“PREVALENCE OF DEPRESSION AND ANXIETY SYMPTOMS AND THEIR DETERMINANT FACTORS AMONG PATIENTS WITH CANCER”

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BELAGAVI – 590010
KARNATAKA.

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DR. S. S. CHATE, M.D., D.P.M.
Professor and Head,
Department of Psychiatry,
J. N. Medical College,
Nehru Nagar, Belagavi – 590010

Dr. S. S. CHATE
Professor & Head
Dept. of Psychiatry
J.N. Medical College, BELAGAVI - 590 010
KMC Reg No. 48918

Date: 30/06/2024
Place: Belagavi

DR. N.S. MAHANTSHETTI, M.D.
Principal,
J. N. Medical College,
Nehru Nagar, Belagavi – 590010

Principal
Jawaharlal Nehru Medical College
BELAGAVI

KAHER
BELAGAVI
J.N. MEDICAL COLLEGE

Date: 30/06/2024.
Place: Belagavi

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Nehru Nagar, Belagavi- 590 010, Karnataka, INDIA

0831 - 2471350 0831 - 2470759 www.jnmc.edu jncipal@jnmc.edu

Ref No: MDC/PG/ Date: 29-06-2024

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Chairperson-Antiplagiarism Committee &
Principal,
J. N. Medical College, Belagavi.

To,
Reg. No. BQ0121004
Postgraduate Student,
2021-22 Batch,
Department of Psychiatry
J. N. Medical College, Belagavi.

K.L.E. ACADEMY OF HIGHER EDUCATION AND RESEARCH
(Deemed to-be-University)
Accredited 'A+' Grade by NAAC in (3rd Cycle) Placed in Category 'A' by MHRD (GoI)
JNMC INSTITUTIONAL ETHICS COMMITTEE
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
Website: http//www.jnmc.edu
E-Mail : dome@jnmc.edu
Phone: (+ 91-(0)831 Office : 2472550
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref No.MDC/JNMCIEC/ 108 **Date: 27/09/2022**

To,
Reg. no.: BQ0121004
PG Student in Psychiatry,
J. N. Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

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(Dr. Sunita Sonoli)
Member Secretary
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi.

(Dr. Harsha Hegde)
Chairman,
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi

LIST OF ACRONYMS

IARC	International Agency for Research on Cancer
GLOBOCAN	Global Cancer Observatory
HIC	high-income countries
LMIC	low and middle-income countries
WHO	World Health Organization
QOL	Quality of Life
CES	Cumulative Effect Sizes
HPA	Hypothalamus Pituitary Axis
OPD	OutpatientDepartment
HADS	Hospital Anxiety and Depression Scale
BSI	Brief Symptom Inventory
DASS - 21	Depression Anxiety Stress Scale - 21
MRC	Medical Research Centre

ABSTRACT

BACKGROUND: Cancer is a growing public health issue across the world, but the mental health consequences in this setting have not been well-characterized. Literature from several countries clearly confirms that patients with cancer have higher rates of depression and anxiety than the general population and results in greater morbidity and poorer cancer related outcomes. In India, even though there were studies done for assessment of depression and anxiety among cancer patients, studies to determine the specific factors associated with prevalence of anxiety and depression in cancer patients were not satisfactory. Therefore, we have conducted the following study to assess the prevalence of depression and anxiety and also determine the factors that contribute to the same in cancer patients.

OBJECTIVES:

Primary objective:

Estimation of prevalence of depression among cancer patients.

Secondary objectives:

a). Estimation of prevalence of anxiety among cancer patients.

b). Association between socio-demographic and clinical variables with depression and anxiety.

METHODS:

This was a cross-sectional study where 209 patients who were diagnosed with any type of cancer, with no previous history of psychiatric illness and substance abuse (except nicotine) were assessed using HADS scale. Details regarding socio-demographic and cancer related parameters were taken. The collected data were analyzed with percentages for categorical variables using chi square test. For continuous variables, unpaired student t-test and standard deviation was used.

RESULTS: The mean age of participants in our sample was 45.70 (±13.361) years. Prevalence of depression and anxiety among the study sample were found to be 24.4% and 11% respectively. Significant association was found between severity of depression with multiple variables such as: younger age, unmarried status, poor educational background, multiple hospital admissions, awareness of cancer diagnosis, presence of family history of cancer and multimodal cancer treatment. With respect to severity of anxiety, significant association was seen with younger age, unmarried status, first time hospital admission, awareness of cancer diagnosis, presence of family history of cancer related deaths, and multimodal cancer treatment.

CONCLUSION: Roughly one fourth of the study participants were found to have major depression and 11% had anxiety disorder. Higher prevalence of depression was seen in those with younger age group, patients who were unmarried, poor educational background, multiple hospital admissions, patients who were aware of cancer diagnosis, family history of cancer and cancer related deaths, and multimodal treatment. Similarly, higher prevalence of anxiety was associated with younger age group, female gender, unmarried status, poor educational background, first time hospital admission, awareness of their diagnosis of cancer, presence of family history of cancer related deaths, and multimodal treatment.

Keywords: Cancer, depression, anxiety.

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INTRODUCTION

Depression is characterized by ongoing feelings of sadness, lack of enjoyment in activities once found pleasurable, and increased fatigue, feeling helpless, hopeless, worthless and suicidal thoughts at extreme(1).

Anxiety is an uncomfortable emotional state marked by specific physiological responses, triggered by a perceived but often exaggerated threat. Psychological symptoms may involve a sense of imminent danger, tension, and difficulty recognizing the true nature of the perceived threat.Physiological changes mostly include palpitations, tremulousness, increased sweating and breathlessness[1]. In general population, depression is prevalent with an approximate global point prevalence of 4.7 % and anxiety is prevalent with point estimate of around 27.3%(2,3)(2,3).

Cancer is the second leading cause of death worldwide and global burden continues to grow. Between 2008 and 2030, the global incidence is expected to increase by more than 80%(4).

In a cross-sectional study conducted in 2021 involving 1,011 cancer patients, it was found that 23.4% exhibited symptoms of depression, while 19.1% showed signs of anxiety. Moreover, there was noted underutilization of interventions for these conditions among the patients(5). Therefore, it is important to be aware of both the prevalence and contributing factors of depression and anxiety among cancer patients.

Major depression when comorbid with chronic disease like cancer, it leads to reduced quality of life and increased health care costs. They have worse anxiety, functional impairment, and more likely to have suicidal thoughts and difficulties in adherence to cancer treatment(4). Cancer patients often experience ongoing depression and anxiety, which adds to the challenges of treatment and makes management more difficult(5).

In India, there are lack of studies to assess the prevalence of depression and anxiety in cancer patients and determine the factors that has significant influence for the same. Therefore, the aim of this study is to assess the prevalence of depression and anxiety and determine the factors that contribute to the same in cancer patients.

OBJECTIVES OF THE STUDY

1. To assess the prevalence of depression among cancer patients.
2. a) To assess the prevalence of anxiety among cancer patients.
   b) To determine the factors that influence depression and anxiety among cancer patients.

REVIEW OF LITERATURE

CANCER BURDEN:

Cancer presents as significant public health concern on a global scale. Recently, the International Agency for Research on Cancer (IARC) released the GLOBOCAN 2020 (Global Cancer Observatory) estimates detailing the global burden of cancer across 185 countries for 36 different types of cancer(6). According to the World Health Organization (WHO) 2019 data, cancer is one of the most leading causes of death in 112 among 183 countries globally.

According to GLOBOCAN 2020, approximately 19.3 million new cases of cancer were diagnosed in 2020, resulting in nearly 0.01billion deaths globally. GLOBOCAN projects that the number of cancer cases will rise to 28.4 million by 2040.Breast cancer is now the most common type worldwide, comprising 11.7% of all cancer cases, followed by lung cancer (11.4%), subsequently by colorectal cancer (10.0%), lesser by prostate cancer (7.3%), and then, least by stomach cancer (5.6%)(7).

In terms of cancer-related deaths, lung cancer leads with 1.8 million fatalities (18%), followed by colorectal cancer (9.4%), subsequently by liver cancer (8.3%), and then lesser by stomach cancer (7.7%), and least by female breast cancer (6.9%). Among men, lung, prostate, and colorectal cancers are the most common, while among women breast, colorectal, and lung cancers predominate(7).

Presently, high-income countries (HIC) experience three times higher cancer incidence rates among both men and women compared to low and middle-income countries (LMIC). However, LMICs are expected to drive the majority of the increase in global cancer cases over the next five decades(8).

Asia, with 60% of the world's population, represents half of all cancer cases and is projected to contribute to 58% of cancer-related deaths. In contrast, Europe and the Americas together account for 22.8% and 20.9% of cancer cases respectively, and 19.6% and 14.2% of cancer deaths respectively(7).

IN INDIA:

Based on GLOBOCAN statistics for 2022, there were approximately 690,000 new cancer cases among males and 720,000 cancer cases among females. The age-adjusted incidence rate was 97.1 for males and 100.8 for females. In males, the most prevalent cancers included those affecting the lip, oral cavity, lung, and esophagus, while among females, breast, cervical, uterine, and ovarian cancers were the most commonly diagnosed.Regarding mortality, approximately 470,000 deaths were recorded among males and 440,000 among females. The total five-year prevalence in the population is estimated to be around 3.2 million cases.

IMPACT OF CANCER ON PEOPLE:

A meta-analysis of 64 articles examined the Quality of Life (QOL) among cancer survivors who were two or more years past their diagnosis. Among the eight QOL subdomains evaluated, seven showed medium to large negative Cumulative Effect Sizes (CES), indicating poorer QOL. The subdomain related to cognitive health exhibited a small negative CES. Specifically, physical, role-physical, and mental health showed large negative effect sizes, while global, emotional, vitality, and social health demonstrated medium negative CES. The most substantial effect on Quality of Life (QOL) was observed in role-physical health, a component of the SF-36 questionnaire that assesses cancer survivors' capability to work and manage daily activities. This finding suggests that long-term cancer survivorship continues to have a notable impact on QOL(9).

A study investigated the prevalence of fatigue among a large group of breast cancer survivors compared to the general population, aiming to identify demographic, medical, and psychosocial factors associated with fatigue. Out of approximately 1,957 participants, about one third of breast cancer survivors reported more severe fatigue. This fatigue was linked with notable depression, pain, and sleep problems.The research found that although the majority of breast cancer survivors in this diverse and extensive sample did not report higher levels of fatigue compared to women in the general population, there was a specific subgroup of survivors who did experience more severe and persistent fatigue(10).

ETIOPATHOGENESIS OF DEPRESSION AND ANXIETY IN CANCER:

The biological underpinnings of depression and anxiety in patients having cancer were due to inflammation. Research indicates that individuals with major depression often exhibit elevated levels of pro-inflammatory cytokines. These cytokines are believed to contribute to various abnormalities involved in the pathophysiology of depression, affecting neurotransmitter metabolism, neural plasticity, and neuroendocrine function. Even in the early stages of cancer, tumors can produce cytokines such as InterLeukin-6, C-Reactive Protein, and Tumor Necrosis Factor-alpha. Previous studies reported that patients with depression tend to have significantly higher plasma IL-6 concentrations. IL-6, produced by both tumor cells and tumor-associated macrophages, serves as a biomarker for depression. Identifying these biomarkers can help clinicians identify cancer patients who are at risk of developing depression(11).

The presence of circulating pro-inflammatory agents has the potential to penetrate the blood-brain barrier, consequently impacting cognitive functioning. This includes scenarios such as heightened migration of macrophages to the brain and increased expression of inflammatory markers on microglial cells, which have been associated with the development of anxiety(12).

Chronic stress can disrupt the regulation of the HPA axis, leading to elevated cortisol levels. This axis is typically controlled by negative feedback, where glucocorticoids bind to Glucocorticoid Receptors. However, excessive levels of glucocorticoids can have adverse effects on the brain. Pro-inflammatory cytokines plays a role in desensitizing these receptors, thereby disrupting regulatory mechanisms and sustaining elevated cortisol levels. Increased levels of pro-inflammatory cytokines are observed in both depression and cancer(12).

RISK FACTORS:

The risk factors for anxiety in cancer patients often overlap with those for depression, making mixed states of anxiety and depression more prevalent than isolated cases of either. These factors include the period immediately after receiving a life-threatening diagnosis, undergoing chemotherapy, longer illness duration, younger age, advanced disease stage, unemployment, and impaired social and cognitive abilities. Factors contributing to anxiety encompass poor socioeconomic status, female gender and lacking preparation for the end of life.Depression among cancer patients arises from a complex interplay of various factors. Personal risk factors encompass female gender, having a history of mood disorders or substance abuse, and having lower socioeconomic status. Additionally, disease and treatment-related factors include experiencing a heavier physical toll from the illness and treatment, having advanced disease, and undergoing chemotherapy(13).

DEPRESSION:

The Institute of Health Metrics and Evaluation's 2020 report highlighted depression as a top reasonfor disability globally. WHO's 2017 assessment similarly emphasized depression's substantial impact on global disability, affecting approximately 322 million individuals. Additionally, a systematic review published in 2020, covering articles up to 2018, indicated a noteworthy upward trend in the prevalence of depression over time among patients with cancer(14).

ANXIETY:

Anxiety disorders rank highest among all mental health conditions, encompassing a range from social anxiety disorder to panic disorders. These disorders, including separation anxiety, generalized anxiety, specific phobias, and agoraphobia, collectively impact approximately 33.7% of the population over their lifetime. They tend to manifest predominantly during midlife and are more prevalent among women than men. Their prevalence not only leads to considerable personal impairment but also imposes a substantial economic burden on society as a whole (15).

COMORBID DEPRESSION IN PHYSICAL DISEASES:

In population affected by prevalent physical ailments like cancer, cardiovascular, and neurodegenerative diseases, meta-analyses showed that depression rates can reach up to 41%. Research from both observational and Mendelian randomization studies indicates a reciprocal link between depression and physical illnesses, where each can influence and predict the other. Factors stemming from one condition can exacerbate the risk of the other; for example, motivational challenges linked to depression can obstruct efforts towards exercise, maintaining healthy dietary habits, consequently increasing susceptibility to physical diseases,whereas impaired functioning due to physical illnesses causes distress and worries, ultimately leading to depression(2).

MORTALITY:

Depression and various physical illnesses independently elevate mortality rates, and when they co-occur, the risk intensifies. A study utilizing the United Kingdom Biobank revealed that having both diabetes mellitus and depressive disorder escalates mortality risk. Furthermore, a recent comprehensive review found that depression heightens cardiovascular-related mortality among individuals with physical conditions like cancer, stroke, and diabetes mellitus. A study utilizing Danish registries and a newly introduced metric for lost life years found that, as compared to overall population, men and women with depression experienced a loss of 8.27 and 6.40 years of life, respectively(2).

CANCER:

Extensive meta-analyses indicate that the point prevalence of depression among individuals with cancer is approximately 21%, with rates peaking during acute phases of the illness and treatment. Among various types of cancer, hematological, gastrointestinal, lung, and gynecological cancers are frequently associated with higher rates of depression(2).

A recent systematic review highlighted various factors—somatic (such as advanced cancer stage, pain, and comorbidities), sociodemographic (including gender and age), and social (like low socioeconomic status and inadequate social support)—linked to heightened risk of depression. Additionally, depression might marginally elevate the chances of cancer development and mortality. A recent meta-analysis found that depression correlates with higher risks of both cancer incidence and cancer-specific mortality. Moreover, Mendelian randomization studies indicate that genetically predicted depression slightly raises breast cancer incidence(2).

An observational study in 2002 involving 178 individuals diagnosed with renal cell carcinoma, lymphoma, plasma cell dyscrasia, or malignant melanoma found that nearly half of the cancer patients exhibited enough anxiety symptoms to warrant consideration for an anxiety disorder diagnosis(16).

Researchers in North India conducted a study in breast cancer patients to investigate the prevalence of both depressive and anxiety disorder. They aimed to identify socioeconomic factors linked to these conditions and assess changes in psychological distress one year after completing treatment. Certain factors such as being under 50 years old, having a lower level of education, earning a lower income, being single, and having poor economic status were linked toincreased levels of anxiety among breast cancer patients. Similarly, for depression, receiving less financial support, earning a lower income, and being single were linked to higher likelihoods of experiencing depression. However, there was a notable improvement observed in both anxiety and depression levels after a 12-month follow-up period(17).

A study conducted at the Pain Treatment Clinic of the Institute of Oncology in Warsaw between 2017 and 2018 involved 537 cancer patients aged 19 to 91. The objective was to evaluate levels of anxiety and depression along with selected psychosocial factors among the study sample. Findings revealed that both anxiety and depression were more pronounced in women compared to men ($p=0.000$). Additionally, risk of depression increased with age ($p=0.015$). Patients residing in rural areas and those receiving disability or retirement pensions exhibited the highest levels of depression symptoms, whereas those in small to medium-sized towns and economically active individuals or those on short sick leave showed lower levels of depression symptoms(18).

In 2000, Chen et al (19) did a study to assess the levels of anxiety and depression among hospitalized cancer patients in Taiwan. The research focused on a group of 203 patients, with 77 experiencing pain and 126 without pain.

Anxiety and depression were observed to affect 12% and 20% of the patients, respectively. Those experiencing pain had notably higher rates of both anxiety and depression compared to those without pain. Moreover, when pain was present in patients, depression was significantly more pronounced, even after accounting for other factors related to the illness, although anxiety levels did not show the same difference.

In 2021, a cross-sectional study conducted at the King Hussein Cancer Center in Jordan aimed in determining the prevalence of depression and anxiety among cancer patients. The study revealed that 23.4% of patients experienced depression, while anxiety prevalence ranged from 19.1% to 19.9%. These conditions were notably common among hospitalized patients. Specifically, depression was prevalent among those with bladder cancer, whereas anxiety was more common among lung cancer patients in inpatient settings. In outpatient settings, depressive symptoms were frequent among breast cancer patients, while prostate cancer patients often experienced anxiety. Importantly, only 15.5% of the patients were taking treatment to manage their conditions(5).

A systematic review and meta-analysis in 2021, covering 40 studies conducted over a 15-year span was published. It revealed that in lower-middle and low-income countries, the combined prevalence of depression and anxiety disorders among cancer patients stood at 21% and 18% respectively. These conditions were frequently linked to lower levels of education and advanced disease(4).

The occurrence of depression and anxiety differs among various types of cancer, with a significant number of lung cancer patients, specifically 13%, experiencing major depression,11% of those with gynecological cancers, 6% in genitourinary cancers, 7% in colorectal cancers, and 9% in breast cancers. The highest levels of anxiety are observed in gynecological, hematological, and lung cancers. These differences are attributed to varying prognosis,pain levels, and extent of body image disruption experienced by patients. Anxiety symptoms in cancer patients often coexist with depression rather than manifesting solely as anxiety, and treating depression may also alleviate anxiety(20).

An investigation was conducted at an oncology center in the United States to analyze in cancer patients, about prevalence of anxiety and depression. The study involved the assessment of 8,265 patients.According to the study, 12.4% of patients exhibited mixed symptoms of anxiety and depression, 11.7% displayed pure anxiety symptoms, and 6.0% showed pure depression symptoms. Patients with stomach, pancreatic, head and neck, and lung cancers demonstrated higher rates of mixed anxiety/depression symptoms, while those with breast cancer showed lower rates(21).

A cross-sectional study conducted in 2014 analyzed clinical data from cancer clinics in the UK and Scotland between 2008 and 2011 for determining prevalence of major depression. The study revealed that major depression was most prevalent instudy patients with lung cancer, followed by

gynecological, breast, colorectal, and genitourinary cancers. These patients tended to be younger, socially disadvantaged, and female. Alarmingly, 73% of them were not receiving effective interventions for depression(22).

A thorough search of the literature on depression and anxiety among cancer patients, reviewing 117 observational studies found that 5.81% of study participants in 11 of these studies were diagnosed with depressive disorders, while significant depressive symptoms were present in 17.07% of participants across 76 studies. Additionally, significant anxiety symptoms were identified in 16.86% of participants across 56 studies. Among eight studies, 9.85% of participants reported recent suicidal thoughts. After diagnosis, the crude suicide mortality rate stood at 47.1 per 100,000 person-years across 12 studies, indicating a notably higher rate(23).

TYPE OF CANCER:

A systematic review was conducted up to June 2020 to explore the connection between anxiety, depression, and outcomes in urological cancer patients. The review encompassed 25 studies, revealing that significant anxiety and depressive disorders have a notable impact on both functional abilities and mortality rates among these patients. This effect seems particularly pronounced in male cancers, such as prostate and testicular cancer(24).

A systematic review and meta-analysis aimed to evaluate the emergence of anxiety and depression in colorectal cancer patients. The findings revealed a clear correlation between being diagnosed with colorectal cancer, regardless of its location, and an elevated likelihood of experiencing anxiety and depression. The studies included in the analysis indicated that patients undergoing chemotherapy treatment continued to exhibit a heightened risk of anxiety and depression for up to five years following their cancer diagnosis. Additionally, regarding sociodemographic factors, individuals aged 65 years and older, as well as females, were more prone to experiencing anxiety and depression compared to males(25).

A prospective study was conducted in Iran to assess anxiety and depression levels in gastrointestinal cancer patients through interviews. The study aimed to assess if knowing their cancer diagnosis influenced their psychological well-being and used HADS Scale for assessment.Their observations implied that individuals who knew about their diagnosis exhibited notably greater levels of psychological distress. For instance, the mean anxiety score for those who knew their diagnosis was 9.1 (SD 4.2), compared to 6.3 (SD 4.4) for who didn’t know their diagnosis ($P < 0.001$). Similarly, the mean depression score for those aware of their diagnosis was

9.1 (SD 4.1), while it was 7.9 (SD 3.6) for those unaware (P = 0.05). The conclusion drawn was that cultural considerations and the manner in which information is delivered to cancer patients significantly impact their psychological well-being, either positively or negatively(26).

Psychological distress, encompassing depression, and anxiety affects a substantial portion of breast cancer patients, ranging from 15% to 54%. However, research indicates that implementing certain psychological interventions like developing coping skills and supportive psychotherapy have been effective in reducing levels of depression and anxiety in this population(27).

Examination of depression and anxiety rates was done in Germany by researchers among women recently diagnosed with breast or genital organ cancer. Among 29,366 patients, 7,994 women experienced depression or anxiety, with 76.2% having breast cancer and 23.8% having genital organ cancer. It was observed that the incidence of Depression/anxiety was around 8.8 per 100 person-years for breast cancer patients and 5.9 per 100 person-years for genital organ cancer patients. Breast cancer was linked to a 1.41-fold higher risk of developing depression or anxiety compared to genital organ cancer(28).

Ovarian cancer ranks as the third most prevalent cancer globally, with incidence and mortality rates differing across nations(29). Liu et al(30) in 2017 noted variations in ovarian cancer occurrence and death rates. Global Cancer statistics for 2020 revealed a standardized age incidence of 6.6 per 100,000 women and a mortality rate of 2.4.A study conducted in 2023 utilized systematic review and meta-analysis, examining 18 cross-sectional studies to ascertain the combined prevalence of anxiety and depression among ovarian cancer patients. Among these studies, 17 provided data on anxiety prevalence, while 16 reported on depression prevalence in this patient population.The study findings indicated that ovarian cancer patients exhibit significantly notable depressive and anxiety symptoms compared to the general female population, underscoring the importance of addressing psychological aspects of their care(29).

Parotid gland tumors are frequently salivary gland benign growths that significantly alter facial appearance, leading to emotional stress leading to depression and anxiety, that could hinder recovery. A study examined 186 patients with these tumors between 2017 and 2021 to detect factors leading to negative emotions and poor outcomes during the perioperative stage.Among 186 patients, around 23.1% displayed symptoms of anxiety, while 24.7% exhibited signs of depression. The study identified several factors that were individually linked to anxiety, including tumor characteristics, patient's education level, postoperative complications, presence of

hypertension, and tumor recurrence. Similarly, factors independently linked to depression included tumor metastasis, patient's education level, and postoperative complications.The research suggests that individuals diagnosed with tumors of parotid gland are prone to encountering several complications following surgery such as Frey syndrome, and are highly susceptible to developing negative emotions, significantly impacting their prognosis.(30)

Each year, around 300,000 individuals are diagnosed with oral cancer,impacting both physical and mental well-being. In 2020, a systematic review of three studies involving 528 patients, predominantly men (66–83%), treated for oral squamous cell carcinoma in Europe and India, was conducted. European studies revealed that 28% of participants showed depression based on Hospital Anxiety and Depression Scale (HADS), with an average depression score of 8.0 on the Brief Symptom Inventory (BSI). Meanwhile, the Indian study indicated a notable rise (p Value < .001) in depression from moderate to severe levels on the DASS-21scale. Despite varying symptom severity, individuals treated for oral squamous cell carcinoma face a risk of developing depressive symptoms post-treatment(31).

Gastric cancer ranks as the fifth most common cancer worldwide. Another study examined the anxiety and depression prevalence and risk factors among 82 recurrent gastric cancer patients. The research found that individuals aged 60 years and above, those with diabetes, shorter time to recurrence, higher tumor-node-metastasis (TNM) stage at diagnosis, and distant metastasis at recurrence were prone to experience anxiety.Similarly, individuals aged 60 years and above, those with diabetes, shorter time to recurrence, tumor location at diagnosis were at higher risk for depression. The study also observed that 52.4% of recurrent gastric cancer patients experienced anxiety, and 41.5% experienced depression, higher than rates among newly diagnosed patients. This increase could be attributed to the significant mental stress experienced by recurrent gastric cancer patients, leading to decreased self-confidence and increased feeling of despair, ultimately resulting in higher occurrences of anxiety and depression(32).

COURSE OF TREATMENT:

Between 2017 and 2018, a cross-sectional, quantitative epidemiological investigation was conducted to detect frequency of anxiety and depressive symptoms among cancer patients attending a tertiary cancer hospital's radiotherapy department. The study involved 100 patients. Findings revealed that at the onset of radiotherapy, 61% of patients exhibited significant depression and anxiety, a figure that rose to nearly 89% by the treatment's conclusion.

Consequently, they interpreted finally that cancer therapies, including chemotherapy and radiotherapy, compound anxiety and depression by introducing additional stressors(33).

One of the studies carried out in Germany in 2022 focused on evaluating depressive, anxiety disorders among 25 women (with an average age of 52.91 years) who received adjuvant radiotherapy for breast malignancies. The findings revealed that anxiety peaked just before the commencement of radiation therapy, whereas anxiety levels were lowest on the day treatment concluded. Throughout the duration of radiotherapy, women with a lifetime history of chronic illnesses consistently experienced heightened levels of anxiety and depression. Additionally, women with high intelligence and limited social support exhibited more pronounced symptoms of depression compared to women with lower intelligence and a supportive family background during certain assessment periods(34).

A forward-looking investigation was conducted in Spain to ascertain the occurrence of anxiety and depression among cancer patients beginning adjuvant therapy, and also to study about the factors influencing these conditions. In the research, out of 600 patients examined, anxiety was found in 49.8%, and depression was prevalent in 36.6%. Women and younger individuals exhibited considerable levels of anxiety and depression compared to men and older adults. Employed individuals experienced notable levels of anxiety compared to retirees, while singles showed greater signs of depression than married or partnered individuals. Logistic regression analysis observed that male gender, elders, having hope, receiving social support, and maintaining optimism were significantly linked to a reduced likelihood of experiencing anxiety and depression(35).

A research study conducted in Spain aimed to determine the presence of anxiety and depression among patients who began systemic treatment for advanced cancer amid the COVID-19 pandemic. In a group of 401 patients, the study revealed that 36% suffered from anxiety and 35% from depression. Patients under the age of 65, with a projected survival of over 18 months, and women tended to experience higher emotional distress. Further examination indicated that factors such as being preoccupied with cancer, feeling hopeless and being female were observed to have significantly notable levels of anxiety along with depression. Additionally, younger age was identified as a factor associated with an increased likelihood of anxiety(36).

Researchers conducted a study to evaluate the psychological changes experienced by individuals at two phases:After receiving the diagnosis of cancer and 2–4 weeks following completion of

medical treatment. Among 67 participants, it was found that anxiety levels were higher before treatment compared to after treatment (with mean scores of 7.41 and 6.69 on the HADS-Anxiety subscale, respectively). However, depression scores showed the opposite trend, being higher after treatment compared to before (with mean scores of 3.14 and 3.89 on the HADS-Depression subscale, respectively). On observing the study findings, it was concluded that cancer patients need unique attention both before and after their treatment. Anxiety is often more noticeable at the time of diagnosis, whereas depression tends to become more common following medical treatment(37).

LATER STAGE OF CANCER:

In 2014, researchers conducted a study utilizing secondary analysis of patient data collected from outpatient oncology practices spanning from November 2006 to November 2009. The study involved 500 participants with an average age of 73.1, most of whom were in advanced disease. In the study, it was found that 12.6% of participants reported clinically significant depression, while 20.9% reported clinically significant anxiety. The research suggested that anxiety tends to decrease as older adults with cancer age, whereas depression levels remained consistent regardless of age(38).

A comprehensive assessment examined the correlation between anxiety, depression, and metastatic cancer. The review highlighted that depression correlates with decreased adherence to treatment guidelines, while high anxiety levels may lead to avoidance of challenging decisions related to advance care planning and end-of-life choices. Additionally, individuals experiencing depression and anxiety tend to express greater disparities between their desired and actual life-sustaining treatments, struggle to grasp information conveyed by their doctors, and exhibit diminished trust in their healthcare providers(39).

In New York City hospitals, researchers investigated anxiety levels among 194 terminally ill cancer patients. The findings revealed that 18.6% of patients had anxiety scores indicating borderline abnormal severity, while 12.4% reported anxiety with abnormal severity. The study also noted a notable positive relationship between anxiety and several measures of psychological distress, for example, the desire for hastened death and feelings of hopelessness and depression. Conversely, anxiety showed a negative correlation with social support. Furthermore, female participants indicated notably higher anxiety levels compared to male participants. Among the participants, those who expressed no belief in an afterlife demonstrated the lowest anxiety levels,

followed by individuals with a definite belief in an afterlife. Conversely, those who were uncertain or had a "somewhat" belief in an afterlife reported significantly higher anxiety levels(40).

In the Canadian National Palliative Care Survey, 381 people on palliative cancer treatment were interviewed using semi-structured interviews to evaluate depressive and anxiety disorders. Around 24.4% met the diagnostic criteria for major depression affecting 13.1% of the patients and 41.9% of participants met criteria for two or more diagnoses. For example, among those diagnosed with an anxiety disorder (13.9%), 66% also met criteria for depression, and 45% also met criteria for a second anxiety disorder(41).

MATERIALS AND METHODS

This study was conducted as a cross-sectional investigation aimed at determining the prevalence of depression and anxiety in cancer patients, as well as identifying factors that impact these conditions in this population. It was conducted at the Department of Oncology (OPD and Ward) at KLE's Dr. Prabhakar Kore Hospital, Belagavi over a period of one Year from 1st September 2022 to 31st August 2023.

The source of samples were all patients attending oncology opd and ward, diagnosed with any form or type of cancer.

Inclusion Criteria:

1.All adults ≥18 years

2.All Patients confirmed with any form or type of cancer

Exclusion Criteria:

1.Patients with primary psychotic/mood disorder

2.Patients with other debilitating chronic medical illnesses

3.Patients with History of substance dependence (except nicotine)

Ethical Clearance

Prior to commencement, appropriate clearance got from Institutional Ethics Committee, Jawaharlal Nehru Medical College, Belagavi with Ethical Clearance number MDC/DOME/108.

Informed Consent

It was obtained from both the patients and the accompanying reliable attendants.

Sample Size

P = 16.2% (Walker et al.2021 in their meta-analysis reported the global prevalence of depression in cancer patients to be 16.2%)(4).

d = 5%

q = 1-p

Z = 1.96 for 95% confidence interval

On the basis of the formula,

Sample size (n) = Z2pq / d2

= 1.96 *1.96 *16.2 *83.8 / 25

= 209

n = no. of study samples

Z = The critical value representing the standard value associated with a specific level of confidence. (For a 95% confidence interval (or 5% level of significance for type-I error), the corresponding critical value is 1.96, and for a 99% confidence interval, the critical value is 2.58.)

q = 1-p

d = Error margin.

Z (The critical value for a 95% confidence interval is 1.96)

p = 16.2%, q = 83.8%, d = 5%.

The sample size was obtained as 209.

SAMPLING TECHNIQUE: Convenience sampling.

TOOLS:

1.HADS (Hospital Anxiety and Depression Scale):

The Hospital Anxiety and Depression Scale (HADS) will be utilized to evaluate anxiety and depression as dependent variables. This scale comprises two subscales: anxiety and depression, each containing 7 items. Responses for each item range from 0 to 3. Scores from these items are summed to yield subscale scores for anxiety and depression, ranging from 0 to 21, and a total score ranging from 0 to 42. A higher score indicates more severe symptoms of anxiety or depression. Recommended cut-off scores are 8–10 for doubtful cases and ≥11 for definite cases.

PROCEDURE:

All participants diagnosed with any type of cancer and any stage of cancer were interviewed by the Principal Investigator (PI). They were explained regarding the study and its implications. A written informed consent was obtained from both the patients and the attendant in their own vernacular language. Following this, study participants meeting inclusion and exclusion criteria were assessed using detailed proforma to collect socio-demographic and clinical features and also assessed for depression and anxiety using Hospital Anxiety and Depression Scale.

DATA ANALYSIS:

The data obtained was tabulated in Microsoft Excel version 16.64 and appropriate statistical analysis had been done using IBM SPSS 25. The socio-demographic and clinical details of the patients (descriptive statistics) was described using percentages for categorical variables or as mean and standard deviation for continuous variables. To assess Strengths of associations between categorical variables chi square test was applied and for continuous variables, unpaired student t-test was applied. Spearman correlation coefficient was applied to test correlation between severity of depression, severity of anxiety with age. All tests were 2- tailed. P value of <0.005 was reported as significant.

RESULTS

Table 1: Socio-Demographic profile of the study sample.

Variables	**Frequency (N = 209)**	**Percentage (%)**
Sex		
Male	118	56.5
Female	91	43.5
Mean Age (in years)	45.70 ±13.361	
Marital Status		
Married	178	85.2
Unmarried	31	14.8
Education		
Illiterate	6	2.9
Secondary	100	47.7
Diploma	39	18.7
Masters	64	30.7
Occupation		
Unskilled	40	19.1
Semiskilled	100	47.8
Skilled	69	33.1

Table 2: Distribution of patients by cancer Related Parameters.

Variables	Frequency (N=209)	Percentage
Pattern of Admission		
First time	117	56.0
Follow up	92	44.0
Aware of the diagnosis		
Yes	163	78.0
No	46	22.0
Family history of cancer		
Yes	25	12.0
No	184	88.0
Cancer related deaths in family		
Yes	6	2.9
No	203	97.1
Type of cancer treatment		
Chemotherapy	48	23.0
Radiotherapy	2	1.0
Surgical intervention	108	51.6
Multimodal treatment	51	24.4

Table 3: Prevalence of depression in study sample.

Diagnosis of Depression	**N (209)**	**%**
No	99	47.4%
Yes	**110**	**52.6%**
Total	209	100%

Figure 1: Prevalence of depression in study sample.

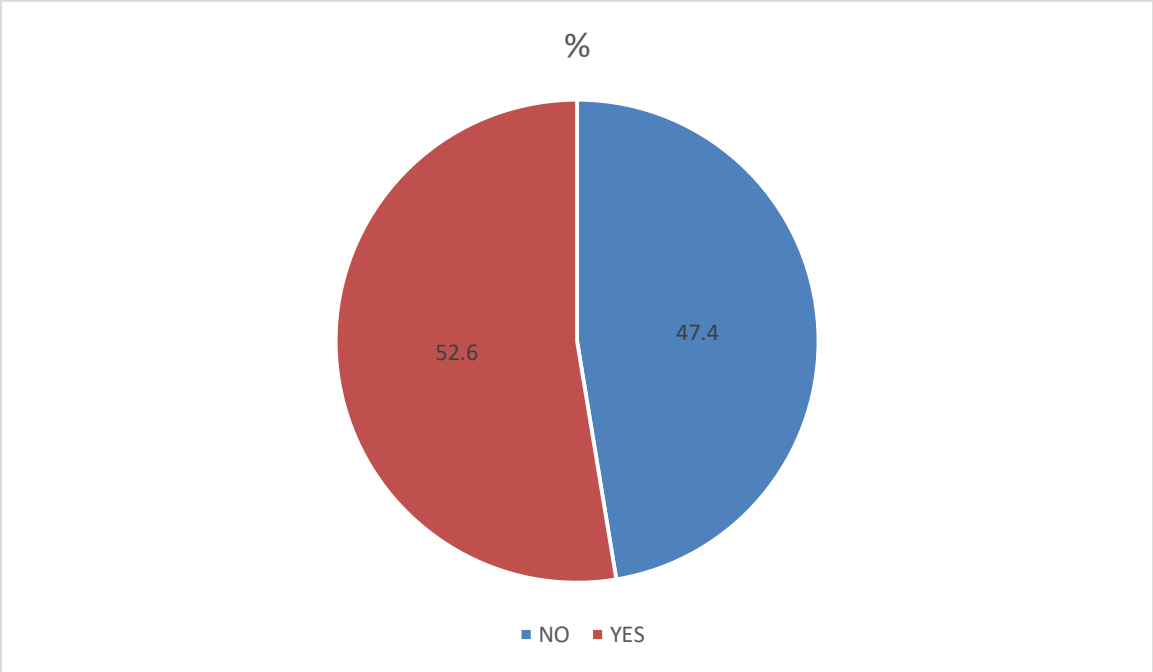

Table 3 and Figure 1 shows the prevalence of Depression among the study sample. Participants who were found to have Depression were 110(52.6%) and who didn't have Depression were 99(47.4%).

Table 4: Distribution of Participants according to severity of Depression.

HADS Depression (severity)	**N (209)**	**%**
Normal	99	47.4%
Borderline abnormal	59	28.2%
Abnormal	51	24.4%
Total	209	100%

Table 5: Prevalence of Anxiety in study sample.

Diagnosis of Anxiety	**N (209)**	**%**
No	142	67.9%
Yes	**67**	**32.1%**
Total	209	100%

Figure 2: Prevalence of Anxiety in study sample.

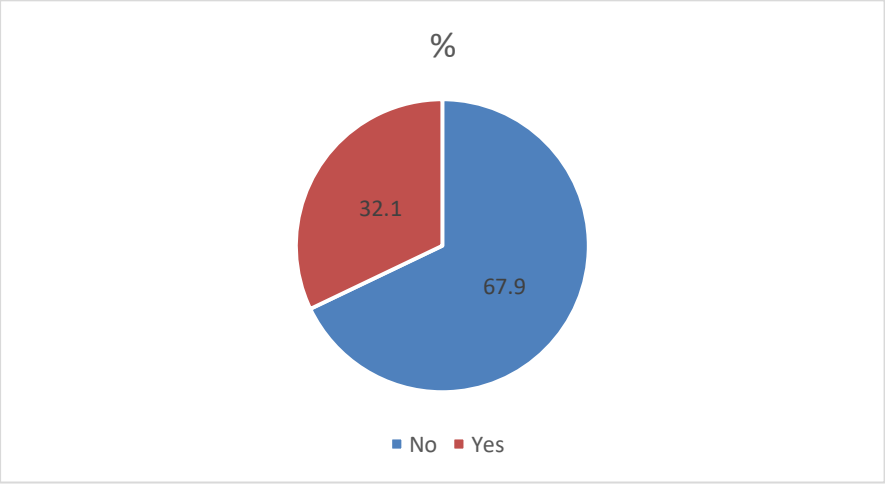

Table 5 and Figure 2 shows the prevalence of Anxiety among study participants.Participants who were found to have Anxiety were 67(32.1%) and who didn't have Anxiety were 142(67.9%).

Table 6: Distribution of Participants according to severity of Anxiety.

HADS Anxiety (severity)	**N (209)**	**%**
Normal	142	67.9%
Borderline abnormal	44	21.1%
Abnormal	23	11.0%
Total	209	100%

Table 7: Correlation between age and severity of depression.

		Age
Depression (HADS)	Correlation coefficient 'r'	-0.291
	P Value	< 0.001*
	N	209

Pearson correlation

***Significant**

Table 7 shows the correlation between severity of depression as per Hospital Anxiety and Depression Scale with the age of the study participants. Hospital Anxiety and Depression Scale showed Weak negative correlation with age of the participants and it is statistically significant. This implies younger the patients, more severe the depressive symptoms experienced.

Table 8: Association between Gender and severity of Depression.

Severity of depression	Gender		Total	p-value
	Male	Female		
Normal	56(47.5)	43(47.3)	99(47.4)	0.995
Borderline Abnormal	33(28.0)	26(28.5)	59(28.2)	
Abnormal	29(24.5)	22(24.2)	51(24.4)	
Total	118(100)	91(100)	209(100)	

Figure 3: Association between Gender and severity of Depression.

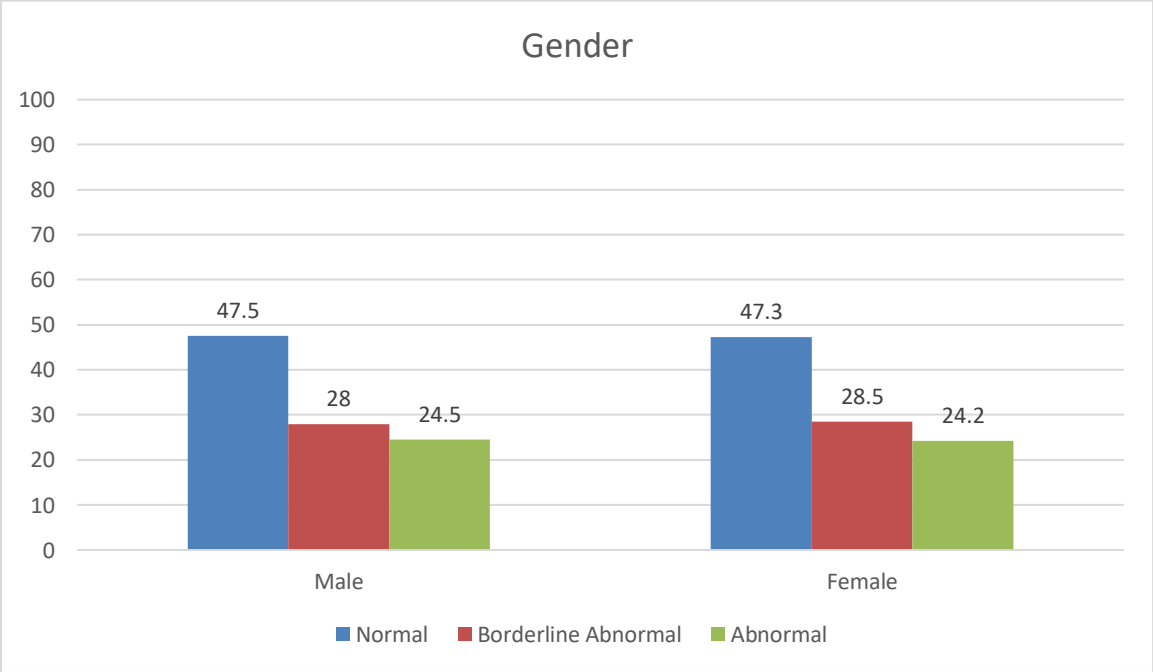

Table 8 and Figure 3 shows the Association between Gender and severity of Depression. Prevalence of depression is almost similar in male and female participants, with 24.5% and 24.2% respectively and the difference between two groups was not statistically significant as p value is 0.995.

Table 9: Association between Marital status and severity of Depression.

Severity of depression	Marital status		Total	p-value
	Married	Unmarried		
Normal	93(52.2)	6(19.4)	99(35.8)	< 0.001 *
Borderline Abnormal	50(28.1)	9(29.0)	59(28.5)	
Abnormal	35(19.7)	16(51.6)	51(35.6)	
Total	178(100)	31(100)	209(99.9)	

Figure 4: Association between Marital status and severity of Depression.

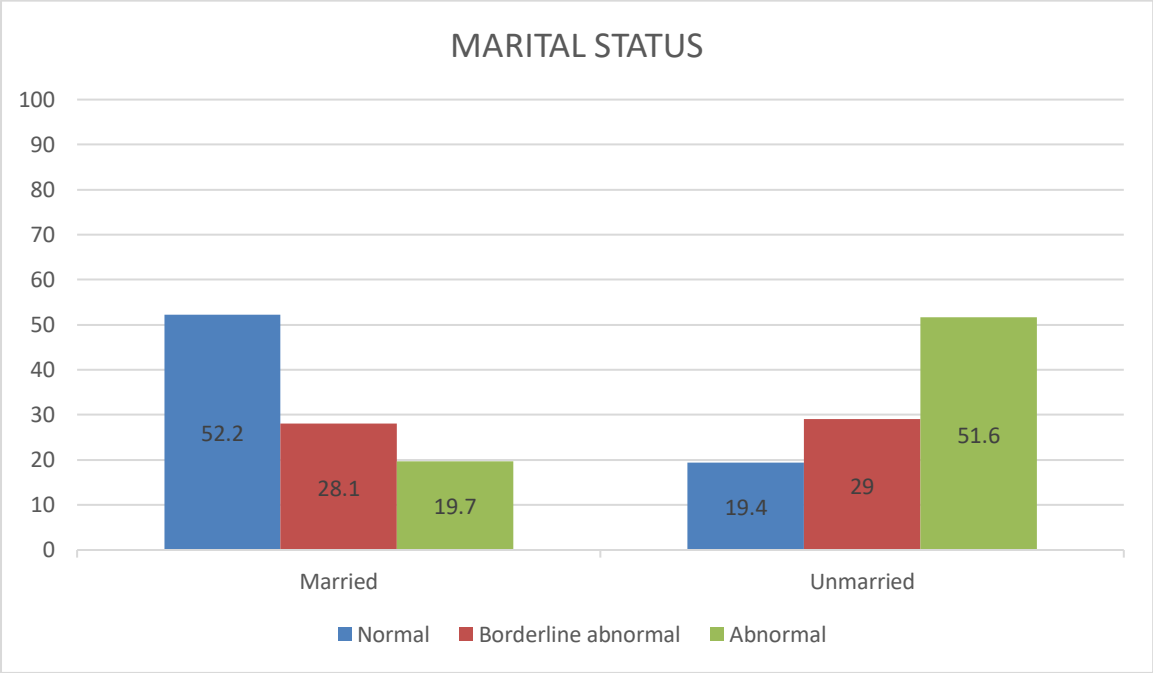

Table 9 and Figure 4 shows the Association between Marital status and severity of Depression. Prevalence of depression is higher in participants who were unmarried (51.6%) than married (19.7%) and this difference was statistically significant (p <0.001).

Table 10: Association between Educational Status and severity of Depression.

Severity of depression	Educational status				Total	p-value
	Illiterate	secondary	Diploma	Masters		
Normal	3(50.0)	42(40.6)	21(53.8)	33(52.5)	99(49.2)	0.231
Borderline Abnormal	1(16.7)	26(26.6)	13(33.3)	19(28.4)	59(26.2)	
Abnormal	2(33.3)	32(32.7)	5(12.8)	12(19.1)	51(24.4)	
Total	6(100)	100(100)	39(100)	64(100)	209(99.8)	

Figure 5: Association between Educational Status and severity of Depression.

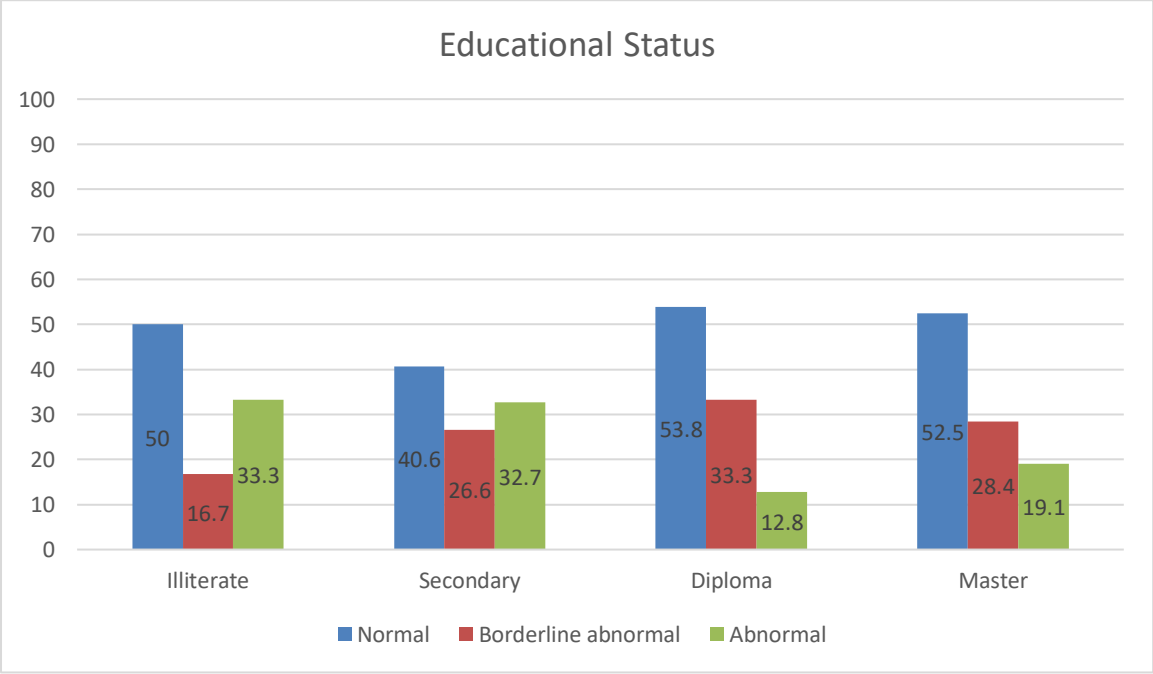

Table 10 and Figure 5 shows the Association between Educational status and severity of Depression. Prevalence of depression is comparable between participants who were Illiterate and who have completed secondary school of education (33.3% vs 32.7%)and lesser in participants who have completed Master's degree (19.1%), with least among who have completed Diploma (12.8%). There were no statistically significant differences between these groups (p 0.231).

Table 11: Association between occupation and severity of depression:

Severity of depression	Occupation			Total	p-value
	Unskilled	Semiskilled	Skilled		
Normal	15(37.5)	48(48.0)	36(55.1)	99(46.8)	0.29
Borderline Abnormal	16(40.0)	30(30.0)	13(20.8)	59(30.3)	
Abnormal	9(22.5)	22(22.0)	20(24.1)	51(22.8)	
Total	40(100)	100(100)	69(100)	209(99.9)	

Figure 6: Association between occupation and severity of depression.

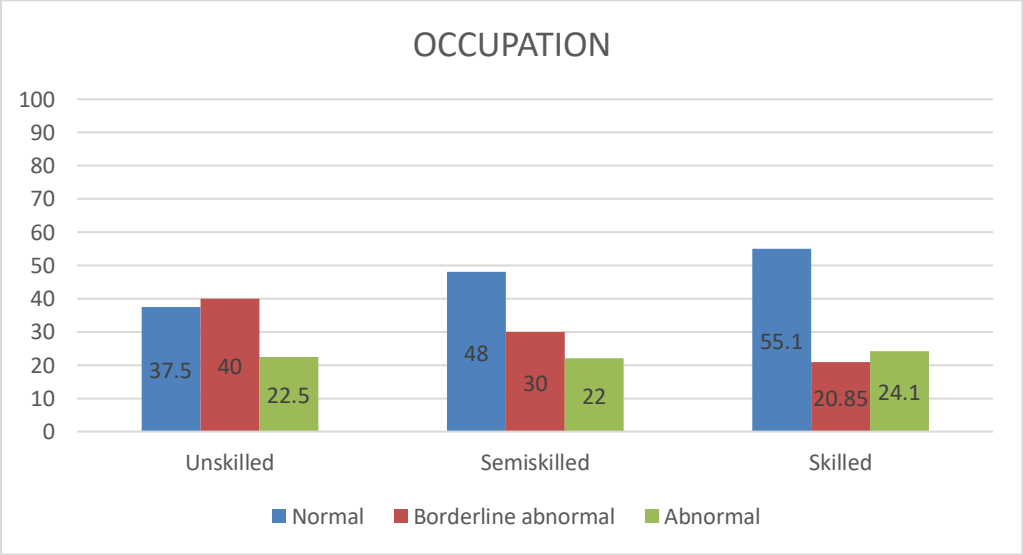

Table 11 and Figure 6 shows the Association between Occupation and severity of Depression. Prevalence of depression was almost comparable between the participants, irrespective of their type of occupation. 24.1% of skilled workers,22.5% of unskilled workers and 22% of semiskilled workers had depression and there were no statistically significant differences between these groups (p 0.29).

Table 12: Association between Pattern of admission and severity of depression.

Severity of depression	Pattern of admission		Total	p-value
	First time	Follow up		
Normal	59(50.4)	40(43.5)	99(46.9)	0.046*
Borderline Abnormal	37(31.6)	22(23.9)	59(27.7)	
Abnormal	21(17.9)	30(32.6)	51(25.2)	
Total	117(100)	92(100)	209(99.8)	

Figure 7: Association between Pattern of admission and severity of depression.

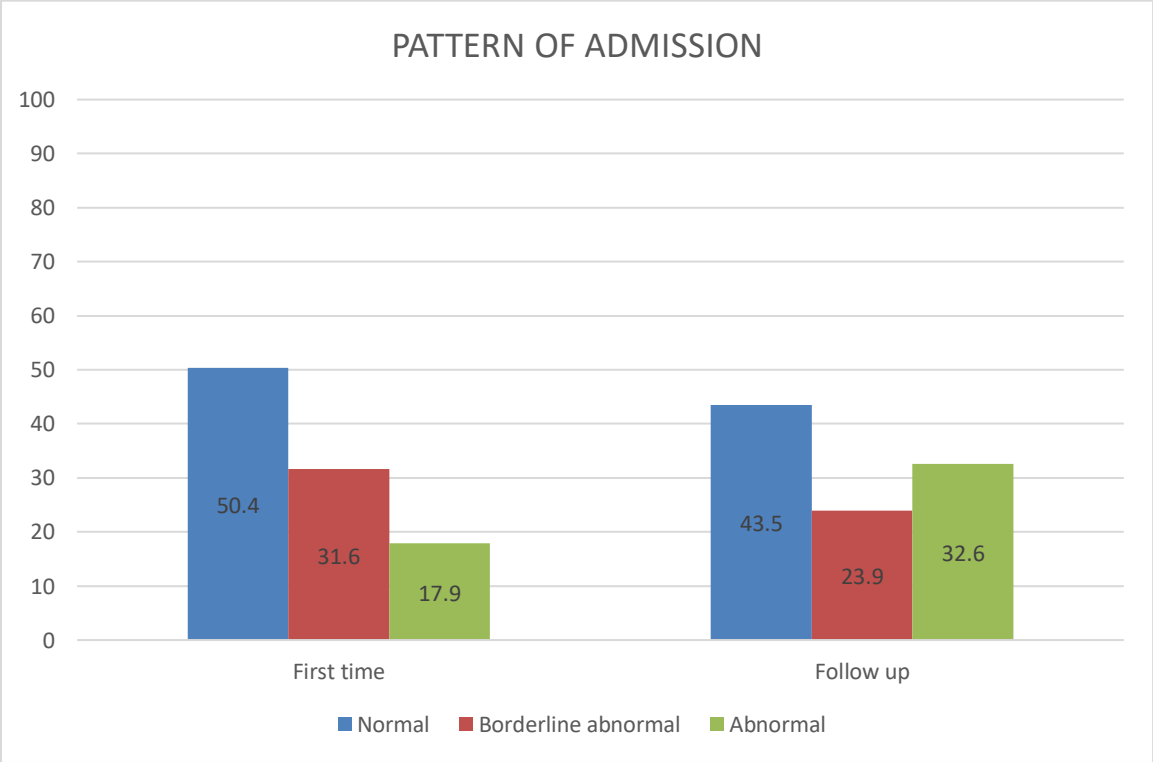

Table 12 and Figure 7 shows the Association between Pattern of admission and severity of Depression. Higher proportion of participants who got admitted multiple times had Depression (32.6%) than participants who got admitted for first time (17.9) and this difference was statistically significant (p 0.046).

Table 13: Association between State of Awareness of Diagnosis (cancer) and severity of Depression.

Severity of depression	Awareness of Diagnosis (cancer)		Total	p-value
	Yes	No		
Normal	65(39.9)	34(73.9)	99(56.9)	< 0.001*
Borderline Abnormal	48(29.4)	11(23.9)	59(26.6)	
Abnormal	50(30.7)	1(2.2)	51(16.4)	
Total	163(100)	46(100)	209(99.9)	

Figure 8: Association between State of Awareness of Diagnosis (cancer) and severity of Depression.

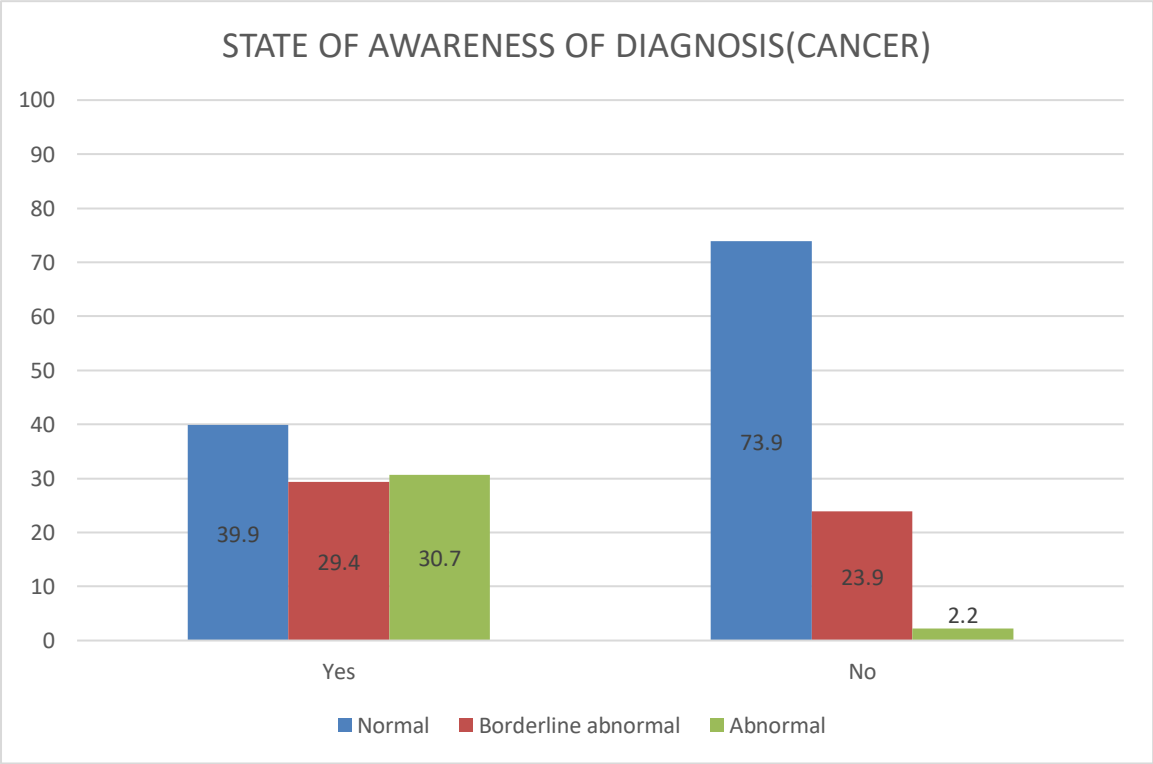

Table 13 and Figure 8 shows the Association between Participant's State of awareness of Diagnosis (cancer) and severity of Depression. Prevalence of depression was higher among participants who were already aware of their Diagnosis of cancer (30.7%) than who were not (2.2%) and this difference was statistically significant (p <0.001).

Table 14: Association between presence of Family history of cancer and severity of Depression.

Severity of depression	Family history of cancer		Total	p-value
	Yes	No		
Normal	6(24.0)	93(50.5)	99(37.2)	0.044*
Borderline Abnormal	10(40.0)	49(26.6)	59(33.3)	
Abnormal	9(36.0)	42(22.8)	51(29.4)	
Total	25(100)	184(100)	209(99.9)	

Figure 9: Association between presence of Family history of cancer and severity of Depression.

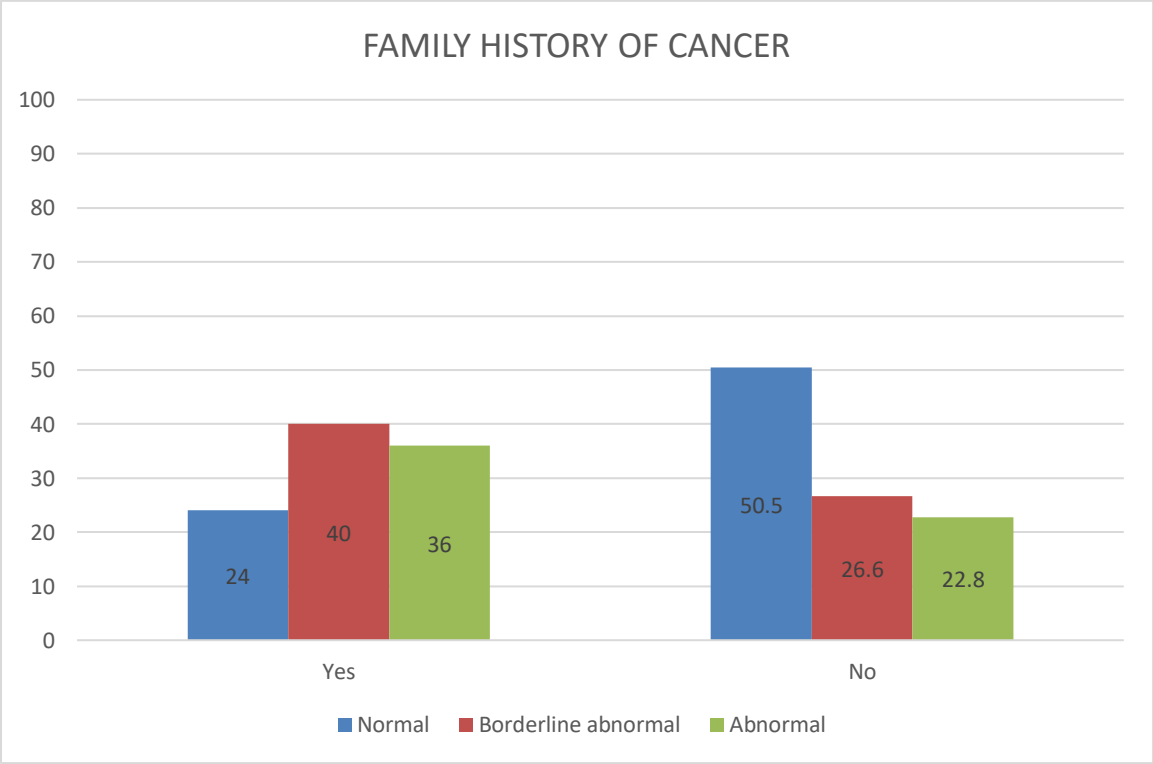

Table 14 and Figure 9 shows the Association between presence of Family history of cancer and severity of Depression. Participants with family history of cancer had higher prevalence of depression (36%) than who didn't have the family history (22.8%) and this difference was statistically significant (p 0.044).

Table 15: Association between presence of Family history of Cancer related Deaths and severity of Depression.

Severity of depression	Family history of Cancer related Deaths		Total	p-value
	Yes	No		
Normal	0(0)	99(48.8)	99(24.4)	0.06
Borderline Abnormal	3(50.0)	56(27.6)	59(38.8)	
Abnormal	3(50.0)	48(23.6)	51(36.8)	
Total	6(100)	203(100)	209(100)	

Figure 10: Association between presence of Family history of Cancer related Deaths and severity of Depression.

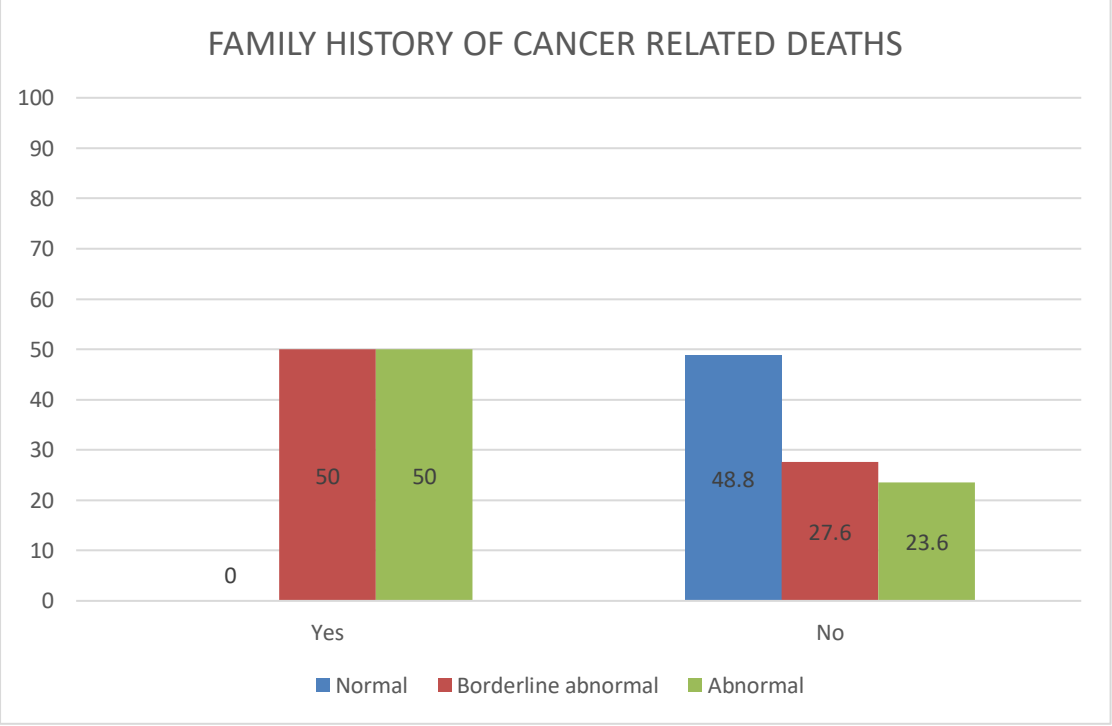

Table 15 and Figure 10 shows the Association between presence of Family history of cancer related deaths and severity of Depression. Participants who had cancer related Deathsin the family had higher prevalence of depression (50%) than who didn't have such history (23.6%). However, this difference was not statistically significant (p 0.06).

Table 16: Association between Type of Cancer Treatment and severity of Depression

Severity of depression	Type of Cancer Treatment				Total	p-value
	Chemotherapy	Radiotherapy	Surgical intervention	Multimodal treatment		
Normal	26(54.2)	2(100)	53(49.5)	18(35.5)	99(59.8)	0.003*
Borderline Abnormal	12(25.0)	0(0)	36(40.6)	11(24.0)	59(22.4)	
Abnormal	10(20.8)	0(0)	19(9.9)	22(40.5)	51(17.8)	
Total	48(100)	2(100)	108(100)	51(100)	209(100)	

Figure 11: Association between Type of Cancer Treatment and severity of Depression.

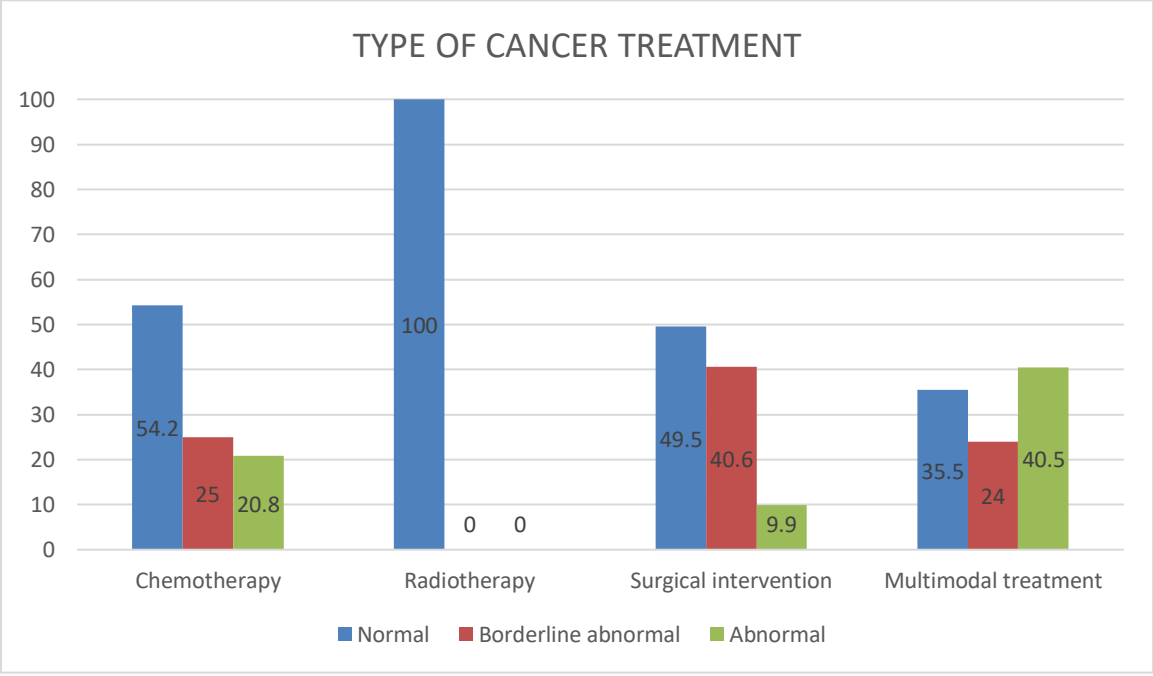

Table 16 and Figure 11 shows the Association between Type of Cancer Treatment and severity of Depression. Participants who were on multimodal treatment had higher prevalence of depression (40.5%) followed by who were only on chemotherapy (20.8%) and the least by people who only had Surgical intervention (9.9%). Notably, out of the study sample, who were only on radiotherapy, none had depression. Ultimately, differences between these groups were statistically significant (p 0.003).

Table 17: Correlation between age and severity of anxiety.

		Age
Anxiety (HADS)	Correlation coefficient 'r'	-0.110
	P Value	0.113
	N	209

Pearson correlation

Table 17 shows the correlation between severity of anxiety as per Hospital Anxiety and Depression Scale with the age of the study participants. Hospital Anxiety and Depression Scale showed weak negative correlation with age of the participants and it is not statistically significant.

Table 18: Association between Gender and severity of Anxiety.

Severity of anxiety	Gender		Total	p-value
	Male	Female		
Normal	81(68.6)	61(67.0)	142(67.8)	0.363
Borderline Abnormal	27(22.9)	17(18.7)	44(20.8)	
Abnormal	10(8.5)	13(14.3)	23(11.4)	
Total	118(100)	91(100)	209(100)	

Figure 12: Association between Gender and severity of Anxiety.

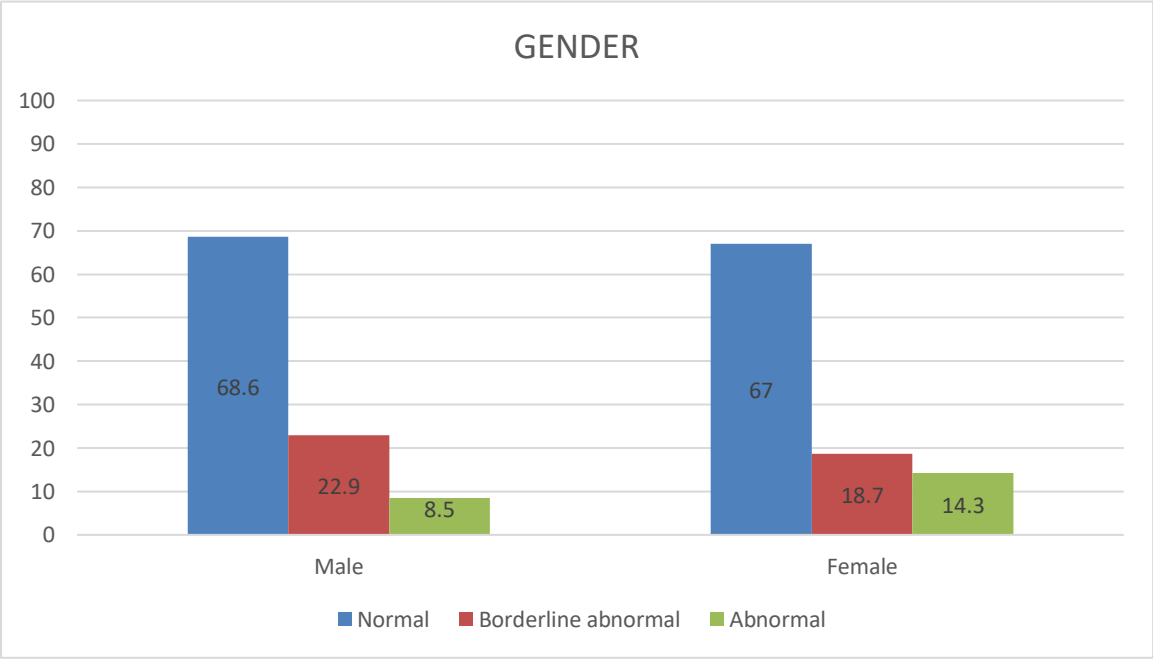

Table 18 and Figure 12 shows the Association between Gender and severity of Anxiety. Prevalence of anxiety is higher in female participants than male participants with 14.3% and 8.5% respectively, however the difference between two groups was not statistically significant (p 0.363).

Table 19: Association between Marital status and severity of Anxiety.

Severity of anxiety	Marital status		Total	p-value
	Married	Unmarried		
Normal	126(70.8)	16(51.6)	142(61.2)	0.044 *
Borderline Abnormal	36(20.2)	8(25.8)	44(23.0)	
Abnormal	16(9.0)	7(22.6)	23(15.8)	
Total	178(100)	31(100)	209(100)	

Figure 13: Association between Marital status and severity of Anxiety.

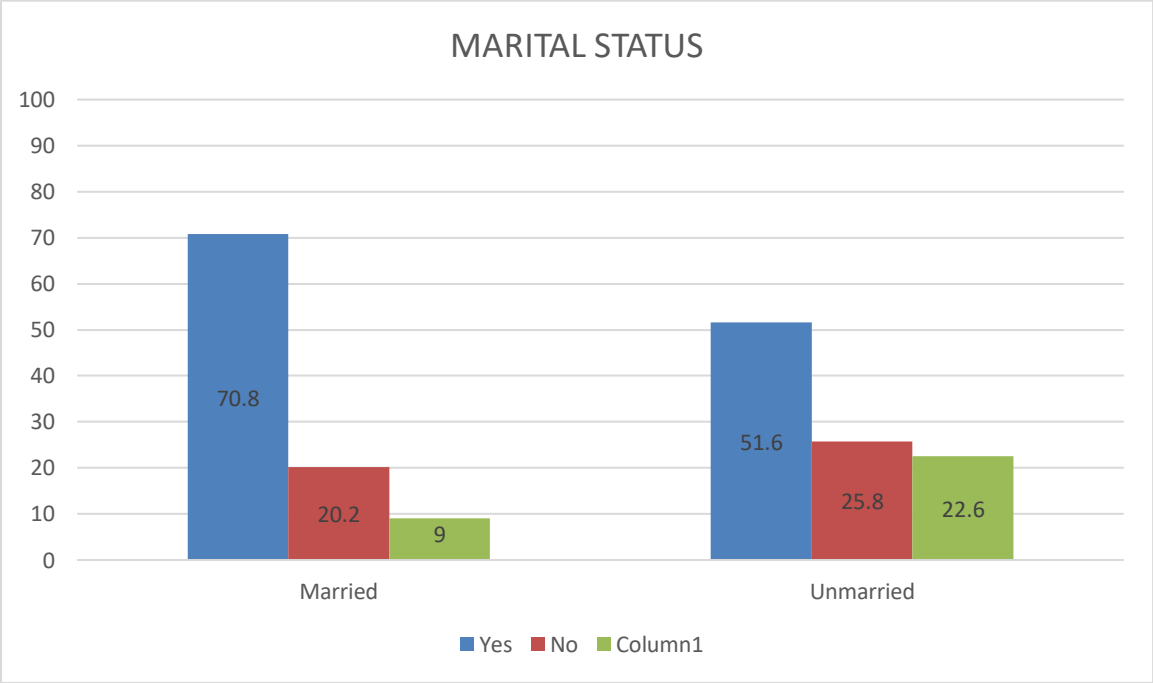

Table 19 and Figure 13 shows the Association between Marital status and severity of Anxiety. Prevalence of anxiety is higher in participants who were unmarried (22.6%) than married (9%) and the difference was statistically significant (p 0.044).

Table 20: Association between Educational Status and severity of Anxiety.

Severity of anxiety	Educational Status				Total	p-value
	Illiterate	Secondary	Diploma	Master's		
Normal	4(66.7)	62(60.9)	29(74.4)	47(73.8)	142(68.9)	0.153
Borderline Abnormal	0(0)	23(23.4)	8(20.5)	13(21.6)	44(16.3)	
Abnormal	2(33.3)	15(15.6)	2(5.1)	4(4.5)	23(14.6)	
Total	6(100)	100(100)	39(100)	64(100)	209(99.8)	

Figure 14: Association between Educational Status and severity of Anxiety.

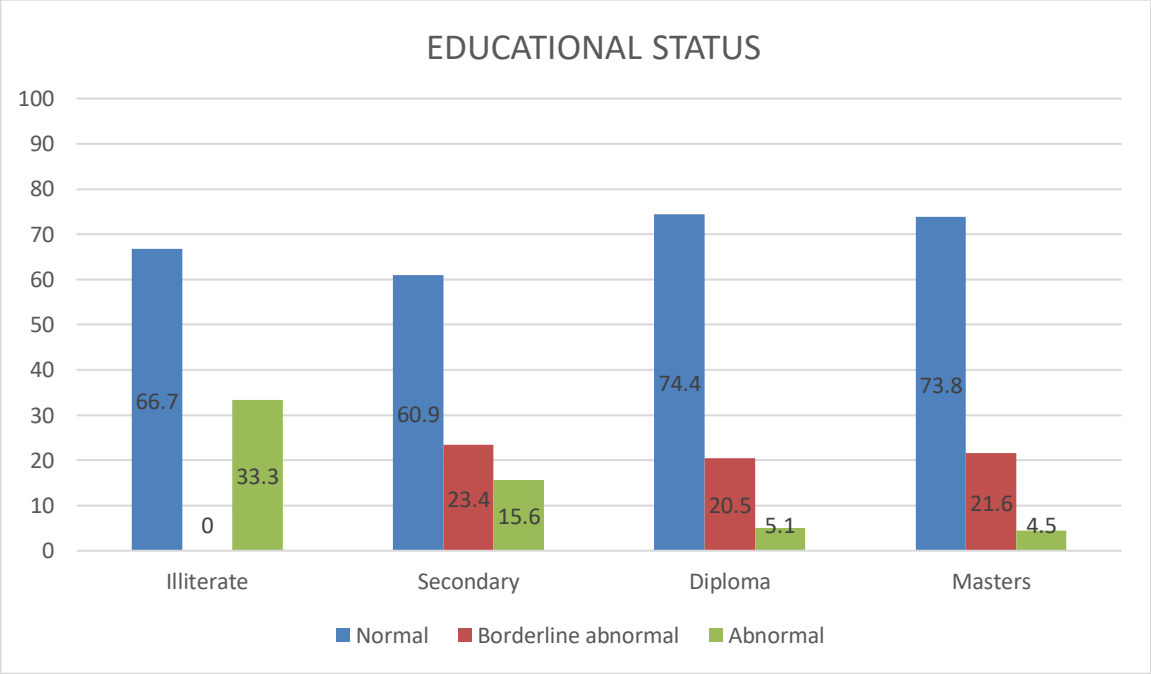

Table 20 and Figure 14 shows the Association between Educational status and severity of Anxiety. Prevalence of anxiety is higher among participants who were Illiterate (33.3%), followed by who have completed up to secondary level of education (15.6%) and there was comparable between participants who have completed Diploma and Master's (5.1% vs 4.5%). However, these differences were not statistically significant.

Table 21: Association between Occupation and severity of Anxiety.

Severity of anxiety	Occupation			Total	p-value
	Unskilled	Semiskilled	Skilled		
Normal	23(57.5)	67(67.0)	52(75.2)	142(66.5)	0.397
Borderline Abnormal	13(32.5)	20(20.0)	11(15.2)	44(22.5)	
Abnormal	4(10.5)	13(13.0)	6(9.6)	23(10.8)	
Total	40(100)	100(100)	69(100)	209(99.8)	

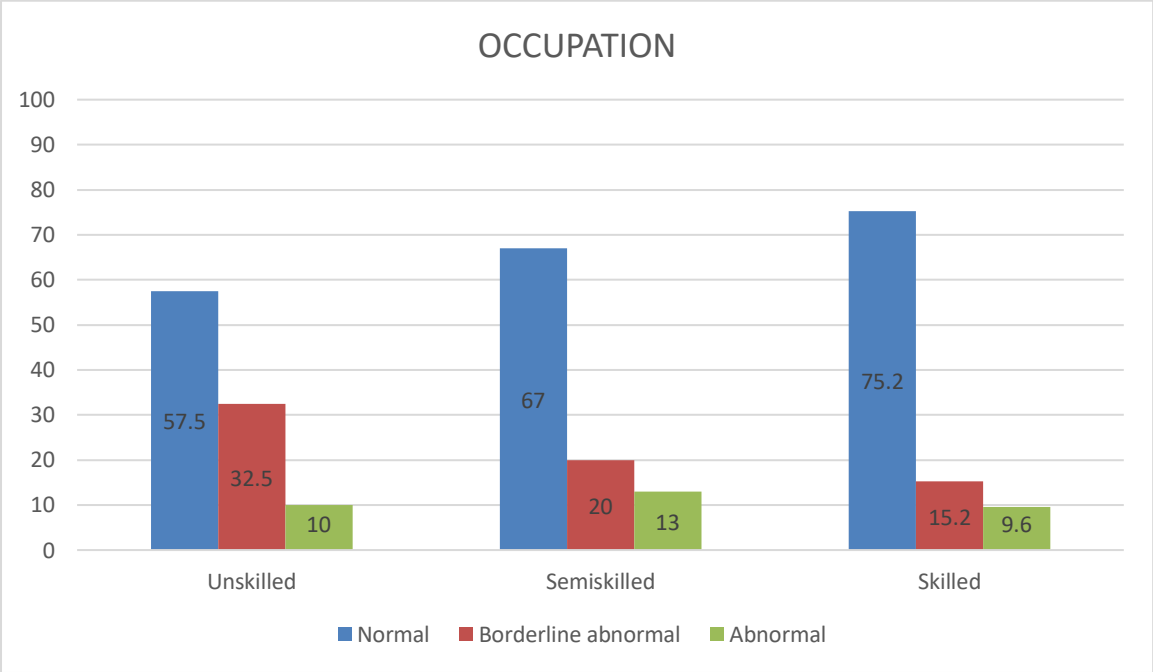

Table 21 and Figure 15 shows the Association between Occupation and severity of Anxiety. Higher prevalence of anxiety was observed among participants with semiskilled jobs (13.0%) and prevalence of anxiety was comparable between participants with unskilled (10.0%) and skilled (9.6%) jobs and these differences were not statistically significant.

Table 22: Association between Pattern of admission and severity of Anxiety.

Severity of anxiety	Pattern of admission		Total	p-value
	First time	Follow up		
Normal	67(57.3)	75(81.5)	142(69.4)	0.001*
Borderline Abnormal	34(29.1)	10(10.9)	44(20.0)	
Abnormal	16(13.7)	7(7.6)	23(10.6)	
Total	117(100)	92(100)	209(100)	

Figure 16: Association between Pattern of admission and severity of Anxiety.

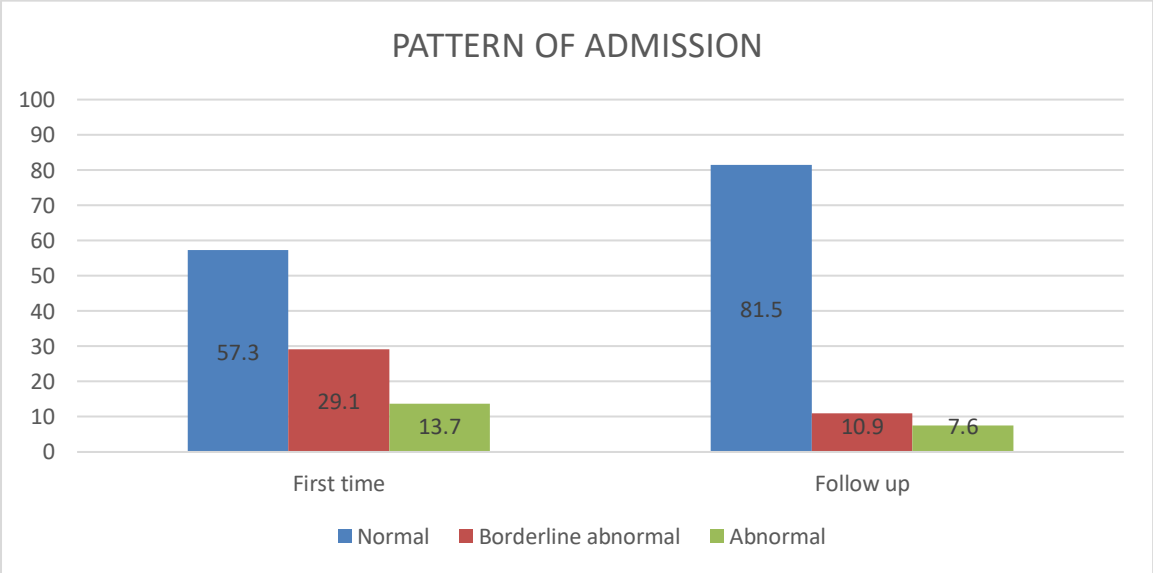

Table 22 and Figure 16 shows the Association between Pattern of admission and severity of Anxiety. Higher proportion of participants who got admitted for first time had anxiety (13.7%) than participants who got admitted multiple times (7.6%) and this difference was statistically significant (p 0.001).

Table 23: Association between State of Awareness of Diagnosis (cancer) and severity of Anxiety.

Severity of anxiety	State of Awareness of Diagnosis(cancer)		Total	p-value
	Yes	No		
Normal	104(63.8)	38(82.6)	142(73.2)	0.049*
Borderline Abnormal	38(23.3)	6(13.0)	44(18.1)	
Abnormal	21(12.9)	2(4.3)	23(8.6)	
Total	163(100)	46(100)	209(99.9)	

Figure 17: Association between State of Awareness of Diagnosis (cancer) and severity of Anxiety.

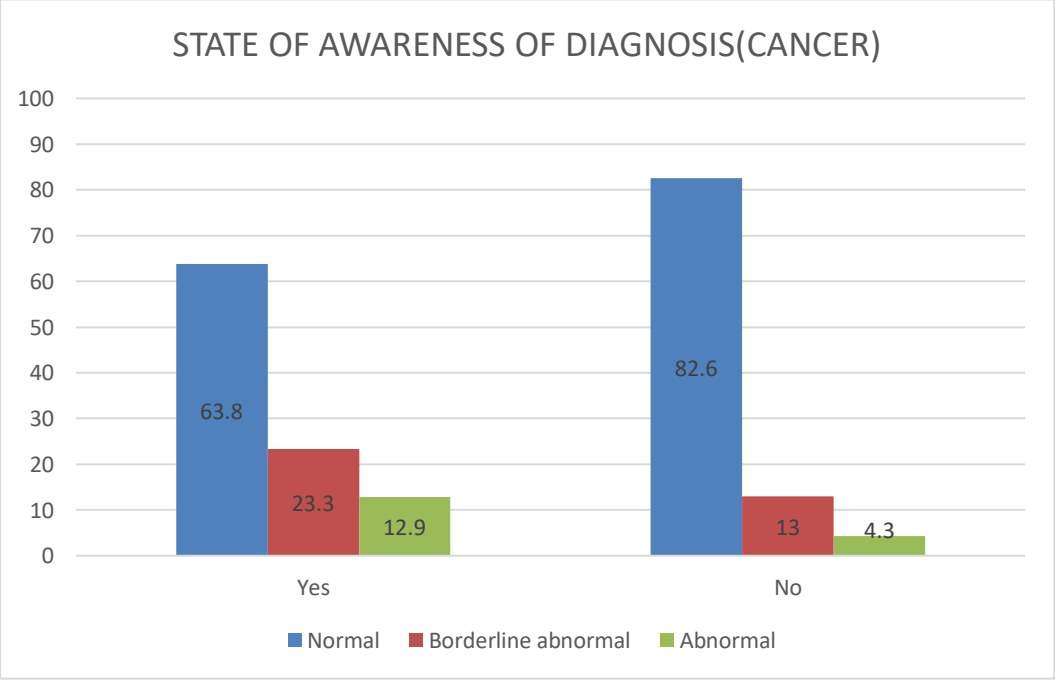

Table 23 and Figure 17 shows the Association between Participant's State of awareness of Diagnosis(cancer) and severity of Anxiety. Prevalence of anxiety was higher among participants who were already aware of cancer diagnosis (12.9%) than who weren't (4.3%), this difference noted to be statistically significant.

Table24: Association of presence of cancer in family with severity of Anxiety.

Severity of anxiety	Family history of cancer		Total	p-value
	Yes	No		
Normal	17(68.0)	125(67.9)	142(67.9)	0.98
Borderline Abnormal	5(20.0)	39(21.2)	44(20.6)	
Abnormal	3(12.0)	20(10.9)	23(11.4)	
Total	25(100)	184(100)	209(99.9)	

Figure 18: Association between Presence of cancer in family and severity of Anxiety.

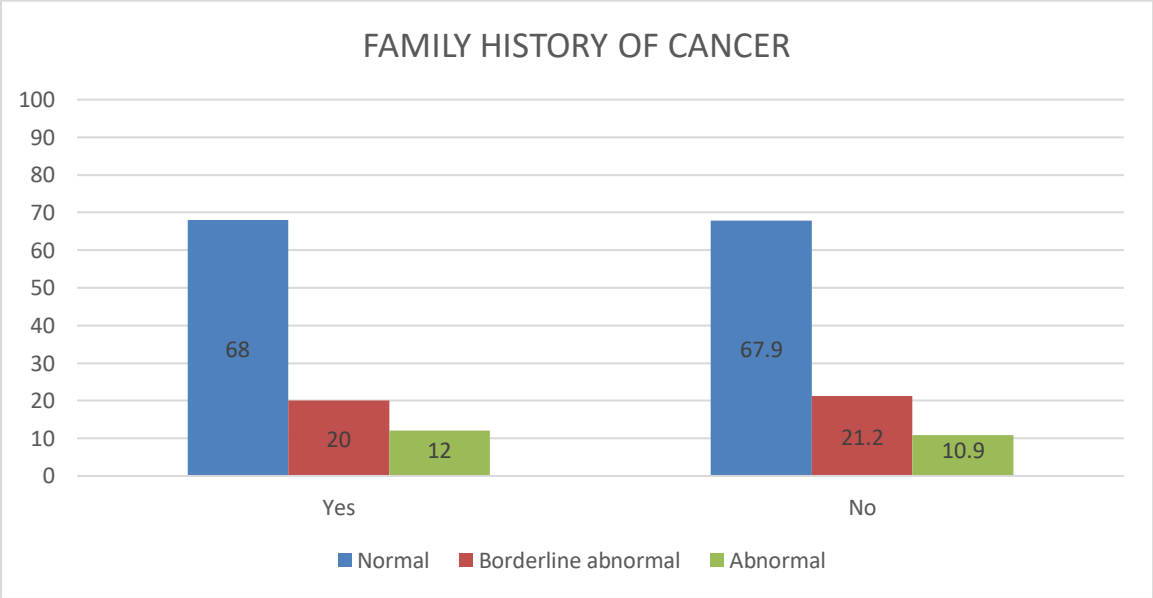

Table 24 and Figure 18 shows the Association of positive cancer history in family with severity of Anxiety. Prevalence of anxiety was comparable (p 0.98) between participants who had history of cancer among family members and who didn't have such history (12% vs 10.9%).

Table 25: Association between Cancer related Deaths in family and severity of Anxiety.

Severity of anxiety	Family history of Cancer related Deaths		Total	p-value
	Yes	No		
Normal	1(16.7)	141(69.5)	142(43.1)	0.013*
Borderline Abnormal	4(66.7)	40(19.7)	44(43.2)	
Abnormal	1(16.7)	22(10.8)	23(13.7)	
Total	6(100)	203(100)	209(100)	

Figure 19: Association between Cancer related Deaths in family and severity of Anxiety.

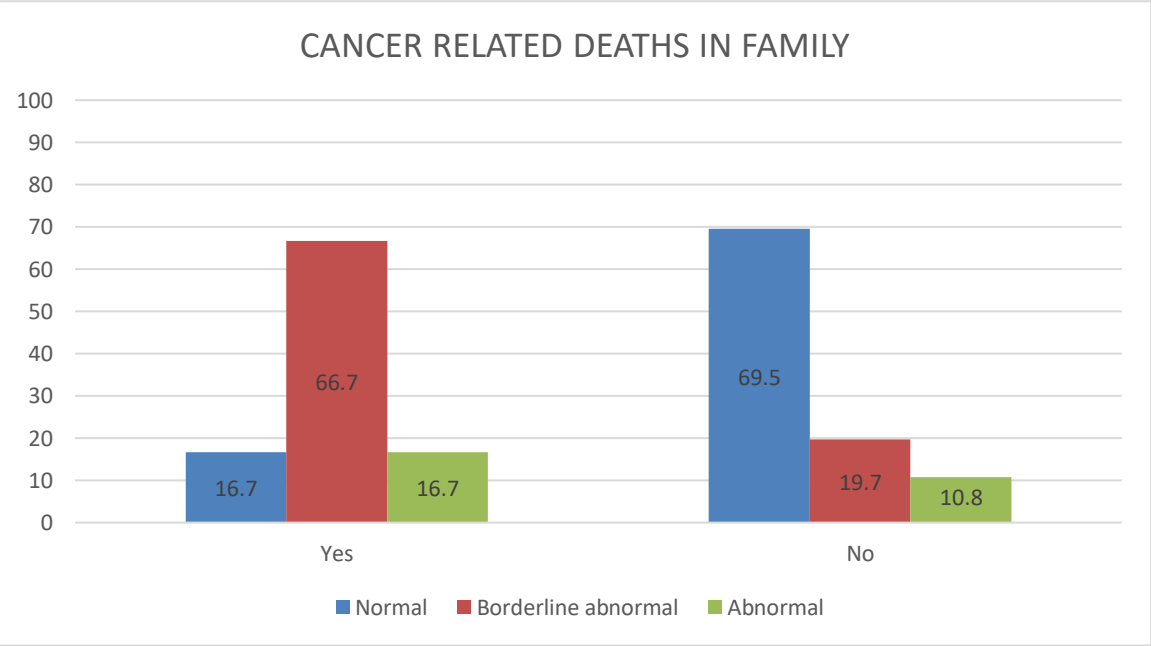

Table 25 and Figure 19 shows the association of Family history of Cancer related Deaths with severity of Anxiety. Participants who had cancer related Deaths in the family had elevated prevalence of anxiety (16.7%) than who didn't have (10.8%) and this difference was considered to be significant statistically.

Table 26: Association between Type of Cancer Treatment and severity of Anxiety.

Severity of anxiety	Type of Cancer Treatment				Total	p-value
	Chemotherapy	Radiotherapy	Surgical intervention	Multimodal treatment		
Normal	39(81.3)	1(50.0)	64(73.4)	38(69.0)	142(68.4)	0.014*
Borderline Abnormal	8(16.7)	1(50.0)	29(18.7)	6(18.7)	44(26.0)	
Abnormal	1(2.1)	0(0)	15(7.8)	7(12.3)	23(5.5)	
Total	48(100)	2(100)	108(100)	51(100)	209(99.9)	

Figure 20: Association between Type of Cancer Treatment and severity of Anxiety.

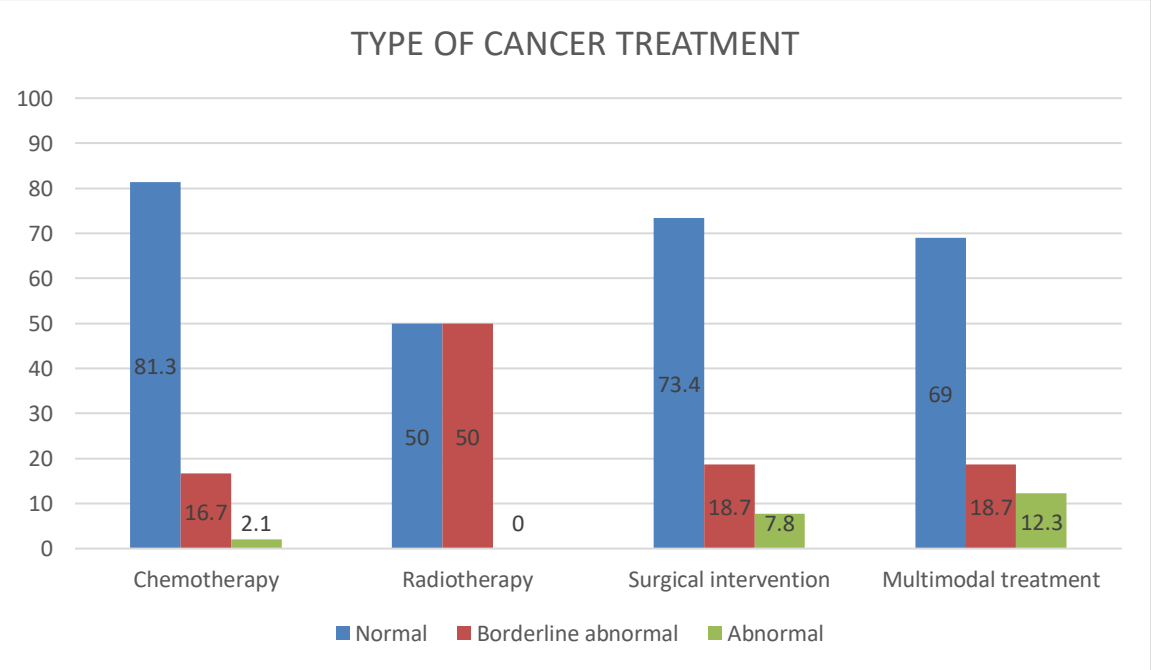

Table 26 and Figure 20 shows the association of type of Cancer Treatment with severity of Anxiety. Participants who were on multimodal treatment had more prevalence of anxiety (12.3%) followed by who only had Surgical intervention (9.9%) and the least by participants who were only on chemotherapy (2.1%). Among the participants, who were only on radiotherapy,50% didn't have anxiety and 50% had anxiety symptoms with severity at borderline. The difference between these groups was noted to be statistically significant.

DISCUSSION

This study was designed as a cross-sectional investigation to evaluate the frequency of depression and anxiety among cancer patients, as well as to identify the factors influencing these conditions. For clinical convenience, participants having HADS score with abnormal severity were considered to have depression and anxiety disorder.

SOCIO-DEMOGRAPHIC VARIABLES

Age:

According to the World Health Organization, cancer prevalence was elevated among individuals aged 50-54 years across both genders. In our study, the average age of participants was 45 years. This difference in mean age could be attributed to the study being conducted within a specific geographic area with distinct demographic characteristics. However, almost similar mean age was observed across various other studies.(42)(18,43)

Gender:

It was stated by World Health Organization that prevalence of cancer was almost comparable between men (3.97 billion) and women (3.91 billion). In this study, majority of the participants were males (56.5%) and remaining were females (43.5%). Similar proportion was observed in another study by Hasan et al with males (55%) (44). Almost similar proportion (55.4%) was seen by Naser et al in his study (5).

Marital status:

In this study, most of the participants were married (85.2%) as mean age of our participants was 45 years. In one Indian cross-sectional study, among the study sample of 210, three fourth of the participants were married (18). Similar proportion around 82.4%was also observed by Naser et al(5). In 2014, another study also had predominantly married participants (97.3%)(44)

Education:

With regard to educational status, around ½ of the participants (47.7%) have completed up to secondary school of education. Similar results were observed in 2012, wherein, 35.3% were educated up to secondary school education (44). Another study had majority of their participants (37%) having completed secondary school of education(38). Similar pattern of demographic finding (40.1%) was reported in 2018(45).

Occupation:

About 33% of the participants in this study sample had skilled jobs, which was similarly observed by Khalil et al in 2016 where 35.8% had skilled jobs (43). Among the study participants, 47.8% had semiskilled jobs which were comparable in another study by Alacaciglu et al where 43.5% were housewives (44).

CANCER RELATED VARIABLES:

Aware of cancer diagnosis:

In our study, 22% of the participants were unaware of their cancer diagnosis, a proportion that aligns with findings from several other studies. For instance, Alacacioglu et al found that 8.5% of their study sample were unaware of their cancer diagnosis (49), while Tavoli et al. reported that nearly half of their study participants were not aware of their diagnosis (46).

History of cancer/cancer related deaths in family:

Our study participants about 12%had a positive cancer history in their family, a proportion similar to that reported by Khalil et al (11%) in 2016(46). Further investigations specifically examining family history of cancer or cancer-related deaths were not identified in the literature; instead, most studies have focused on assessing family history of psychiatric illnesses.

Type of cancer treatment:

Majority of our study participants (51.6%) had surgical intervention as their mode of treatment. Similar finding was seen in another study by Linden et al.where more than half of the participants had surgically operated for cancer(44). Followed by surgery, multimodal treatment (combination of chemotherapy or radiotherapy and surgical intervention) was the common treatment, similarly shown by Naser et al(5).

FACTORS AFFECTING ANXIETY AND DEPRESSION IN CANCER PATIENTS:

Age:

In this study, a weak negative correlation existed for prevalence of anxiety with age of the participants, thereby younger the participants, higher the severity of anxiety symptoms experienced. In 2007, Tavoli et al also demonstrated that young patients (<50 years) are more distressed, had higher rates of anxiety than elderly patients (>50 years) when they have gastrointestinal cancer (26). Similar finding was reported by another study where younger patients (below 50 years) reported higher anxiety than older patients (70 years and above)(44). In 2019, a study done by Peng et al had observed similar association between anxiety and age(45).

When it comes with depression, we observed weak negative correlation with age. So, younger the participants, higher the severity of depressive symptoms experienced. In 2013, another study by Holland J et al. also reported similar association where prevalence of depression was higher among 20-49 years of age(47).

Possible reason for above findings could be lack of coping skills in younger patients, when compared with elders, and feeling bad about early onset of cancer and pessimistic views about the same.

Gender:

Our findings showed that women (14.3%) showed higher rates of anxiety than males (8.5%), which was a common finding across many studies. For instance, Linden et al also observed in their study that women (65%) showed higher rates of anxiety than men (45%)(44). Similar findings also reported in other studies (35)(36). Usually women tend to be biologically vulnerable when compared with men and most of the women, especially in our setting won't get opportunities to divert their negative thoughts what men used to do and this could be the reason why women have more anxiety.

However, with respect to depression, we observed comparable findings between men (24.5%) and women (24.2), which were in contrary to most of the studies. However similar findings were observed in few other studies (48)(26). But we couldn't find possible explanation for the same.

Marital status:

Participants who were unmarried had anxiety with higher prevalence (22.6%) than married ones (9%). Similar pattern was seen with respect to depression where among unmarried participants, more than half (51.6%) suffered with significant depressive symptoms. Possible reason for this difference could be that mostly unmarried participants were young, feeling lonely and lack constant family support. In 2019, Peng et al. reported comparable findings in their study, where among the participants who were unmarried, 45.8% had depression and 41.7% had anxiety(45).

Education:

In our study sample, we observed that illiterate patients had a significantly higher prevalence of anxiety (33.3%) compared to those who were well-educated. Similar trend was observed with respect to depression as well. Highest prevalence of depression was observed among the illiterate (33.3%), followed by those who studied up to secondary school education (32.7%). Similar findings were also reported in other studies too. For instance, participants having high educational levels had lower depression scores, reported by Alacacioglu et al(49).Also, in 2008, Bjelland et al observed similar findings in their study(50).People with poor educational background commonly have poor socioeconomic status, having difficulty in meeting the treatment needs. And also, it's possible that they might have lack of appropriate knowledge about their illness and its prognosis. These factors could be the possible explanation for above findings.

Pattern of admission:

Based on our knowledge, in other studies, association of depression and anxiety with pattern of admission was not studied. However, based on our findings, prevalence of anxiety was higher among participants who got admitted for first time (13.7%). The similar observations have been made by Lueboonthavatchai in 2007 in his study(51).The possible reasons for more anxiety among those getting admitted for the first time could be: The uncertainty surrounding the diagnosis, or the revelation of the cancer diagnosis for first time.

With respect to depression, there was higher prevalence among study participants with multiple hospital admissions (32.6%). Repeated hospital admissions cause interference in occupational and personal functioning which leads to depression, which could possibly explain the above finding.

Awareness of the diagnosis:

In this study, participants who knew about their cancer diagnosis showed higher anxiety (12.9%) compared to those who did not (4.3%). A similar pattern was observed with depression as well (30.7% vs 2.2%). These findings were also observed in a meta-analysis done in 2021, where Chittem et al concluded that anxiety and depression had significant association with the state of awareness of diagnosis of cancer(52), which was also observed by Tavoli et al(26).

Whereas in contrary to this common finding across other studies, according to Alacacioglu et al in 2013, there was no notable difference in the prevalence of depression and anxiety between patients who were aware of their diagnosis and those who were not(49).

Family history of cancer:

This study showed that prevalence of depression was higher among participants with history of cancer in family than who didn't have such history. This specific association was not studied in most of the studies, rather they had assessed for association with presence of psychiatric illnesses in family. However, in 2016, Khalil et al assessed the presence of family history of cancer and found that a significant proportion of patients with such history experienced depression(46).

Type of cancer treatment:

While focusing on cancer treatment, participants who got surgical intervention, had lesser prevalence of depression (9.9%). Whereas with multimodal treatment, higher rate of both anxiety (12.3%) and depression (40.5) were observed.In 2014, another research reported depression to be lesser in prevalence (15.9%) with surgical intervention when compared with other mode of treatment(44).

Table 27: Studies assessing the prevalence of depression and anxiety among cancer patients.

Authors	**Year**	**Country**	**Prevalence**
Wilson et al(41)	2007	Canada	Depressive disorder -13.1% Anxiety disorder - 13.9%
Kolva et al[40]	2011	New York	Anxiety disorder - 12.4%
Portero et al[36]	2022	Spain	Depressive disorder -35% Anxiety disorder - 36%
Fonseca et al[35]	2018	Spain	Depressive disorder -36.6% Anxiety disorder - 49.8%
Szoc et al[21]	2009	United States	Depressive disorder -6% Anxiety disorder - 11.7%
Naser et al[5]	2021	Jordan	Depressive disorder -23.4% Anxiety disorder – 19.1%
Chen et al[19]	2000	Taiwan	Depressive disorder -20% Anxiety disorder – 12%
Srivastava et al[17]	2016	India	Depressive disorder -28% Anxiety disorder – 37%

CONCLUSION

Our study shows prevalence of depression and anxiety among cancer patients and factors that contribute to the same. Around one fourth of study participants had depression and 11% had anxiety disorder. Higher prevalence of depression was associated with younger age, unmarried status, poor educational background, multiple hospital admissions, awareness of their diagnosis of cancer, presence of family history of cancer and cancer related deaths, and multimodal treatment. Likewise, higher prevalence of anxiety was associated with factors such as younger age group, female gender, unmarried status, poor educational background, first time hospital admission, awareness of their diagnosis of cancer, presence of family history of cancer related deaths, and multimodal treatment.

STRENGTHS OF THE STUDY:

1. Recruitment of Adequate sample size

2. Usage of validated tools

LIMITATIONS OF THE STUDY:

1. This study being conducted in tertiary cancer Centre and the results cannot be generalized in other setups.

SUMMARY

Currently, cancer ranks as the second most common cause of death globally, and its burden on a global scale is increasing[4]. Onset of cancer and undergoing further treatment procedures were significant risk factors for the development of psychological distress, ultimately leading to depression and then anxiety disorders. According to the recent meta-analysis by Walker et al[4], among cancer patients, the proportion of prevalence defined by Diagnostic and Statistical Manual of Mental Disorders or International Classification of Diseases criteria was 21% for depression, 18% for anxiety disorder. With this background, we decided to conduct a study to assess the level of prevalence of anxiety and depression among cancer patients and factors that contribute to the same.

This was a cross-sectional study conducted in the Department of Psychiatry, KLES Prabhakar Kore Hospital and MRC. Two hundred and nine Cancer patients visiting oncology opd and getting admitted in oncology ward, who didn't have any primary psychotic/mood disorders nor other debilitating chronic medical illnesses were recruited. Hospital Anxiety and Depression Scale was applied to rate the severity of anxiety and depression experienced.

It was seen that mean age of patients in our study was 45.70 (±13.361) years, predominantly males (56.5%), than females (43.5%). Majority of the participants were married (85.2%), completed up to secondary school of education (47.7%), semiskilled workers (47.8%), got admitted for first time (56%), aware of their cancer diagnosis (78%). Half of the study sample had surgical intervention as their cancer management. Very few had family history of cancer (12%) and cancer related deaths (2.9%).

Based on our findings, prevalence of depression and anxiety among the study sample were found to be 24.4% and 11% respectively. Higher prevalence of depression was found among participants with younger age group, unmarried status (51.6%), poor educational background (33.3%), multiple hospital admissions (32.6%), awareness of cancer diagnosis (30.7%), presence of family history of cancer (36%) and multimodal cancer treatment (40.5%). Likewise, prevalence of anxiety was higher with younger age group, unmarried status (22.6%), first time hospital admission (13.7%), awareness of cancer diagnosis (12.9%), presence of family history of cancer related deaths (16.7), and multimodal cancer treatment (12.3%).

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Annexure-I

INFORMED CONSENT

"PREVALENCEOFDEPRESSIONANDANXIETYSYMPTOMSANDTHEIRDETERMINANTFACTORSAMONG PATIENTS WITH CANCER"

Principal Investigator (PI):REG.NO. BQ0121004.

Objective:

- To assess the prevalence of depression and anxiety among cancer patients.
- To determine the factors that influence depression and anxiety among cancer patients.

Introduction: You are being invited to participate in this study to find out "**PREVALENCE OF DEPRESSION AND ANXIETY SYMPTOMS AND THEIR DETERMINANT FACTORS AMONG PATIENTS WITH CANCER**". Almost two-thirds of patients with cancer have significant levels of anxiety and depression, which impair individual's quality of life and increase their risk of suicide.

Furthermore, untreated depression and anxiety have significant negative consequences, including altered treatment decision-making, non-compliance with treatment, extended recovery times and increased intensity of pain perception.Depression has been shown to be underdiagnosed and under-recognized in clinical practice,owing to the complex nature and inter-relationship between cancer and depression in patients with cancer.

Explanation of procedure: In this study, you will have to answer a few prepared questions about socio-demographic details and questions related to depression and anxiety. If you agree to participate, then only questions will be asked to you. At any moment, you can withdraw from the study.

Withdrawal from participation in the study: Participation in this study is voluntary.You will be free to decide whether to participate in this study or continue participation once enrolled. In case you decide to withdraw your participation,you are free to do so and this will not impact your ongoing treatment in anyway. However, please convey the decision to the principal investigator.

Possible benefits from participating in the study: During the course of the study,if you are found to be suffering from depression or anxiety, you will be referred to the Department of Psychiatry at KLE Dr. Prabhakar Kore Hospital for further assessment and counselling. Also the data gathered will help develop policies to support cancer patients in future.

Possible risks from participating in the study: There are no risks involved in participating in this study.

Privacy and confidentiality: The information collected from you will be coded, to prevent any person from identifying you.Your identity will never be revealed.The data collected from you will be kept confidential and only processed or aggregated data will be used for publication.

Financial incentives: You will not receive any payment for participating in this study.

Authorization for publication of aggregated data: Results obtained after processing of the aggregateddatawillbepublishedforscientificpurposesandorpresentedtoscientificgroups. However, your identity will never be revealed.

Questions: In case of any questions with regard to this study, you are free to contact:

REG.NO. BQ0121004.

Postgraduate, Department of Psychiatry, Jawaharlal Nehru Medical College,

KAHER, Belagavi – 590010,

Karnataka.

Legal rights: By signing this consent form, we are not waving any of your legal rights.

Signature/Thumb Impression of the patient

CONSENT STATEMENT

I am making a voluntary decision to participate in the study **"PREVALENCE OF DEPRESSION AND ANXIETY SYMPTOMS AND THEIR DETERMINANT FACTORS AMONG PATIENTS WITH CANCER".** My signature below indicates that I have decided to participate and I have read the information provided above or the information provided above has been read to me in the language that I understand best. I was given the opportunity to ask questions and that they have been answered to my satisfaction.

Name of the participant:

Signature or left thumb impression of the participant:

Name of the witness:

Signature or left thumb impression of the witness:

Name of the investigator:

Signature of the investigator:

Date: Place:

ANNEXURE II

PROFORMA

1.SOCIO – DEMOGRAPHIC DETAILS:

PATIENTNAME				
AGE				
SEX				
MARITAL STATUS				
EDUCATION	ILLITERATE	SECONDARY SCHOOL	DIPLOMA	MASTERS
OCCUPATION	UNSKILLED	SEMISKILLED	SKILLED	

2.CLINICAL RELATED PARAMETERS:

PATTERN OF ADMISSION	FIRST TIME		MULTIPLE ADMISSIONS	
FAMILY HISTORY OF CANCER	YES		NO	
FAMILY HISTORY OF CANCER RELATED DEATHS	YES		NO	
TYPE OF CANCER TREATMENT	CHEMOTHERAPY	RADIOTHERAPY	SURGICAL INTERVENTION	MULTIMODAL

ANNEXURE III

1. **TOOL.**
2. **KEY TO MASTER CHART.**
3. **MASTER CHART.**

1.TOOL

Hospital Anxiety and Depression Scale (HADS)

Tick the box beside the reply that is closest to how you have been feeling in the past week.
Don't take too long over you replies: your immediate is best.

D	A		D	A	
		I feel tense or 'wound up':			**I feel as if I am slowed down:**
	3	Most of the time	3		Nearly all the time
	2	A lot of the time	2		Very often
	1	From time to time, occasionally	1		Sometimes
	0	Not at all	0		Not at all
		I still enjoy the things I used to enjoy:			**I get a sort of frightened feeling like 'butterflies' in the stomach:**
0		Definitely as much		0	Not at all
1		Not quite so much		1	Occasionally
2		Only a little		2	Quite Often
3		Hardly at all		3	Very Often
		I get a sort of frightened feeling as if something awful is about to happen:			**I have lost interest in my appearance:**
	3	Very definitely and quite badly	3		Definitely
	2	Yes, but not too badly	2		I don't take as much care as I should
	1	A little, but it doesn't worry me	1		I may not take quite as much care
	0	Not at all	0		I take just as much care as ever
		I can laugh and see the funny side of things:			**I feel restless as I have to be on the move:**
0		As much as I always could		3	Very much indeed
1		Not quite so much now		2	Quite a lot
2		Definitely not so much now		1	Not very much
3		Not at all		0	Not at all
		Worrying thoughts go through my mind:			**I look forward with enjoyment to things:**
	3	A great deal of the time	0		As much as I ever did
	2	A lot of the time	1		Rather less than I used to
	1	From time to time, but not too often	2		Definitely less than I used to
	0	Only occasionally	3		Hardly at all
		I feel cheerful:			**I get sudden feelings of panic:**
3		Not at all		3	Very often indeed
2		Not often		2	Quite often
1		Sometimes		1	Not very often
0		Most of the time		0	Not at all
		I can sit at ease and feel relaxed:			**I can enjoy a good book or radio or TV program:**
	0	Definitely	0		Often
	1	Usually	1		Sometimes
	2	Not Often	2		Not often
	3	Not at all	3		Very seldom

Please check you have answered all the questions

Scoring:

Total score: Depression (D) _____ Anxiety (A) _____

0-7 = Normal

8-10 = Borderline abnormal (borderline case)

11-21 = Abnormal (case)

2.KEY TO MASTER CHART

- **SEX**

1.Male

2.Female

- **MARITAL STATUS**

1.Married

2.Unmarried

- **EDUCATION**

1.Illiterate

2.Secondary school

3.Diploma

4.Master's

- **OCCUPATION**

1.Unskilled

2.Semiskilled

3.Skilled

- **PATTERN OF ADMISSION**

1.First time

2.Multiple

- **AWARE OF DIAGNOSIS (CANCER)**

1.Yes

2.No

- **FAMILY HISTORY OF CANCER**

1.Yes

2.No

- **FAMILY HISTORY OF CANCER RELATED DEATHS**

1.Yes

2.No

- **TYPE OF CANCER TREATMENT**

1.Chemotherapy

2.Radiotherapy

3.Surgical intervention

4.Multimodal

3. MASTER CHART

S.No	Age	Sex	Marital S	Pattern of admission	Education	Occupation	Type of Cancer	Aware of carcinoma	Family History of Cancer	Cancer Related Death am	Type of Cancer Treatment	HADS-1	2	3	4	5	6	7	8	9	10	11	12	13	14	Sub scale score - D	Interpretation	Sub scale score - A	Interpretation
1	56	2	1	2	3	1	Multiple Myeloma	2	2	2	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	2	1	1	1
2	65	1	1	1	1	3	common bile duct carcinoma	2	2	2	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	1	1
3	57	2	1	2	3	3	breast carcinoma	2	2	2	1	1	0	1	0	1	0	0	0	1	1	1	0	1	0	1	1	6	1
4	63	1	1	2	2	3	colon carcinoma grade 4	2	2	2	1	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	1	2	1
5	45	2	1	2	4	3	ovarian lymphoma	2	2	2	1	0	1	0	0	1	0	0	1	0	1	1	1	0	1	5	1	2	1
6	63	1	1	1	2	3	buccal mucosal carcinoma	2	2	2	3	1	0	1	0	1	0	2	0	1	0	2	0	1	0	0	1	9	2
7	40	1	1	2	3	2	Gastric carcinoma	2	2	2	4	0	1	0	1	0	1	0	0	0	1	0	0	0	2	6	1	0	1
8	45	2	1	1	2	2	breast carcinoma	1	2	2	3	1	2	1	2	1	2	1	1	1	2	1	2	1	1	12	3	7	1
9	35	1	1	2	2	2	Multiple Myeloma	2	2	2	1	1	1	1	1	1	0	0	0	1	1	1	1	0	0	4	1	5	1
10	42	1	1	2	4	3	osteosarcoma	1	1	2	1	1	2	0	2	0	2	0	1	0	2	0	1	1	2	12	3	2	1
11	19	1	2	2	5	3	acute myeloid leukemia	1	2	2	1	1	2	0	2	1	2	1	1	0	1	0	1	2	1	10	2	5	1
12	22	2	2	1	4	3	breast carcinoma	1	2	1	3	2	2	1	2	2	1	2	1	2	2	1	2	1	2	12	3	11	3
13	52	1	1	2	3	3	colon carcinoma grade 3	1	1	2	1	1	0	0	1	0	0	0	0	0	1	0	0	1	1	3	1	2	1
14	38	2	1	1	2	2	uterine sarcoma	2	2	2	3	1	1	1	0	1	0	2	1	1	0	1	0	0	1	3	1	7	1
15	40	1	1	2	2	2	extrahepatic cholangiocarcinoma	1	1	1	1	1	2	1	1	2	1	1	1	0	0	0	2	0	2	9	2	5	1
16	32	2	1	2	2	2	metastatic carcinoma right breast with lung mets	1	2	2	1	1	2	0	1	2	1	0	1	0	1	1	2	0	2	10	2	4	1
17	38	2	1	1	2	3	parotid adenocarcinoma	1	2	2	3	1	2	1	1	1	2	1	1	1	1	1	2	1	2	11	3	6	1
18	61	2	1	2	2	2	carcinoma endometrium	1	2	2	3	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	1	1
19	66	1	1	2	1	3	Multiple Myeloma	2	2	2	1	1	1	0	1	1	0	0	1	0	0	0	1	1	0	4	1	3	1
20	58	1	1	2	2	3	carcinoma buccal mucosa	1	2	2	1	1	2	1	1	2	2	1	1	0	1	0	2	1	2	11	3	6	1
21	59	2	1	2	2	2	carcinoma breast	1	1	2	4	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	1	1
22	74	1	1	1	2	2	carcinoma left lower alveolus	1	2	2	3	2	1	2	2	2	2	2	1	1	1	0	2	2	2	11	3	11	3
23	28	1	2	2	3	3	small cell carcinoma lung	1	2	2	1	1	2	0	2	2	2	1	1	0	1	0	2	1	2	12	3	5	1
24	63	1	1	2	2	2	buccal mucosal squamous cell carcinoma	1	2	2	3	0	0	0	0	1	0	0	1	0	0	0	1	0	0	2	1	1	1
25	72	1	1	2	2	2	chronic myeloid leukemia	2	2	2	1	0	1	1	0	1	0	0	1	0	0	0	1	1	0	3	1	3	1
26	28	2	1	2	2	2	cholangiocarcinoma	1	2	2	1	1	2	2	1	2	2	1	1	0	1	1	2	1	2	11	3	8	2
27	49	1	1	1	2	3	Gastric carcinoma	1	2	2	3	2	1	2	1	2	2	1	2	1	1	1	2	2	2	11	3	11	3
28	30	1	2	2	2	2	parotid adenocarcinoma	1	2	2	4	1	2	1	2	1	2	0	1	0	1	0	1	1	2	11	3	4	1
29	55	2	1	1	2	2	carcinoma endometrium	1	2	2	3	1	2	1	1	2	1	1	1	1	1	1	2	2	2	10	2	9	2
30	28	2	2	2	2	3	carcinoma breast	1	1	2	4	1	2	1	2	1	2	1	2	0	1	1	2	1	2	13	3	6	1
31	25	2	2	1	2	2	rectal carcinoma	1	2	2	3	2	1	2	1	2	2	1	1	1	1	1	2	2	2	9	2	11	3
32	30	1	2	2	2	2	buccal mucosal carcinoma	1	2	2	4	1	2	1	2	2	1	0	1	0	2	0	2	1	2	12	3	5	1
33	25	2	2	1	2	3	ovarian carcinooma	1	2	2	3	2	1	2	2	2	2	1	1	0	1	1	2	2	2	11	3	10	2
34	55	2	2	1	2	3	multiple myeloma	1	2	2	1	1	1	1	2	2	1	1	0	1	0	0	1	1	1	6	1	7	1
35	48	2	1	2	2	3	cholangiocarcinoma	1	2	2	3	0	1	0	0	0	1	0	0	0	0	0	0	0	1	3	1	0	1
36	38	1	1	2	2	3	lung adeno carcinoma	1	1	2	1	1	2	1	2	2	2	1	2	0	1	1	2	1	2	13	3	7	1
37	60	1	1	2	2	1	renal cell carcinoma with pancreatic mets	1	1	1	4	1	2	1	2	2	2	1	1	1	1	1	2	1	2	12	3	8	2
38	45	1	1	1	2	2	soft palate squamous cell carcinoma	1	1	2	3	2	1	1	1	2	1	2	1	1	2	1	1	2	1	8	2	11	3
39	40	1	1	1	2	3	pancreatic carcinoma	1	1	1	3	2	2	1	1	2	2	1	1	1	1	1	2	2	2	11	3	10	2
40	37	2	1	2	2	2	carcinoma buccal mucosa	1	2	2	4	1	2	1	2	2	2	1	1	0	1	0	1	1	2	11	3	6	1
41	46	1	1	2	2	2	soft tissue sarcoma (mediastinal)	1	2	2	1	1	3	1	2	2	2	1	2	1	1	1	3	2	2	15	3	9	2
42	70	2	1	1	2	2	buccal mucosa squamous cell carcinoma	1	2	2	3	2	1	2	2	2	1	1	1	1	2	2	2	2	1	10	2	12	3
43	44	1	1	1	2	3	Multiple Myeloma	2	2	2	1	2	1	2	1	2	1	1	1	0	1	2	1	2	1	7	1	11	3
44	38	1	1	2	2	2	pancreatic ductal adenocarcinoma	1	1	2	4	1	3	2	3	3	2	2	2	1	2	1	3	2	3	18	3	12	3
45	53	2	1	2	2	2	gastric carcinoma	1	2	2	4	1	1	1	1	1	2	0	0	0	0	0	1	0	1	6	1	3	1
46	35	2	1	2	2	3	breast carcinoma	1	1	2	4	1	2	1	3	2	2	1	1	0	2	1	2	1	2	14	3	7	1
47	26	1	2	1	2	2	renal cell carcinoma	1	2	2	3	2	1	2	1	2	2	2	1	1	1	1	2	2	2	10	2	12	3
48	32	1	1	1	2	3	penile carcinoma	1	2	2	4	1	1	0	1	1	1	1	0	0	1	0	1	0	1	6	1	3	1
49	35	2	1	1	1	1	parotid carcinoma	1	2	2	3	2	1	2	1	2	2	1	1	1	1	1	2	2	1	9	2	11	3
50	57	1	1	1	2	2	glioblastoma multiforme	1	2	2	1	2	2	1	2	2	2	1	2	1	1	1	2	2	2	13	3	10	2
51	34	2	1	1	2	2	cervical squamous cell carcinoma	1	2	2	3	2	1	1	1	2	2	2	1	1	0	1	1	2	2	8	2	11	3
52	39	2	1	2	2	2	thyroid follicular carcinoma	1	1	2	4	0	1	0	1	0	1	0	0	0	0	0	0	1	1	4	1	1	1
53	45	2	1	2	2	3	Gastric carcinoma	1	2	2	4	3	3	2	2	2	3	2	2	1	1	1	2	2	3	16	3	13	3
54	51	2	1	2	2	2	primary peritoneal carinoma,carcinoma ovary	1	2	2	4	1	3	1	2	2	2	1	2	0	1	1	3	1	2	15	3	7	1
55	33	1	1	1	2	2	testicular seminoma	1	2	2	3	1	2	1	2	2	2	1	1	1	1	1	2	2	2	12	3	9	2
56	34	1	1	2	4	3	carcinoma oesophagus	1	2	2	4	1	1	0	1	1	1	0	0	0	0	0	0	0	1	4	1	2	1
57	40	1	1	2	3	3	adenocarcinoma prostate	2	2	2	4	1	1	1	2	1	2	0	0	0	1	0	1	1	2	9	2	4	1
58	41	2	1	2	2	1	acute promyelocytic leukemia	1	2	2	1	0	1	0	0	1	0	0	0	0	0	0	1	0	1	3	1	1	1
59	49	1	1	1	4	3	carcinoma oesophagus	1	2	2	3	1	0	1	0	1	0	0	0	0	0	0	0	1	0	0	1	4	1
60	60	1	1	2	3	2	gallbladder adenocarinoma	1	2	2	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1
61	41	2	1	2	3	2	rectal carcinoma	1	2	2	4	1	1	0	1	1	1	0	0	0	0	0	1	0	0	4	1	2	1
62	56	2	2	2	1	1	lobular carcinoma breast	1	1	2	4	2	2	2	2	2	1	1	2	1	1	1	2	2	2	12	3	11	3
63	36	1	1	2	4	3	parotid mucoepidermoid carcinoma	1	2	2	4	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	1	1	1
64	43	2	1	2	2	1	multiple myeloma	2	2	2	1	1	2	0	2	1	1	1	1	0	0	0	2	0	3	11	3	3	1
65	49	1	2	1	4	2	renal transitional cell carcinoma	1	2	2	3	1	2	2	1	2	1	1	2	0	1	1	2	1	2	11	3	8	2
66	33	1	1	2	4	3	pacreatic cystadenocarcinoma	1	2	2	4	1	2	1	2	1	2	1	2	1	1	1	2	1	2	13	3	7	1
67	56	1	1	2	3	2	hepatocellular carcinoma	1	2	2	4	2	3	2	3	2	2	1	2	1	1	1	2	2	3	16	3	11	3
68	39	2	1	2	3	2	small cell carcinoma lung	1	2	2	3	1	2	1	2	1	1	1	2	1	0	0	2	1	2	11	3	6	1
69	47	2	1	2	2	2	thyroid hurthle cell carcinoma	1	1	2	4	1	1	1	2	1	1	1	1	0	1	1	2	1	1	9	2	6	1
70	57	2	1	2	2	2	ductal carcinoma breast	1	2	2	4	1	1	1	0	1	0	0	0	0	0	0	1	1	1	3	1	4	1
71	50	1	1	1	3	2	non hodgkin lymphoma	2	2	2	1	1	1	0	1	1	1	0	0	0	0	0	1	0	1	5	1	2	1
72	43	1	1	2	4	3	gastric adenocarcinoma	1	2	2	4	1	2	2	2	2	1	1	1	1	1	1	2	1	2	11	3	9	2
73	47	1	1	1	4	3	carcinoma tongue verrucous hyperplasia	1	2	2	3	2	2	2	2	1	2	1	1	1	1	1	2	1	2	12	3	9	2
74	38	2	2	1	4	3	right gluteal soft tissue sarcoma	2	2	2	3	2	1	2	1	2	1	1	1	1	0	1	1	2	1	6	1	11	3
75	51	2	1	1	4	2	gallbladder adenocarinoma	1	2	2	3	2	2	2	2	2	1	1	1	1	1	1	2	2	2	12	3	11	3
76	27	2	2	2	2	1	osteosarcoma	1	2	2	1	2	2	1	2	1	2	1	1	1	1	1	2	1	2	12	3	8	2
77	37	1	1	2	2	2	parotid adenoid cystic carcinoma with mets	1	2	2	4	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	3	1
78	25	1	2	1	2	1	rectal carcinoma	1	2	2	3	2	2	1	2	2	1	1	1	1	1	1	2	1	2	11	3	9	2
79	28	2	2	1	1	1	lobular carcinoma breast	1	1	2	1	1	2	0	2	1	2	1	1	0	2	0	2	1	2	13	3	4	1
80	42	1	1	2	2	2	pancreatic adenosquamous carcinoma	1	2	2	4	2	2	2	3	2	2	2	2	1	1	2	2	2	3	15	3	13	3
81	30	2	1	2	2	3	renal transitional cell carcinoma	1	2	2	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	4	1	4	1
82	30	2	1	1	2	2	gastric adenocarcinoma	1	2	2	3	2	1	2	1	1	1	1	1	1	1	2	1	2	1	7	1	11	3
83	53	2	1	2	3	3	small cell carcinoma lung	2	2	2	3	1	1	0	0	0	1	0	1	0	0	0	1	1	1	5	1	2	1
84	61	2	1	2	2	1	carcinoma breast	1	2	2	4	1	3	1	2	2	2	1	1	1	0	1	2	1	3	13	3	8	2
85	38	1	1	1	2	1	parotid mucoepidermoid carcinoma	1	2	2	3	2	2	2	2	2	2	2	2	1	1	1	2	2	2	13	3	12	3
86	39	1	1	2	2	1	parotid mucoepidermoid carcinoma	1	2	2	4	1	1	1	2	1	1	1	1	0	1	0	2	1	2	10	2	5	1
87	32	2	1	1	3	3	cervical squamous cell carcinoma	1	2	2	3	1	1	0	1	1	1	0	0	0	0	0	1	1	1	5	1	3	1
88	48	2	1	2	3	3	Multiple Myeloma	1	2	2	1	1	2	1	1	1	2	0	1	1	0	1	2	1	2	10	2	6	1

89	27	1	2	2	4	3	rhabdomyosarcoma lower limb	1	2	2	4		1	2	1	3	2	3	1	2	0	1	0	2	1	2	15	3	6	1
90	50	1	1	1	4	3	gastric adenocarcinoma	1	2	2	3		1	1	1	1	1	1	0	0	0	0	0	1	1	1	5	1	4	1
91	43	2	2	1	2	1	fibrosarcoma	1	2	2	3		2	2	3	2	2	3	2	1	1	1	1	2	2	2	13	3	13	3
92	52	1	1	1	2	2	rectal carcinoma	1	1	2	3		2	1	1	0	1	1	1	0	0	0	0	1	2	1	4	1	7	1
93	20	2	2	1	4	5	osteosarcoma knee joint	2	2	2	3		1	1	1	1	1	1	1	1	0	0	0	1	1	1	6	1	5	1
94	33	1	1	1	4	3	parotid mucoepidermoid carcinoma	1	2	2	3		1	1	1	2	2	1	1	0	0	0	0	1	1	1	6	1	6	1
95	28	2	2	1	2	2	carcinoma tongue	1	2	2	3		3	3	2	2	3	2	2	2	1	2	1	2	2	3	16	3	14	3
96	55	1	1	1	4	2	gallbladder adenocarcinoma	1	2	2	3		1	1	1	0	1	1	0	0	0	0	0	1	1	1	4	1	4	1
97	49	1	1	2	2	1	gastric adenocarcinoma	2	2	2	4		1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2	1
98	30	1	1	2	2	2	renal cell carcinoma with metastasis	1	2	2	4		1	2	1	2	2	2	1	1	0	1	1	2	1	2	12	3	7	1
99	41	1	1	2	4	3	fibrosarcoma with lung mets	1	2	2	4		2	3	2	3	3	2	2	2	1	1	1	2	2	3	16	3	13	3
100	48	2	1	2	3	2	metastatic pancreatic adenocarcinoma	1	2	2	3		1	3	2	3	2	2	2	2	2	2	2	3	2	3	18	3	13	3
101	38	1	1	1	2	2	carcinoma buccal mucosa	1	1	2	3		2	1	1	1	1	2	1	1	1	1	0	1	1	1	8	2	7	1
102	52	2	1	1	2	2	carcinoma colon	1	2	2	3		2	1	2	1	2	1	1	1	1	0	1	1	1	1	6	1	10	2
103	71	1	1	1	4	3	vagal paraganglioma	1	2	2	3		1	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1	2	1
104	40	1	1	1	4	3	parotid adenocarcinoma	1	2	2	3		1	0	1	0	1	1	1	0	0	0	0	1	1	0	2	1	5	1
105	56	2	1	1	2	1	buccal mucosal carcinoma	1	2	2	3		2	1	2	1	1	1	1	1	1	1	1	1	1	1	7	1	9	2
106	71	1	1	1	2	2	carcinoma gall bladder	2	2	2	3		2	1	0	1	1	1	1	0	0	0	0	0	1	0	3	1	5	1
107	19	1	2	2	4	4	osteosarcoma knee joint	2	2	2	3		2	2	1	2	1	1	1	1	0	1	1	2	1	1	10	2	7	1
108	38	1	1	1	3	2	cholangiocarcinoma	1	2	2	3		1	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	3	1
109	65	1	1	2	4	3	gastric carcinoma with metastasis	1	2	2	4		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1
110	45	1	1	1	2	2	carcinoma buccal mucosa	1	2	2	1		1	1	0	1	1	1	0	0	0	1	0	1	1	1	6	1	3	1
111	40	2	1	1	2	2	parotid carcinoma	1	2	2	3		2	1	1	1	2	1	1	1	1	0	1	1	1	1	6	1	9	2
112	23	2	2	2	4	3	carcinoma breast	1	2	2	4		0	2	1	2	2	1	0	1	0	1	0	1	0	1	9	2	3	1
113	42	1	1	2	4	3	Multiple myeloma	1	2	2	1		1	2	0	1	1	1	0	0	0	0	0	1	1	1	6	1	3	1
114	67	1	1	1	2	1	rectal carcinoma	2	2	2	3		1	0	1	0	0	1	0	0	0	0	0	1	2	0	2	1	4	1
115	40	2	1	2	3	3	osteosarcoma knee	1	2	2	4		0	2	1	2	1	1	0	1	0	0	0	1	1	2	9	2	3	1
116	54	2	1	2	2	2	carcinoma ovary	1	2	2	4		1	2	1	1	2	2	1	1	0	0	0	2	1	2	10	2	6	1
117	45	2	1	1	4	3	uterine sarcoma	1	2	2	3		1	0	1	0	1	1	0	1	1	0	0	0	1	1	3	1	5	1
118	35	1	1	1	4	3	soft tissue sarcoma abdominal wall	1	2	2	3		1	2	1	2	1	2	1	1	1	1	1	2	1	2	12	3	7	1
119	56	2	1	1	2	3	carcinoma colon	2	2	2	3		1	1	1	1	1	1	0	0	0	0	0	1	1	1	5	1	4	1
120	39	1	1	1	3	2	common bile duct carcinoma	1	2	2	3		0	1	0	1	1	1	0	0	0	0	0	1	0	1	5	1	1	1
121	30	1	1	1	3	2	carcinoma tongue	1	2	2	3		1	1	1	1	1	1	0	0	1	0	0	1	1	1	5	1	5	1
122	20	2	1	2	3	3	acute myeloid leukemia	1	2	2	1		1	2	1	1	2	1	0	0	0	0	0	1	1	2	7	1	5	1
123	18	2	2	2	2	3	granulosa cell tumour ovary	1	2	2	1		1	0	1	0	1	1	0	0	0	0	0	0	1	0	1	1	4	1
124	40	1	1	2	2	3	carcinoma buccal mucosa	1	2	2	4		1	2	0	2	1	2	1	1	0	1	0	2	1	2	12	3	4	1
125	45	1	1	2	4	3	carcinoma lung	1	2	2	4		1	0	0	0	1	0	0	0	0	0	0	1	0	1	2	1	2	1
126	60	1	1	1	2	2	carcinoma penis	1	2	2	3		1	1	1	1	1	1	1	0	0	0	1	2	1	1	6	1	6	1
127	35	2	1	2	2	1	carcinoma cervix	1	2	2	4		1	2	1	1	2	1	1	1	1	1	1	2	1	2	10	2	8	2
128	53	2	1	1	4	3	gastric adenocarcinoma	1	1	1	3		2	2	1	2	1	1	1	1	1	0	1	2	1	2	10	2	8	2
129	27	1	2	1	2	2	pancreatic carcinoma	1	2	2	3		2	2	1	2	2	2	1	1	0	1	1	2	2	2	12	3	9	2
130	55	1	1	2	3	3	carcinoma rectum	1	2	2	4		1	1	0	0	1	1	0	0	0	0	0	1	1	1	4	1	3	1
131	62	1	1	1	3	2	testicular seminoma	2	2	2	3		1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	3	1
132	33	2	1	2	4	2	gluteal soft tissue sarcoma	1	2	2	4		0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1
133	53	1	1	2	4	2	hodgkin lymphoma	1	2	2	1		1	2	1	2	1	1	1	1	0	0	0	1	1	2	9	2	5	1
134	58	1	1	1	2	1	carcinoma colon	1	2	2	3		2	1	1	1	2	1	1	0	1	0	0	2	1	3	8	2	8	2
135	33	2	1	1	3	2	parotid adenocarcinoma	1	2	2	3		1	2	1	1	1	2	0	1	0	0	0	1	2	2	9	2	5	1
136	38	2	1	1	4	2	carcinoma breast	1	2	2	1		1	1	2	1	1	1	1	1	1	1	1	1	1	2	8	2	8	2
137	34	1	1	1	3	2	osteosarcoma knee	1	2	2	3		1	1	2	1	1	1	1	1	1	1	1	1	1	2	8	2	8	2
138	43	2	1	2	4	3	buccal mucosal carcinoma	1	2	2	4		1	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	2	1
139	49	1	1	1	4	3	renal cell carcinoma	1	1	2	3		1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	3	1
140	68	1	1	1	3	2	carcinoma colon	2	2	2	3		1	0	1	0	0	0	1	0	0	0	0	0	1	0	0	1	4	1
141	60	1	1	1	4	2	carcinoma penis	1	2	2	3		1	1	1	1	1	1	1	0	0	0	0	1	0	1	5	1	4	1
142	59	1	1	1	3	2	carcinoma hip joint	1	2	2	1		2	1	1	1	2	2	1	1	1	0	0	2	2	2	9	2	9	2
143	60	2	1	2	4	2	carcinoma cervix	1	2	2	4		1	2	1	2	2	2	1	2	0	0	0	2	1	2	12	3	6	1
144	52	2	1	1	4	3	carcinoma ovary	1	2	2	3		1	0	1	1	1	0	0	0	0	0	0	1	0	1	3	1	3	1
145	75	1	1	1	2	2	carcinoma rectosigmoid colon	2	1	2	3		2	1	1	1	2	1	1	1	0	1	0	2	1	2	9	2	7	1
146	57	1	1	2	3	2	urothelial carcinoma	1	2	2	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
147	55	2	1	1	4	2	renal cell carcinoma	1	2	2	3		1	2	1	1	2	2	1	1	1	1	1	1	1	1	9	2	8	2
148	70	1	1	1	2	1	carcinoma uncinate process	2	2	2	3		1	0	1	0	1	1	1	0	1	0	0	0	1	1	2	1	6	1
149	58	1	1	1	4	3	carcinoma upper gingivobuccal sulcus	1	1	1	3		2	1	1	2	2	1	1	1	1	1	1	2	2	2	10	2	10	2
150	70	1	1	1	2	1	abdominal functional paraganglioma	2	2	2	3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
151	50	2	1	1	4	2	carcinoma breast	1	1	2	1		1	2	1	1	2	1	1	1	0	0	0	2	2	2	9	2	7	1
152	49	2	1	2	2	1	carcinoma buccal mucosa	1	2	2	2		1	0	1	0	2	0	1	0	1	0	0	0	2	0	0	1	8	2
153	30	1	1	1	3	2	carcinoma colon	1	2	2	3		1	2	1	1	2	1	1	1	1	2	1	2	1	2	11	3	8	2
154	35	1	1	1	4	2	testicular seminoma	1	2	2	1		1	1	2	1	2	2	1	1	1	0	1	2	2	1	8	2	10	2
155	57	1	1	2	4	2	carcinoma lip	1	2	2	2		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
156	59	2	1	2	2	1	carcinoma cervix	1	2	2	3		1	2	0	1	1	1	0	1	0	0	0	2	1	2	9	2	3	1
157	38	2	1	2	3	1	carcinoma breast with mets	1	2	2	4		0	1	0	2	1	1	0	1	0	1	0	1	1	2	9	2	2	1
158	19	1	2	1	4	3	insulinoma	2	2	2	3		2	1	1	2	2	1	1	1	1	1	1	2	2	2	10	2	10	2
159	49	1	1	2	3	2	hepatocellular carcinoma	1	2	2	4		1	1	1	1	2	1	1	1	1	1	1	2	2	2	9	2	9	2
160	50	1	1	1	3	2	carcinoma penis	2	2	2	3		1	1	2	1	1	1	1	1	1	1	1	2	1	2	9	2	8	2
161	33	1	1	1	4	2	cholangiocarcinoma	1	2	2	3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
162	44	2	1	2	2	1	carcinoma breast	1	2	2	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
163	57	1	1	1	3	2	transitional cell carcinoma kidney	2	2	2	3		1	2	1	1	2	1	1	1	0	1	1	1	2	2	9	2	8	2
164	33	2	1	1	2	1	uterine sarcoma	2	2	2	1		0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	2	1
165	29	2	1	1	4	3	parotid adenocarcinoma	1	2	2	3		2	1	1	1	1	1	1	1	1	1	1	1	1	2	8	2	8	2
166	42	1	1	1	4	2	multiple myeloma	1	2	2	1		1	1	2	1	1	1	1	2	1	1	1	1	1	1	8	2	8	2
167	44	1	1	1	4	2	gall bladder carcinoma	1	2	2	3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
168	55	1	1	1	4	2	carcinoma lung	1	2	2	3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
169	44	2	1	2	2	1	Multiple Myeloma	2	2	2	3		0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	1
170	58	1	1	1	3	1	extrahepatic cholangiocarcinoma	2	2	2	3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
171	32	2	1	2	4	2	ovarian carcinooma	1	2	2	3		1	2	1	1	2	1	0	1	0	1	0	2	1	2	10	2	5	1
172	40	2	1	1	3	2	osteosarcoma tibia	1	2	2	3		0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	1	1
173	62	2	1	1	4	2	adenocarcinoma rectum	1	2	2	3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
174	50	2	1	1	2	1	medullary carcinoma thyroid	2	1	2	3		2	1	1	1	2	1	1	1	1	1	1	2	2	2	9	2	10	2
175	71	1	1	1	3	1	para aortic paraganglioma	2	2	2	3		1	1	2	1	2	1	1	1	0	1	1	1	2	2	8	2	9	2
176	70	2	2	1	4	2	gastro oesophageal junction adenocarcinoma	2	2	2	3		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
177	22	1	2	1	4	3	carcinoma colon	1	2	2	3		2	1	1	2	2	1	1	1	1	1	1	1	1	2	9	2	9	2

178	69	1	1	1	2	2	carcinoma buccal mucosa	2	2	2	3		1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
179	55	2	1	1	4	2	carcinoma breast	1	1	2	1		1	0	1	0	1	2	1	0	0	0	1	0	1	1	3	1	6	1
180	52	1	1	1	4	3	carcinoma penis	1	2	2	3		1	1	1	1	1	1	1	2	0	1	2	1	2	2	9	2	8	2
181	46	1	1	1	4	2	carcinoma lung	1	2	2	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
182	45	2	1	1	4	2	carcinoma breast	1	2	2	3		1	0	2	0	1	1	0	0	0	0	1	1	1	1	3	1	6	1
183	41	1	1	1	3	2	carcinoma base of tongue	2	2	2	3		1	1	1	2	2	1	1	1	0	0	0	1	1	2	8	2	6	1
184	53	1	1	2	4	2	carcinoma buccal mucosa	1	2	2	3		1	1	1	2	2	2	1	1	0	0	1	2	1	2	10	2	7	1
185	53	1	1	1	4	2	Diffuse large B cell lymphoma	1	2	2	1		0	1	1	1	1	2	1	1	0	0	0	2	1	2	9	2	4	1
186	70	2	1	1	2	1	gastro oesophageal junction adenocarcinoma	2	2	2	3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
187	46	1	1	2	2	1	carcinoma lateral tongue	1	2	2	4		2	1	1	1	2	1	1	1	1	1	1	2	2	2	9	2	10	2
188	34	2	2	2	2	1	carcinoma breast	1	2	2	3		0	1	1	1	1	1	1	0	0	0	0	1	1	1	5	1	4	1
189	52	1	1	1	3	2	cholangiocarcinoma	1	2	2	3		1	1	1	1	1	1	0	0	0	0	0	1	1	1	5	1	4	1
190	63	1	1	1	4	2	carcinoma penis	2	2	2	3		1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	3	1
191	45	2	1	1	2	1	osteosarcoma tibia and fibula	1	1	2	3		1	2	1	2	2	1	1	1	0	0	0	1	2	2	9	2	7	1
192	50	2	1	2	2	1	ovarian carcinoma	1	2	2	4		1	2	1	1	1	2	1	1	0	0	0	1	2	2	9	2	6	1
193	48	2	1	1	3	2	soft tissue sarcoma	2	2	2	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
194	60	1	1	1	2	1	gastric adenocarcinoma	2	2	2	3		0	1	1	1	2	1	0	1	0	1	0	1	1	2	8	2	4	1
195	35	2	2	1	2	1	medullary carcinoma thyroid	1	2	2	3		2	2	1	1	2	1	1	1	0	1	1	2	1	2	10	2	8	2
196	46	2	1	1	2	1	multiple myeloma	1	2	2	1		0	1	0	1	1	1	0	1	0	0	0	1	1	1	6	1	2	1
197	22	2	2	1	4	3	insulinoma	1	2	2	3		1	2	1	1	2	1	1	2	0	1	1	2	1	2	11	3	7	1
198	36	2	1	1	3	2	carcinoma breast	1	2	2	1		1	0	0	0	1	1	0	0	0	1	0	0	0	1	3	1	2	1
199	43	1	1	1	4	2	carcinoma penis	1	2	2	3		1	0	1	1	1	0	1	0	0	0	0	1	1	1	3	1	5	1
200	39	1	1	1	4	3	cholangiocarcinoma	1	2	2	3		1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2	1
201	55	1	1	1	2	1	carcinoma penis	1	2	2	3		2	1	1	1	2	2	1	1	1	1	1	2	1	2	10	2	9	2
202	32	1	1	1	4	3	carcinoma rectum	1	2	2	1		1	2	1	1	2	1	1	1	0	1	0	1	1	2	9	2	6	1
203	60	1	1	1	1	3	retroperitoneal sarcoma	2	2	2	3		0	0	1	0	1	0	0	0	0	0	0	0	1	1	1	1	3	1
204	64	1	1	2	2	2	carcinoma ascending colon	2	2	2	3		1	1	1	1	2	1	1	1	0	0	1	2	1	2	8	2	7	1
205	79	1	1	1	2	2	hepatocellular carcinoma	2	2	2	3		0	1	0	1	1	1	0	0	0	0	0	1	1	1	5	1	2	1
206	33	2	1	1	3	2	carcinoma breast	1	2	2	3		2	1	1	1	2	1	1	1	1	0	1	2	2	2	8	2	10	2
207	54	1	1	2	4	2	carcinoma buccal mucosa with metastasis	1	2	2	3		1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1	7	1
208	45	1	2	1	2	1	testicular carcinoma	1	2	2	3		1	2	1	1	1	1	1	1	1	1	1	1	1	2	9	2	7	1
209	58	1	1	2	2	1	colon carcinoma with metastasis	1	2	2	3		1	2	0	1	2	2	0	0	0	0	0	2	1	2	9	2	4	1