological rehabilitation, based on confirmed results of several controlled studies designed and conducted in a bio-psycho-social research framework, have been proved to reduce the psycho-social vulnerability of cancer patients and to enhance health related quality of life in this patient population. The findings of a study Rawl et al. (2002) revealed that cancer-care nursing interventions can decrease psychosocial morbidity and improve quality of life for newly diagnosed patients with cancer undergoing treatment. The Metaanalytical findings of Rehse and Pukrop (2003) support the usefulness of psychosocial interventions for improving quality of life in adult cancer patients.

Reviews on Response Evaluation Criteria in Solid Tumors (RECIST) are useful to see the efficacy of medical intervention. RECIST is a set of published rules that define when cancer patients improve ("respond"), stay the same ("stabilize"), or worsen ("progression") during treatments. The criteria were published in February, 2000 by an international collaboration including the European Organisation for Research and Treatment of Cancer (EORTC), National Cancer Institute of the United States, and the National Cancer Institute of Canada Clinical Trials Group. Today, the majority of clinical trials evaluating cancer treatments for objective response in solid tumors are using RECIST. Following are the evaluation of target lesions. *Complete Response (CR)*: Disappearance of all target lesions. *Partial Response (PR)*: At least a 30% decrease in the sum of the longest diameter (LD) of target lesions, taking as reference the baseline sum LD. *Stable Disease (SD)*: Neither sufficient shrinkage to qualify for PR nor sufficient increase to qualify for progressive disease, taking as reference the smallest sum LD since the treatment started. *Progressive Disease (PD)*: At least a 20% increase in the sum of the LD of target lesions, taking as reference the smallest sum LD recorded since the treatment started or the appearance of one or more new lesions (American Psychosocial Oncology Society [APOS] (2012); Therasse et al., 2000).

Studies on stress, coping, quality of life and intervention in Indian context

In a review of recent publications in the area of stress and coping, with specific reference to women's physical health status, Rao (2009) indicated that the transactional model of stress and coping continues to be the mainstay of research in this area. In addition to problem-focused coping, women often use distraction methods, seeking social support and faith or religious coping.

In the trajectory of disease progress and treatment plan, patients and the family members are confronted with challenging situations like insurmountable physical distress, inadequate coping patterns, and unanswered spiritual issues. The background of serious threat to very existence of life leads to a debilitating QoL. Various studies conducted globally revealed that patients who received palliative care intervention along with oncological treatments had higher scores of QoL compared to patients who received only oncology care alone (Devi, 2011).

Mohan et al. (2007) evaluated the baseline QoL of 101 lung cancer patients and observed its association with various clinical parameters and overall respiratory status. Findings of their study reported that lung cancer patients have unsatisfactory quality of life, with the global health status and physical functions being most affected. Number of symptoms, Karnofsky Performance Status, dyspnoea and spirometry significantly affect quality of life. A single point prevalence study conducted by Sumita, (2011) concluded that 90% of patients with cancer experience pain at some point during their illness and it significantly impacts quality of life. According to a review by Prasad, and Padmaja (2012), psychological factors like quality of life and ways of coping play a role in the exacerbation and maintenance of cancer. Existing research review thus indicates that there is a need for further and extensive research in the area of Psychooncology in terms of quality of life and coping in cancer patients.

Research approaches are required to study the various issues that should be improved or overcome in India. Recent research indicates a definite positive impact on treatment outcomes when an integrative approach that focuses on symptom control and quality of life is provided along with the standard therapeutic regimens (Nandini, Sridhar, Usharani, Kumar, & Naveen, 2011).

Sushmita, Arora, Soumik, Sharma, and Patel (2011) conducted a study to analyze symptom control in patients who are not receiving cancer directed treatment and to identify areas of potential improvement in the care of fifty consecutive patients who had residual/ recurrent disease after specific cancer directed treatment. The results indicated that half of these patients were not aware of the exact nature of their illness and likely prognosis. More than 90% had adequate family support but 40% had economic problems which interfered with the health care of the patient. They concluded that control of physical symptoms was achieved in most of these patients but emotional and spiritual concerns need to be addressed more effectively. In a crosssectional study by Kandasamy, Chaturvedi, and Desai (2011) 50 patients with advanced cancer from a hospice were assessed, and findings suggested that spiritual well being is an important component of the quality of life of advanced cancer patients, and is closely related to the physical and psychological symptoms of distress.

Sayed and Kazi (2008) recommended that, as cure is attainable in very few cases of lung cancer, the imperative issue is to make quality of life as good as possible as part of the palliative care package.

A study by Arunachalam, Thirumoorthy, Devi, and Thennarasu (2011) evaluated the effect of disfigurement due to cancer and its treatments on quality of life. 120 patients from the inpatient/outpatient department of oncology who had undergone various forms of treatment for cancer were included in this study. Their findings suggested that a sudden change either due to cancer or its treatment or due to side effects leads to significant social maladjustment, elevated anxiety, depression, and poor quality of life among the cancer survivors with body disfigurement which calls for multiprofessional involvement in addressing various psychosocial issues. Barathi and Mary (2011) conducted a cross- sectional study on in-patients with advanced cancer. Samples consisted of twenty patients with advanced cancer receiving palliative care in group 1 and twenty patients receiving routine oncology treatment only in group 2. Their results indicated that the functional scores and symptom control of group I was statistically significant compared with group II. In patients receiving palliative care the global QoL was statistically significant. The researchers concluded that palliative care improves quality of life in patients receiving palliative care, compared with those who receive routine oncology treatment only.

While each of the dimensions of stress, coping and quality of life have been studied separately, importance of psychological interventions was extensively discussed in existing research it was seen that the above mentioned domains were not brought together for any study and importance of psychological intervention playing a complementary role to medical intervention was also not explored in the above contexts. Considering the importance of enhancing quality of life, minimizing the stress and improving the coping of the patients and also the role of psychological intervention as indicated and discussed in the above sections, the present study aims to study the stress, coping and quality of life in patients with pre- and post-medical treatment for cancer. Based upon the results a suitable psychological intervention package would be developed and administered on a new sample of 10 patients each from the three types of cancer alongside the medical intervention. The effect of the same on stress, coping strategies and quality of life in patients is measured pre- and post-medical and psychological intervention. Based on the above review findings following research question, objectives and hypothesis were made and are given below.

Research Questions

The study attempted to find out the answers to the following main research questions.

(i) Is there any difference in the stress, coping strategies and quality of life of cancer patients (i.e. patients with lung cancer, breast cancer and head-and-neck cancer) pre- and post- medical intervention?

69

(ii) Is there an impact of psychological intervention package when used along with medical intervention, on managing stress, fostering appropriate coping strategies and enhancing quality of life of cancer patients (i.e. patients with lung cancer, breast cancer and head-and-neck cancer)?

Objectives

The objectives of the present research were

(i) To explore the level of stress of patients with lung cancer, breast cancer and head-and-neck cancer pre- and post-medical intervention

(ii) To explore the coping strategies adopted by patients with lung cancer, breast cancer and head-and-neck cancer pre- and post-medical intervention

(iii) To explore the level of quality of life of patients with lung cancer, breast cancer and head-and-neck cancer pre- and post-medical intervention

(iv) To find out the relationship between the stress, coping strategies, quality of life, ECOG performance status, and the age of the patients with lung cancer, breast cancer and head-and-neck cancer pre- and post-medical intervention

(v) To develop a psychological intervention package to manage stress, foster appropriate coping strategies and enhance quality of life of patients with lung cancer, breast cancer and head-and-neck cancer basing upon the findings of the study

(vi) To test the effectiveness of the developed psychological intervention package when used alongside the medical intervention on the stress, coping strategies and quality of life of a new sample of patients with lung cancer, breast cancer and head-and-neck cancer.

Hypotheses

It was hypothesized that

(i) The stress among the patients with lung cancer, breast cancer and head-andneck cancer would differ pre- and post-medical intervention

(ii) The coping strategies adopted by patients with lung cancer, breast cancer and head-and-neck cancer would differ pre- and post-medical intervention

(iii) The level of quality of life of patients with lung cancer, breast cancer and head-and-neck cancer would differ pre- and post-medical intervention

(iv) There would be a relationship between the stress, coping strategies, quality of life, ECOG performance status and the age of the patients with lung cancer, breast cancer and head-and-neck cancer, during pre- as well as post-medical intervention

(v) The developed psychological intervention package would be effective in managing stress, fostering appropriate coping strategies and enhancing quality of life of patients with lung cancer, breast cancer and head-and-neck cancer.

OPERATIONAL DEFINITIONS

Cancer: Is an abnormal growth of cells which tend to proliferate in an uncontrolled way. This disease not only has physiological effects but psychological impact as well in terms of severe pain, uncertainty about life and fears of death which results in high levels of stress.

Stress: Stress is a psycho-physiologic arousal response occurring in the body as a result of a stimulus which becomes a "stressor" by virtue of the cognitive and emotional interpretation of the individual.

Coping strategies: A response aimed at diminishing the physical, emotional and psychological burden that is linked to stressful life events and daily hassles

Quality of Life: Quality of life is a descriptive term that refers to people's emotional, social and physical wellbeing and their ability to function in the ordinary tasks of living.

Psychoeducation: Psychoeducation is a specialized form of education aimed at helping to learn and creating awareness about the range of emotional and behavioural difficulties, their effects, and strategies to deal with them.

Relaxation: Relaxation is a way of teaching clients to deal directly with such strong emotions as anxiety, stress, pain, or anger for which no external coping behaviour is possible or where cognitive coping behaviour is insufficient (although the two procedures are often paired).

For relaxation guided imagery was used in the present study. The term Guided imagery or visualization is a technique that uses the imagination to create vivid images that the body can perceive and respond to improve mood and/ or physical well-being. Guided imagery can ease stress, anxiety, enhance personal awareness, and improve psychological coping skills.

Cognitive behavioral therapy (CBT): is a psychotherapeutic approach which addresses dysfunctional emotions, maladaptive behaviors and cognitive processes, and contents through a number of goal-oriented, explicit systematic procedures.

METHOD OF STUDY

Plan and design

The present study consisted of three Parts, such as Part A, B and C. Part A involved a within group design which was exploratory in nature to examine the level of stress, type of coping strategies and quality of life in patients with lung cancer (LC), breast cancer (BC) and head & neck cancer (HNC), by using Pre-medical intervention assessment (Pre-MIA) after diagnosis and Post-medical intervention assessment (Post-MIA) after 6 weeks of medical intervention. This was followed by the development of a psychological intervention package (as Part B) to be administered along with medical intervention. Part C which was also within group design focused upon the testing of the effectiveness of the developed psychological intervention along with the medical intervention. Part C also consisted of pre-medical and psychological intervention assessment. The design is presented in the next page in the form of a flow chart.



Participants

The population of the study consisted of patients with three types of cancer viz. Lung cancer (LC), breast cancer (BC) and head & neck cancer (H &NC). In Part A, 105 patients in total and in Part C 30 patients in total with above three types of cancer were selected by means of purposive sampling method from hospitals namely Medwin Hospital, Omega Cancer Hospital and M.N.J. Institute of Oncology and Regional Cancer Centre from twin-cities of Hyderabad / Secunderabad in the state of Andhra Pradesh of India.

Informed consent

Separate informed consent forms were given to the patients with cancer and their consent was obtained. The informed consentform described the details of what is going to be done paitients with cancer in the study, confidentiality of the data, and the rights of the patients with cancer was obtained (*Appendix 1*). The consent form had the statements of consent of the patients with cancer in the study. Only those patients who were willing to participate for the whole period of 6weeks of study were included both in Part A and Part C.

In Part A, characteristics of the sample was colleted with help of Demographic Data Form (DDF) (Appendix 3) from the total sample of 105 patients (50 male, 55 females) comprised of 35 female patients with BC, 35 (female 8, males 27) patients with LC and 35 patients (female 12, male 23) with HNC. Their age group was between 28 - 65 years of age and mean age was 52 years. Out of the total patients 9.5% were employed, 12.4% patients were self-employed and 78.1% were unemployed. From the total sample, 29.5% were living in urban areas, 61.9% were living in rural areas and 8.6% were living in semi urban. Whereas 17.1% belonged to Upper socioeconomic status, 21.9% belonged to Middle socioeconomic status and 61.0% belonged to Lower socioeconomic status. With reference to life style issues, 19.0% were smokers and 63.8% non-smokers, 15.2% were smokers who also consume alcohol, 1% smokers who also use gutkha and 1% use both alcohol & gutkha. From the total sample, 4.8% of the patients had family history of cancer and 95.2% of the patients were no family history of cancer. On Eastern Cooperative Oncology Group (ECOGPS) 8.6% of the patients in the sample were grade-0(Asymptomatic), 42.9% of the patients with cancer were grade-1(Symptomatic but completely ambulatory), 20.0% of the patients with cancer were grade-2 (Symptomatic, <50% in bed during the day), and 25.7% patients with cancer were grade-3 (Symptomatic, >50% in bed, but not bedbound), and 2.9% of the patients with cancer were grade -4 (Bedbound). From the total sample of patients with LC, BC, and HNC who had caregivers, 74.3% had their spouse as the caregiver, 1.0% had parent as caregiver, 1.0% had brother as caregiver, 22.9% had son as caregiver and 1.0% had others. All patients were married.

In Part C, the total sample of 30 patients diagnosed with cancer (19males, 11 females) comprised of 10 female patients with BC, 10 LC and 10 HNC. Their age group was between 27-65 years of age and mean age was 52 years. Out of the total patients 6.7% were employed, and 93.3% were unemployed. 23.3% were living in urban areas and 76.7% were living in rural areas. 6.7% belonged to Upper Socio Economic Status, 23.3% belonged to Middle Socio Economic Status and 70% belonged to Lower Socio Economic Status. If we look at their life style issues, 13.3% were smokers and 33.3% non-smokers, 40% were smokers also using alcohol, 6.7% were smokers also using gutkha and 6.7% were using alcohol and gutkha. Whereas 13.3% of the patients had family history of cancer and 86.7% of the patients had no family history of cancer. On ECOGPS 6.7% of the patients in the sample were grade-0(Asymptomatic), 43.3% of the patients with cancer were grade-1 (Symptomatic but completely ambulatory), 30% of the patients with cancer were grade-2(Symptomatic, <50% in bed during the day), and 20% patients with cancer were grade-3 (Symptomatic, >50% in bed, but not bedbound). Among patients with LC, BC, and HNC who had caregivers, 66.7% had spouse as caregiver, 3.3% had sisters as caregiver, 16.7% had son as caregiver, 6.7% had daughter as caregiver and 1.0% had others. All the patients were married. In both the parts following criteria were used for exclusion and inclusion of participants in the sample.

Inclusion criteria: Newly diagnosed male & female patients with LC, BC, HNC between the age of 18-65 years having no psychiatric illness and belonging to the cancer stage of below IV and scores on ECOG Performance Status 04 with life

expectancy of 3-6 months were included irrespective of their occupation, place of living and socio economic status.

Exclusion criteria: The patients below the age of 18years and above 65years, having psychiatric illnesses, patients who are not able to familiarize themselves or understand and undergos relaxation, who are not able to get into therapeutic mode and those with other physical illness were excluded from the study.

Description of the research tools

The following research tools were used for the study.

Eastern Cooperative Oncology Group-Performance status (ECOGPS): The ECOGPS was developed by Oken, Creech, & Tormey (1982) and this scale is widely used to quantify the functional status of cancer patients, and is an important factor determining prognosis in a number of malignant conditions (*Appendix 4*). The PS describes the status of symptoms and functions with respect to ambulatory status and need for care. PS '0' means normal activity, PS 1 means some symptoms, but still near fully ambulatory, PS 2 means less than 50%, and PS 3 means more than 50% of daytime in bed, while PS 4 means completely bedridden. This is also an ordinal forced-choice scale. Choices range from 0 (fully active) to 5 (dead). Higher scores reflect worse function.

The Questionnaire on Stress in Cancer Patients- Revised Version (QSC-R23): QSC-R23 developed by Herschbach et al. (2003), is a disease specific questionnaire to assess psychological stress in cancer patients (all diagnosis and treatment settings). It contains 23 items that describe potential everyday stress and in everyday language (*Appendix 5*). Each problem has to be answered twice: 'Does it

apply to the test person at present? And –'If it does apply, what extent does this problem cause distress? The range of the response categories varies between 0 (the problem does not apply to me) and 5 (the problem applies to me and is very big problem). The items are grouped into five homogeneous scales: psychosomatic complaints, fears, information deficits, Everyday life restrictions and social strains. The scoring was done according to the author's guidelines. In the score ranging from 0-115, higher score indicate, higher stress and lower scores indicate, lower stress. The construct validity of the test has been demonstrated by correlation analysis with diverse psychological tests such as HADS depression (r = 0.75, n = 578), HADS anxiety (r = 0.73, n = 579) and SCL-90-R (r = 0.76, n = 171). The discriminant validity and sensitivity to change have also been demonstrated. The Cronbach's alpha, found to be 0.89 (n = 1349) for the total score.

Brief COPE Inventory: The Brief COPE was developed by Carver (1997). The Brief COPE consists of 28 items. It assesses 14 subscales, two items each, which deals with ways a person is coping with stress in his/her life and patients were instructed to report what they usually do when they are under stress. Patients choose their answers based on a 4-point Likert scale that is anchored at 1 = I haven't been doing this at all, 2 = I've been doing this a little bit, 3 = I've been doing this a medium amount, 4 = I've been doing this a lot. Each item in the inventory speaks about particular way of coping (*Appendix 6*). Carver gave choice for any further research to take further steps according to the convenience in categorizing into domains (Carver, 1997). The scale possesses four domains, such as problem focused (active coping, planning and seeking of instrumental support), emotion focused (seeking emotional support, positive reframing and religion), adaptive (acceptance and humor), and maladaptive (venting, behavioural disengagement, self-distraction, substance use, self-

blame and denial) coping strategies. Accordingly a study has categorized these into 4 domains (Rohland, 2000). The researcher has adopted the 14 coping strategies filled into four broad domains as per the above the study. Carver reported high internal Cronbach alpha reliability coefficients for the B-COPE ranging from 0.50 (venting) to 0.90 (substance use) and this suggests that the coping strategies are quite stable over time. The internal validity of the B-COPE scale shows moderate inter-correlation while the test-retest reliabilities ranged from 0.46 to 0.86 (Carver, 1997).

The Brief COPE Inventory was translated into two languages, such as Telugu and Hindi.

European Organization for the Treatment and Research of Cancer Quality of Life Questionnaire-QLQ-C30, version 3.0. (EORTC QLQ-C30 version 3.0): The EORTC-QLQ-C30 version 3.0 was developed by Aaronson et al. (1993) and scoring procedure was adopted by Fayers et al. (2001) for assessing health related quality of life for cancer patients. The core questionnaire, EORTC-QLQ-C30 contains 30 questions and is designed to cover a range of health-related quality of life issues relevant to most cancer diagnoses (*Appendix 7*). The questionnaire is organized into five functional scales (physical, role, emotional, cognitive and social), three symptoms scales (fatigue, pain, and nausea/vomiting), a Global Health Status and quality of life (GHS/QoL) scale, and a number of single items assessing additional symptoms (dyspnoea, sleep disturbance, constipation and diarrhea) and perceived financial impact. Each item has a 4-point response scale (1- not at all, 2 - a little, 3 - quite a bit and 4 - very much) with the exception of the two items measuring GHS/QoL, which have 7- point response scales such as 1- very poor to 7 - excellent. The scoring was done as per the procedure prescribed in the manual. For the functional and global health and quality of life scales, a higher score indicates better functioning, for the symptoms–oriented scales and items, a higher score corresponds to a higher level of Symptomatology. High internal consistency, overall reliability and validity for the instrument have been demonstrated across languages and countries in numerous international trials with cancer patients. Validity was evaluated with 305 patients in 13 countries. An average of 11 minutes was needed to complete the questionnaire. Moderate interscale correlations support the distinct components of the quality-of-life construct. The functional and symptom measures discriminated among patients according to clinical status. In addition, significant differences were found in QLQ-C30 scores over time for patients whose treatment responsechanged with treatment. Reliability estimates for the subscales were similar across cultural subgroups (alpha=.52-.89).

Cancer Information Scale (CINFOS): CINFOS was developed for the purpose of present research and the scale aimed at understanding and assessing the misconceptions of the patients with three types of cancer LC, BC and HNC. Each form contained 10 items where five items are common for all the cancer patients to measure their misconceptions about cancer in general. The remaining five items addressed the misconceptions about the specific type of cancer (*Appendix 8*). In each form, some items are positively scored to indicate presence of misconceptions and some are negatively scored. For example item no. 4 '*Lung cancer is not a communicable disease*' of CINFOS for LC is a positive item, thus getting a low score on misconceptions. Whereas item no. 1. *Only smokers get lung cancer*' of CINFOS for LC, is a negative item, thus indicating misconceptions. For BC item no. 4 '*Diagnosis of breast cancer does not mean death*' of CINFOS is positive item whereas

item no.1 'Surgery for breast cancer always means removal of whole breast' of CINFOS is negative. For HNC item no. 4 'Excessive usage of cell phones causes brain cancer' of CINFOS is positively scored, whereas item no. 6 'Surgery is the only treatment for head and neck cancers' of CINFOS is negatively scored. For example if patients say 'true' to the item no. 2 'There is no cure for cancer' then the score is 1, whereas if patients says false he/she scores '0'. The higher total score indicates greater level of misconceptions. The researcher read out the statements and noted the responses of the patients in case where the patients were not able to read them.

Visual Analogue Scale (VAS): A visual analogue scale containing a range from 0 to 100 was used to *measure the state of relaxation* of the three types of cancer patients before and after psychological intervention using visualization technique. In this scale, '0' represents not at all relaxed whereas '100' represents a state of complete relaxation (*Appendix 9*). Each patient was instructed to rate his/her level of relaxation by using this scale. Higher rating indicates a greater level of relaxation perceived by the patient. Feasibility of the visual analogue scale in other studies involving other chronic illness/ pain related illness, such as pain assessment using a visual analogue scale was seen in studies like those of Hawksley (2000) for measuring chronic pain in children; a study on Perceptual Motor Skills by Hunfeldvan, der Wouden, and Hazebroek-Kampschreur (1997); a study on the impact of meditation-based stress reduction programme on Fibromyalgia by Kenneth, Kaplan, Don, and Maureen Galvin-Nadeau (1993) and a study on measuring anxiety in surgical patients using a visual analogue scale by Pritchard (2010).

Triple Column Technique (TCT): was developed by Burns, 1989 and was used to assess the cognitive distortions and to help patients to reorient the thoughts in

a positive direction (*Appendix 10*). Patients were asked to rate the intensity of their negative automatic thoughts pre- and post-medical and psychological intervention.

A semistructured interview has also been done with the consultant oncologists to understand their perspective on the stress experienced by their patients, caretakers and the consultant during the trajectory of the disease diagnosis, progression and treatment (*Appendix 11*)

Procedure

The present study consisted of three parts. The instruments that were adapted were used with necessary permissions and those which were newly developed were translated into regional languages (Telugu and Hindi) and validated for administration. Ethics committee concurrence was obtained. A pilot study was conducted to assure the feasibility of administration of the identified tools on the target sample. For sample collection in Andhra Pradesh, Hyderabad city, five cancer hospitals were identified and permission was taken to conduct the study. Initially ECOGPS was administered with help of the senior consultants and Doctors to include patients newly diagnosed with cancer in the present study. Same procedure was followed both in Part A and Part C.

In Part A the researcher established rapport with newly diagnosed patients with LC, BC and HNC, explained the purpose of study to them and took written consent. Patient details like, stage of cancer and sociodemographic data were obtained. The identified instruments were administered. Wherever doubts were raised, the researcher clarified to required extent to the patients. Other research tools were also administered with sufficient interval in between sessions. The following research tools were used.

The Questionnaire on Stress in Cancer Patients Revised Version (QSC-R23) for assessing stress; Brief COPE inventory for identifying type of coping strategies used by patients with cancer; European Organization for the Treatment and Research of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) for assessing their quality of life. Patients with LC, BC and HNC chosen for participation in the study were within IV stage of cancer and not in advanced stage. An observation record was maintained for pharmacological intervention as part of Part A where only medical intervention was given through methods like chemotherapy, radio therapy, hormonal therapy and surgery etc. for a period of six weeks. Thus all the instruments were administered immediately after diagnosis and after 6weeks of medical intervention.

Based upon the findings of Part A data, a psychological intervention was designed consisting of Psychoeducation, Cognitive Behaviour Therapy (CBT) and Relaxation using Guided imagery under Part B.

In Part C, samples were selected by following the same procedure as in Part A from LC (10), BC (10), and HNC (10) cancer patients. In this Part, a combination of medical as well as psychological intervention was administered. The assessment tools were administered as a part of pre medical-psychological intervention (Pre-MPIA). Then, along with medical intervention, psychological intervention involving Psychoeducation, CBT and Relaxation using guided imagery was given. Soon after the completion of medical and psychological intervention of 6 weeks duration, Post-Medical-Psychological Intervention Assessment (Post-MPIA) was done using the same research tools again. Here also the treatment response was noted after the 6 weeks of medical and psychological intervention.

Before starting relaxation a familiarization session was given to ensure the patient's satisfaction, attention and comfort before initiating the relaxation session. Here, the investigator explained the rationale of the relaxation training to the patients before beginning the session. The procedure was also explained to the patients as well as their caretakers. The familiarization session, was meant to mark the beginning the process of moving on in a structured way, by easing the patients into the process of working with the relaxation (guided imagery). As the patients were willing to help themselves to move on in a more comfortable way, they were cooperative and familiarized themselves with the session as instructed. They were told that before starting relaxation they should follow the instructions and accordingly they have to imagine and feel relaxed. The familiarization session helped the patients feel familiar with the program, and work with the familiar voice of investigator as well recorded audio CD. Once the patient was familiarized with the procedure for relaxation and was comfortable, visualization using guided imagery was administered where audio CD developed by a senior practicing clinical psychologist was used to give instructions.

In pychoeducation, information and flip charts brochures related to information helpful in dispelling the myths and misconceptions; clarification and explanation about the myths and misconceptions by expert Oncologist through video clippings etc. were used. Inaddition, usage of effective coping methods was discussed, to deal with their stress. For cognitive distortions CBT was used with the help of cognitive restructuring techniques. Soon after the completion of medical and psychological intervention of 6weeks duration, post-medical and psychological intervention assessment (post-MPIA) was done using the same research tools used in pre-medical- psychological intervention (Pre-MPIA). The details of the developed psychological intervention administered in Part C are given the following tabular form.

S. No	Type of Intervention	Method	Session schedule and scale used.			
1.	Psychoeducation	CINFOS (LC, BC and HNC).	Six weeks at the rate of			
		Handouts	one session per week			
		Pre-recorded video clippings	CINFOS (pre- and post)			
		Interviews with senior oncologists.				
		Providing required information and				
		facts				
		Flip charts and Pamphlets				
		Awareness about the emotional and				
		cognitive reactions creating stress				
		and ways of coping to deal with				
		them				
2.	Relaxation	Visualization technique:	Six weeks at the rate of			
		Familiarization session	one session per week			
		followed by six sessions of	VAS (pre- and post)			
		relaxtion				
		Recorded guided imagery CD's				
		(by a senior clinical psychologist)				
		Visual Analogue Scale (VAS)				
		ranging from 0-100				
		For self rating of the subject on the				
		extent of relaxation				
3.	Cognitive Behaviour Therapy	Triple Column Technique (TCT).	Six weeks at the rate of			
		Identification of Negative	one session per week			
		Automatic Thoughts (NATs	TCT (pre- and post)			
		Helping subject to restructure the				
		thoughts in a more positive way				
		Noting Dairy				

Psychological intervention schedule

RESULTS

The results are discussed in three parts. In part A, impact of medical intervention is discussed by looking at the difference between scores of pre- and post-medical intervention assessment of stress, coping and quality of life. In part B, development of a psychological intervention package is discussed. In part C, the impact of psychological intervention along with medical intervention is examined by looking at the difference between pre- and post-medical and psychological intervention assessment (pre- post MPIA) of stress, coping and quality of life.

In Part A the data were collected from 105 patients, with 35 patients each from lung cancer (LC), Breast Cancer (BC) and Head-Neck-Cancer (HNC) categories. For this purpose the patients were selected from the Omega Cancer Hospital and M.N.J. Institute of Oncology and Regional Cancer Centre located in Hyderabad. They were administered Demographic Data Form (DDF) and Eastern Cooperative Oncology Group Performance Status (ECOGPS) for measuring the performance status of the patients. As a part of pre- and post- medical intervention assessment (pre- post MIA) for stress - QSC-R23, for Coping strategies - Brief Cope Questionnaire and to identify GHS/QoL - EORTC QLQ-C30 was used.

The obtained quantitative data were analyzed by means of descriptive statistics, paired and independent t test, Pearson r by using SPSS 16.0, and wherever required, graphs have been plotted.

In Part B psychological intervention was developed involving a combined package of psychoeducation, CBT and relaxation through guided imagery. The intervention was administered on 30 patients at the rate of ten each from LC, BC and HNC. The responses of patients to pre- and post- medical and psychological intervention were also quantified. Statistical procedures used were descriptive statistics, paired and independent t test, Pearson r, Wilcoxon signed rank test (to measure the effect of relaxation) and One-way ANCOVA (to check whether treatment response of the patients varies according to the variation in intervention) with help of SPSS 16.0 and wherever required graphs were plotted.

Part A

Impact of medical intervention on Stress, Coping and Quality of life in cancer Patients

The impact of medical intervention is found in following ways.

(1) Differences in overall stress and on its domains

(2) Differences in coping strategies viz. problem focused, emotion focused,

and maladaptive coping strategies and their domains

(3) Differences in overall scores of GHS/ QoL., and its domains

Stress of patients with cancer pre- and post-MIA

An attempt was made to find out if there was any significant difference in the levels of stress on the dimensions of psychosomatic complaints, fear, information deficit, everyday life restrictions, social strains, and overall stress level.

Table 1 shows M, SD and t values of the level of overall stress and its five dimensions-psychosomatic complaints, fear, information deficit, Everyday life restrictions, and social strains in the total sample consisting of patients with three types of cancers viz LC, BC and HNC.

Table 1

Variable	Pre-MIA		Post-MIA		t	Cohen's d
	М	SD	М	SD		
Stress	73.52	15.75	68.97	16.68	2.46*	.28
Psychosomatic complaints	19.50	5.09	14.68	4.42	9.50**	1.01
Fears	16.50	4.07	14.73	4.20	4.71**	0.42
Information deficits	11.41	5.09	9.87	1.90	2.80**	0.40
Everyday life restrictions	14.49	5.59	16.33	4.29	3.39**	0.15
Social strains	11.32	4.24	11.00	3.50	0.74	0.08

M, SD and t values for stress scores of patients with cancer during pre- and post-MIA

Note. N = 105, **p* <.05, ***p*<.01



Figure 1 Mean stress scores of patients with cancer pre- and post-MIA

Note: Stress: Overal Stress, PSC: Psychosomatic Complaints, FR: fears, ID: Information deficits, ELR: Everyday life restrictions, SS: Social strains

It is observed from Table 1, that the paired *t*-test done on overall stress scores showed that there was a significant difference between scores of overall stress of the

patients with cancer, t(104) = 2.46, p < .05, effect size = .28. This indicates that the overall stress among patients with cancer was lower during post-MIA (M = 68.97, SD = 16.68) in comparison to pre-MIA (M = 73.52, SD = 15.72). The effect of medical intervention was found to be medium.

A significant difference was noticed between pre- and post-medical intervention scores of psychosomatic complaints of the patients with cancer, t(104) = 9.50, p < .01, effect size = 1.01. This indicated that psychosomatic complaints among patients with cancer were lesser during post-MIA (M = 14.68, SD = 4.42) in comparison to pre-MIA (M = 19.50, SD = 5.09). Here the effect of medical intervention was found to be high.

A significant difference was noticed between pre- and post-MIA score of fears of the patients with cancer, t(104) = 4.71, p < .01, effect size = 0.42. This indicated that that fear among patients with cancer was less during post-MIA (M = 14.73, SD = 4.20) in comparison to pre-MIA (M = 16.50, SD = 4.07). The effect of medical intervention was found to be medium.

A significant difference was noticed between pre- and post-MIA scores of information deficits of the patients with cancer, t(104) = 2.80, p < .01, effect size = 0.40. This indicated that that information deficit among patients with cancer was low during post-MIA (M = 9.87, SD = 1.90) in comparison to pre-MIA (M = 19.50, SD = 5.09). Here the effect of medical intervention was found to be medium.

A significant difference was noticed between pre- and post-MIA scores of Everyday life restrictions of the patients with cancer, t(104) = 3.39, p < .01, effect size = 0.15. This indicated that that everyday life restrictions among patients with cancer increased during post-MIA (M = 16.33, SD = 4.29) in comparison to pre-medical intervention assessment (M = 14.49, SD = 5.59). Here the effect of medical intervention was found to be low.

Figure 1 indicates mean values on overall stress, and its components pre- and post-MIA. It is observed that in post-MIA phase, psychosomatic complaints, fears, and information deficits were lower, whereas everyday life restrictions were higher and social strains showed no differences, in comparison to pre-MIA.

Coping strategies adopted by patients with cancer pre- and post-MIA

An attempt was also made to see the differences in pre- and post-MIA in the coping strategies adopted by patients with cancer. *M*, *SD* and *t* values of coping strategies and their domains i.e problem focused coping: active coping, planning, and use of instrument support; emotion focused coping: use of emotional support, positive reframing, and religion; adaptive coping: acceptance, and humor; maladaptive coping: venting, behavioural disengagement, self-distraction, substance use, self-blaming, denial in the patients with cancer were calculated and presented in Table 2.

Table 2

M, SD and t values for coping strategies scores of patients with cancer pre- and post-MIA

Coping strategies	<u>Pre-M</u> M	<u>IA</u> SD	<u>Post-M</u> M	<u>IIA</u> SD	t	Cohen's d
Problem focused coping	13.00	3.81	11.93	3.04	3.46**	.36
Active coping	3.94	2.01	3.77	1.72	1.01	0.09
Planning	3.48	1.68	2.69	1.20	5.45**	0.54
Use of instrumental support	5.58	1.54	5.48	1.09	0.77	0.07
Emotion focused coping	16.69	3.73	17.52	3.50	2.96**	0.22
Use of emotional support	7.14	1.50	7.55	1.29	2.52*	0.29
Positive reframing	3.91	1.98	4.13	1.67	1.38	0.12
Religion	5.63	2.37	5.84	2.45	1.45	0.07
Adaptive coping	5.45	1.80	5.68	1.72	1.43	0.13
Acceptance	3.37	1.69	3.62	1.68	1.74	0.14
Humor	2.08	0.57	2.06	0.41	0.28	0.04
Maladaptive coping	25.72	6.08	21.97	6.51	7.41**	0.59
Venting	4.08	1.97	3.41	1.81	4.18**	0.35
Behavioural disengagement	3.61	1.93	3.30	2.00	1.92	0.15
Self-distraction	4.23	1.65	3.87	1.23	2.01*	0.24
Substance use	2.55	1.06	2.34	0.88	1.96*	0.21
Self-blaming	4.18	2.39	3.54	2.14	3.71**	0.28
Denial	7.08	1.69	5.5	1.97	8.38**	0.86

Note. N=105, * *p* <.05, ***p*<.01


Figure 2 Mean coping strategies scores of patients with cancer pre- and post-MIA

Note: PFC: Problem focused coping, EFC: Emotion focused coping, AC: Adaptive coping, MAC: Maladaptive coping

As seen in Table 2, the paired *t*-test done on coping strategies scores showed that there was a significant difference between pre- and post-MIA scores of problem focused coping strategies of the patients with cancer, t(104) = 3.46, p < .01, effect size = .36. This indicates that the usage of problem focused coping strategies among patients with cancer was low during post-MIA (M = 68.97, SD = 16.68) in comparison to pre-MIA (M = 73.52, SD = 15.72) and the effect of medical intervention was found to be medium.

A significant difference was found between pre- and post-MIA scores of planning of the patients with cancer, t(104) = 5.45, p<0.1, effect size = .54. This indicates that the usage of planning among patients with cancer was lower during post-MIA (M = 2.69, SD = 1.20) in comparison to pre-MIA (M = 3.48, SD = 1.68), the effect of medical intervention was found to be medium.

There was a significant difference between pre- and post medical intervention assessment scores of emotion focused coping strategies of the patients with cancer, t(104) = 2.96, p < .01, effect size = .22. This indicates that the usage of emotion focused coping strategies among patients with cancer was more during post-MIA (M = 17.52, SD = 3.50) in comparison to pre- MIA (M = 16.69, SD = 3.73). The effect of medical intervention was found to be medium.

A significant difference was found between pre- and post medical intervention assessment scores of use of emotional support in patients with cancer, t(104) = 2.52, p < .05, effect size = 0.29. This indicated that the use of emotional support among patients with cancer was more during post-MIA (M = 7.55, SD = 1.29) in comparison to pre-MIA (M = 7.14, SD = 1.5) and the effect of medical intervention was found to be medium.

There was a significant difference between pre- and post medical intervention assessment scores of maladaptive coping strategies in patients with cancer, t(104) = 7.41, p < .01, effect size = 0.59. This indicates that the usage of maladaptive coping strategies among patients with cancer was low during post-MIA (M = 21.97, SD = 6.57) in comparison to pre-MIA (M = 25.72, SD = 6.51). The effect of medical intervention was found to be medium.

A significant difference was found between pre- and post-MIA scores of venting in patients with cancer, t(104) = 4.18, p < .01, effect size = 0.35. This indicates that the venting among patients with cancer was lesser during post-MIA (M = 3.41, SD = 1.81) in comparison to pre-MIA (M = 4.08, SD = 1.97) and effect of medical intervention was found to be medium.

A significant difference was found between pre- and post- MIA scores of selfdistraction in patients with cancer, t(104) = 2.1, p < 0.05, effect size = 0.24. This indicated that the self-distraction among patients with cancer was lesser during post-MIA (M = 3.87, SD = 1.23) in comparison to pre-MIA (M = 4.23, SD = 1.65). The effect of medical intervention was found to be medium.

A significant difference was found between pre- and post-MIA scores of substance use in patients with cancer, t(104) = 1.96, p < 0.05, effect size = 0. 24. This showed that the substance use among patients with cancer was lesser during post-MIA (M = 2.34, SD = 0.88) in comparison pre- MIA (M = 2.55, SD = 1.06). The effect of medical intervention was found to be medium.

A significant difference was found between pre- and post-MIA scores of selfblaming in patients with cancer, t(104) = 3.54, p < .01, effect size = 0.28. This showed that the self-blaming among patients with cancer decreased during post-MIA (M = 3.54, SD = 2.14) in comparison to pre-MIA (M = 4.18, SD = 2.39). The effect of medical intervention was found to be medium.

A significant difference was found between pre- and post-MIA scores of denial in patients with cancer, t(104) = 8.38, p < .01, effect size = 0.86. This indicated that among patients with cancer denial of the problem situation decreased in post-MIA (M = 5.50, SD = 1.97) in comparison to pre-MIA (M = 7.08, SD = 1.69). The effect of medical intervention was found to be high.

There were no significant differences between pre- and post-MIA scores of adaptive coping strategies and its sub domains. This showed that there was not much of change in the usage of adaptive coping strategies pre- and post- medical intervention.

Figure 2 shows the graphical representation of all the above results. It shows mean values of coping strategies of patients with cancer pre- and post-medical intervention assessment. The figure demonstrates that during post-MIA, the mean values during post-MIA on problem focused coping strategies and maladaptive coping strategies were lower, whereas emotion focused coping strategies were higher and adaptive coping strategies were slightly higher in comparison to pre-MIA.

GHS/ QoL of patients with cancer pre- and post-MIA

An attempt was made to see the differences in GHS/ QoL of patients with cancer pre- and post-MIA. Table 3 shows *M*, *SD* and *t* values of the EORTC-QLQ-30 and its scales (GHS/QoL, functional and symptoms scales) in patients with cancer during pre- and post-MIA.

Table 3

M, SD and t values for GHS/ QoL of patients with cancer pre- and post-MIA

Variables	<u>Pre-MI</u>	4	Post-Ml	<u>IA</u>		Cohen's
	М	SD	М	SD	t	d
GHS/ QoL	15.55	16.64	17.70	17.04	.95	0.12
Functional scales						
Physical functioning	40.13	34.30	40.48	32.24	.15	0.01
Role functioning	30.94	34.30	35.83	35.68	1.26	0.13
Emotional functioning	24.81	24.24	37.14	22.91	4.50**	0.53
Cognitive functioning	82.91	30.80	91.28	20.93	2.63*	0.31
Social functioning	16.67	32.37	15.87	32.87	.32	0.02
Symptoms scales						
Fatigue	71.40	30.83	66.14	27.22	1.79	0.18
Nausea and vomiting	8.27	19.91	1.60	7.52	3.23**	0.44
Pain	70.66	35.59	50.64	30.82	5.85**	0.60
Dyspnoea	52.98	45.95	30.84	38.00	5.19**	0.52
Insomnia	60.95	44.95	63.86	32.80	.69	0.07
Appetite loss	32.05	43.36	18.04	28.50	3.47**	0.36
Constipation #	15.25	34.91	42.80	28.52	6.24**	0.86
Diarrhea	3.81	18.09	2.53	14.38	.56	0.07
Financial difficulties	82.54	37.30	82.86	36.14	.13	0.00

Note. N=105, **p*<.05, ** *p*<.01

Narcotic effect



Figure 3 Mean GHS/ QoL scores of patients with cancer pre- and post-MIA

Note: GHS/QoL: Global Health Status/ Quality of life, PF2: Physical Functioning, RF2: Role Functioning, EF: Emotional Functioning, CF: Cognitive Functioning, SF: Social Functioning, FA: Fatigue, NV: Nausea / Vomiting, PA: Pain, DY: Dyspnoea, SL: Sleeping, AP: Appetite, CO: Constipation, DI: Diahrrhea, FI: Financial difficulties

The paired *t*-test done on EORTC-QLQ-C30 scores (Table 3) shows that there was a significant difference between pre- and Post-MIA scores of emotional functioning of the patients with cancer, t(104) = 4.50, p<.01, effect size = 0.53. This indicated that the emotional functioning among patients with cancer was more during post-MIA (M = 37.14, SD = 22.91) in comparison to pre-MIA (M = 24.81, SD = 24.24) and the effect of medical intervention was found to be medium.

A significant difference was found between pre- and post-MIA scores of cognitive functioning of the patients with cancer, t(104) = 2.63, p < .05, effect size = 0.31. This showed that the cognitive functioning among patients with cancer was found to be better during post-MIA (M = 91.28, SD = 20.93) in comparison to pre-MIA (M = 82.91, SD = 30.80). Here the effect of medical intervention was found to be medium.

A significant difference was found between pre- and post-MIA scores of nausea and vomiting of the patients with cancer, t(104) = 3.23, p < .01, effect size = 0.44. This showed that the nausea and vomiting among patients with cancer reduced during post-MIA (M = 1.60, SD = 7.62) in comparison to pre-MIA (M = 8.27, SD = 19.91) and the effect of medical intervention was found to be medium.

There was a significant difference between pre- and post- MIA scores of pain of the patients with cancer, t(104) = 5.85, p < .01, effect size = 0.60. This showed that the pain among patients with cancer was reduced during post-MIA (M = 50.64, SD = 30.82) in comparison to pre-MIA (M = 70.66, SD = 35.59). The effect of medical intervention was found to be high.

A significant difference was found between pre- and post- MIA scores of dyspnoea of the patients with cancer, t(104) = 5.19, p < .01, effect size = 0.52. This indicated that the dyspnoea among patients with cancer was reduced during post-MIA (M = 30.84, SD = 38.00) in comparison to pre-MIA (M = 52.98, SD = 45.95) and the effect of medical treatment was found to be medium.

There was a significant difference between pre- and post- MIA scores of appetite loss of the patients with cancer, t(104) = 3.47, p<.01, effect size = 0.36. This indicated that the appetite loss among patients with cancer was found to be reduced during post-MIA (M = 1, SD = 28.50) in comparison to pre-MIA (M = 32.05, SD = 43.36). The effect of medical intervention was found to be medium. This showed that appetite loss reduced and there was an improvement in the appetite of patients during post-MIA.

A significant difference was seen between pre- and post-MIA scores of constipation of the patients with cancer, t(104) = -6.24, p < .01, effect size = 0.86. This indicated that the constipation among patients with cancer increased during post-MIA (M = 42.80, SD = 28.52) in comparison to pre-MIA (M = 15.25, SD = 34.91) and the effect of medical intervention was found to be high. This increase in constipation may be attributed to the narcotic effect.

There were no significant differences between pre- and post-MIA scores of GHS/QoL on the following sub domains: Functional scales viz. physical functioning, role functioning, and social functioning; Symptoms scale viz. fatigue, insomnia,

followed by single item scales like diarrhea and financial difficulties of the patients with cancer.

Figure 3 shows the mean values of quality of life patients with cancer pre- and post-MIA. The figure indicates mean values on Global health status/Quality of life (GHS/QoL), Physical Functioning, Role Functioning, Emotional functioning (EF) and cognitive functioning (CF), being higher except social functioning (SF) during post-MIA, in comparison to pre-MIA, and Fatigue (FA), Nausea and Vomiting (NV), Pain (PA), Dispnoea (DY), Appetite loss (AP), Diarrhoea (DI) were lower, whereas sleep (SL), constipation (CO) , and financial difficulties (FI) were higher in post-MIA, in comparison to pre-MIA.

Relationship between stress, coping strategies, GHS/QoL, age and ECOGPS of the patients with cancer pre- and post-MIA

Pre-MIA

Intercorrelation between scores on stress, coping strategies (viz. problem focused, emotion focused, adaptive and maladaptive), quality of life, age and ECOG performance status of patients (N = 105) with lung cancer, breast cancer and head-and-neck cancer were calculated separately for both pre- and post-MIA are presented along with M and SD in Table 4 for pre intervention and Table 4.5 for post medical intervention respectively.

Table 4

	Variables	1	2	3	4	5	6	7	8	М	SD
1	Stress	-	25*	10	29**	04	33**	07	.44**	73.52	15.74
2	Problem focused coping		-	.40**	.18	.06	.28**	09	23*	13.00	3.81
3	Emotion focused coping			-	.10	.01	.20*	04	10	16.69	3.73
4	Adaptive coping				-	.16	.25*	.20*	.02	5.45	1.80
5	Maladaptive coping					-	20*	.09	.37**	25.72	6.07
6	GHS/QoL						-	.02	36**	15.55	16.64
7	Age							-	.8	51.97	10.99
8	ECOGPS								-	1.71	1.03

Relationship between stress, coping strategies, GHS/QoL, age and ECOGPS of the patients with cancer pre-MIA

Note. N=105, All analysis are two tailed, *p <.05, **p<.01

Table 4 shows that a significant negative correlation was found between stress and problem focused coping, r = -.25, p < .05. This indicated that with an increase in the stress of the patients there was a decrease in their problem focused coping strategies (M = 73.52, SD = 15.74) and vice versa during pre-MIA.

There was a significant negative correlation between stress and adaptive coping, r = -.29, p < .01. This indicated that with an increase in the stress of the patients with cancer, there was a decrease in their adaptive coping strategies (M = 73.52, SD = 15.74) and vice versa during pre-MIA.

A significant negative correlation was found between stress and GHS /QoL, r = -.33, p < .01. This showed that with increase in the stress of the patients with cancer, there was a decrease in their GHS /QoL (M = 73.52, SD = 15.74) and vice versa during pre-MIA.

A significant positive correlation was found between stress and ECOGPS, r = .44, p < .01. This indicated that with an increase in stress of the patients with cancer, there was also an increase in their ECOGPS (M = 1.71, SD = 1.03) and vice versa during pre-MIA.

A significant positive correlation was found between problem focused coping strategies and emotion focused coping strategies, r = .40, p < .01. This indicated that with an increase in the usage of problem focused coping strategies of the patients with cancer, there was also an increase in their emotion focused coping strategies (M = 13.00, SD = 3.81) and vice versa during pre-MIA.

A significant positive correlation was found between problem focused coping strategies and GHS/QoL, r = 0.28, p < 0.01. This showed that with an increase in the usage of problem focused coping strategies of the patients with cancer, there was also an increase in their GHS/QoL (M=13.00, SD 3.81) and vice versa during pre-MIA.

A significant negative correlation was seen between problem focused coping strategies and ECOGPS, r = -.23, p < .05. This showed that when problem focused coping strategies of the patients with cancer increased, there was a decrease in their ECOGPS (M = 1.71, SD = 1.03) and vice versa during pre-MIA.

There was a significant positive correlation between emotion focused coping strategies and GHS/QoL, r = .20, p < .05. This indicated that when emotion coping strategies of the patients with cancer increased, there was also an increase in their GHS/QoL (M = 16.69, SD = 3.73) and vice versa during pre-MIA.

There was a significant positive correlation between adaptive coping strategies and GHS/QoL, r = .25, p < .05. This showed that with an increase in adaptive coping strategies of the patients with cancer, there was also an increase in their GHS/QoL (M = 5.45, SD = 1.80) and vice versa during pre-MIA.

A significant positive correlation between adaptive coping and age, r = .20, p < .05. This showed that with an increase in the age level, there was more usage of adaptive coping strategies (M = 51.97, SD = 1.80) and vice versa during pre-MIA.

A negative correlation was found between maladaptive coping strategies and GHS/QoL, r = -.20, p < .05. This showed that when the maladaptive coping used by patients with cancer increased, there was a decrease in their GHS /QoL (M = 25.72, SD = 6.07) and vice versa during pre-MIA.

There was a significant positive correlation between maladaptive coping and ECOGPS, r = .37, p < .01. This indicated that with an increase in the ECOGPS of the patients with cancer, there was also an increase in their maladaptive coping strategies (M = 73.52, SD = 15.74) and vice versa during pre-MIA.

There was a significant negative correlation between GHS /QoL and ECOGPS, r = -.36, p < .01. This showed that with an increase in GHS /QoL of the patients with cancer, there was a decrease in their ECOGPS (M = 1.71, SD = 1.03) and vice versa during pre-MIA.

Post-MIA

Intercorrelation between age, performance status through ECOGPS, stress, coping strategies - problem focused, emotion focused, adaptive coping and maladaptive coping, and quality of life of the patients with LC, BC and HNC (N = 105) post-MIA are presented along with *M* and *SD* in Table 5.

Table 5

Relationship between stress, coping strategies, GHS/QoL, age and ECOPS of the patients with ca	cancer during post-MIA
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	Variables	1	2	3	4	5	6	7	8	М	SD
1	Stress	-	18	01	10	.43**	28**	.14	.60**	68.97	16.68
2	Problem focused coping		-	.39**	.30**	.14	05	.14	17	11.93	3.03
3	Emotion focused coping			-	.07	08	.02	.04	13	17.52	3.50
4	Adaptive coping				-	.02	03	06	12	5.68	1.72
5	Maladaptive coping					-	25*	.16	.38**	21.97	6.51
6	GHS/QoL						-	04	30**	17.70	17.04
7	Age							-	.12	51.97	10.99
8	ECOG								-	1.79	1.08

Note. N=105, All analysis are two tailed *p<.05, **p<.01

Table 5 shows a significant positive correlation was found between stress and maladaptive coping strategies, r = .43, p < .01. This showed that of with increase in stress, there was also an increase in maladaptive coping strategies (M = 68.97, SD = 16.68) and vice versa during post-MIA.

A significant negative correlation between stress and GHS/ QoL, r = -.28, p < .01. This showed that when stress of the patients with cancer increased, there was decrease in their GHS/QoL (M = 68.97, SD = 16.68) and vice-versa during post-MIA.

There was a significant positive correlation between stress and ECOGPS, r = .60, p < .01. This showed that when stress of the patients with cancer increased, there was also an increase in their level of ECOGPS (M = 68.97, SD = 16.68) during post-MIA.

There was a significant positive correlation between problem focused coping strategies and emotion focused coping strategies, r = .39, p < .01. This showed that when problem focused coping strategies of the patients with cancer increased, there was also an increase in their emotion focused coping strategies (M = 11.93, SD = 3.03) and vice versa during post-MIA.

A significant positive correlation was seen between problem focused coping strategies and adaptive coping strategies, r = .30, p < .01. This indicated that when problem focused coping strategies of the patients with cancer increased, there was also an increase in their adaptive coping strategies (M = 11.93, SD = 3.03) and vice versa during post-MIA.

There was a significant negative correlation between maladaptive coping strategies and GHS/QoL, r = -.25, p < .05. This showed that with an increase in maladaptive coping strategies of the patients, there was a decrease in their GHS/QoL (M = 11.93, SD = 3.03) and vice versa during post-MIA.

There was a significant positive correlation between maladaptive coping strategies and ECOGPS, r = .38, p < .01. This showed that when maladaptive coping strategies of the patients with cancer is increased, there was also an increase in their ECOGPS (M = 1.79, SD = 1.08) and vice versa during post-MIA.

A significant negative correlation was found between GHS/QoL and ECOGPS, r = -.30, p < .01. This showed that when there was an increase in GHS/QoL of the patients with cancer, there was a decrease in their ECOGPS (M = 17.70, SD = 17.04) during post-MIA

Part B

Development of psychological intervention package

A psychological intervention was developed which was administered along with medical intervention during Part C of the study, in order to manage stress, enhance coping and improve quality of life of the patients with cancer. This was developed incorporating primarily three major dimensions such as psychoeducation, CBT and relaxation by referring to the findings based on data obtained during Part A of the study, secondary sources of data and expert opinion (*Appendix 2*)

Impact of psychological intervention

The effect of psychoeducation was measured by using Cancer Information Scale (CINFOS), impact of relaxation by using Visual Analogue Scale (VAS), impact of Cognitive Behaviour Therapy (CBT) using Triple Column Technique (TCT). Preand post- assessment of the effect of each module was noted and data was tabulated. The data tabulated was statistically analyzed with relevant statistical procedures and the results are graphically represented wherever necessary.

Impact of psychoeducation of patients with cancer pre- and post-MPIA

As a part of psychoeducation an attempt was made by the investigator to dispel the common myths and misconceptions of the patients about the disease progression, treatment and the outcomes. This was done with the help of information like flip charts, brochures and pamphlets prepared by medical experts, video clippings of interview by medical experts giving clarity about the cancer and its consequences. In addition to the above, awareness was also created about effective coping strategies.

Myths and misconceptions of patients with cancer were assessed pre- and post-psychoeducation by means of CINFOS. The difference between myths and misconceptions in the patients before and after administration of combined intervention was measured and t value was calculated which is shown in Table 6.

Table 6

M, SD and t values for Cancer Information Scale (CINFOS) of patients with cancer pre- and post-MPIA

Variables	Pre-M	<u>PIA</u>	Post-l	<u>MPIA</u>	t	Cohen's
	М	SD	М	SD		a
CINFOS	7.93	2.27	1.47	.57	14.73**	3.90

Note: N=30 ** p<.01



Figure 4 Mean CINFOS scores of patients with cancer pre- and post-MPIA

Table 6, shows *M*, *SD* and *t* values of the CINFOS of the patients with cancer. The paired *t*-test done on CINFOS scores showed that there was a significant difference between pre- and post-MPIA scores of CINFOS (myths and misconceptions) of the patients with cancer, t(29) = 14.73, p<.01, effect size = 3.90. This indicated that the understanding and knowledge regarding the factual information about their disease among patients with cancer was better and myths and misconceptions reduced in post- MPIA (M = 1.47, SD = .57) in comparison to pre-MPIA (M = 7.93, SD = 2.27). The effect of psychoeducation as a part of intervention was found to be high (see Figure 4).

According to the scoring procedure for CINFOS, higher score indicated higher myths and misconceptions, lower score indicated lower myths and misconceptions. The above findings revealed that the effect of the information disseminated through reliable means as a part of psychoeducation was positive.

Impact of the Application of relaxation technique

The patients were trained in relaxation using visualization through guided imagery. Relaxation was given over a period of 6 weeks of combined intervention. A visual analogue scale was used to measure the extent of relaxation pre- and postadministration of relaxation over six weeks of intervention.

Wilcoxon test was used to measure the effect of relaxation, as perceived and indicated by the patients. This non-parametric test was used, as t test cannot be used for original data. The results in Table 7, show a significant difference, z = 4.81, at p < .01, indicating that during post- relaxation scores had improved (M_d = 40.00) in patients with cancer in comparison with their pre-relaxation scores ($M_d = 20.00$).

Table 7

Wilcoxon signed rank test for impact of relaxation technique used with patients with cancer pre- and post-MPIA

Measurement	Pre- Relaxation (Median)	Post- Relaxation (Median)	Ζ	
Guided imagery	20.00	40.00	4.81**	
Note: $N-30 ** n < 01$				

Note: N=30 ** p<.01

Impact of Cognitive behaviour therapy of patients with cancer

Out of 30 patients in the sample 19 patients have reported negative automatic thoughts before using CBT as a part of medical and psychological intervention. The following section depicting patient wise data of the negative automatic thoughts before and after intervention shows a decrease in the intensity of negative automatic thoughts as reported by the patients after 6 sessions of CBT.

Table 8

The number of patients with LC, BC & HNC showing negative automatic thoughts

Categories of Cancer	Total no of patients	No of patients showing NATs
LC	10	7
BC	10	8
HNC	10	4

Table 8 shows the total number of patients who reported negative automatic thoughts (NATs). Among patients with LC, BC and HNC, 7 of patients with LC had NATs, 8 of the patients with BC reported NATs and 4 of HNC patients showed NATs in the sample.

Patient wise analysis of pre- and post-MPI variation of negative automatic thoughts



Figure 5 Ratings of the patient (LC_001) on NATs pre- and post-MPIA. Note: personalization and blaming (P&B), overgeneralization (OG), jumping to conclusion (JC),

Figure 5 shows the ratings of a patient with lung cancer (LC_001) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient No. LC_001 during pre MPI on the negative automatic thoughts categorized under cognitve distortions viz. Personalization and blaming (100), overgeneralization (80), jumping to conclusion (80) and (50). After 6 sessions of CBT when rating was given by the patients on the same NATs, the ratings decreased to 40, 20, 50 and 20 respectively. This shows that the 6 sessions of CBT was helpful in decreasing the intensity of thoughts enabiling the patients to give different rating after the intervention.



Figure 6 Ratings of the patient (LC_003) on NATs pre- and post-MPIA. Note: overgeneralization (OG), jumping to conclusion (JC), personalization and blaming

Figure 6 shows the ratings of a patient with lung cancer (LC_003) on the negative automatic thoughts before and after 6 sessions of CBT. The ratings were given by the patient before the administration of CBT and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cogntive distortions viz. OG (100), OG (80), JC (80) P&B (100) and JC (100). After 6 sessions of CBT when rating was given by the patients on the same, the ratings decreased to 30, 50, 20, 20, and 20 respectively showing the lowering of the intensity in the thoughts.



Figure 7 Ratings of the patient (LC_004) on NATs pre- and post-MPIA. Note: jumping to conclusion (JC), overgeneralization (OG),

Figure 7 shows the ratings of a patient with lung cacner (LC_004) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. JC (75) OG (100) JC (100) and OG (100). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 50, 50, 20 and 20 respectively indicating the lowered effect of the NATs.



Figure 8 Ratings of the patient (LC_006) on NATs pre- and post-MPIA. Note: jumping to conclusion (JC), labeling (L), Personalization and blaming, overgeneralization (OG)

Figure 8 shows the ratings of a patient with lung cancer (LC_006) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cogntive distortions viz. JC (85), L (100), P&B (90) and OG (50). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 0, 0, 50, 50 and 10 respectively which indicate an extreme lowering of NATs intensity in case of some of the thoughts mentioned by the patient.



Figure 9 Ratings of the patient (LC_007) on NATs pre- and post-MPIA. Note: jumping to conclusion (JC), overgeneralization (OG)

Figure 9 shows the ratings of a patient with lung cancer (No. LC_009) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. OG (100) and JC (100). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 50 and 20 respectively.



Figure 10 Ratings of the patient (LC_008) on NATs pre- and post-MPIA.

Note: overgeneralization (OG), jumping to conclusion (JC),

Figure 10 shows the ratings of a patient with lung cancer (No. LC_008) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cogntive distortions viz. OG (80), JC (70) and JC (100). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 20, 20 and 0 respectively. This lowering is indicated after 6 weekly sessions of CBT.



Figure 11 Ratings of the patient (LC_009) on NATs pre- and post-MPIA. Note: labelling (L), overgeneralization, personalization and blaming (P&B)

Figure 11 shows the ratings of a patient with lung cancer (No. LC_009) on the negative automatic before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cogntive distortions viz. L(100), OG (100), P&B (100), and) P&B (100). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 50, 70, 50, and 50 respectively. This lowring is indicated after 6 weeks sessions of CBT.



Figure 12 *Ratings of the patient (BC_001) on NATs pre- and post-MPIA. Note:* overgeneralization (OG), jumping to conclusion (JC),

Figure 12 shows the ratings of a patient with breast cancer (No. BC_001) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. OG (100), OG (100), JC (80) and JC (100). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 20, 20, 50 and 20 respectively. The lowered rating indicates the effect of CBT.



Figure 13 Ratings of the patient (BC_002) on NATs pre- and post-MPIA. Note: overgeneralization (OG), emotional reasoning (ER), jumping to conclusion (JC),

Figure 13 shows the ratings of a patient with breast cancer (No. BC_002) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. OG (100), ER (100), JC (100) and JC (100). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 20, 0, 20 and 0 respectively. The lowring of ratings points to the impact of CBT.



Figure 14 Ratings of the patient (BC_004) on NATs pre- and post-MPIA. Note: personalization and blaming (P&B), overgeneralization (OG), jumping to conclusion (JC),

Figure 14 shows the ratings of a patient with breast cancer (No. BC_004) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. P&B (100), OG (100), JC (80) and JC (70). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 50, 50 and 50 respectively. Here also, there was a lowering of rating reltively.



Figure 15 Ratings of the patient (BC_005) on NATs pre- and post-MPIA. Note: personalization & blaming (P&B), *o*vergeneralization (OG), jumping to conclusion (JC),

Figure 15 shows the ratings of a patient with breast cancer (No. BC_005) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. P&B (70), OG (100) and JC (70). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 50, 20 and 50 respectively. The difference in rating may attributed to the impact of CBT.



Figure 16 Ratings of the patient (BC_006) on NATs pre- and post-MPIA. Note: jumping to conclusion (JC), overgeneralization (OG),), jumping to conclusion (JC),

Figure 16 shows the ratings of a patient with breast cancer (No. BC_006) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. JC (70), OG (70) and JC (70). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 30, 20 and 40 respectively. Here also, we see a change in ratings of NATs, which may be attributed to CBT.



Figure 17 Ratings of the patient (BC_008) on NATs pre- and post-MPIA. Note: overgeneralization (OG), personalization & blaming

Figure 17 shows the ratings of a patient with breast cancer (No. BC_008) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. OG (100), OG (100), OG (100) and P&B (80). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 40, 40, 40 and 20 respectively. This decrease may be attributed to the effect of sCBT sessions.



Figure 18 Ratings of the patient (BC_011) on NATs pre- and post-MPIA. Note: jumping to conclusion (JC), overgeneralization (OG), personalization & blaming

Figure 18 shows the ratings of a patient on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cogntive distortions viz. JC (90), OG (100), JC (100). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 50, 50, 20 and 20 respectively, and this may be attributed to the impact of the six sessions of CBT.



Figure 19 Ratings of the patient (BC_011) on NATs pre- and post-MPIA. Note: personalization & blaming (P&B), jumping to conclusion (JC), overgeneralization (OG),

Figure 19 shows the ratings of a patient with breast cancer (No. BC_011) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cogntive distortions viz. P&B (100), P&B (100), JC (50) and OG (100). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 60, 50, 20 and 20 respectively.



Figure 20 Ratings of the patient (HNC_001) on NATs pre- and post-MPIA. Note: jumping to conclusion (JC), personalization & blaming (P&B)

Figure 20 shows the ratings of a patient with head-neck-cancer (No. HNC_001) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. JC (70), P&B (100), and P&B (100). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 50, 10 and 50 respectively. The extreme variation in ratings in case one of NAT and variation in other NATs indicate the effect of CBT.


Figure 21 Ratings of the patient (HNC_00) on NATs pre- and post-MPIA. Note: overgeneralization (OG), jumping to conclusion (JC), labelling (L)

Figure 21 shows the ratings of a patient with head-neck-cancer (No. HNC_001) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. OG (100), JC (70) and L (70). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 0, 20, and 20 respectively. The lowering of rating on NATs indicates the effect of CBT.



Figure 22 Ratings of the patient (HNC_003) on NATs pre- and post-MPIA. Note: Overgeneralization (OG),

Figure 22 shows the ratings of a patient with head-neck-cancer (No. HNC_003) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts ategorized under cogntive distortions viz. OG (100) and OG (70). After 6 sessions of CBT when rating was given by the patients on the same, the ratings decreased to 50 and 20 respectively. Here also, the lowered ratings indicate the effect of CBT.



Figure 23 Ratings of the patient (BC_010) on NATs pre- and post-MPIA. Note: Overgeneralization Personalization & Blaming (P&B)

Figure 23 shows the ratings of a patient with head-neck-cancer (No. HNC_010) on the negative automatic thoughts before and after 6 sessions of CBT. The figure indicates a higher rating given by the patient during pre-MPI on the negative automatic thoughts categorized under cognitve distortions viz. P&B (100) and P&B (100). After 6 sessions of CBT when rating was given by the patient on the same, the ratings decreased to 50 and 20 respectively.

This effect mentioned in the above paragraphs with the help of figures is seen after the administration of CBT sessions for six weeks as part of MPI. This shows that the CBT over 6 sessions has helped the patients with cancer in dealing with their negative automatic thoughts more effectively.

Part C

Impact of medical and psychological combined intervention package on stress, coping strategies and quality of life in patients with cancer

During this phase the data were collected from 30 patients, at the rate of ten patients each from LC, BC and HNC categories. The sample consisted of 19 Males, and 11 Females were selected from the Omega Cancer Hospital and M.N.J. Institute of Oncology and Regional Cancer Centre located in Hyderabad. They were administered Demographic Data Form (DDF), Eastern Cooperative Oncology Group Performance Status (ECOGPS) for measuring the performance status of the patients. As a part of pre- and post-combined intervention assessment, QSC-R23, Brief Cope Questionnaire, and EORTC QLQ-C30 were used.

The impact of medical and psychological intervention on the following was found.

(1) Differences in levels of stress with reference to overall stress and sub domains of psychosomatic complaints, fears, information deficits, everyday life restrictions, and social strains.

(2) Differences in coping strategies viz. problem focused, emotion focused, adaptive and maladaptive coping strategies.

(3) Differences in GHS/ QoL on overall scores of QoL as well as on the sub domains of functional and symptom scales.

Stress of patients with cancer pre-and post-MPIA

Table 9 shows M, SD and t values of the level of overall stress and its components (psychosomatic complaints, fear, information deficit, Everyday life restrictions, and social strains) in the patients with three types of cancers.

Table 9

М,	SD	and t va	ilues j	for	stress	scores	of	patients	with	cancer i	n pr	e-and	post-l	MP]	[A
			./				./	1							

Variables	<u>Pre-MP</u>	<u>Pre-MPIA</u>		<u>IPIA</u>	t	Cohen's
	М	SD	М	SD		a
Stress	69.43	14.91	16.80	6.69	22.85**	4.55
Psychosomatic complaints	20.40	5.43	6.10	3.81	15.84**	3.04
Fears	12.90	1.88	4.17	1.88	17.29**	4.64
Information Deficits	8.13	5.26	0.07	0.25	8.50**	2.16
Everyday life restrictions	14.77	4.30	4.17	2.15	15.60**	3.18
Social Strains	11.60	4.70	2.30	1.66	11.29**	2.63

Note. *N*=0, **p* <.05, ***p*<.01



Figure 24 Mean stress scores of patients with cancer pre-and post-MPIA Note: Stress: Overal Stress, PSC: Psychosomatic Complaints, FR: fears, ID: Information deficits, ELR: Everyday life restrictions, SS: Social strains

The paired *t*- test done on overall stress scores showed in Table 9 show that there was a significant difference between pre- and post-MPIA scores of overall stress of the patients with cancer, t(29) = 22.85, p < .01, effect size = 4.55. This indicated that the overall stress among patients with cancer decreased during post-MPIA (M = 16.80, SD = 6.69) in comparison to pre-MPIA (M = 69.43, SD = 14.91). The effect of medical-psychological intervention was found to be high. This showed that patients with cancer showed lowered level of stress during the post- MPIA.

A significant difference was noticed between pre- and post- MPIA scores of psychosomatic complaints of the patients with cancer, t(29) = 15.84, p < .01, effect size = 3.04. This indicated that that psychosomatic complaints among patients with cancer were lesser during post-MPIA (M = 6.10, SD = 3.81) in comparison to pre-MPIA (M = 20.40, SD = 5.43). Here the effect of medical-psychological intervention was found to be high.

A significant difference was noticed between pre- and post- MPIA scores of fear of the patients with cancer, t(29) = 17.29, p < .01, effect size = 4.64. This indicated that that fears among patients with cancer were lesser during post-MPIA (M = 4.17, SD = 1.88) in comparison to pre-MPIA (M = 12.90, SD = 1.88). Here the effect of medical-psychological intervention was found to be high.

A significant difference was noticed between pre- and post- MPIA scores of information deficits of the patients with cancer, t(29) = 8.50, p < .01, effect size = 2.16. The information deficit among patients with cancer was lower (indicating that they have acquired more information) during post- MPIA (M = 0.07, SD = 0.25) in comparison to pre-MPIA (M = 8.13, SD = 5.26). Here the effect of medical-psychological intervention was found to be high.

A significant difference was noticed between pre- and post- MPIA scores of Everyday life restrictions of the patients with cancer, t(29) = 15.60, p < .01, effect size = 3.04. This indicated that that Everyday life restrictions among patients with cancer decreased during post-MPIA (M = 4.17, SD = 2.15) in comparison to pre-MPIA (M = 14.77, SD = 4.30). The effect of medical-psychological intervention was found to be high. This finding is in contrast with the Part A findings where only medical intervention was used (Table 1).

There was a significant difference between pre- and post- MPIA scores of social strains of the patients with cancer, t(29) = 11.29, p < .01, effect size = 2.63. The social strains among patients with cancer were less during post-MPIA (M = 2.30, SD = 1.66) in comparison to pre-MPIA (M = 11.60, SD = 4.70). Here the effect of medical and psychological intervention was found to be high.

Figure 24 shows the mean values of stress in patients with cancer pre- and post- MPIA. The figure indicates mean values on overall stress and its components. The figure clearly demonstrates the lowering of psychosomatic complaints, fear, information deficit, everyday life restrictions and social strains lower during post-MPIA, in comparison to pre-MPIA. When compared with Figure 1, in Part A, where only medical intervention was used, Figure 24 clearly presents the difference which was markedly seen in post-MPIA as compared to post-MIA. Though Figure 1 shows lowered scores on stress, psychosomatic complaints, fear, and information deficits during post-MIA, Figure 24 shows a much larger reduction. In addition while everyday life restrictions were higher in post-MIA, it was lower in post-MPIA. While social strains showed no difference in pre- and post-MIA, social strains were lower in post-MPIA.

Coping strategies adopted by patients with cancer pre- and post-MPIA

Table 10 shows M, SD and t values of the coping strategies and its domains, (problem focused coping: active coping, planning, and use of instrumental support;

emotion focused coping: use of emotional support, positive reframing, and religion; adaptive coping: acceptance, and humor; maladaptive coping: venting, behavioural disengagement, self-distraction, substance use, self-blaming, denial) in the patients with three types of cancer pre-and post-MPIA.

The paired *t*-test done on coping strategies scores showed in Table 10 shows that there was a significant difference between pre- and post-MPIA scores of problem focused coping strategies of the patients with cancer, $t(29) = 48.45 \ p <.01$, effect size = 12.93. This indicated that the usage of problem focused coping strategies among patients with cancer was more during the post- MPIA (M = 68.80, SD = 4.10) in comparison to pre-MPIA (M = 14.90, SD = 4.23). The effect of medical-psychological intervention was found to be high.

A significant difference was found between pre- and post-MPIA scores of active coping of the patients with cancer, t(29) = 5.85, p < 0.1, effect size = 1.58. This indicated that patients with cancer used more active coping after the intervention as indicated by post- MPIA (M = 7.47, SD = 1.13) in comparison to pre-MPIA (M = 4.90, SD = 2.00). The effect of medical-psychological intervention was found to be medium.

A significant difference was found between pre- and post-MPIA scores of the planning of the patients with cancer, t(29) = 5.28, p < 0.1, effect size = 1.58. This indicated that the usage of planning among patients with cancer was better during post- medical-psychological intervention assessment (M = 6.07, SD = 1.50) in comparison to pre-MPIA (M = 4.03, SD = 2.04). The effect of medical-psychological intervention was found to be high.

135

Table 10

M, *SD* and *t* values for coping strategies scores of patients with cancer pre- and post-MPIA

Coping strategies	Pre-	MPIA	Post-	<u>MPIA</u>		Cohen's
	М	SD	М	SD	t	d
Problem focused coping	14.90	4.23	68.80	4.10	48.45**	12.93
Active coping	4.90	2.00	7.47	1.13	5.85**	1.58
Planning	4.03	2.04	6.07	1.50	5.28**	1.38
Use of instrumental	5.93	1.66	7.03	1.00	3.75**	0.63
Support						
Emotion focused coping	19.40	2.84	23.03	7.03	6.22**	1.65
Use of emotional	7.70	.91	8.00	.00	1.79	0.42
support						
Positive reframing	5.13	1.35	7.13	.94	7.37**	1.72
Religion	6.57	1.92	7.90	.55	3.70**	0.94
Adaptive coping	7.17	2.20	9.60	.93	5.68**	1.44
Acceptance	5.17	2.20	7.60	.93	5.68**	1.44
Humor	2	0	2	0	0	0
Maladaptive coping	24.53	4.83	17.93	4	6.39	1.48
Venting	3.70	1.90	2.93	1.34	2.27*	0.84
Behavioural	3.37	1.52	2.50	1.33	2.59*	0.60
Disengagement						
Self-distraction	3.98	1.27	3.27	1.17	2.36*	0.58
Substance use	2.88	1.28	4.33	.92	7.06**	1.30
Self-blaming	4.23	2.37	2.33	.80	4.00**	1.06
Denial	6.40	2.11	2.57	1.38	7.76**	2.14

Note. *N*=30, **p* <.05, ** *p*<.01



Figure 25 Mean coping strategies scores of patients with cancer pre- and post-MPIA

Note: PFC: Problem focused coping, EFC: Emotion focused coping, AC: Adaptive coping, MAC: Maladaptie coping

A significant difference was found between post-MPIA scores of use of instrumental support of the patients with cancer, t(29) = 3.75, p<.01, effect size = 63. This indicated that the use of instrumental support among patients with cancer was more during the post-MPIA (M = 7.03, SD = 1.00) in comparison to pre-MPIA (M = 5.93, SD = 1.66). The effect of medical-psychological intervention was found to be medium.

These results showed that patients with cancer in the sample have used more problem focused coping strategies as a result of medical and psychological intervention involving active coping, planning and use of instrumental support.

There was a significant difference between post-MPIA scores of emotion focused coping strategies of the patients with cancer, t(29) = 6.22, p < .01, effect size =1.65. This indicated that the usage of emotion focused coping strategies among patients with cancer was more during the post- MPIA (M = 23.03, SD = 7.03) in comparison to pre-MPIA (M = 19.40, SD = 2.84) and the effect of medical-psychological intervention was found to be high.

A significant difference was found between pre- and post-MPIA scores of positive reframing in patients with cancer, t(29) = 7.37, p < .01, effect size = 1.72. This indicated that the use of positive reframing among patients with cancer was more during the post- MPIA (M = 7.13, SD = .94) in comparison to pre-MPIA (M = 5.13, SD = 1.35). The effect of medical-psychological intervention was found to be high.

A significant difference was found between pre- and post-MPIA scores of religious coping in patients with cancer, t(29) = 3.70, p < .01, effect size = 0.94. This indicated that the use of religious coping among patients with cancer was more during the post- MPIA (M = 7.90, SD = .55) in comparison to pre-MPIA (M = 6.57, SD = 1.92) and the effect of medical and psychological intervention was found to be high.

The results showed that patients with cancer in the sample have used more emotion focused coping strategies post- MPIA.

There was a significant difference found between pre- and post-MPIA scores of adaptive coping strategies in patients with cancer, t(29) = 5.68, p < .01, effect size = 1.44. This indicated that the usage of adaptive coping strategies among patients with cancer was more during the post- MPIA (M = 9.60, SD = .93) in comparison to pre-MPIA (M = 7.17, SD = 2.20). The effect of medical-psychological intervention was found to be high. A significant difference was found between pre- and post-MPIA scores of acceptance coping strategies in patients with cancer, t(29) = 5.68, p < .01, effect size = 1.44. This indicated that the use of acceptance coping strategies among patients with cancer was more during post- MPIA (M = 7.60, SD = .93) in comparison to pre-MPIA (M = 5.17, SD = 2.20). The effect of medical-psychological intervention was found to be high.

These results showed that patients with cancer in the sample have used more adaptive coping strategies during post- MPIA.

There was a significant difference between pre- and post-MPIA scores of maladaptive coping strategies in patients with cancer, t(29) = 6.39, p < .01, effect size = 1.48. This indicated that the maladaptive coping strategies among patients with cancer were low during post-MPIA (M = 17.93, SD = 6.39) in comparison to pre-MPIA (M = 24.53, SD = 4.83). The effect of medical-psychological intervention was found to be high.

A significant difference was found between post-MPIA scores of venting in patients with cancer, t(29) = 2.27, p < .05, effect size = 0.84. This indicated that the usage of venting among patients with cancer was low during post-MPIA (M = 2.93, SD = 1.34) in comparison to pre-MPIA (M = 3.70, SD=1.90) and the effect of medical-psychological intervention was found to be high.

A significant difference was found between pre- and post- MPIA scores of behavioral disengagement in patients with cancer t(29) = 2.59, p < .05, effect size = 0.60. This indicated that the usage of behavioural disengagement among patients with cancer was better during post-MPIA (M = 2.50, SD = 1.33) in comparison to pre-MPIA (M = 3.37, SD = 1.52). The effect of medical-psychological intervention was found to be medium.

A significant difference was found between post-MPIA scores of selfdistraction in patients with cancer, t(29) = 2.36, p < .05, effect size = 0.58. This indicated that the usage of self-distraction among patients with cancer was found to be less during post- MPIA (M = 3.27, SD = 1.17) in comparison to pre-MPIA (M = 3.98, SD = 1.27). The effect of medical-psychological intervention was found to be medium.

A significant difference was found between pre- and post-MPIA scores of substance use in patients with cancer, t(29) = 7.06, p < .01, effect size = 1.30. This showed that the substance use among patients with cancer was more in post-MPIA (M = 4.33, SD = .92) in comparison to pre-MPIA (M = 3.98, SD = 1.27). The effect of medical-psychological intervention was found to be high. The results on substance use as maladaptive coping strategies of Part C are in contrast with Part A. In Part A, there was significant decrease in substance use. The difference indicating increase in Part C may be attributed to the small sample size in Part C, where one patient out of 10 HNC patients resorting to substance use seems to have affected the results.

A significant difference was seen between pre- and post-MPIA scores of selfblaming in patients with cancer, t(29) = 4.00, p < .01, effect size = 1.06. This showed that the self-blaming among patients with cancer was low during post- MPIA (M = 2.33, SD = .80) in comparison to pre-MPIA (M = 4.23, SD = 2.37). The effect of medical-psychological intervention was found to be high. A significant difference was found between pre- and post-MPIA scores of denial in patients with cancer, t(29) = 2.57, p < .01, effect size = 2.14. This indicated that the denial among patients with cancer was less during post- medical-psychological intervention assessment (M = 2.57, SD = 1.38) in comparison to pre-MPIA (M = 6.40, SD = 2.11). The effect of medical-psychological intervention was found to be high.

These results showed that patients with cancer in the sample have used less maladaptive coping strategies owing to the combined medical and psychological intervention.

Figure 25 shows the mean values of coping strategies of patients with cancer during pre- and post-MPIA. The figure indicates mean values on problem focused coping strategies, emotion coping strategies, adaptive coping strategies and maladaptive coping strategies. The figure indicates a large increase in problem focused coping strategies in post-MPIA, increase in emotion focused coping strategies, adaptive coping strategy and adaptive coping strategies in post- MPIA, whereas maladaptive coping strategies were seen to be lower in post-MPIA, in comparison to pre-MPIA. Thus an increase was seen in problem focused, emotional focused and adaptive coping strategies and decrease in maladaptive coping strategies in post-MPIA which point towards the effectiveness of combined package of medical and psychological intervention.

141

GHS/ QOL of patients with cancer pre- and post-MPIA

Table 11 shows M, SD and t values of the EORTC-QLQ-30 and its scales (GHS/QoL, functional and symptoms scales) in patients with three types of cancers during pre- and post-MPIA

Table 11

	М,	SD	and t	values	for	GHS/	QOL	l of	² patients	with	cancer	pre-	and	post-MPI
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Variables	Pre-MPIA		Post-MP	PIA	t	Cohen's	
v ar rables	$\frac{M}{M}$	SD	$\frac{I O S I M I}{M}$	<u>SD</u>	ı	d	
GHS/ QoL	19.58	11.50	52.27	18.00	15.87**	2.16	
Functional scales							
Physical functioning	32.40	31.58	70.63	23.91	9.63**	1.36	
Role functioning	11.60	25.11	25.60	28.26	4.85**	0.52	
Emotional	31.17	26.47	87.27	10.91	13.97**	2.77	
Functioning							
Cognitive functioning	86.33	30.20	96.68	9.14	1.87	0.46	
Social functioning	21.13	34.76	24.47	36.57	1.45	0.09	
Symptoms scales							
Fatigue	84	18.92	36.53	14.24	16.58**	2.83	
Nausea and vomiting	5.60	13.41	1.70	5.18	1.49	0.38	
Pain	74.50	28.58	29.47	20.77	8.79**	1.80	
Dyspnoea	42.17	46.27	13.30	22.51	4.17**	0.79	
Insomnia	83.33	31.29	18.73	18.84	11.24**	2.50	
Appetite loss	83.33	31.29	9.93	17.76	11.01**	2.88	
Constipation#	5.53	15.35	30.90	17.40	5.10**	1.54	
Diarrhea	10.00	27.90	0	0	1.96*	0.50	
Financial difficulties	81.07	33.62	77.80	36.46	.98	0.09	

Note. N=30, **p*<.05, ** *p*<.01

Narcotic effect



Figure 26 Mean GHS/ QOL scores of patients with cancer pre- and post-MPIA

Note: GHS/QoL: Global Health Status/ Quality of life, PF2: Physical Functioning, RF2: Role Functioning, EF: Emotional Functioning, CF: Cognitive Functioning, SF: Social Functioning, FA: Fatigue, NV: Nausea and Vomiting, PA: Pain, DY: Dyspnoea, SL: Sleeping, AP: Appetite, CO: Constipation, DI: Diahrrhea, FI: Financial

Table 11 shows the paired *t*-test done on EORTC-QLQ30. The scores show that there was a significant difference between pre- and post-MPIA scores of GHS /QoL of the patients with cancer, t(29) = 15.87, p<.01, effect size = 2.16. This indicated that the GHS/QoL among patients with cancer was better during post-MPIA (M = 52.27, SD = 18.00) in comparison to pre-MPIA (M = 19.58, SD = 11.50). The effect of medical and psychological intervention was found to be high. These results showed that the patients with cancer in the sample have improved in their overall physical condition and Quality of life improved.

A significant difference was found between pre- and post-MPIA scores of physical functioning of the patients with cancer, t(29) = 9.63, p < .01, effect size = 1.36. This showed that the physical functioning among patients with cancer was better during post-MPIA (M = 70.63, SD = 23.91) in comparison to pre-MPIA (M = 32.40, SD = 31.58). Here the effect of medical and psychological intervention was found to be high.

A significant difference was found between pre- and post-MPIA scores of role functioning of the patients with cancer, t(29) = 4.85, p < .01, effect size = 0.52. This showed that the role functioning among patients with cancer was better during post-MPIA (M = 25.60, SD = 28.26) in comparison to pre-MPIA (M = 11.60, SD = 25.11). Here the effect of medical and psychological intervention was found to be high.

A significant difference was found between pre- and post-MPIA scores of emotional functioning of the patients with cancer, t(29) = 13.97, p<.01, effect size = 2.77. This showed that the emotional functioning among patients with cancer was better during post- MPIA (M = 87.27, SD = 10.91) in comparison to preMPIA (M = 31.17, SD = 87.27). Here the effect of medical and psychological intervention was found to be high. Similar findings were reported in Part A too on emotional functioning.

There was a significant difference between pre- and post-MPIA scores of fatigue of the patients with cancer, t(29) = 16.58, p < .01, effect size = 2.83. This showed that the fatigue among patients with cancer reduced during post-MPIA (M = 36.53, SD = 14.24) in comparison to pre-MPIA (M = 84, SD = 18.92). The effect of medical and psychological intervention was found to be high.

A significant difference was found between pre- and post-MPIA scores of pain of the patients with cancer, t(29) = 8.79, p < .01, effect size = 1.80. This showed that the pain among patients with cancer was reduced during post- MPIA (M = 29.47, SD = 20.77) in comparison to pre-MPIA (M = 74.50, SD = 28.58). The effect of medical and psychological intervention was found to be high.

A significant difference was found between pre- and post-MPIA scores of dysponea of the patients with cancer, t(29) = 4.17, p < .01, effect size = 0.79. This showed that the dysponea among patients with cancer was lower during post-MPIA (M = 13.30, SD = 22.51) in comparison to pre-MPIA (M = 42.17, SD = 46.27). The effect of medical and psychological intervention was found to be medium.

A significant difference was found between pre- and post-MPIA scores of insomnia of the patients with cancer, t(29) = 11.24, p < .01, effect size = 2.50. This showed that the insomnia among patients with cancer was reduced during post-MPIA (M = 18.73, SD = 18.84) in comparison to pre-MPIA (M = 74.50, SD = 28.58). The effect of medical and psychological intervention was found to be high.

A significant difference was found between pre- and post- MPIA scores of appetite loss of the patients with cancer, t(29) = 11.01, p < .01, effect size = 2.88. This showed that the appetite loss among patients with cancer was reduced during post-MPIA (M = 9.93, SD = 17.76) in comparison to pre-MPIA (M = 83.33, SD = 31.29). The effect of medical and psychological intervention was found to be high. The results showed that appetite improved during MPIA.

A significant difference was found between pre- and post-MPIA scores of constipation of the patients with cancer, t(29) = 5.10, p < .01, effect size = 1.54. This showed that the constipation among patients with cancer increased during post-MPIA (M = 30.90, SD = 17.40) in comparison to pre-MPIA (M = 5.53, SD = 15.35). The effect of medical and psychological intervention was found to be high. This increase in constipation is attributed to narcotic effect.

A significant difference was found between pre- and post-MPIA scores of diarrhea of the patients with cancer, t(29) = 1.96, p < .05, effect size = 0.50. This showed that the diarrhea among patients with cancer reduced during post-MPIA (M = 0, SD = 0) in comparison to pre-MPIA (M = 10, SD = 27.90). The effect of medical and psychological intervention was found to be high.

There was no significant difference between pre- and post-MPIA scores of symptoms scales viz. nausea/vomiting, and financial difficulties. However, it was observed from the mean values that functional scales viz. physical functioning, emotional functioning, and cognitive functions showed improvement from average to above average and high. Role functioning and social functioning were found to be low. Whereas values on symptom scales decreased from severe to mild, during post-medical and psychological intervention assessment.

Figure 26 shows the mean values of quality of life in patients with cancer preand post-MPIA. The figure indicates that mean values on GHS/QoL, PF2, RF2, CF and SF were higher in post-MPIA, in comparison to Pre-MPIA. Values on symptoms scales FA, NV, DY, AP, DI were lower in post-MPIA, whereas SL, CO and FI were higher in post-MPIA, in comparison to pre-MPIA. On the other hand in Part A, Figure3 demonstrates that mean values of GHS/QoL, PF2, RF2, EF and CF were higher in post-MIA as compared to pre-MIA. Values on FA, NV, PA, DY, AP and DI were lower in post –MIA, whereas SL, CO, and FI were higher in post-MIA.

There was no significant difference between pre- and post-MPIA scores of functional scales of cognitive functioning, social functioning and symptoms scales of nausea and vomiting, and financial difficulties.

Relationship between stress, coping strategies, GHS/QoL, age and ECOGPS of the patients with cancer pre- and post-MPIA

Pre-MPIA

Intercorrelation between age, performance status through ECOGPS, stress, coping strategies - problem focused, emotion focused, adaptive coping and maladaptive coping, and quality of life of the patients with cancers (N = 30) pre- medical and psychological intervention are presented along with M and SD in Table 12.

There was a significant negative correlation in pre-MPIA between GHS/QoL and ECOGPS, r = -.40, p < .05. This showed that when GHS /QoL of the patients with cancer decrease, there was an increase in their ECOGPS and viceversa. There was no significant relation between other variables.

Table 12

	Variables	1	2	3	4	5	6	7	8	М	SD
1	Stress	-	28	16	08	.24	06	19	.26	69.43	14.91
2	Problem focused coping		-	.11	02	.06	.16	.13	15	14.90	4.23
3	Emotion focused coping			-	.36	20	12	.05	18	19.40	2.83
4	Adaptive coping				-	.02	09	.02	.27	7.17	2.19
5	Maladaptive coping					-	22	09	.23	24.53	4.83
6	GHS/QoL						-	.08	40*	19.57	11.50
7	Age							-	.21	51.60	10.82
8	ECOGPS								-	1.63	.89

Relationship between stress, coping strategies, GHS/QoL, age and ECOGPS of the patients with cancer pre-MPIA

Note. N=30, All analysis are two tailed *p < .05, **p < .01

Table 13

	Variables	1	2	3	4	5	6	7	8	М	SD
1	Stress	-	23	21	21	.09	29	.21	.40*	16.80	6.68
2	Problem focused coping		-	.27	04	.68**	47**	.09	.17	68.80	4.10
3	Emotion focused coping			-	.21	14	.02	19	24	23.03	1.27
4	Adaptive coping				-	53**	.23	.16	10	9.60	.93
5	Maladaptive coping					-	52**	.12	.21	17.93	3.68
6	GHS/QoL						-	27	27	52.27	18.00
7	Age							-	.56**	51.60	10.82
8	ECOGPS								-	1.23	1.16

Relationship between stress, coping strategies, GHS/QoL, age and ECOGPS of the patients with cancer post- MPIA

Note. N=30, All analysis are two tailed *p <.05, **p<

Post-MPIA

Intercorrelation between age, performance status through ECOGPS, stress, coping strategies - problem focused, emotion focused, adaptive coping and maladaptive coping, and quality of life of the patients with cancer (N = 30), post-medical and psychological intervention are presented along with M and SD in Table 13.

The correlation table shows a significant positive correlation between stress and ECOGPS, r = .40, p < .05. This showed that with increase in stress of the patients with cancer, there was also an increase in their level of ECOGPS and viceversa. It may be recalled that higher scores on ECOGPS indicate lower functioning (M = 16.80, SD = 6.68) during post-MPIA.

A significant positive correlation was found between problem focused coping strategies and maladaptive coping strategies, r = .68, p < .01. This showed that with an increase in problem focused coping strategies, there was also an increase in their maladaptive coping strategies (M = 68.80, SD = 4.10) and viceversa during post-MPIA.

A significant negative correlation was found between problem focused coping strategies and GHS/QoL, r = -.47, p < .01. This showed that with increase in problem focused coping strategies of the patients with cancer, there was a decrease in their GHS/QoL (M = 68.80, SD = 4.10) and viceversa during post-MPIA. This may indicate that perhaps too much of focus on problem focused coping and the relevant strategies to be used, may enable the patients to remain more in the problem centered cognition, thus, efficacy of the GHS/QoL.

There was a significant negative correlation between adaptive coping strategies and maladaptive coping strategies, r = -.53, p < .01. This showed that with increase in the adaptive coping strategies of the patients with cancer, there was a decrease in their maladaptive coping strategies (M = 9.60, SD = .93) during post-MPIA and vice versa.

A significant negative correlation was found between maladaptive coping strategies and GHS/Qol, (r = -.52, p < .01). With an increase in maladaptive coping strategies of the patients with cancer, there was a decrease in their GHS/QoL (M = 17.93, SD = 3.68) and vice versa during post-MPIA. There was a significant positive correlation between age and ECOGPS, r = .56, p < .01. This showed that with an increase in the age of the patients with cancer, there was also increase in their ECOGPS (M = 51.60, SD = 10.82) during post-MPIA.

A comparison between the assessment of stress, coping and GHS/ QoL post-MIA (Part A) and post-MPIA (Part C)

One-way ANCOVA was done on post test scores of stress, coping strategies and quality of life of patients who were administered only medical intervention (Part A) and when both medical and psychological intervention (Part C). The impact of medical intervention among cancer patients is observed in terms of treatment response. Thirty patients were randomly selected from Part A sample who were administered only medical intervention, with equal representation from each category of cancer, in accordance with the sample of 30 patients upon whom both medical and psychological intervention were administered. Taking into consideration the assumptions, One-Way ANCOVA was done on each of the dependent variable under study and the results are presented in table 14, 15 and 16.

Table 14

Variables	<u>MIA</u>		<u>MPIA</u>		Mean Square			<i>F</i> (1,57)		
	Μ	SD	М	SD	TR	Group	Error	TR	Group	
Stress	70.31	2.32	17.25	2.32	129.69	38537.56	153.80	<1	250.57**	
Psychosomatic complaints	15.23	4.28	6.10	3.80	21.46	1051.31	16.36	1.31	64.25**	
Fears	15.77	.57	4.29	.57	9.14	1807.90	9.40	<1	192.35**	
Information deficits	10.01	.27	.05	.27	.09	1357.24	2.14	<1	635.27**	
Everyday life restrictions	15.84	.67	4.13	.67	.83	1876.05	12.95	<1	144.87**	
Social strains	11.19	.49	2.31	.48	.04	1080.38	6.79	<1	159.10**	

Estimated M and SD and results of One-way ANCOVA done on stress and its component scores

Note. N=60, ** *p*<.01, TR: Treatment esponse

Table 14 shows One-way ANCOVA done on post test scores of intervention overall stress post test scores of Part A and Part C. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 250.57, p < .01. Adjusted mean stress scores suggest that the stress was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 17.25, SD = 2.32) compared to the patients who were administered only medical intervention (M = 70.31, SD = 2.32). The results also revealed that treatment response was not found to be a covariate.

With reference to the domains of stress, Table 14 shows results of One-way ANCOVA done on psychosomatic complaints post test scores. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 64.25, p<.01. Adjusted mean psychosomatic complaints scores suggest that the scores on psychosomatic complaints were significantly lower in case of the patients with cancer who were administered medical and psychological intervention (M = 4.28, SD = 3.80) compared to the patients who were administered only medical intervention (M = 15.23, SD = 4.28). The results also revealed that treatment response was not found to be a covariate.

Table 14 shows One-way ANCOVA done on post test scores of the sub domain of fears. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 192.35, p < .01. Adjusted mean fears scores suggest that the fears was significantly lower in case of the patients with cancer who were administered medical and psychological intervention (M = 4.28, SD = .57) compared to the patients who were administered only medical intervention (M = 15.77, SD = .57). The results also revealed that treatment response was not found to be a covariate.

Table 14 shows One-way ANCOVA done on post test scores of the sub domain of information deficits. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 635.27, p < .01. Adjusted mean information deficits scores suggest that the information deficits was significantly lower in case of the patients with cancer who were administered medical and psychological intervention (M = .05, SD = .27) compared to the patients who were administered only medical intervention (M = 10.01, SD = .27). The results also revealed that treatment response was not found to be a covariate.

Table 14 shows One-way ANCOVA done on post test scores of the sub domain of everyday life restrictions. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 144.87, p < .01. Adjusted mean everyday life restrictions scores suggest that the everyday life restrictions were significantly lower in case of the patients with cancer who were administered medical and psychological intervention (M = 4.13, SD = .67) compared to the patients who were administered only medical intervention (M = 15.84, SD = .67). The results also revealed that treatment response was not found to be a covariate.

Table 14 shows One-way ANCOVA done on post test scores of the sub domain of social strains. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 159.10, p < .01. Adjusted mean social strains scores suggest that the social strains were significantly lower in case of the patients with cancer who were administered medical and psychological intervention (M = 2.31, SD = .49) compared to the patients who were administered only medical intervention (M = 11.19, SD = .49). The results also revealed that treatment response was not found to be a covariate.

Table 15

Estimated M and SD and results of One-way ANCOVA done on coping strategies and its component scores

Variables	<u>M</u>	<u>IA</u>	<u>M</u>	PIA	Mean Square			F(1,57)		
	Μ	SD	Μ	SD	TR	Group	Error	TR	Group	
Problem Focused Coping	11.63	.66	68.97	.66	18.60	45017.60	12.58	1.47	3578.83**	
Active coping	3.75	.26	7.48	.26	.14	190.47	1.90	<1	99.88**	
Planning	2.29	.22	6.11	.22	1.03	199.19	1.39	<1	142.81**	
Use of instrumental support	5.67	.22	7.06	.22	.50	26.44	1.45	<1	18.21**	
Emotion focused coping	18.36	.50	22.97	.50	2.30	291.20	7.24	<1	40.19**	
Use of emotional support	7.64	.16	7.99	.16	.05	1.66	.78	<1	2.10	
Positive reframing	4.57	.26	7.13	.25	.01	90.06	1.87	<1	48.05**	
Religion	6.15	.34	7.85	.34	1.60	39.51	3.22	<1	12.25**	
Adaptive coping	5.46	.21	9.47	.21	10.50	219.89	1.28	8.16**	170.84**	
Acceptance	3.46	.21	7.47	.21	10.50	219.89	1.28	8.16**	170.84**	
Maladaptive coping	21.59	.98	18.37	.99	121.50	141.90	27.85	4.36**	5.10**	
Venting	3.35	.29	3.05	.29	8.53	1.23	2.40	3.56	.51	
Behavioural disengagement	3.12	.31	2.65	.31	13.33	3.09	2.74	4.87**	1.12	
Self-distraction	3.76	.22	3.31	.22	1.08	2.78	1.40	<1	1.99	
Substance use	2.05	.13	4.35	.13	.21	72.61	.46	<1	157.23**	
Self-blaming	3.56	.34	2.34	.34	.01	20.52	3.12	<1	6.60**	
Denial	5.75	.31	2.68	.31	8.07	129.28	2.78	2.90	46.41**	

Note. N=60, ** *p*<.01, TR: Treatment response

Table 15 shows One-way ANCOVA done on post test scores of problem focused coping. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 3578.82, p < .01. Adjusted mean problem focused coping scores suggest that the problem focused coping was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 68.97, SD = .66) compared to the patients who were administered only medical intervention (M = 11.62, SD = .66). The results also revealed that treatment response was not found to be a covariate.

Table 15 shows One-way ANCOVA done on post test scores of the sub domain of active coping scores the results revealed that after adjusting for treatment rating scores. There was a significant effect of the between-subjects factor, F(1,57) = 99.89, p < .01. Adjusted mean active coping scores suggest that the active coping was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 7.48, SD = .26) compared to the patients who were administered only medical intervention (M = 3.75, SD = .26). The results also revealed that treatment response was not found to be a covariate.

Table 15 shows One-way ANCOVA done on post test scores of the sub domain of planning. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 142.81, p < .01. Adjusted mean planing scores suggest that the planing was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 6.11, SD = .22) compared to the patients who were administered only medical intervention (M = 2.29, SD = .22). The results also revealed that treatment response was not found to be a covariate.

Table 15 shows One-way ANCOVA done on post test scores of the sub domain of use of instrumental support. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 18.21, p < .01. Adjusted mean use of instrumental support scores suggest that the use of instrumental support was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 7.06, SD = .22) compared to the patients who were administered only medical intervention (M = 5.67, SD = .22). The results also revealed that treatment response was not found to be a covariate.

Table 15 shows One-way ANCOVA done on post test scores of the emotion focused coping strategies. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 40.19, p < .01. Adjusted mean emotion focused coping scores suggest that the emotion focused coping was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 22.97, SD = .50) compared to the patients who were administered only medical intervention (M = 18.36, SD = .50). The results also revealed that treatment response was not found to be a covariate.

Table 15 shows One-way ANCOVA done on post test scores of the sub domin of positive reframing. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 48.05, p < .01. Adjusted mean positive reframing scores suggest that the positive reframing was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 7.13, SD = .26) compared to the patients who were administered only medical intervention (M = 4.56, SD = .26). The results also revealed that treatment response was not found to be a covariate.

Table 15 shows One-way ANCOVA done on post test scores of the sub domain of religion. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 12.25, p < .01. Adjusted mean religion scores suggest that the religion was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 7.85, SD = .34) compared to the patients who were administered only medical intervention (M = 6.15, SD = .34). The results also revealed that treatment response was not found to be a covariate.

Table 15 shows One-way ANCOVA done on post test scores of the adaptive coping. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 170.84, p < .01. Adjusted mean adaptive coping scores suggest that the adaptive coping was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 9.47, SD = .21) compared to the patients who were administered only medical intervention (M = 5.46, SD = .21). The results also revealed that the treatment response (covariate) was significantly related to the adaptive coping F(1,57) = 8.16, p < .01.

Table 15 shows One-way ANCOVA done on post test score of the sub domain of acceptance. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 170.84, p < .01. Adjusted mean acceptance scores suggest that the acceptance was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 7.47, SD = .21) compared to the patients who were administered only medical intervention (M=3.46, SD = .21). The results also revealed that the treatment response (covariate) was significantly related to the acceptance, F(1,57) = 8.16, p < .01.

Table 15 shows One-way ANCOVA done on post tetst scores of the maladaptive coping. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 5.10, p<.01. Adjusted mean maladaptive coping scores suggest that the maladaptive coping was significantly reduced in case of the patients with cancer who were administered medical and psychological intervention (M = 18.37, SD = .99) compared to the patients who were administered only medical intervention (M = 21.59, SD = .99). The results also revealed that the treatment response (covariate) was significantly related to the maladaptive coping, F(1,57) = 4.36, p<.01.

Table 15 shows One-way ANCOVA done on post test scores of the sub domain of substance use. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 157.23, p<.01. Adjusted mean substance use scores suggest that the substance use was significantly increased in case of the patients with cancer who were administered medical and psychological intervention (M = 4.35, SD = .13) compared to the patients who were administered only medical intervention (M = 2.05, SD = .13). Sample being small, the effect of even very few people with substance use had an overall impact on the estimated mean score. The results also revealed that treatment response was not found to be a covariate.

Table 15 shows One-way ANCOVA done on post test scores of the sub domain of self-blaming. Tshe results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 6.60, p < .01. Adjusted mean self-blaming scores suggest that the selfblaming was significantly lowerin case of the patients with cancer who were administered medical and psychological intervention (M = 2.34, SD = .33) compared to the patients who were administered only medical intervention (M = 3.56, SD = .33). The results also revealed that treatment response was not found to be a covariate.

Table 15 shows One-way ANCOVA done on post test scores of the sub domain of denial. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 46.41, p < .01. Adjusted mean denail scores suggest that denail was significantly lower in case of the patients with cancer who were administered medical and psychological intervention (M = 2.68, SD = .31) compared to the patients who were administered only medical intervention (M = 5.75, SD = .31). The results also revealed that treatment response was not found to be a covariate.

Table 16

Estimated M and SD and results of On	e-way ANCOVA done on GHS/	QoL and its component scores
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Variables	<u>M</u>	<u>IIA</u>	<u>MPIA</u>		1	Mean Square	<i>F</i> (1,57)		
	М	SD	М	SD	TR	Group	Error	TR	Group
GHS/ QoL	20.84	2.92	50.93	2.92	1124.70	12393.15	244.57	4.60**	50.67**
Functional Scales									
Physical functioning	41.87	5.34	68.39	5.34	3148.03	9627.01	817.96	3.85	11.77**
Role functioning	36.81	6.01	22.63	6.01	55542.02	2752.52	1034.76	5.35**	2.66
Emotional functioning	32.84	2.99	86.56	2.99	312.42	39508.84	256.93	1.21	153.77**
Cognitive functioning	97.70	1.86	96.20	1.86	318.13	31.03	99.01	1.39	.31
Social functioning	9.07	5.52	22.59	5.52	2201.63	2501.91	871.87	2.52	2.87
Symptoms Scales									
Fatigue	66.81	4.03	37.45	4.03	532.35	11798.39	464.51	1.15	25.40**
Pain	54.39	5.10	31.21	5.10	1898.06	7359.98	746.12	2.54	9.86**
Dyspnoea	35.89	5.87	16.24	5.86	5438.85	5281.96	985.85	5.52**	5.36**
Insomnia	69.75	5.01	17.95	5.01	385.66	36735.89	718.40	<1	51.13**
Appetite loss	18.44	4.63	9.22	4.63	314.44	1162.84	612.54	<1	1.89
Constipation	42.98	4.33	30.01	4.33	490.55	2302.61	536.22	<1	4.29**
Financial difficulties	97.35	4.98	78.25	4.98	128.39	4991.53	709.70	<1	7.03**

Note. N=60, ** *p*<.01, TR: Treatment response

Table 16 shows One-way ANCOVA done on post test scores of the GHS/QoL. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 50.67, p<.01. Adjusted mean GHS/QoL scores suggest that the GHS/QoL was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 50.93, SD = 2.92) compared to the patients who were administered only medical intervention (M = 20.84, SD = 2.92). The results also revealed that the treatment response (covariate) was significantly related to the GHS/QoL, F(1,57) = 4.60, p<.01.

With reference to the functional scales of GHS/QoL Table 16 show the results of One-way ANCOVA done on post test scores of the physical functioning. Post test scores revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 11.77, p<.01. Adjusted mean physical functioning scores suggest that the physical functioning was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 68.39, SD = 5.34) compared to the patients who were administered only medical intervention (M = 41.87, SD = 5.34). The results also revealed that treatment response was not found to be a covariate.

With reference to the functional scales of GHS/QoL Table 16 show the results of One-way ANCOVA done on post test scores of the role functioning. Post test scores revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 5.35, p<.01. Adjusted mean role functioning scores suggest that the role functioning was significantly affected in case of the patients with cancer who were administered medical and psychological
intervention (M = 22.63, SD = 6.01) compared to the patients who were administered only medical intervention (M = 36.81, SD = 6.01). The results also revealed that treatment response was not found to be a covariate.

With reference to the functional scales of GHS/QoL Table 16 show the results of One-way ANCOVA done on post test scores of the emotional fucntioning. Post test scores revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 153.77, p<.01. Adjusted mean emotional functioning scores suggest that the emotional functioning was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 86.56, SD = 2.99) compared to the patients who were administered only medical intervention (M = 32.84, SD = 2.99). The results also revealed that treatment response was not found to be a covariate.

The One-way ANCOVA done on post test scores of symptoms scale of fatigue (Table 16). The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 25.40, p<.01. Adjusted mean fatigue scores suggest that the fatigue was significantly lower in case of the patients with cancer who were administered medical and psychological intervention (M = 37.45, SD = 4.03) compared to the patients who were administered only medical intervention (M = 66.81, SD = 4.03). The results also revealed that treatment response was not found to be a covariate.

The One-way ANCOVA done on post test scores of symptoms scale of pain (Table 16). The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 9.86, p < .01. Adjusted mean pain scores suggest that the pain was significantly better in case of the

patients with cancer who were administered medical and psychological intervention (M = 31.21, SD = 5.10) compared to the patients who were administered only medical intervention (M = 54.39, SD = 5.10). The results also revealed that treatment response was not found to be a covariate.

The result of One-way ANCOVA done on post test scores of symptoms scale of Dyspnoea are shown in Table 16. The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 5.36, p < .01. Adjusted mean Dyspnoea scores suggest that the Dyspnoea was significantly lower in case of the patients with cancer who were administered medical and psychological intervention (M = 16.24, SD = 5.87) compared to the patients who were administered only medical intervention (M = 35.84, SD = 5. 87). The results also revealed that the treatment response (covariate) was significantly related to the Dyspnoea, F(1, 57) = 5.52, p < .01, which indicates that when the scores are reduced symptoms also reduced which was seen after medical and psychological intervention.

The One-way ANCOVA done on post test scores of symptoms scale of insomnia (Table 16) results revealed that after adjusting for treatment rating scores, there significant effect of the between-subjects was а factor, F(1,57) = 51.13, p<.01. Adjusted mean insomnia scores suggest that the insomnia was significantly in case of the patients with cancer who were administered medical and psychological intervention (M = 17.95, SD = 5.01) compared to the patients who were administered only medical intervention (M = 69.75, SD = 5.10). The results also revealed that treatment response was not found to be a covariate.

The One-way ANCOVA done on post test scores of symptoms scale of constipation (Table 16). The results revealed that after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 4.29, p < .01. Adjusted mean constipation scores suggest that the constipation was significantly better in case of the patients with cancer who were administered medical and psychological intervention (M = 30.01, SD = 4.33) compared to the patients who were administered only medical intervention (M = 42.98, SD = 4.33). The results also revealed that treatment response was not found to be a covariate.

The One-way ANCOVA done on post test scores of financial difficulties (Table 16) show that the after adjusting for treatment rating scores, there was a significant effect of the between-subjects factor, F(1,57) = 7.03, p<.01. Adjusted mean financial difficulties scores suggest that the financial difficulties were significantly more in case of the patients with cancer who were administered medical and psychological intervention (M = 78.25, SD = 4.98) compared to the patients who were administered only medical intervention (M = 42.98, SD = 8.98). The results also revealed that treatment response was not found to be a covariate.

Interview with Oncologists

A semistructured interview was conducted with five senior Oncologists to explore their perceptions related to stress in cancer patient, caretakers and Doctors. The data qualitatively obtained from the semi structured interview with five senior oncologists were analyzed and three themes emerged, such as 1. Receivers of the news and their reaction (Q.No. 1 & 2); 2. Stress in patients [cancer stage, source, and impact on health] (Q.No's 3, 4 &5); 3. Oncologist's stress and coping strategies (Q.No's. 6&7). For the first theme, namely receivers of the news and their reaction, one Oncologist responded that patients were their receiver of the news, two Oncologists responded that spouse was their receiver, three Oncologist respond that a near relative was the receiver. Among the receivers who were informed about the diagnosis, four Oncologists percieved that the reaction was stressful. Four Oncologists reported that the response of stress is in patient and relative, only one Oncologist reported the response of stress in patients.

For the second theme, namely stress in patients which was reported in Q.No's 3, 4 &5, four Oncologists reported that stress was seen in patients after diagnosis. Only two Oncologists reported that stress was seen in patients, after treatment progression. One Oncologist reported that in the area of financial aspect, they experience the stress most. Two Oncologists reported that stress was seen in patients on family related issues and personal issues. Four Oncologists reported that most visible effects of stress are due to psychological factors. One Oncologist reported that most visible effects of stress are due to social aspect.

For the third theme, Oncologist's stress and coping strategies (Q.No's. 6&7), four Oncologists reported that they feel stressed with patient's conditions. When asked what strategies were used to manage such stress, three Oncologists reported that they go for group discussion with professionals who are seniors and their peers/ colleagues. One Oncologist reported that she would prefer to go clinical trials based on previous treatment cycles response. On other hand one Oncologist reported that he does not feel stressed and he would take it as more professional responsibility rather than in a personal way.

DISCUSSION

The discussion of the results obtained from the study is done in detail in this chapter. The sequence of discussion was followed according to the study's objectives.

In Part A the data were collected from 105 patients, with 35 patients each from lung cancer (LC), Breast Cancer (BC) and Head-Neck-Cancer (HNC) categories. Data was collected pre- and post-medical intervention on stress, coping strategies and quality of life of patients in each category.

The obtained quantitative data were analyzed by means of descriptive statistics, paired and independent t test, Pearson r by using SPSS 16.0, and wherever required, graphs have been plotted.

In Part B psychological intervention was developed involving a combined package of psychoeducation, CBT and relaxation through guided imagery. The intervention was administered n 30 patients ten each from LC, BC and HNC. Here also the obtained data in response to the psychological intervention modules were quantified and relavant statistical procedures were used. In Part C, data was collected from 30 patients at the rate of 10 patients each from each category of cancer viz. LC, BC and HNC. Data was collected pre- and post-medical-psychologial intervention on stress, coping strategies and quality of life of patients in each category. Statistical procedures used were descriptive statistics, paired and independent *t* test, Pearson *r*, Wilcoxon signed rank test (to measure the effect of relaxation) and One-way ANCOVA (to check whether treatment response of the patients varies according to the variation in intervention) with help of SPSS 16.0 and wherever required, graphs were plotted.

Impact of medical intervention on Stress, Coping and Quality of life in cancer Patients

Stress of patients with cancer pre- and post-MIA

The first objective of the study was to explore the level of stress of patients with cancer pre- and post-medical intervention. Table 1 results showed that there was a significant difference between scores of overall stress of the patients with cancer. The overall stress among patients with cancer was lower during post-MIA in comparison to pre-MIA. The effect of medical intervention was found to be medium. Thus hypothesis 1 is accepted.

However, the overall level of stress remained above average even after medical intervention, though the values have decreased post-MIA. The level of stress has not been as high as pre-medical intervention, but it still remained at above average level. These points to the possible need for a psychological intervention in addition to the medical intervention. Studies in cancer research indicate distress among cancer patients across disease and treatment trajectory. Carlson et al. (2004a) in their study using a large representative sample which was diagnostically heterogeneous comprising a total of 3095 cancer patients, studied the patients' self-reported clinical levels of distress, including anxiety and depression, across the disease continuum. They concluded that distress is very common in cancer patients across diagnoses and across the disease trajectory. Specifically, chemotherapy or radiation may increase intrusive thoughts or avoidant behaviors in relation to cancer treatments (Smith, Redd, Peyser, & Vogl, 1999; Kangas, Henry, & Bryant, 2002). Another important facet of

such researches states that high level of distress is common in patients with cancer and few patients are referred to psychosocial care (Verdonck-de Leeuw et al., 2009 ; Cherny & Coyle, 1994), indicating a strong need for such care. Thus in the present study the above average level of stress even after relavent medical intervention inspite of comparatively lowered of stress owing to medical intervention, also points to a need for an additional psychological intervention to help dealing with the stress alongside of the medical intervention.

In addition, the findings of the present study also indicated significant differences on psychomatic complaints like frequent fatigue, pain, and difficulty to attain sleep. This may also be dealt from the point of view of the further psychological intervention. Bianca, Holger, Axel, Rolf, and Jochen (2010) in their study observed that a substantial proportion of cancer patients in acute care are psychosocially distressed and pain is one of the most common, burdensome, and feared symptoms experienced by patients with cancer. A review of literature reported the existence of insomnia for up to five years after cancer treatment (Babson, Feldner, & Badour, 2010). Many studies have shown that insomnia is prevalent particularly in patients with lung and breast cancer (Graci, 2005; Parker, Bliwise et al., 2008; Vena, Parker, Cunningham, Clark, & McMillan, 2004). Insomnia and subsequent sleep disturbances can lead to fatigue, mood disturbances, and contribute to immunosuppression, which can have a profound impact on quality of life and perhaps affect the course of disease. Such serious effects may be prevented when a psychological intervention is added to the medical intervention. There was also a significant difference between pre- and post-MIA on fear, information deficit, and Everyday life restrictionss. Newell, Ziegler, Stafford, and Lewin, (2004) in their findings revealed that there was a need for individualized information provision defined not exclusively by the surgical

procedure but other aspects too. The hospital visits, treatment patterns and procedures show an impact on the routine and functioning as compared to pre diagnosis state. Previous studies show that during the course of treatment most of the patients with cancer were restricted to stay at home or bed ridden and this led to disturbance in their daily routine are their functional activities (Grossman, Deuring, Garland, Campbell, & Carlson, 2008).

There was no significant difference noticed between pre- and post-medical interventions on social strains.

The results of pre-and post-MIA of stress thus demonstrate that though there was a decrease in the level of stress after medical intervention, there is a need for intervention using psychological support to deal with the stress. The intervention should be designed aiming to help the patients overcome information deficit, cognitively reorient themselves positively and be more relaxed such that psychosomatic complaints and fear are limited and more relalistic appraisal of their situation is attained.

Coping strategies adopted by patients with cancer pre- and post-MIA

The second objective of study was to explore the coping strategies adopted by patients with cancer pre- and post-medical intervention. The findings revealed that patients have used greater emotion focused coping strategies, less of maladaptive coping strategies as well as problem coping strategies and there were no significant changes in the usage of adaptive coping (Table 2). Hence, the hypothesis 2 is accepted.

Emotion focused coping, especially use of emotional support were higher postmedical intervention perhaps becuase the reality of the diagnosis and related treatment regimen were slowly sinking into the life of the patients showing their effects on the cognitive strengths of the individual like reasoning. The resultant emotionality of the individual after diagnosis when counterbalanced with the social support accorded by the family and significant others may help the individual cope with the realities of the disease and its consequences that dawned upon him/ her. In a collective culture like India, use of emotional support provided by near and dear helps in making it possible to attain a difference in coping with the stress caused by cancer diagnosis and treatment.

The findings of the present study are similar to the study of Kuo and Ma (2002) which reported that after accounting for physical symptom distress, greater frequency of use of emotion-focused coping was associated with higher psychological distress. Studies by Ali and Khali (1991); Lazurus and Folkman (1984) and Tasi, (1995) also reveal the fact that patients with lung cancer facing symptom distress often rely on religion, obey treatment regimens, seek social support, and distract their attention from their symptoms.

The results showed that patients with cancer in the sample have used less problem focused coping strategies especially planning post-medical intervention (Table 2). The significant differences seen in the planning which decreased postmedical intervention may be due to the dependence and reliance on medical procedure rather than their own planning.

Table 2 results thus showed that patients with cancer in the sample have decreased using maladaptive coping strategies during post medical intervention. This

could be because of the improvement in their health perceived by the patients after 6 weeks of medical treatment and the resultant reduction of dependence on maladaptive strategies used prior to medical intervention. The results of the present study are in contrast with findings reported by certain earlier studies, in relation to the usage of denial as well as venting coping strategies. "Denial, behavioral disengagement, suppressing competing activities, and ventilating emotions" were the coping strategies most commonly used by patients during treatment or immediately following treatment (Sherman, Simonton, Adams, Vural, & Hanna, 2000).

GHS/ QoL of patients with cancer pre- and post-MIA.

The third objective of study was to explore the level of quality of life of patients with cancer pre- and post-medical intervention. Table 3 showed that in the patients, Global Health Status/Quality of life (GHS/QoL) was low, and functional scales viz. physical functioning, role functioning, and social functioning were at an average level; and there were no significant differences between pre- and post-MIA. Hence, the hypothesis 3 is not accepted.

Results indicated that there were no significant differences between pre- and post medical intervention assessment scores of symptoms scale viz. fatigue, insomnia, followed by single item scale like diarrhea and financial difficulties of the patients with cancer, and these symptoms were reported to be at moderate level. Review of related research shows that cancer patients suffer from multiple physical symptoms such as fatigue and pain (Miaskowski et al., 2006) and also from psychological changes such as fear of death and fear of progression or recurrence of disease, and changes in the QoL. Loss of physical functioning, psychological events such as depression, and reduced overall quality of life is associated with uncontrolled symptoms (Montazeri et al., 1996; Gridelli et al., 1996). According to Velamur, (2009) sleep disturbances are extremely troublesome to the patient and decrease the overall quality of life. More than 50% of cancer patients with sleep disturbances reported their symptoms to be moderate, severe or intolerable (Engstrom, Strohl, Rose, Lewandowski, & Stefanek, 1999). Subramanian et al. (2010) in their study on of the 152 patients reported that nearly half of all patients with lung cancer reported insomnia. Presents study results however do not display similar findings.

Table 3 showed that on functional scales, there was a significant difference between pre- and post-MIA scores of emotional functioning, and cognitive functioning. The table also showed that emotional and cognitive functioning among patients with cancer was found to be better during post-MIA in comparison to premedical intervention assessment. These results are consistent partially with the findings of a study by Arora, Gustafson, and Hawkins (2001) who reported high levels of physical functioning and emotional functioning in a sample of 558 breast cancer patients one month after the last component of primary treatment, i.e. surgery, radiation therapy (RT) or chemotherapy (CT). The same instrument (EORTC-QLQ-C30) used in the present study was used for comparing the situation at the beginning of chemotherapy and at the end of inpatient treatment in a study by Schumacher, Kessler, Buchner, Wewers, and Van de Loo (1998). Their analyses showed that physical, emotional, and social functioning improved significantly from beginning of chemotherapy to the end of inpatient treatment. They also found that at the end of inpatient treatment, patients suffer significantly less from fatigue, nausea, loss of appetite and sleep disturbance. A study by Esra Saatc, Yüksel Koçak, Nafiz Bozdemir, Ersin Akpınar and Zeynep Kalaylıoğlu-Wheeler, (2007) demonstrates that the chances of having a more stable emotional life increased with chemotherapy in

stage I lymphoma patients. Iconomou (2008a) found small but statistically significant improvements in cognition, as measured by the MMSE, after 12 weeks of combined chemotherapy.

On symptoms scale, Table 3 showed significant differences between pre- and post-MIA scores of nausea and vomiting, pain, dyspnoea and appetite loss. These symptoms were reduced during post-MIA in comparison to pre-MIA. Similar findings were reported by Schumacher, Kessler, Buchner, Wewers, and van de Loo (1998) whose study revealed decreased fatigue, nausea, loss of appetite and sleep disturbance in acute myeloid leukemia of 28 patients. A study by Chaplin, and Morton (1999) on 93 patients found that management of the cancer can result in a reduction of the occurrence and severity of the cancer pain despite the treatment modality utilized.

On the other hand a significant difference was seen between pre- and post-MIA scores of constipation of the patients with cancer. The values in Table 4.3 indicated that the constipation among patients with cancer increased during post-MIA in comparison to pre-MIA and the effect of medical intervention was found to be high. This may be attributed to the narcotic effect as reported by previous studies. Mesothelioma (2012), reported that about 50 percent of cancer patients experience constipation, other side effects can occur from this condition such as decreased appetite and nausea. Some chemotherapy and anti-sickness drugs can cause constipation (Macmillan Cancer Support, 2012).

Relationship between stress, coping strategies, GHS/QoL, age and ECOGPS of the patients with cancer pre- and post-MIA

The fourth objective of study was to find out the relationship between the stress, coping strategies, GHS/QoL, ECOGPS, and the age of the patients with cancer pre- and post-medical intervention.

Pre-MIA

In the pre-MIA, Table 4 indicated a significant negative correlation between stress and problem focused coping strategies, adaptive coping strategies, and GHS/QoL. When stress of the patients with cancer is increased, there was a decrease in their problem focused coping strategies, adaptive coping strategies, and GHS/QoL. The lower usage of adaptive coping strategies may be owing to the stress caused by cancer diagnosis. According to Kenne Sarenmalm, Ohlén, Jonsson, and Gaston-Johansson (2007), patients with lower coping capacity report higher prevalence of symptoms, experience higher levels of distress, and experience worse perceived health, which in turn may decrease their Health Related Quality of life (HRQOL).

A significant positive correlation was found between stress and ECOGPS. This indicated that with an increase in stress of the patients with cancer, there was also an increase in their level of ECOGPS and viceversa. A significant positive correlation was found between problem focused coping strategies, emotion focused coping strategies and GHS/QoL. This showed that when problem focused coping strategies of the patients with cancer increased, there was an increase in their emotion focused coping strategies and quality of life (GHS/QoL) increased. Whereas a significant negative correlation was found between problem focused coping strategies and

ECOGPS. This showed that when problem focused coping strategies of the patients with cancer increased, there was a decrease in their ECOGPS.

There was a significant positive correlation between emotion focused coping strategies and GHS/QoL. This indicated that when emotion coping strategies of the patients with cancer increased, there was also an increase in their quality of life. There was a significant positive correlation between adaptive coping strategies, quality of life and age. This showed that with an increase in adaptive coping strategies of the patients with cancer, there was an increase in quality of life and age with an increased in age level there is an increase in adaptive coping strategies.

A negative correlation was found between maladaptive coping strategies and GHS/QoL. This showed that when the maladaptive coping used by patients with cancer increased, there was a decrease in their quality of life. There was a significant positive correlation between maladaptive coping and ECOGPS. This indicated that with an increase in the maladaptive coping strategies of the patients with cancer, there was also an increase in their ECOGPS.

There was a significant negative correlation between GHS /QoL and ECOGPS. This showed that with an increase in their quality of life, there was a decrease in their ECOGPS during pre-MIA.

Post-MIA

During post-MIA, Table 5 shows a significant positive correlation between problem focused coping strategies, emotion focused coping strategies and GHS /QoL. Studies such as those done by Carver et al. (1993); Thomson, Gustafson, Hamlett, and Spock (1992), showed that emotion-focused and problem-focused coping strategies may be used simultaneously or alternately. It is therefore difficult to discriminate between them in the coping process (Carver et al., 1993; Thomson, Gustafson, Hamlett, & Spock, 1992). One possible assumption is that when an illness is associated with controllable factors, individuals with the illness engage in problemfocused solutions but when the illness is not amenable to cure or factors that are controllable, the tendency to use more emotion-focused strategies may emerge. Based on this premise, it is expected that persons with a chronic illness such as cancer may use both problem- focused and emotion-focused strategies.

Findings of a study by Ransom, Jacobsen, Schmidt, and Andrykowski (2005) talk about the relationship between problem focused coping and quality of life. According to them early stage breast cancer patients using problem focused coping strategies who seek out information about their illness reported greater physical quality of life improvement. Some strategies such as seeking social support serve both emotional and problem-focused functions (Folkman, Lazarus, & Dunkel-Scheter, 1986). Neither of the two forms of coping is inherently adaptive or maladaptive, thus in stressful situations, individuals may use a combination. The correlation seen between problem focused and emotion focused strategies in the present study may be supported by the rationale that the above findings provide.

A negative correlation was found between maladaptive coping strategies and GHS/QoL. These findings are supported by previous research too. A study by Faller Schilling and Lang (1995) showed that lung cancer patients with psychosocial causal attributions suffered greater emotional distress and were also more likely to be rated as showing a maladaptive way of coping with illness. Studies demonstrated that disengagement coping strategies have been associated with poorer quality of life

(Lutgendorf, Anderson, & Rothrock, 2000; Ransom, Jacobsen, Schmidt, & Andrykowski, 2005; McCaul, Sandgren, & King, 1999) and more psychological distress (Perczek, Burke, Carver, Krongrad, & Terris, 2002; Carver et al., 1993).

During post-MIA, there was a significant positive correlation found between stress and maladaptive coping strategies. This showed that when stress of the patients with cancer is increased, there was also an increase in their maladaptive coping strategies. On the other hand with decrease in stress of the patients with cancer, there was an increase in their quality of life. When stress of the patients with cancer increased, there was also an increase in their level of ECOGPS.

With increase in problem focused coping strategies of the patients with cancer, there was also an increase in emotion coping strategies during post-MIA. This interrelatedness of problem focused and emotion focused coping makes it more useful to think of the two as complementary coping functions rather than as two fully distinct and independent coping categories (Lazarus, 2006).

During post-MIA, with increase in problem focused coping strategies of the patients with cancer, there was also an increase in their adaptive coping strategies. With increased maladaptive coping strategies of the patients with cancer, there was a decrease in their quality of life. Findings of a study by Aarstad, Aarstad, Bru, and Olofsson (2005) support the above findings. According to this study, level of avoidance coping was inversely associated with the health-related quality of life, and level of emotional coping was associated with health-related quality of life in a complex manner. There was a positive correlation between age and ECOGPS.

During pre-MIA, with increase in stress of the patients with cancer, there was a decrease in problem focused and adaptive coping strategies. With an increase in problem focused coping strategies of the patients with cancer, there was decrease in their ECOGPS. With an increase in maladaptive coping strategies, there was decrease in their quality of life.With an increase in quality of life of the patients with cancer there was a decreased ECOGPS. Whereas during post-MIA with an increase in stress there was also an increase in their maladaptive coping strategies. With an increase in maladaptive coping strategies. With an increase in maladaptive coping strategies in their maladaptive coping strategies in their maladaptive coping strategies. With an increase in maladaptive coping strategies, there was a decrease in quality of life. With an increase in quality of life there was a decrease in ECOGPS during post-MIA. Similar findings were observed in age and ECOGPS between both pre – and post-MIA. There was also a significant negative correlation between maladaptive coping strategies and quality of life, between quality of life and ECOGPS, both in pre- and post-MIA.

Part B

Impact of Psychological Intervention

The fifth objective of the study was to develop an appropriate psychological intervention package complimenting the medical intervention. This was developed and applied on a sample of 30 patients (at the rate of 10 each from LC, BC and HNC). The following paras discuss the impact of the modules of the psychological intervention which was used along with medical intervention.

Impact of psychoeducation on patients with cancer

Table 6 showed that there was a significant difference between pre- and post-MPIA scores of CINFOS (myths and misconception) of the patients with cancer after psychoeducation. This indicated that the understanding and knowledge regarding the factual information about their disease among patients with cancer was better in post-MPIA in comparison to pre-MPIA. The myths and misconceptions during pre-MPIA were greater and during post-MPIA they were lower, owing to psychoeducation. Thus the effect of psychoeducation as part of medical and psychological intervention was found to be high. These findings are supported by the findings of a study by Gundel et al. (2003) who prospectively evaluated the effects of a six-session psychoeducational intervention held by medical doctors or psychologists in a German acute cancer center Their findings provide evidence that even short interdisciplinary setting. psychoeducational interventions can at least improve the level of cancer-related information while hardly denting the budget of any healthcare system. A study by Gandel et al. (2007) on 13 patients with HNC demonstrated that ten sessions of psychoeducation in the context of interdisciplinary cancer therapy can be an effective intervention at moderate cost. Research has also shown that providing educational information at the early stages can lead to greater treatment compliance (Richardson, Shelton, Krailo, & Levine, 1990). The findings of a multi-site randomized study conducted by Dolbeault et al. (2009) on 203 patients with breast cancer demonstrated the feasibility and effectiveness of a psychoeducational intervention, which can accelerate the reduction of negative affects which are present at the end of treatment.

Effects of psychoeducational intervention have been highlighted in many studies. Teaching, giving patients information and education on cancer and treatment is often used as one of the elements (Berglund et al., 2007; Brown et al., 2006). According to Rehse, and Pukrop (2003); Helgeson, Cohen, and Schulz (1999) psychoeducational approaches may be more effective than peer discussion or supportive care. In the review by Devine and Westlake (1995) psychoeducational care

was found to benefit adults with cancer in relation to anxiety, depression, mood, nausea, vomiting, pain, and knowledge about their condition.

Katz, Irish, and Devins (2004) did a study on the development, validation and pilot-testing of a psychoeducational intervention for oral cancer patients. The results from pilot data from 19 subjects (10 psychoeducation, nine standard cases) indicated that the intervention is feasible and highly acceptable. At follow-up, the intervention group showed a gain in knowledge, less body image disturbance, lower anxiety and a trend toward higher well-being. Another study shows that psychoeducational support program may promote a better overall QoL and symptom experience in transition to survivorship among 48 female breast cancer survivors (Park, Bae, Jung, & Kim, 2012). Similarly in the present study, patients with cancer conditions who were given psychoeducation demonstrated that they gained more factual knowledge about their disease condition, treatment, effective use of coping strategies and other important information through information booklets, brochures, pamphlets, clarification by medical experts through video interviews and discussion with the researcher provided in the study.

Impact of of relaxation

The patients were trained in relaxation using visualization through guided imagery. Relaxation was given over the period of 6 weeks of combined intervention. The results showed a significant difference between measurements of the extent of relaxation pre- and post-administration of relaxation using guided imagery (see Table 7).

Supportive studies in the available literature also show the efficacy of relaxation techniques as a part of psychological intervention. In seminal study findings by Karin, Bernhard, and Monika (2001) the relaxation intervention proved to have a small but significant effect on the treatment-related symptoms of the medical treatment of cancer nausea and pain. Patients who received relaxation training experienced significantly less nausea and pain. Burish, Snyder, and Jenkins (1991) in their study on 60 cancer patients were randomly assigned to one of four treatments: (a) relaxation training with guided relaxation imagery (RT), (b) general coping preparation package (PREP), (c) both RT and PREP, or (d) routine clinic treatment only. The patients in intervention groups reported less emotional distress, less disruption in daily life, and less anticipatory nausea as compared to controls. Walker et al. (1999) in their study on 96 women with newly diagnosed large or locally advanced breast cancer found that patients who received relaxation training and guided imagery prior to chemotherapy initiation reported better quality of life and less emotional distress than controls.

The effectiveness of relaxation training among cancer patients in acute treatment too has been shown in various empirical studies (Burish & Lyles, 1981; Morrow, 1984; Cotanch & Strum, 1987; Bridge, Benson, Pietroni, & Priest, 1988). Psychological therapies (e.g., relaxation, meditation, visual imagery, and hypnotherapy) are among the more popular nontraditional therapies, with more than 50% of Australian and up to 29% of U.S. and 10% of European and Canadian cancer patients reporting the use of at least one type of psychological therapy (Dodd, 1987; Warrick et al., 1999; Begbie, Kerestes, & Bell, 1996; Miller et al., 1998; Sollner, Zingg-Schir, Rumpold, & Fritsch, 1997; Maher, Young, & Feigel, 1994). According to Decker, Cline-Elsen, and Gallagher (1992) relaxation training substantially

improves several psychological parameters associated with quality of life in ambulatory patients who are undergoing radiation therapy. Training in relaxation and guided imagery appeared to be somewhat beneficial to women cancer patients on emotional status (Leon-Pizarro et al., 2007). According to Kristine et al. (2008) relaxation and guided imagery are useful strategies for cancer pain.

In the present study, it was observed that while relaxation technique itself provide a relaxed state, in addition to that, the time the professional psychologist spent with patient also seemed to have contributed towards an improved sense of relaxation in the patients. It was observed that patients who participated in the psychological intervention were highly motivated about the relaxation intervention and showed enthusiasm towards practicing on their own after being trained.

There are a number of difficulties involved in making direct comparisons of the present study results with those from the related literature. These are owing to variations that include differences in measures of stress, coping strategies and quality of life in patients with cancer. Out of the many studies which reported similar results, variations are seen in several aspects. Some studies have considered survival time (Greer, 1991; Buddeberg, Sieber, & Wolf, 1996) and others have considered the time of recurrence (Greer, Morris, & Pettingale, 1979; Greer, 1991; Trijsburg, Van Knippenberg, & Rijpma, 1992). Unlike same such studies, in the present study, patients were chosen immediately after diagnosis. This was followed by medical treatment in Part A and both medical treatment and psychological intervention in Part C on cancer patients. A relatively short period of 6 weeks of intervention and preand post- assessment to find out the impact of intervention followed.

Impact of cognitive behaviour therapy

In the present study out of 30 patients in the sample only 19 patients have reported negative automatic thoughts before using CBT as a part of medical and psychological intervention. Patient wise data (see Figures 5-23) of the negative automatic thoughts before and after intervention show a decrease in the intensity of negative automatic thoughts after 6 sessions of CBT. This demonstrated that the CBT has helped the patients with cancer in dealing with their NATs more effectively. Several randomized controlled trials done by previous studies report similar findings. Quasi experimental studies testing CBT in patients with breast cancer showed similar results, most notably studies like Berger, et al. (2002 & 2003); Quesnal et al., (2003); and Savard, Simard, Ivers, & Morin, (2005). Cognitive behaviour therapy in lung cancer patients with insomnia could improve quality of life, lung cancer symptoms as well as improve mood disturbances (Rumble et al., 2005). Sharon et al., (2006) in their review suggested that there is sufficient evidence to conclude that cognitive behavioral interventions are effective in reducing and managing psychological distress in cancer patients and are accepted by these patients.

Part C

Impact of medical and psychological combined intervention package on stress, coping strategies and quality of life in patients with cancer

The sixth objective of study was to test the effectiveness of the developed psychological intervention package on the stress, coping strategies and quality of life of a new sample of patients with cancer.

Stress of patients with cancer pre- and post-MPIA

The results depicted in showed Table 9 that there was a significant difference between pre- and post-MPIA in all domains related to stress. The scores of overall stress of the patients with cancer were better during post-MPIA, and the effect of medical and psychological intervention was found to be high. Whereas in Part A, where only medical intervention was used, the findings showed that the everyday life restrictions scores were significantly higher in post-MIA compared to pre-MIA. The change towards reduction in everyday life restrictions after the usage of combined package thus points to the possibility of the benefits that a psychological intervention can attain if added to medical intervention. In Part A, there was no significant difference between pre- and post-MIA on social strains. The reduction in social strains in post-MPIA thus may be attributed to the usage of psychological intervention.

The present results are supported by the results of previous studies. A similar study by Carlson and Bultz, (2003) concluded that psychosocial interventions are often efficacious in decreasing distress and improving QoL. Many more studies also show similar results which indicate that psychological interventions (Andersen et al., 2004; Shapiro & Recht, 2001; Maltoni et al., 2005) show substantial efficacy in reducing emotional distress for cancer patients (Dodd, 1988; Scheier et al., 2005; Goodwin, Leszcz, & Ennis, 2001; Yates et al., 2005). Fawzy, Cousins and Fawzy, (1990) report that a short-term psychiatric group intervention for patients with malignant melanoma effectively reduces psychological distress and enhances long-term effective coping. Fawzy, Fawzy and Canada (2001) found that newly diagnosed malignant melanoma patients who received a psychoeducational intervention showed significantly lower levels of anxiety, depression and general psychological distress at

the six month follow-up. Similar benefits of education have been reported by Fawzy et al. (1993). According to Holland and Alici, (2010) psychosocial, behavioural, and pharmacologic interventions to reduce distress will enhance patients' ability to adhere to treatment, which improves outcomes in cancer care.

If efficacious psychological interventions to reduce stress are delivered early, they will improve mental health, health and treatment-relevant behaviors, and potentially, biologic outcomes (Hewitt, Herdman, & Holland, 2004). Psychological interventions reducing cancer patients' stress can help them recover from treatment and enter remission faster (Amy, 2010). Results of the present study show significant pre- and post difference on QSC-domains: psychosomatic complaints, fear, information deficits, Everyday life restrictions and social strains (Table 12) of the patients with cancer after the psychological intervention was used along with medical intervention. The psychological intervention comprised of psychoeducation, CBT and Relaxation. A study done to test the efficacy of CBT for cancer pain reported that that, overall, this treatment significantly reduced pain (Abernethy, Keefe, McCrory, Scipio, & Matchar, 2006). It is claimed that patients managed via 'multidisciplinary programmes have lower overall healthcare costs, return to work more frequently and experience greater pain control as compared with those managed with more traditional biomedical models (Gill, Taylor, & Knaggs, 2012).

When they were newly diagnosed with cancer, the patients would develop fears of progression of disease which contributes to stress. Several reviews revealed that this would be reduced if psychological interventions are used. Fear of progression, one of the main sources of distress for cancer patients, can be reduced

with short psychotherapeutic interventions (Herschbach et al., 2010; Herschbach, & Dinkel, 2011), predicted long-term response to therapy (Dinkel et al., 2012).

Lack of information would also be one of the major factors to contribute to stress in patients with cancer according to a few studies. Patients rate information needs pertaining to their illness and treatments as very important (Boberg et al., 2003). For instance, information should be tailored to each patient's expectations and preferences (e.g., much detailed information in advance versus less information provided on an as-needed basis), as well as to the patient's individual diagnosis and clinical situation. Evidence also indicates that patients' wide range of information needs (e.g., information specific to their type and stage of cancer, treatment, prognosis, rehabilitation, achievement and maintenance of maximal health, coping, and financial concerns) change over time, for example, during and after treatment (Rutten, Arora, Bakos, & Aziz, 2005; Epstein & Street, 2007).

The present study results indicated that patients with cancer experienced relatively lower stress after the information which was provided through video clippings and written materials such as pamphlets and flip charts as well discussions during the interventions. Coulter and Ellins (2006) in their study report that written information improved knowledge and recall of health information, and the provision of verbal and written information together had a greater impact than the provision of either alone. The findings of the present study were in contrast with the findings of Hersch, Juraskova, Price, and Mullan (2009) who concluded that information-based interventions seemed largely unable to provide meaningful benefits. On the other hand, according to them, cognitive-behavioural interventions had some positive effects.

The present study shows that stress related to social strains reduced after medical and psychological intervention. The intervention included regular interaction by the therapist with the patients three times a week for six weeks in order to provide relaxation, CBT, psychoeducation for the patients. In addition, the caretakers of the patients were also involved in terms of helping in relaxation training. Thus through the period following daignosis and immediate treatment, the therapist psycghological support combined with family support may have helped the patients deal with distress better.

In the present study the findings indicated that Everyday life restrictions were decreased and they were able to perform within normal limit after medical and psychological intervention. The reason could be patients with cancer who participated in the present study during treatment spent their time mostly at home during treatment and were dominated by self-care and leisure, with social engagement limited to immediate family and close friends.

During post-MPIA patients with cancer showed lower levels of stress. A lower stress level seems to have helped them towards reduced psychosomatic complaints, fear of progression of disease and social strains. The intervention where Psychoeducation was consistently used for 6 weeks and attempt was made to dispel their myths and misconception seemed to have helped them in proper dissemination of information about their condition. In addition, reduced fear related to life expectancy both through factual information provision using Psychoeducation and CBT that dealt with irrational cognitions, seemed to have contributed towards lowering of overall stress level, complementing the strength provided by medical intervention. On the other hand when only medical intervention was used, the results showed that in postMIA, psychosomatic complaints, fear, information deficit were lower, whereas Everyday life restrictions were higher and social strains showed no differences, in comparison to pre-MIA. Thus combined intervention seems to have helped the patients when added to medical intervention rather than using medical intervention alone.

Coping strategies adopted by patients with cancer pre- and post-MPIA

Table 10 indicated a large increase in problem focused coping strategies in post-MPIA, increase in emotion focused coping strategies, adaptive coping strategies in post- MPIA, whereas maladaptive coping strategies seem to be lower in post-MPIA, in comparison to pre-MPIA.

As part of the problem focused coping strategies of the patients with cancer, a significant difference was found between pre- and post-MPIA scores of active coping, planning and use of instrumental support. It may be recalled here that as a part of psychological intervention, awareness related to coping and various strategies was provided in psychoeducation. This may have helped the patients with cancer in focusing on more problem focused strategies. As result of medical and psychological intervention, in Part C, the patients have been using problem focused coping to a large extent. There was a difference in pre- and post-MIA on problem focused coping strategies in Part A too, but the difference on problem focused coping strategies in part A and Part C are in opposite directions. In Part A problem focused coping strategies was more in pre-MIA where as in Part C, problem focused coping was more in post-MPIA.

Studies have shown that effective usage of coping strategies helps in the management of stress. Problem focused coping strategies are those that change one's emotions or thoughts about a stressor or ones that involve effortful behaviour to reduce the stressor. These have included active coping (i.e., attempting to find a solution for the problem) (Rogers, Hansen, Levy, Tate, & Sikkema, 2005). These strategies refer to coping efforts that defuse stressful situations through active, direct, and goal-oriented activities such as information seeking, problem solving, planning, and seeking social support (Tobin, Holroyd, Reynolds, & Wigal, 1989). A study by Wijndaele et al. (2007) found that participants that engaged in problem-focused coping had reduced symptoms of stress, anxiety and depression, compared to participants that engaged in other coping styles. Problem-focused coping is associated with reduced distress in cancer patients (Billings & Moos, 1984; Cronkite, Moos, Twohey, Cohen, & Swindle, 1998). According to Lazarus and Folkman, 1984; Lutgendorf, Anderson, & Ullrich, 2002) problem focused strategies (e.g., planning or seeking instrumental support) intervene in the stressful situation.

Results indicated that the emotion focused coping strategies among patients with cancer was second most used coping strategies during post- MPIA in comparison to pre-MPIA and the effect of medical-psychological intervention was found to be high. Similar findings were seen in Part A too. A study was conducted by Genc and Tan (2011) to find the relationship between the physical and psychological symptoms of 46 patients with LC undergoing chemotherapy and their coping strategies. Their findings revealed that they commonly preferred emotion-focused coping strategies.

Evidence suggests that coping through emotional approach i.e., coping through actively processing and expressing emotion (Stanton, Danoff-Burg, Cameron, & Ellis,

1994; Stanton, Kirk, Cameron, & Danoff-Burg, 2000) may enhance adjustment in cancer patients. Randomized, controlled studies of psychological interventions, in which one intervention component is the facilitation of emotional expression, provided evidence that these interventions can enhance psychological adjustment (Fawzy, Cousins, et al., 1990; Spiegel, Bloom, & Yalom, 1981), improve immune function (Fawzy, Kemeny, et al., 1990), and perhaps promote longer survival (Fawzy et al., 1993; Spiegel, Bloom, Kraemer, & Gottheil, 1989) in groups with cancers such as metastatic breast cancer and malignant melanoma. It may be noted that most of these studies were multi component interventions too.

A significant difference was found between pre- and post- MPIA scores of positive reframing, and religious coping in emotion focused coping strategies. Patients with cancer used more positive reframing and religious coping strategies during post-MPIA, thus showing the effect of the intervention to be high. Similar results were observed in Part A also where positive reframing and religious coping were significantly better in post-MIA as compared to pre-MIA. However, in Part A, there was a significant difference between pre- and post MIA on use of emotional support where use of emotional support was more during post-MIA. Positive reframing relates to viewing the problem in a more positive way (Cohen, 2002). Patients after cancer surgery who were frequently using positive reframing and active coping were more likely to find benefits in their disease (Urcuyo, Boyers, Carver, & Antoni, 2005). This coping, among survivors of cancer, has been studied extensively and is reported to be used frequently (Berckman & Austin, 1993; Jarrett, Ramirez, Richards, & Weinman, 1992). It has been linked to higher scores on measures of mental health and psychological well-being (Ell et al., 1989), positive affect (Manne et al., 1994), lower psychological or emotional distress (Carver et al., 1993; Dunkel-Schetter, Feinstein,

Taylor, & Falke, 1992; Ell et al., 1989; Schnoll Mackinnon, Stolbach, & Lorman, 1995), lower psychiatric symptomatology (Chen et al., 1996).

The adaptive coping strategies and under this category acceptance (Table 13) was the most used coping strategy during post-MPIA in comparison to pre-MPIA. The effect of medical-psychological intervention was found to be high. It may be seen that Part A, though there was an increase in usage of adaptive coping strategies in post-MIA, it was not significant. Similar findings were reported by Maeda, Kurihara, Morishima, and Munakata (2008); Roesch, Adams, and Hines, (2005) where the intervention seemed to have enhanced the short-term personality change, adaptive coping, and psychological well-being of primary breast cancer patients.

The results showed that the maladaptive coping strategies among patients with cancer were low during post- MPIA in comparison to pre-MPIA. The effect of medical and psychological intervention was found to be high. In Part A, also significant difference between pre- and post-MIA scores on maladaptive coping strategies was seen where maladaptive coping strategies decreased during post-MIA. Present study results showed that these maladaptive types of coping strategies were less used after post-MPIA. This shows that the patients benefited from the intervention and maladaptive coping strategies reduced.

A significant difference was found between pre- and post- MPIA scores of venting, behavioral disengagement, self-distraction, and denial. Patients with cancer used these strategies lesser during post- MPIA. The effect of medical-psychological intervention was found to be high. In Part A also there was significant difference between venting, self-distraction, denial which were low in post-MIA as compared to pre-MIA. The findings of a study by Sherman, Simonton, Adams, Vural, and Hanna

(2000) showed that "denial, behavioral disengagement, suppressing competing activities, and ventilating emotions" were the coping strategies most commonly used by patients during treatment or immediately following treatment. It may be noted that no psychological intervention was used in the quoted study. In the present study however, owing to the psychological intervention, the results were different and patients used lesser maladaptive coping strategies after medical and psychological intervention.

The results on substance use as maladaptive coping strategy of Part C are in contrast with Part A, where there was significant decrease in substance use. This may be attributed to the small sample size in Part C were one patient out of 10 HNC patients resorting to substance use has affected the results.

GHS/ QOL of patients with cancer pre- and post-MPIA

EORTC-QLQ30 scores depicted in Table 11 showed that there was a significant difference between pre- and post-MPIA scores of GHS /QoL of the patients with cancer. These scores showed that the patients with cancer in the sample have shown overall improvement post-MPIA in GHS /QoL and it was found to be above average. The effect of medical and psychological intervention was found to be high. These findings were similar to those of Nordin et al. (2012) who in their randomized clinical trial have provided empirical evidence regarding the effectiveness of a stress-management program on 300 patients given in group or individually during adjuvant therapy in terms of decreased stress, minimizing fatigue, and maintaining or enhancing patients' quality of life and psychological well-being. A study by Rueda et al. (2011) showed that psychotherapeutic, psychosocial and educational interventions can play some role in improving patients' quality of life. According to Degi (2006)

psychotherapy and psycho-social interventions in oncological rehabilitation, have been proved to reduce the psycho-social vulnerability of cancer patients and to enhance HQoL. Similar findings were seen in the studies of Rawl et al. (2002); Rehse and Pukrop (2003). According to Goodwin (2005) psychosocial intervention has been linked to improvements in QoL variables among breast cancer patients. Similar findings were also seen in Indian studies by Nandini et al. (2011). The present study findings are also supported by Devi's (2011) review findings which pointed that patients who received palliative care intervention along with oncological treatments had higher scores of Quality of life compared to patients who received only oncology care alone.

Studies highlight the importance of psychological and psychosocial interventions effectiveness in maintaining or improving the QOL for prostate cancer (Badger et al. 2011). Psychosocial intervention helps Improving patients' levels of general functional ability or quality of life (Cain, Kohorn, Quinlan, Latimer, & Schwartz, (1986); Arathuzik, (1974); Richardson, (1997); Maguire, Brooke, Tait, Thomas, and Sellwood, (1983); Maguire, Tait, Brooke, Thomas, and Sellwood (1987); Dodd, (1987). Ultimately, the quality of life of the patient can be positively influenced with the help of psycho-oncological interventions (Tschuschke, 2002; Fawzy, 1995; Ali & Khali, 1989).

A significant difference was found between pre- and post-MPIA scores of functional scales of physical functioning and emotional functioning, scores on these scales increased from average to high, and the effect of medical-psychological intervention was found to be high and role functioning also improved but it was found to be low. Similar findings were reported in Part A too on emotional functioning.

Previous studies also support the above findings. In a study by Allison et al. (2004) which intended to test the feasibility of providing a psycho-educational intervention for people with head-and-neck cancer, it was seen that following the intervention, the patients showed significant improvements in physical and social functioning and global qualities of life. Similar seminal study by Korstjens, Mesters, van der Peet, Gijsen, and van den Borne, (2006) showed that improvement was seen on 658 patients in global quality of life and emotional functioning. Studies also demonstrated better improvement in global quality of life and emotional function (Hartmann, Muche, & Reuss-Borst, (2007), role functioning (Hartmann, Ring, & Reuss-Borst, 2004). In Part A there was a significant difference in cognitive functioning which was not found in Part C.

EORTC-QLQ30 symptoms scale results indicate that there was a significant difference between pre- and post-MPIA scores of fatigue, pain, dyspnoea, insomnia, appetite loss and diarrhea of the patients with cancer. This showed that symptomatically the patients with cancer improved in health. The symptom scales indicated a decrease in symptoms from severe to mild during post-MPIA in comparison to pre-MPIA. The effect of medical-psychological intervention was found to be high. Such significant difference was not found in Part A between pre- and post-MIA on fatigue. However, in Part A there was a significant difference between pre- and post-MIA on nausea and vomiting, pain, dyspnoea, insomnia, appetite loss, constipation and diarrhea.

When previous studies were reviewed, seminal study findings by Goedendorp, Gielissen, Verhagen, and Bleijenberg (2009) revealed that intervention that specifically targeted fatigue yielded larger effect sizes. Findings of the present study

are also supported by certain other studies, Cohen and Fried, (2007); Forester, (1985); Spiegel, Bloom, and Yalom (1981), which showed that psychosocial interventions not specially designed to manage fatigue were effective in reducing fatigue during cancer treatment. More studies in the available literature suggest that psychological interventions may assist in the treatment of fatigue (Ream, Richardson, & Alexander-Dann, 2006; Armes, Chalder, Addington-Hall, Richardson, & Hotopf, 2007; Jacobsen Donovan, Vadaparampil, & Small, 2007). In a study by Borneman, Koczywas, and Sun (2010) which was a longitudinal, three-group, quasi-experimental study conducted over a 3-month period, a sample of 280 patients with breast, lung, colon, or prostate cancers, stage III and IV disease were chosen as sample. Their results showed that their educational intervention resulted in an increase in knowledge and a decrease in barriers related to management of pain and fatigue. Another study (Given, Given, & McCorkle, 2002) suggests that behavioral interventions targeted to specific symptoms, such as pain and fatigue, can significantly reduce symptom burden and improve the quality of life for patients with cancer. Gorin et al. (2012) in their findings revealed that psychosocial interventions had medium-size effects on both pain severity and interference.

Patients with breast cancer receiving cognitive behavioral therapy for insomnia had significant improvements in fatigue, trait anxiety, depression and quality of life (Dirksen, & Epstein, 2008). Its effectiveness may be improved by evaluating and actively integrating HRQL assessments during the program, thereby enabling rapid and adequate symptomatic treatment and/or psychological intervention (Petruson, Silander, & Hammerlid, 2003). Semple et al. (2009) suggested that head and neck cancer patients with post-treatment psychosocial dysfunction can benefit from a problem-focused psychosocial intervention. Psychosocial interventions, including cognitive-behavioural therapy (CBT), crisis intervention, problem-solving techniques, supportive psychotherapy, and group psychotherapy, have been found to be effective in reducing distress and improving the overall quality of life among cancer patients (Institute of Medicine, 2008; Jacobsen, 2009).

Findings show that constipation increased during post-MPIA. According to many studies as well as the opinions of medical experts gathered by the investigator, this may be attributed to the possibility of narcotic effect, due to which patients usually have difficulties of constipation. Similar results were seen in Part A too. According to Harman (2009) many medications used in the direct treatment of cancer or in the treatment of side effects can cause constipation. Even with non-chemotherapy medications, there are several that are commonly used for cancer side effects that contribute to constipation. Constipation is probably the most prevalent side effect of opiod use, and it is also the side effect that is least likely for tolerance to develop (Smith, 2001).

There was no significant difference between pre- and post-MPIA scores of functional scales of cognitive functioning, social functioning and symptoms scales nausea and vomiting, and financial difficulties. However, it was observed from the mean values that functional scales viz. physical functioning, emotional functioning and cognitive functions showed improvement from average to above average and high. Role functioning and social functioning were found to be low. Whereas symptom scales decreased from severe to mild, during post-MPIA. Relationship between stress, coping strategies, GHS/QoL, age and ECOGPS of the patients with cancer pre- and post-MPIA

Pre-MPIA

Table 12 shows there was a significant negative correlation in pre-MPIA between GHS/QoL and ECOGPS. This showed that when GHS /QoL of the patients with cancer decreased, there was an increase in their ECOGPS. Previous study by Mohan et al. (2007) also reported similar observations where lung cancer patients have an unsatisfactory Quality of life, with the global health status and physical functions being most affected. In Part A during post-MIA, when only medical intervention was used, when stress increased, there was an increase in ECOGPS. When problem focused coping increased, there was an increase in emotion focused coping and adaptive coping strategies. When maladaptive coping strategies increased, there was a decrease in GHS/QoL and increase in ECOGPS.

Post-MPIA

During post-MPIA, as Table 13 results show there was a significant positive relationship between problem focused coping strategies and maladaptive coping strategies. A significant positive relationship was found between stress and ECOGPS. When stress increased, there was decrease in ECOGPS. In Part A, where only medical intervention was used, the correlation matrix showed that when stress increased, there were an increase in maladaptive coping strategies and ECOGPS.

In post-MPIA there was a significant negative correlation found between problem focused coping strategies and GHS/QoL. In part A, when problem focused coping increased there was an increase in emotional coping and adaptive coping
strategies too. There was a significant negative correlation between adaptive coping strategies and maladaptive coping strategies. With an increase in the adaptive coping strategies of the patients with cancer, there was a decrease in their maladaptive coping strategies during post-MPIA and vice versa. In Part A, such findings were not found.

There was a significant negative correlation between maladaptive coping strategies and GHS/QoL. With an increase in maladaptive coping strategies of the patients with cancer, there was a decrease in their GHS/QoL and vice versa during post-MPIA. In Part A, with an increase in maladaptive coping strategies there was an increase in ECOGPS and a decrease in GHS/QOL.

A comparison between the post intervention assessment scores of stress, coping and GHS/ QoL post-MIA (Part A) and post-MPIA (Part C)

One-way ANCOVA was done with an intention to see if there was any difference in the post test scores after medical intervention only was used (Part A) and post test scores after medical and psychological intervention was used (Part C). An attempt was made to see if there was any such difference seen, then which of the post test scores (i.e., whether Part A or Part C) was better.

Values on Table 14 show that there was a significant difference between post test scores of Part A and post test scores of Part C in overall stress and their domains. Overall stress scores in the post test decreased after medical and psychological intervention when compared to post test after only medical intervention. The reduction in the mean score values of overall stress in Part C as compared with part A clearly indicate this findings. Same was the case with the scores of the domains of stress too. There was a significant difference on stress scores on domains of psychosomatic complaints, fears, information deficits, everyday life restrictions and social strains. The reduction in the mean scores of stress on afore mentioned domains of Part C as compared with Part A clearly demonstrate that there was a decrease in stress in these domains. Treatment response was not found to be a covariate on overall stress scores or scores on other domains of stress.

Values on Table 15 show that there was a significant difference between post test scores of Part A and post test scores of Part C in coping strategies and their domains. Post test scores of coping strategies on overall scores of problem focused coping, emotion focused coping, adaptive coping increased in Part C as indicated by the estimated mean values and overall scores on maladaptive coping decreased in Part C as indicated by the estimated mean values, when compared with Part A. The post test scores on some of the sub domains of these coping strategies also increased after medical and psychological intervention when compared to only medical intervention. There was a significant increase in the domains of problem focused coping viz. active coping, planning and use of instrumental support. The increase in the estimated mean score values of problem focused coping strategies sub domains in Part C as compared with part A clearly indicate this. Treatment response was not found to be a covariate on problem focused coping overall scores, or scores on domains of problem focused coping strategies. Similarly, there was a significant increase of emotion focused coping and on their domains of positive reframing and religion. The increases in the estimated mean score values of emotion focused coping strategies on its sub domains in Part C as compared with part A clearly indicate this. Treatment response was not found to be a covariate on emotion focused coping scores or scores on domains of emotion focused coping strategies. There was significant difference between post test scores of Part A and Part C on overall scores of adaptive coping and its domain of acceptance. The marked improvement in the estimated mean values of adaptive coping and acceptance in Part C in comparison with Part A show that adaptive coping and acceptance improved when medical and psychological intervention has been used as compared to usage of only medical intervention. Treatment response was found to be a covariate on adaptive coping and acceptance scores. The items pertaining to acceptance of reality of the illness and having to live with it constituted the items of acceptance as the domain under adaptive coping. Both in Part A and Part C, the medical intervention which seemed to help them largely in this acceptance, as treatment enabled them in their realistic acceptance over time, must have contributed to the importance of medical treatment contributing to their clinical status. Though it was evident from the estimated mean values that acceptance increased in Part C, the role of medical treatment and resultant status in acceptance of reality seemed to have played a significant role. The treatment response is thus a covariate in adaptive coping and its acceptance domain.

There was significant difference between post test scores of Part A and Part C on scores of maladaptive coping and its domains of substance use, self-blaming and denial. The marked reduction in the estimated mean values of maladaptive coping, self-blaming and denial domains (except substance use) in Part C in comparison with Part A show that maladaptive coping, self-blaming and denial were used lesser when medical and psychological intervention has been used of compared to usage of only medical intervention. This decrease in post test scores of Part C on overall scores of maladaptive coping and its domains mentioned above was clearly indicated by the estimated mean scores. Treatment response was not found to be a covariate on above indicated coping strategies scores.

Values on Table 16 showed that there was significant difference between post test scores of Part A and Part C on overall scores of GHS/QoL. The marked improvement in the estimated mean values of quality of life in Part C in comparison with Part A show that quality of life improved when medical and psychological intervention has been used as compared to usage of only medical intervention. This increase was indicated by the increase in the estimated mean scores of post test scores of Part C. With reference to the domains of functional scales, there was a significant difference between post test scores of Part C, when compared to Part A on the domains of physical functioning and emotional functioning. Treatment response was not found to be a covariate for overall scores of quality of life, sub domains of physical functioning and emotional functioning or any other domains of functional scales except role functioning. This shows that there was an improvement on physical and emotional functioning sub domains according to post test scores of Part C where medical and psychological intervention was used. On the domain of role functioning treatment response was a covariate, the reason for which could be because of the statements on this domain, which focussed on the following aspects viz., limitation of work and daily activities and pursuing hobbies and leisure time activities. In both these aspects role functioning may have its limitations on both part A and Part C, as patients included in the sample were those who were recently diagnosed with cancer and were undergoing different types of treatment. The treatment regimen and the change which they have to bring about in accordance with this present status of health with reference to their daily and work related activities need to be centred around the medical treatment. Hence, the psychological intervention perhaps did not contribute to

the improvement in post test scores of Part C compared to Part A. Among the domains of the symptoms scale, there was a significant difference on the sub domains of fatigue, pain, dyspnoea, insomnia and constipation, between the post test scores of Part A and Part C. The estimated mean values of all these domains indicate reduction of values on the above mentioned dimensions in post test scores of Part C, which indicate improvement in quality of life on the sub domains of the above mentioned symptoms scale. Except for dyspnoea, in the above mentioned domains of symptoms scale, treatment response was not found to be a covariate. However, on dyspnoea it was seen that treatment response was a covariate, though there was a improvement an post intervention score in Part C indicating lesser dyspnoea (as seen in the decrease in the estimated mean scores of dyspnoea). Dyspnoea indicates shortness of breath which requires medical attention which could be the reason for the above. On all other domains of symptoms scales treatment response was not a covariate.

Thus One-way ANCOVA done on stress, coping strategies and GHS/QoL and their components scores revealed that medical and psychological intervention contributed to the improvement in the variables measured. This was seen in the reduced stress, improved coping strategies and quality of life.

When all the components and subcomponents of stress, coping and quality of life have been thus compared, five components seem to have the treatment response as significant covariate. They are adaptive coping, acceptance, maladaptive coping, GHS/ QoL and dyspnoae. The results also show that on almost all domains except for eight components viz use of emotional support, venting, behavioral disengagement, selfdistraction, cognitive functioning, social functioning, nausea and vomiting and diarrhea there is a significant difference indicating an improvement in Part C. This shows that psychological intervention when combined with medical intervention showed better results. This signifies the effectiveness of psychological intervention for the patients with LC, BC and HNC.

Interview with Oncologists

The response to the semistructred interview done with five Oncologists indicated that majority of them felt that the reaction to the diagnosis of cancer is stressful whether the receiver of the news was the patient, his/her spouse or relative. Especially with patients, majority of Oncologists felt that response after diagnosis itself stressful. This stress may be related to financial issues, or family related issues and personal issues. The factors according to them were attributed to psychological and social factors. Majority of Oncologists reported that they themselves at times feel stressed about the condition of patients and use relavent coping strategies to deal with the same. While majority of the Oncologists reported that they seek social support via group discussion with senior professionals and peers, one said that usage of the clinical trails based on previous treatment cycles was helpful. One Oncologist also reported not being stressed as professional responsibility was looked at in separation from personal. Over all, the responses of the doctors also indicated a need for an intervention which could help cancer patients deal with psychological outcomes more effectively in addition to the medical intervention which takes care of physical problems largely. Thus it may be said that the psychological intervention added to the medical intervention in the present study is in line with the perceptions of the Oncologists about the psychological effects on the patients and the need to cope with the same.

Major findings of the present study

In the present study, findings revealed that the medical and psychological intervention has helped the patients in the following ways in addition to the effect medical intervention alone can produce. The following are the major findings based oon the difference in mean pre- and post-medical and psychological intervention.

There was a reduction of overall stress, everyday life restrictions and social strains after MPIA.

There was an improvement in usage of active coping, use of instrumental support under problem focused coping after MPIA, there was greater usage of positive reframing and religion under emotion focused coping. There was an improvement in adaptive coping, and usage of acceptance as strategies. There was also reduction of maladaptive coping by lowering the usage of strategies like behavioural disengagement along with others

Improvement was seen in GHS/ QoL. In the functional scales, improvement was seen on physical functioning and role functioning. On symptoms scales, there was a reduction of fatigue, insomnia, and diarrhea.

Thus while medical intervention does contribute to the overall health of cancer patients, adding a psychological intervention to complement the role of medical intervention was seen to be highly beneficial. The dimensions of stress which could not be handled by medical intervention alone were dealt with when medical and psychological intervention was used. Improvements were seen in adaptive coping and other helpful coping strategies like active coping, planning, usage of instrumental support, positive reframing and religion. There was decrease in maladaptive coping strategies. The impact of adding psychological intervention was also seen on QoL, as well as on functional and symptoms scales in positive direction.

Conclusion

The present study considered the actual treatment situation to see whether any additional support is required other than medical treatment. But the treatment situation was a very complex one. The treatment given was radiotherapy, chemotherapy, hormonal therapy and surgery, or a combination of these, for the first time or repeatedly. For those reasons, the results may be considered preliminary. In the present study it can be concluded that the Part A and Part C highlight the differential impact of stressors as well as the different coping strategies adopted by patients with cancer to overcome stress challenges and enhancing quality of life during the cancer treatment. The findings also revealed that there is an impact of psychological intervention along with medical treatment.

Recommendations

Being the informal caregivers, family members are crucial in maintaining the well being of the patient at home. The well being of the patient in turn affects that of the caregivers. Hence, intervention aimed at handling caregivers stress, coping and quality of life also need to be taken care of.

Soon after diagnosis if the patients would be referred to psychologists, that may help to start early intervention aiming at reducing stress using effective coping strategies, thus enhancing QoL of patients with cancer. To achieve these issues, a well disgined tailor made package of psychoeducation, relaxation and cognitive behavioural therapy as per the needs of the patients, before and during treatment and post-treatment follow ups are recommended.

To practically implement these issues, a busy clinician alone may not be able to spare sufficient time. It will be beneficial that every cancer centre should have a "Psychooncology department" consisting of a mental health team which includes health psychologist in addition to medical health specialists to take proper care and counsel the patients before, during and after the treatment. This would ensure a better quality of life of the patient through entire treatment process and even after treatment.

As a multidisciplinary approach all healthcare staff involved in the care of patients with cancer should be familiar with the appropriate aspects of treatment including psychosocial interventions. Hence, awareness about psychological interventions is needed at various levels in the health care staff.

Limitations

There are a number of difficulties involved in making direct comparisons of present study results with those from the literature on this topic. These include differences in measures of stress, coping strategies and quality of life in patients with cancer. Their procedures are evidently different from the present study, where patients were chosen immediately after diagnosis. This was followed by treatment or intervention. A relatively short period of 6 weeks of intervention and pre- and postobservation followed by assessment of the impact of intervention showing the efficacy of the interventions was followed.

208

In the present study the age range of patients with cancer is 27-62 years. Age would be one of the prognostic factors for QoL in the treatment itself and a larger sample with clear age wise categorization would perhaps yield clearer resutls.

The sample size in Part C is quite small and generalizability of the results is limited. Furthermore, the presence of a control group in the same phase would have enhanced the validity of the findings. The psychological states showing their impact upon the variables studied may also depend upon the stage of cancer, nature and intensity of treatment procedures and the resultant physiological effect on the patients too. The kind of therapy and phase of treatment progression may also have differential impact.

Implications

The study stands as a guide for developing holistic psychoeducational, relaxation and cognitive behaviour therapy intervention packages and tailor made programmes for patients with cancer and specific types of cancer. If a similar study is taken up some of the considerations should be taken care of as listed below.

(1) Future studies may be conducted with a larger sample size to enable generalizability of the results.

(2) Long- term follow-up must be carried out to establish the efficacy of the intervention programme.

(3) Further research is also required on outcomes (including patient and carer satisfaction measures) and on the continuation of the approach following an initial treatment programme.

209

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Appendix – 1 Part A

SUBJECT'S INFORMED CONSENT FORM

This is a study on "Stress, coping and quality of life in patients with Cancer".

Why are you approached to be a Volunteer in the study?

You are requested to participate in the study because you are diagnosed with cancer. Your participation to the study is purely voluntary. Please read the details of the study carefully. In case you have any questions please free to get all quarries answered by the Investigator. After understanding the whole study, if you are convinced to participate in the study, you may sign the consent form.

Purpose of the study:

The Investigator intends to study the levels of stress, types of coping and quality of life in patients with Cancer. The exploration may help him/ her in designing an intervention aimed at helping the patients deal more positively with stress, develop adaptive coping and a better quality of life.

Do you have to stop any of your prescribed medicines/ therapies (Radiation therapy / Chemotherapy)?

No. You **need not stop** any medicines you have been taking for your ailments including **radiation or chemotherapy**. You can continue with your regular followup. We advise you to visit your hospital / physician with continues with all cycles of chemotherapy/ radiation therapy.

What does this study do the subjects?

The study seeks to explore level of stress, coping and quality of life in patients with cancer. About 100 participants are expected to take part in the study. In case you give your consent to participate in this study you will be a period of six weeks during

which you will be assessed on the stress levels, coping and quality of life. After exploring level of stress, coping strategies and quality of life, the Investigator would like to develop a psychological intervention programme.

The first assessment will be at the time of first meeting with the Investigator, the second assessment will be six weeks from the first one. Each assessment will include three questionnaires (QSC-R23, Brief COPE and EORTC-30) which will take about 10 minutes each to complete. If a participant has any difficulty to fill up the questionnaire, in terms of language, understanding or others, the researcher will assist the participant to complete the questionnaires.

The researcher will contact you either in person or by telephone for scheduling the assessment and any follow up sessions.

Will you be paid for participation in the study?

No. Your participation in the study will be totally voluntary and no payments will be made for enrolling yourself in the study.

Can you leave the study in the middle?

Yes, you are free to withdraw at any time that you decide against further participation in the study without explaining any reason.

In case you have any further questions about the study you may contact the Investigator Mr. B.Vijay Prasad on the phone number 9177624278.

If you are satisfied with the information you may please sign the consent form.

Stress, Coping and Quality of Life in Patients with Cancer

A research work for PhD in Psychology, Centre for Health Psychology University of Hyderabad

PARTICIPANT CONSENT FORM

This is to state that I have read the information sheet carefully and understood the details of the study. I give my consent to participate in the study "Stress, coping and quality of in patients with Cancer". Conducted by the B. Vijay Prasad research scholar, Centre for Health Psychology, University of Hyderabad 500 046.

I give my consent for participating in the study, to give my response to the questionnaires of the Investigator and as a part the study when it is required, at my residence / hospital / place of mutual convenience.

Name of the Participant Address: Signature of the participant

Phone No: E-mail:

Appendix - 1 Part B SUBJECT'S INFORMED CONSENT FORM

This is a study on "Stress, coping and quality of life in patients with Cancer".

Why are you approached to be a Volunteer in the study?

You are requested to participate in the study because you are diagnosed with cancer. Your participation to the study is purely voluntary. Please read the details of the study carefully. In case you have any questions please free to get all quarries answered by the Investigator. After understanding the whole study, if you are convinced to participate in the study, you may sign the consent form.

Purpose of the study:

The Investigator intends to study the levels of stress, types of coping and quality of life in patients with Cancer. The psychological intervention packages will be found to be effective in reducing stress, fostering appropriate coping strategies and enhancing quality of life in patients with cancer.

Do you have to stop any of your prescribed medicines/ therapies (Radiation therapy / Chemotherapy)?

No. You **need not stop** any medicines you have been taking for your ailments including **radiation or chemotherapy**. You can continue with your regular followup. We advise you to visit your hospital / physician with continues with all cycles of chemotherapy/ radiation therapy.

What does this study do the subjects?

The study seeks to explore level of stress, coping and quality of life in patients with cancer. About 30 participants are expected to take part in the study. In case you give your consent to participate in this study you will participate for period of six weeks during which you will be assessed on the stress levels, coping and quality of life. After exploring level of stress, coping strategies and quality of life, then you will be included in the psychological intervention programme. The first assessment will be at the time of first meeting with the Investigator, the second assessment will be six weeks from the first one. Each assessment will include three questionnaires (QSC-R23, Brief COPE and EORTC-30) which will take about 10 minutes each to complete. If a participant has any difficulty to fill up the questionnaire, in terms of language, understanding or others, the researcher will assist the participant to

complete the questionnaires. In between these two assessments as a psychological intervention the Subject will be provided, Psychoeducation, Cognitive mediation and training Relaxation by Guided Imagery (RGI). In guided imagery, the Psychologist will provide a vivid description of a natural surrounding and the Subject will be instructed to imagine being in the described environment. Each session will be for duration of 45-60 minutes. The Subject will receive the therapy once a week for a period of 6 weeks. In addition psychoeduction and cognitive mediation are done through educative video clippings and doubt clarification if any by a specialist.

The researcher will contact you either in person or by telephone for scheduling the assessment and any follow up sessions.

Will you be paid for participation in the study?

No. Your participation in the study will be totally voluntary and no payments will be made for enrolling yourself in the study.

Confidentiality:

All personal details obtained during this study will be stored in strict confidence. The data will be used for only academic and research purpose.

Can you leave the study in the middle?

Yes, you are free to withdraw at any time that you decide against further participation in the study without explaining any reason.

In case you have any further questions about the study you may contact the Investigator Mr. B.Vijay Prasad on the phone number 9177624278.

If you are satisfied with the information you may please sign the consent form.

Stress, Coping and Quality of Life in Patients with Cancer

A research work for PhD in Psychology, Centre for Health Psychology University of Hyderabad

PARTICIPANT CONSENT FORM

This is to state that I have read the information sheet carefully and understood the details of the study. I give my consent to participate in the study "Stress, coping and quality of in patients with Cancer". Conducted by the B. Vijay Prasad research scholar, Centre for Health Psychology, University of Hyderabad 500 046.

I give my consent for participating in the study, to give my response to the questionnaires of the Investigator and as a part the study when it is required, at my residence / hospital / place of mutual convenience.

Name of the Participant Address: Signature of the participant

Phone No: E-mail:

DEVELOPMENT OF PSYCHOLOGICAL INTERVENTION

Before the study was done the researcher interacted with the oncologist and other medical staff of the institute where the participants for study were proposed to be selected. The purpose of study was discussed in detail and with the support and cooperation of the oncologist and medical supervisors, the study was conducted.

A pilot study was done by the researcher to understand and assess the feasibility of research after which the actual study was conducted.

Designing and Developing of Psychological Intervention Package

Based upon the results of the Part A where assessment of stress, coping and quality of life was done before and after medical intervention, a psychological intervention was developed, which could be used in addition to the medical intervention. The psychological intervention targets the appropriate areas of concern related to stress, coping and quality of life in the patients with cancer.

It was observed during the Part A of investigation, that a number of patients expressed a need for and lack of proper information about their condition or illness and they wanted to know for what purpose they were brought to the hospital and necessity to take treatment. The quarries generally asked by them and inputs from several practicing Oncologist helped in developing a tool titled Cancer Information Scale (CINFOS). Considering all the above issues a psychoeducational intervention programme protocol was prepared. A CINFOS was developed focusing on the misconceptions of patients about their condition and treatment side effects. To dispel the misconceptions, psychoeducative material and visual aids were prepared such as video clippings (in English as well as regional languages) consisting of inputs from consultant oncologists. In addition to this, informative handouts, pamphlets and flip charts, pertaining to cancer myths and misconceptions were also provided. For reducing stress and enhancing their quality of life, visualization relaxation technique using guided imagery was used. To measure the level of relaxation Visual Analogue Scale was adopted (Wewers & Lowe 1990). Negative automatic thoughts and cognitive distortions of the patients were identified and Cognitive Behaviour Therapy (CBT0 was used to deal with the same and measurement was done using triple column technique (Burns, 1989). After thus developing on intervention package the protocol was sent to a senior psycho-oncologist for the purpose of verification and suggestions for further modifications. The recommendations were incorporated and the intervention package was used as psychological intervention in addition to the medical intervention.

Application of psychological intervention along with medical intervention

During the Part A, a new sample of patients with LC, BC and HNC were selected as per the same criteria as in Part A. As in the Part A, the investigator interacted with the patients and briefed them about the study and written consent was taken for their voluntary participation in the present study. After rapport building, ECOGPS was administered with help of Oncologist to include patients with the specified types & stages of cancer as required in the present study. The same research tools used in Part A were used namely Questionnaire on Stress in Cancer Patients Revised Version (QSC-R23) for assessing stress, Brief COPE questionnaire for identifying type of coping strategies used by patients with cancer and European Organization for the Treatment and Research of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) for assessing their quality of life. Patients with LC, BC and HNC were chosen for participation in the study if they were within the IV stage of cancer. An observation record was maintained for pharmacological and psychological intervention as part of Part C, like chemotherapy, radio therapy, hormonal therapy and surgery etc. The psychological intervention consisting of psychoeducation, visualization technique (guided imagery) & cognitive behaviour therapy was conducted for a period of six weeks at the rate of three sessions per week (viz first session psychoeducation, second session guided imagery and third session cognitive behaviour therapy) for every patient alongside they ongoing medical intervention.

Psychoeducation was given after assessing the myths and misconceptions of the patients on cancer information scale. Each and every misconception was discussed and proper explanation was given individually to the patients with specific cancer i.e. LC, BC and HNC. They were provided necessary information that would answer and dispel their myths & misconception in the form of handouts as well as through pre-recorded video clippings counseling of interviews with senior oncologists. In addition, flip charts were also displayed and information pamphlets about truths & realities about cancer and specific types of cancer and dealing with cancer were distributed to the patients.

In the method of guided imagery, initially patients were explained about the visualization technique and how to use imagination guided towards pleasant images according to the instructions. Demonstration (familirizagation) was given till they understood the procedure. Once they were able to follow the instructions and able to imagine, sessions were conducted with the help of audio recorded guided imagery instructions given by a senior clinical psychologist. Caregivers and family members were also made aware of the procedure. After few sessions once the patients were able to properly practice and relax, recorded CD's were provided to the patients and

caregiver or family members who would assist the patients to practice relaxation method at their home, in addition to the relaxation under the supervision of the researcher during the weekly sessions. Assessment was done at the end of each relaxation session to measure the extent of their relaxation. This was done with help of Visual Analogue Scale (VAS) ranging from 0-100.

Cognitive Behaviour Therapy was administered by the researcher who is a trained clinical psychologist where the negative automatic thoughts and common cognitive distortions of the patients were identified through Triple Column Technique (TCT) and accordingly CBT sessions were held to help patient handle the distortions and reorient she/himself towards positive thinking. As a part of this the client was also helped to identify and apply more positive patterns of coping with the stresses being faced by them. A dairy was also maintained for each participant to record progression of the intervention programme.

After intervention, the research instruments to assess their stress, coping and quality of life were administered once again as post-medical and psychological intervention assessment. During the whole process, comforts of the patients were taken into consideration and at the end of the study the patients were thanked for their active involvement.

Dear Sir / Madam,

This is to collect information for the study mentioned above. The information collected herewith will be confidential & only for the study related activities. Your support in this is solicited and greatly acknowledged.

Hospital Name: Unit:	Reg.No:Date:			
DEM Participant Characteris 1. Name :	OGRAPHIC DATA FORM (DDF) tics			
2. Age	:			
3. Gender	: Male Female			
4. Marital Status	: Single Married Divorced Others			
5. Occupation	: Employed Self-employed Not employed			
6. SES	: USES MSES LSES			
7. Religion	: Hindu Muslim Christian Sikh Jain Others			
8. Language Spoken	: Telugu English Hindi			
9. Place of living:	Urban Rural Semi Urban			
10. Category of Cancer Cancer	: Lung Cancer Breast Cancer Head & Neck			
11.Stage	: I II IIIa IIIb IV			
1. Life style issues if an	ו y : Smoking Nonsmoking			
None Family Characteristics:	: Alcoholic Gutkha Others ()			
1. Caregiver: Spouse	Parents Brother Sister Son Daughter Others			
2. Family History of illn	ess if any : Present Nil			
3. Address for correspondence :				
Phone or Mobile No:	E-Id:			

Appendix - 4

	ECOG PERFORMANCE STATUS
Grade	Statements
0	Fully active, able to carry on all pre-disease performance without restriction
1	Restricted in physically strenuous activity but ambulatory and able to carry
	out work of a light or sedentary nature, e.g., light house work, office work
2	Ambulatory and capable of all selfcare but unable to carry out any work
	activities. Up and about more than 50% of waking hours
3	Capable of only limited selfcare, confined to bed or chair more than 50% of
	waking hours
4	Completely disabled. Cannot carry on any selfcare. Totally confined to bed or
	chair
5	Dead

Cancer Specific Questionnaire (QSC-R -23)

Here is a list of situation that you might encounter and that might cause you stress. For each situation, please first decide whether the situation currently applies to you. If so, then please indicate how much of a problem the situation is for you by making an "X" on the five point scale "only a slight problem" to "a very big problem". If not, then make an "X" under "Does not apply to me".

Name:	_	Applies to me, is
Age:Gender M: / F	Does not apply to me.	problemproblem
1. I often feel tired and weak		
2. I am suffering pain due to surgery		
3. I feel unconfident in relationships with other pe	eople	
4. I am suffering pain due to unknown causes (he	adaches, lower	
back pain, belly aches)		
5. I am afraid of a progression of my disease		
6. Other people often react unconsiderate/ unsym	pathetic way.	
7. Body care has become difficult since I develop	ed cancer	
8. I am afraid of developing pain		
9. I have the feeling to be of less value for other p	eople	
10. I' m afraid of having to go to the hospital again	1	
11. I feel physically imperfect		
12. I can't follow my hobbies (e.g. sports)as much	as before I dev	eloped cancer
13. I often have trouble sleeping		
14. I'm afraid of not being able to work anymore		
15. I don't feel well informed about my illness/ tre	atment	
16. I'm often tense and nervous		
17. I've had sex less frequently since developing c	ancer	

18. I don't feel adequately informed about possibilities for social/ financial						
support						
19. It's difficult to talk with my family about my situation \Box \Box \Box \Box						
20. Since I developed cancer I have been going out less						
(to the movies, out to eat, visiting friends etc.) \Box \Box \Box \Box						
21. Different doctors gave different information about my illness						
22. I have too few opportunities to talk about emotional problems with a						
specialist						
23. It's difficult for my spouse /partner to empathize my situation						

BRIEF COPE INVENTORY

These items deal with ways you've been coping with the stress in your life since you found out you were going to have to have this operation. There are many ways to try to deal with problems. These items ask what you've been doing to cope with this one. Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping. I want to know to what extent you've been doing what the item says. How much or how frequently. Don't answer on the basis of whether it seems to be working or not -just whether or not you're doing it. Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

- 1 = I haven't been doing this at all
- 2 = I've been doing this a little bit
- 3 = I've been doing this a medium amount
- 4 = I've been doing this a lot

S.No	ITEMS	Rating
1	I've been turning to work or other activities to take my mind off things.	
2	I've been concentrating my efforts on doing something about the	
	situation I'm in.	
3	I've been saying to myself "this isn't real".	
4	I've been using alcohol or other drugs to make myself feel better.	
5	I've been getting emotional support from others.	
6	I've been giving up trying to deal with it.	
7	I've been taking action to try to make the situation better.	
8	I've been refusing to believe that it has happened.	
9	I've been saying things to let my unpleasant feelings escape.	
10	I've been getting help and advice from other people.	
11	I've been using alcohol or other drugs to help me get through it.	
12	I've been trying to see it in a different light, to make it seem more	

	positive.	
13	I've been criticizing myself.	
14	I've been trying to come up with a strategy about what to do.	
15	I've been getting comfort and understanding from someone.	
16	I've been giving up the attempt to cope.	
17	I've been looking for something good in what is happening.	
18	I've been making jokes about it.	
19	I've been doing something to think about it less, such as going to	
	movies, watching TV, reading, daydreaming, sleeping, or shopping.	
20	I've been accepting the reality of the fact that it has happened.	
21	I've been expressing my negative feelings.	
22	I've been trying to find comfort in my religion or spiritual beliefs.	
23	I've been trying to get advice or help from other people about what to	
	do.	
24	I've been learning to live with it.	
25	I've been thinking hard about what steps to take.	
26	I've been blaming myself for things that happened.	
27	I've been praying or meditating.	
28	I've been making fun of the situation.	

European Organization for the Treatment and Research of Cancer Quality of Life Questionnaire-QLQ-C30, version 3.0.

We are interested in some things about you and your health. Please answer all of the questions yourself by circling the number that best applies to you. There are no "right" or "wrong" answers. The information that you provide will remain strictly confidential.

		Not all	A Little	Quite a bit	Very Much	
1.	Do you have any trouble doing strenuous activities, like					
	carrying a heavy shopping bag or a suitcase?	1	2	3	4	
3.	Do you have any trouble taking a <u>long</u> walk?	1	2	3	4	
4.	Do you have any trouble taking a short walk outside of the					
	house?	1	2	3	4	
5.	Do you need to stay in bed or a chair during the day?	1	2	3	4	
6.	Do you need help with eating, dressing, washing yourself					
	or using the toilet?	1	2	3	4	

During the past week:

-	9 I I MARINE	Not all	A Little	Quite a bit	Very Much
6.	Were you limited in doing either your work or other daily				
	activities?	1	2	3	4
7.	Were you limited in pursuing your hobbies or other				
	leisure time activities?	1	2	3	4
8.	Were you short of breath?	1	2	3	4
9.	Have you had pain?	1	2	3	4
10.	Did you need to rest?	1	2	3	4
11.	Have you had trouble sleeping?	1	2	3	4
12.	Have you felt weak?	1	2	3	4
13.	Have you lacked appetite?	1	2	3	4
14.	Have you felt nauseated?	1	2	3	4
15.	Have you vomited?	1	2	3	4
16.	Have you been constipated?	1	2	3	4

During the past week:

		Not	Α	Quite	Very
		all	Little	a bit	Much
17.	Have you had diarrhea?	1	2	3	4
18.	Were you tired?	1	2	3	4
19.	Did pain interfere with your daily activities?	1	2	3	4
20.	Have you had difficulty in concentrating on things, like				
	reading a newspaper or watching television?	1	2	3	4
21.	Did you feel tense?	1	2	3	4
22.	Did you worry?	1	2	3	4
23.	Did you feel irritable?	1	2	3	4
24.	Did you feel depressed?	1	2	3	4
25.	Have you had difficulty remembering things?	1	2	3	4
26.	Has your physical condition or medical treatment				
	interfered with your family life?	1	2	3	4
27.	Has your physical condition or medical treatment				
	interfered with your social activities?	1	2	3	4
28.	Has your physical condition or medical treatment				
	Caused you financial difficulties?	1	2	3	4

For the following questions please circle the number between 1 and 7 that best applies to you

29. How would you rate your overall health during the past week?

1	2	3	4	5	6	7
Verv poor						Excellent

30. How would you rate your overall quality of life during the past week?

1	2	3	4	5	6	7	
Very poor						Excellent	

CANCER INFORMATION SCALE

(CINFOS)

వివరణము:

వివిధ రకాల క్యాన్సర్ల గురుంచి ఎంతోమందికి రకరకాల నమ్మకాలుంటాయి. ఈక్రింది అలాంటి క్యాన్సర్ కి సంభందించి భావనలను గురుంచిన పది వాక్యాలు ఇవ్పబడ్డాయి. ప్రతి వాక్యాన్ని జాగ్రత్తగా చదవండి. మీరు ఇచ్చిన వాక్యాలతో మీరు అంగీకరిస్తే దయచేసి 'నిజం' అసే పదానికి వృత్తం గుర్తు పెట్టండి. ఒకవేళ మీరు అంగీకరించకపోతే దయచేసి 'నిజం కాదు' అసే పదానికి వృత్తం గుర్తు పెట్టండి. ఏ వాక్యాన్ని వదలకుండా అన్నీ పూర్తిగా సమాదానాలివ్వండం ప్రధానం.

निर्देश:

साधारणतः कई लोग गंसामान्य कैंसर के संधर्ब में कुछ रखते है! कैंसर से संबंधित (बाते) में नीचे दस वाक्य दी गयी है! इन्हे आप ध्यान से पढ़े! अगर आप इस वाक्य से सहमत है तों 'सत्य' (हाँ) को चिहनत करें ! अगर आप असहमत है तों 'असत्य' (ना) को चिहनत करें! इस बात का ध्यान रखे कि आपने सभी प्रस्ने का उत्तर दिया है!

Instructions:

Many people carry certain beliefs about different types of cancer. Below given are 10 such statements relating to cancer. Read each statement carefully. If you agree with the statement, please encircle '**True**' and if you do not agree with the statement, please encircle '**False**'. It is important that you complete all the questions without leaving.

1	ఊపిరితిత్తుల (లంగ్స్) క్యాన్సర్ ఏొగత్రాగేవారికి మాత్రమే వస్తుంది	నిజం	నిజం కాదు
	धूम्रपान करनेवालों को ही लंग कैंसर आ सकता है	हा	ना
	Only smokers get lung cancer	TRUE	FALSE
2	క్యాన్సర్ వ్యాధి నయం కాదు	నిజం	నిజం కాదు
	कैंसर बीमारी के लिये कोई इलाज नहीं है	हा	ना
	There is no cure for cancer	TRUE	FALSE
3	క్యాన్సర్ శస్త్ర చికిత్స క్యాన్సర్ వ్యాపించకుండా నియంత్రిస్తుంది	నిజం	నిజం కాదు
	कैंसर शस्त्र चिकित्सा कैंसर फैलने से रोकता है	हा	ना
	Cancer surgery stops spread of cancer	TRUE	FALSE
4	ఊపిరితిత్తుల (లంగ్స్) క్యాన్సర్ ఒకరి నుంచి మరొకరికి వ్యాపించేది కాదు	నిజం	నిజం కాదు
	लंग कैंसर संचारी रोग नहीं है	हा	ना
	Lung cancer is not a communicable disease	TRUE	FALSE
5	కీమాథెరఫి వ్యక్తికి తరచుగా వాంతులకు దారితీస్తుంది	నిజం	నిజం కాదు
	कीमोथेरफी व्यक्ति को अक्सर उलटी करने के लिये मजबूर करता है	हा	ना
	Chemotherapy makes one vomit frequently	TRUE	FALSE
6	ఊపిరితిత్తుల (లంగ్స్) క్యాన్సర్ కు శస్త్ర చికిత్స (సర్జరీ) ఒక్కటే పరిష్కారం	నిజం	నిజం కాదు
	लंग कैंसर इलाज के लिये केवल शस्त्र चिकित्सा ही समाधान है	हा	ना
	The only solutions for lung cancer is surgery	TRUE	FALSE
7	ఊపిరితిత్తుల (లంగ్స్) క్యాన్సర్ నయం చేయడానికి ఎవరూ ఏమీచేయలేరు	నిజం	నిజం కాదు
	लंग कैंसर इलाज के लिये कोई भी कुछ नहीं कर सकता है	हा	ना
	There is nothing one can do to treat lung cancer	TRUE	FALSE
8	రేడియేషన్ థెరఫి వల్ల జుట్టు రాలిపోదు	నిజం	నిజం కాదు
	रेडियेशन (विकिरण) थेरफी से बाल नहीं झड़ते हैं	हा	ना
	Radiation therapy does not cause hair loss	TRUE	FALSE
9	రేడియేషన్ థెరఫి మరణానికి దారితీయదు	నిజం	నిజం కాదు
	विकिरण थेरफी से व्यक्ति की मृत्यु नहीं होती है	हा	ना
	Radiation therapy does not lead to death	TRUE	FALSE
10	క్యాన్సర్ తో ఉన్న ప్రతీ వ్యక్తి కీ ఒకేరకమైన చికిత్సను అందిస్తారు	నిజం	నిజం కాదు
	हर कैंसर के लिए एक ही प्रकार का इलाज उपचार है	हा	ना
	Every one with cancer gets the same kind of treatment	TRUE	FALSE

CANCER INFORMATION SCALE (CINFOS-LC)

1	రొమ్ము క్యాన్సర్ శస్త్ర చికిత్స అంట్ మొత్తం రొమ్ము ని తీసిపేయటమే स्तन कैंसर शस्त्र चिकित्स का अर्थ है कि स्तन निकाल देना है Surgery for breast cancer always means removal of whole breast	నిజం हा TRUE	నిజం కాదు ना FALSE
2	క్యాన్సర్ వ్యాధి నయం కాదు कैंसर बीमारी के लिये कोई इलाज नहीं है There is no cure for cancer	నిజం हा TRUE	నిజం కాదు ना FALSE
3	క్యాన్సర్ శస్త్ర చికిత్స క్యాన్సర్ వ్యాపించకుండా నియంత్రిస్తుంది कैंसर शस्त्र चिकित्सा कैंसर फैलने से रोकता है Cancer surgery stops spread of cancer	నిజం हा TRUE	నిజం కాదు ना FALSE
4	రొమ్ము క్యాన్సర్ వ్యాదినిర్దారణ అంటే మనిషి చనిపోతారని అర్థంకాదు स्तन कैंसर निदान का अर्थ यह नहीं है कि व्यक्ति की मृत्यु होगी Diagnosis of breast cancer does not mean death	నిజం हा TRUE	నిజం కాదు ना FALSE
5	కీమాథెరఫి వ్యక్తికి తరచుగా వాంతులకు దారితీస్తుంది कीमोथेरफी व्यक्ति को अक्सर उलटी करने के लिए मजबूर करता है Chemotherapy makes one vomit frequently	నిజం हा TRUE	నిజం కాదు ना FALSE
6	రొమ్ము క్యాన్సర్ ఏోషకాహారం తీసుకోవడం ద్వారా నివారించవచ్చు स्वस्त आहार व्यक्ति का स्तन कैंसर को नियंत्रित करता है Healthy diet, prevents one's breast cancer	నిజం हा TRUE	నిజం కాదు ना FALSE
7	గర్బ నిరోధక మాత్రలు తీసుకోవడం, రొమ్ము క్యాన్సర్ కు దారితీయదు गर्भ निरोधक गोली (दवाई) लेने से स्तन कैंसर नहीं होता Taking birth control pills does not lead to breast cancer	నిజం हा TRUE	నిజం కాదు ना FALSE
8	రేడియేషన్ థెరఫి వల్ల జుట్టు రాలిపోదు विकिरण थेरफी से बाल नहीं झड़ते हैं ! Radiation therapy does not cause hair loss	నిజం हा TRUE	నిజం కాదు ना FALSE
9	కుటుంబంలో రొమ్ము క్యాన్సర్ చరిత్ర , రొమ్ము క్యాన్సర్ కి దారితీస్తుంది परिवार में अगर स्तन कैंसर की परंपरा रही तो स्तन कैंसर आ सकता है Family history of breast cancer leads to breast cancer	నిజం हा TRUE	నిజం కాదు ना FALSE
10	క్యాన్సర్ తో ఉన్న ప్రతీ వ్యక్తి కీ ఒకేరకమైన చికిత్సను అందిస్తారు हर कैंसर के लिए एक ही प्रकार का इलाज उपचार है Every one with cancer gets the same kind of treatment	నిజం हा TRUE	నిజం కాదు ना FALSE

CANCER INFORMATION SCALE (CINFOS-BC)

1	సిగరెట్ కంటే గుట్కా, జర్దా పంటివి సురజీతం	నిజం	నిజం కాదు
	सिगरेट से जरदा, गुटका तंबाकू सुरक्षित है	हा	ना
	Gutkha and Zarda are safer than cigarettes	TRUE	FALSE
2	క్యాన్సర్ వ్యాధి నయం కాదు	నిజం	నిజం కాదు
	कैंसर बीमारी के लिये कोई इलाज नहीं है	हा	ना
	There is no cure for cancer	TRUE	FALSE
3	క్యాన్సర్ శస్త్ర చికిత్స క్యాన్సర్ వ్యాపించకుండా నియంత్రిస్తుంది	నిజం	నిజం కాదు
	कैंसर शस्त्र चिकित्स कैंसर फैलने से रोकता है	हा	ना
	Cancer surgery stops spread of cancer	TRUE	FALSE
4	సెల్ ఫోన్ల అధిక ఉపయోగం వల్ల బ్రెయిన్ క్యాన్సర్ ని కలుగజేస్తుంది	నిజం	నిజం కాదు
	सेलफोन अत्यधिक उपयोग से ब्रेन कैंसर का कारन होता है	हा	ना
	Excessive usage of cell phones causes brain cancer	TRUE	FALSE
5	కీమోథెరఫి వ్యక్తికి తరచుగా వాంతులకు దారితీస్తుంది	నిజం	నిజం కాదు
	कीमोथेरफी व्यक्ति को अक्सर उलटी करने के लिए मजबूर करता है	हा	ना
	Chemotherapy makes one vomit frequently	TRUE	FALSE
6	తల, మెడ (హెడ్& సెక్) క్యాన్సర్ కు శస్త్ర చికిత్స ఒక్కటే పరిష్కారము	నిజం	నిజం కాదు
	सिर और गरदन कैंसर के लिय शस्त्र चिकित्सा ही एक मात्र उपचार है	हा	ना
	Surgery is the only treatment for head and neck cancers	TRUE	FALSE
7	హెయిర్ డై (తలకి రంగు) ఉపయోగించటం వల్ల బ్రెయిన్ క్యాన్సర్ వస్తుంది हेयर डई (बालों को रंग डालने से) का उपयोग करने से ब्रेन कैंसर आ सकता है Usage of hair dye causes brain cancer	నిజం हा TRUE	నిజం కాదు ना FALSE
8	రేడియేషన్ థెరఫి వల్ల జుట్టు రాలిపోదు	నిజం	నిజం కాదు
	विकिरण थेरफी से बाल नहीं झड़ते हैं	हा	ना
	Radiation therapy does not cause hair loss	TRUE	FALSE
9	బ్రెయిన్ క్యాన్సర్లు స్మృతి (జ్ఞాపకశక్తి) నష్టాని కలిగిస్తాయి	నిజం	నిజం కాదు
	स्मृति सकती खो जाते है	हा	ना
	Brain cancers cause memory loss	TRUE	FALSE
10	క్యాన్సర్ తో ఉన్న ప్రతీ వ్యక్తీ కి ఒకేరకమైన చికిత్సను అందిస్తారు	నిజం	నిజం కాదు
	हर कैंसर के लिए एक ही प्रकार का इलाज उपचार है	हा	ना
	Every one with cancer gets the same kind of treatment	TRUE	FALSE

CANCER INFORMATION SCALE (CINFOS-HNC)

VISUAL ANALOGUE SCALE (VAS) (To measure the state of relaxation)

INSTRUCTIONS: Kindly place a mark on a 0 - 100 scale to indicate to what extent you were relaxed from relaxed not at all to relax completely.



Automatic Thoughts	Distortions	Rational Responses
Write your negative	Identify the distortions in	Substitute more realistic
thoughts	each Automatic Thought.	thoughts and estimate your
and estimate your belief in	_	belief in each one (0 and
each one (0-100).		100).
		,

COGNITIVE RESTRUCTURING TRIPLE - COLUMN TECHNIQUE

Appendix 11

SEMISTRUCTURED INTERVIEW SCHEDULE

- 1. To whom do you inform the diagnosis of cancer when first confirmed?
- 2. Have you noticed stress felt by the reciever after informing the diagnosis of the cancer? If yes kindly specify, who?
- 3. During the patients' visits when do you observe the patients feel more stressful?
- 4. What are the areas where you think, the patients feel more stressful?
- 5. According to your experience, the effect of stress is visible in which aspect of health?
- Do you feel stressed about patient's condition? If yes, when? (If No, no further exploration)
- 7. What are the strategies you follow to manage such type of stress?