BAŞKENT UNIVERSITY

INSTITUTE OF SOCIAL SCIENCES

DEPARTMENT OF PSYCHOLOGY

CLINICAL PSYCHOLOGY MASTER'S PROGRAM WITH THESIS

EXAMINING THE EFFECT OF CONGRUENCE IN THE PERCEPTION OF ILLNESS EXPERIENCE OF CANCER PATIENTS AND THEIR CAREGIVERS ON THEIR PSYCHOLOGICAL WELL-BEING

BY

MEHMET SALDUZ

MASTER'S THESIS

THESIS SUPERVISORS

DR. ÖĞR. ÜYESİ TUĞBA UYAR SUİÇMEZ

PROF. DR. DOĞAN UNCU (CO-ADVISOR)

ANKARA – 2023

BAŞKENT ÜNİVERSİTESİ

SOSYAL BİLİMLER ENSTİTÜSÜ

YÜKSEK LİSANS TEZ ÇALIŞMASI ORİJİNALLİK RAPORU

Tarih: 23 / 05 / 2023

Öğrencinin Adı, Soyadı: Mehmet Salduz

Öğrencinin Numarası: 22010309

Anabilim Dalı: Psikoloji Anabilim Dalı

Programı: Klinik Psikoloji Tezli Yüksek Lisans Programı

Danışmanın Unvanı/Adı, Soyadı: Dr. Öğr. Üyesi Tuğba Uyar Suiçmez

Tez Başlığı: Kanser Hastaları ve Bakım Verenlerin Hastalık Deneyimlerini Algılamalarındaki Uyumun Psikolojik İyi Oluşlarına Etkisinin İncelenmesi/ Examining The Effect of Congruence in the Perception of Illness Experience of Cancer Patients and Their Caregivers on Their Psychological Well-Being

Yukarıda başlığı belirtilen Yüksek Lisans tez çalışmamın; Giriş, Ana Bölümler ve Sonuç Bölümünden oluşan, toplam 52 sayfalık kısmına ilişkin, 23 / 05 / 2023 tarihinde tez danışmanım tarafından Turnitin adlı intihal tespit programından aşağıda belirtilen filtrelemeler uygulanarak alınmış olan orijinallik raporuna göre, tezimin benzerlik oranı %12'tür.

Uygulanan filtrelemeler:

1. Kaynakça hariç

2. Alıntılar hariç

3. Üç (3) kelimeden daha az örtüşme içeren metin kısımları hariç

"Başkent Üniversitesi Enstitüleri Tez Çalışması Orijinallik Raporu Alınması ve Kullanılması Usul ve Esaslarını" inceledim ve bu uygulama esaslarında belirtilen azami benzerlik oranlarına tez çalışmamın herhangi bir intihal içermediğini; aksinin tespit edileceği muhtemel durumda doğabilecek her türlü hukuki sorumluluğu kabul ettiğimi ve yukarıda vermiş olduğum bilgilerin doğru olduğunu beyan ederim.

Öğrenci İmzası:

Onay

23 / 05 / 2023

Öğrenci Danışmanı Unvan, Ad, Soyad,
Dr. Öğr. Üyesi Tuğba Uyar Suiçmez

ACKNOWLEDGEMENTS

First of all, I would like to thank to my master thesis advisor Dr. Öğr. Üyesi Tuğba Uyar Suiçmez who has guided me in accomplishing my thesis with great devotion and patience. Under this guidance, I successfully completed my thesis and had opportunity to improve my academic skills.

Of the jury members of my master thesis, I would like to thank to Dr. Öğr. Üyesi Özlem Kahraman Erkuş for sharing her experiences related to the field and providing me with positive feedbacks. Of the jury members, I also owe Dr. Öğr. Üyesi Burcu Pınar Bulut a debt of gratitude for her listening my thesis defense with great interest and patience and subsequently giving me constructive feedbacks.

Moreover, I would like to also thank to cancer patients and their caregivers for their contributions to the science by participating in my study and to the head of Ankara Bilkent City Hospital out-patient chemotherapy unit Prof. Dr. Doğan Uncu for his supportive attitude. I would like to thank all the staff of the outpatient chemotherapy unit, especially Aysel Baykal, for their tolerance and interest during data collection.

I would also like to thank my friends who supported me throughout this process, and most importantly to my family members who always trust me in my life and have supported the decisions I have made.

ÖZET

SALDUZ, Mehmet. Kanser Hastaları ve Bakım Verenlerin Hastalık Deneyimlerini Algılamalarındaki Uyumun Psikolojik İyi Oluşlarına Etkisinin İncelenmesi. Başkent Üniversitesi, Sosyal Bilimler Enstitüsü, Klinik Psikoloji Tezli Yüksek Lisans Programı, 2023.

Kanser yıkıcı doğası gereği hastaların psikolojik iyilik hallerini olumsuz yönde etkilediği gibi bu süreçte onlara bakım verenlerin de hayatını olumsuz etkilemektedir. Kanser sürecinden etkilenen bireyler ve aileler depresyon ve anksiyete gibi psikolojik sorunlar yaşayabilmekte ve yaşam kaliteleri olumsuz yönde etkilenebilmektedir. Hastaların ve bakım verenlerinin anksiyete, depresyon ve yaşam kalitelerini tetikleyen bir diğer durum da kanser hastalığını algılama biçimleridir. Kanserin birey odaklı olmaktan öte diğer aile bireylerini de içine katan bir yapıda olması hem hastaların hem de bakım verenlerinin hastalık algılarının incelenmesini gerekli kılmaktadır. Bu bağlamda bu çalışmada, hastaların kanseri nasıl algıladığı ve birincil bakım verenlerin de hastaların bu algılarına dair düşünceleri arasındaki uyumun araştırılması amaçlanmıştır. Bu kapsamda çalışmaya 106 tane ayaktan kemoterapi gören kanser hastası ve 106 tane bakım vereni katılım göstermiştir. Katılımcıların depresyon ve anksiyete düzeylerine Hastane Anksiyete ve Depresyon Ölçeği (HADS) ile, sağlık ile ilgili yaşam kalitelerine Kısa Form Yaşam Kalitesi Ölçeği ikinci versiyon (SF-12v2) ile, hastalık algılarına ise Kısa Hastalık Algısı Ölçeği (BIPQ) ile bakılmıştır. Değişkenler arasındaki ilişkiler korelasyon analizleri ile incelenmiştir. İstatistiksel bulgular, hastalığın daha olumsuz algılanmasının hastaların daha yüksek anksiyete ve depresyon düzeyi ve daha kötü bir yaşam kalitesi düzeyi ile anlamlı ilişkisi olduğunu ortaya koymuştur. Hasta ve bakım vereni arasındaki hastalık algısı uyumunun, katılımcıların anksiyete, depresyon ve sağlıkla ilgili yaşam kalitesini yordama etkisine Çoklu Hiyerarşik Regresyon analizi ile bakılmıştır. Sonuçlar, artan hastalık algısı uyumunun hastaların yüksek anksiyetesini yordadığını göstermiştir. Çalışmanın sonuçları tartışma kısmında ilgili literatür ışığında açıklanmıştır.

Anahtar Kelimeler: Hastalık algısı, hastalık algısı uyumu, sağlıkla ilgili yaşam kalitesi, kanser algısı

ABSTRACT

SALDUZ, Mehmet. Examining The Effect of Congruence in the Perception of Illness Experience of Cancer Patients and Their Caregivers on Their Psychological Well-Being. Başkent University, Institute of Social Sciences, Master's in Clinical Psychology, 2023

Cancer, due to its destructive nature, negatively affects the psychological well-being of patients, as well as negatively affecting the lives of those who care for them in this process. Individuals and families affected by the cancer process may experience psychological problems such as depression and anxiety, and their quality of life may be adversely affected. Another factor that exacerbates anxiety, depression and quality of life of patients and their caregivers is the way they perceive cancer. The fact that cancer has a context that includes other family members rather than being individual-oriented makes it necessary to examine the perceptions of the illness of both patients and caregivers. In this context, in this study, it was aimed to investigate the congruence between how patients perceive cancer and primary caregivers' thoughts about these perceptions of patients. In this regard, 106 cancer patients receiving outpatient chemotherapy and 106 caregivers participated in the study. Depression and anxiety levels of the participants were measured with the Hospital Anxiety and Depression Scale (HADs), health-related quality of life with the second version of the SF-12 Quality of Life Scale (SF-12v2), and their perception of illness with the Brief Illness Perception Scale (BIPQ). Relationships between variables were examined by correlational analyses. Statistical findings revealed that a worse illness perception was significantly associated with patients' higher levels of anxiety and depression and a worse quality of life. Multiple Hierarchical Regression analysis was used to analyze predictor effect of illness perception congruence on participants' anxiety, depression, and health-related quality of life. The results showed that higher illness perception congruence predicted patients' higher anxiety levels. The results of the study are explained in the light of the relevant literature in the discussion section.

Keywords: Illness perception, illness perception congruence, health-related quality of life, cancer perception

CONTENTS

APPENDIX

LIST OF TABLES

Page

LIST OF FIGURES

Page

1. INTRODUCTION

Mortality of human being is resulted from different causes. Of these causes, chronic diseases are coming first. Among these chronic diseases which are as much old as human history, cancer also dates back to ancient times. Written records describing cancer, specifically, breast cancer, was documented in Edwin Smith Papyrus that dates back to around 5000 years ago (Hadju, 2010). In this paper, cancer, which is as old as human history, and its effects on human life will be tackled with. The paper begins with a few statistical numbers depicting cancer in the contemporary times, then going forward with its psychological effects on patients and their relatives.

According to the data provided by Global Cancer Observatory, in 2020, approximately 18 million of new cancer cases including breast, lung, colorectum, prostate, stomach, liver, cervix uteri, esophagus and other cancer types. Approximately 9 million of people are died due to cancer in worldwide (Global Cancer Observatory, 2022). Moreover, the statistics by the World Health Organization (WHO) depict that cancer is the second leading cause of death in the world and it accounts for approximately one in every six deaths (WHO, 2014). These statistical numbers actually demonstrate that cancer is at the point where it significantly affects human life. Therefore, cancer has become the focus of many studies from various disciplines, especially in medicine, ranged from those dealing with its etiology to those dealing with its treatment aspect (Ogden, 2011). Although cancer treatment depends on the type and stage of the illness, surgery, chemotherapy, hormonal therapy, radiation therapy, adjuvant therapy and immunotherapy are individually or jointly used methods for treatment (Sudhakar, 2009). Cancer as it by nature can be devastating for those who are diagnosed with it. Patients who are diagnosed with cancer face with lots of physical and psychological problems. For example, physical impacts of cancer in the literature include pain (Ellis et al., 2021; van den Beuken-van den Everdingen et al., 2016), fatigue, sleep problems (Ellis et al., 2021; Weis, 2011; Chen et al., 2020; Lawrence et al., 2004), nausea and vomiting (Grassi et al., 2015). Furthermore, cancer involves a process comprising of clinical inspection, diagnosis, surgical interventions or treatments like chemotherapy which together bring about uncertainty and unpredictability to one's life and result in some psychological burden for patients. Among these psychological effects, anxiety (Bronner et

al., 2018) and depression (Marinho et al., 2017) comes first. Presence of depression and anxiety has negative effects on cancer patients' quality of life and adjustment to their treatments, as well (Coşar, 2020). Cancer has negative effects not just on patients' lives but also on their caregivers. The caregiver of a cancer patient could be a close family member or a friend. Since the process of cancer is generally long and difficult, caregivers are also the ones who are seriously affected by cancer as well. In a study conducted with 152 caregivers of adult cancer patients, it was found that half of the participants show indications of mood disorders while more than ten and thirty percent of them experienced emotional distress and emotional disturbances (Mazzotti et al., 2013). These studies clearly indicate the adverse impacts of cancer on both patients' and their caregivers' lives. Infact, these studies indicate that presence of emotional problems like depression and anxiety is a related factor to these adverse effects of cancer. The current paper discusses anxiety and depression more in detail in the following section.

1.1. Anxiety and Depression in Cancer

Psychological distress is generally defined as the emotional suffering a person experiences in the form of depression, such as sadness or helplessness, and anxiety, such as fatigue or tension (Mirowsky & Ross, 2002). The reasons or explanations for occurrence of anxiety or depression are various. In fact, some of factors related to psychological disturbance have been well-documented in the literature. To illustrate, these factors could be inborn characteristics of individuals like gender or age, and some of them could be about stressful events happening around individuals and making them emotionally disturbed (Drapeau et al., 2012). These stressful events can be a traumatic event, such as sexual harassment, divorce, failing a class at school, or unemployment, or it can be a disease that intervenes to a person's life, such as cancer.

As briefly mentioned in the first section, with cancer diagnosis and its treatment requirements, patients face with the threat of death, uncertainty or hopelessness during the process. Therefore, they are more likely to suffer comorbid psychological problems like depression and anxiety. In a systematic review by Riedl and Schuessler (2021), more than 200 studies documented the clinical depression rate as approximately 20 percent on average

among cancer patients with different types. Similarly, in a cross-sectional study with more than 1000 cancer patients, the rates for depressive symptoms and anxiety symptoms were found as around 23% and 19%, respectively (Naser et al., 2021). Psychological distress generally starts with a cancer diagnosis. Among 222 patients with breast cancer suspicious, after mammography checking, clinical abnormalities were seen in some, and it has been found that the group in whom clinical abnormalities were seen had experienced significantly greater anxiety and depression (Iwatani et al., 2012). Later in the study, some of those with clinical abnormalities were diagnosed with breast cancer, while the rest were diagnosed with benign breast changes. A much more salient finding of the study was also that those diagnosed breast cancer had greater anxiety and depression scores than those diagnosed with benign breast changes. A similar comparison was also made between healthy people and patients with benign tumor in terms of psychological distress and it was reached that patients with benign tumor were more likely to report anxiety symptoms than healthy group (Cunningham et al., 1998). Moreover, another study showed that cancer patients had clearly higher levels of symptoms of depression, anxiety and stress compared to control group (Singh et al., 2015). Taken these results together, it can be concluded that in every step closer to cancer diagnosis, the level of psychological distress usually rises. Apart from psychological distress which patients usually experience at the beginnings of the cancer process, other studies revealed that psychological distress lasts after diagnosis and even in the survivorship process. For example, large-scale prospective and population-based study revealed that a substantial proportion of colorectal cancer survivors still reported high levels of psychological stress, and even in the five years since diagnosis, about 38 percent of them shove an increasing patterns in psychological stress (Dunn et al., 2013). Besides, the cancer process requires the family of the patient to put a great deal of social, emotional and financial care, and this leads to lots of burden on caregivers, especially in terms of psychological well-being (Bevans & Sternberg, 2012). Therefore, it is also inevitable for caregivers of cancer patients to be affected by a cancer diagnosis. To illustrate, on a measurement tools used in detecting the severity of psychological distress and divided into categories (e.g., scores between 0–7 for normal, 8– 10 for mild, 11–14 for moderate, and 15–21 for severe levels), 377 caregivers got about 14 for depression and 12 for anxiety, and this means their psychological distress was around severe levels (Burnette et al., 2016). During cancer treatment, several factors can be accounted for psychological distress and among these factors, one is the treatment itself. As mentioned above, chemotherapy is one of the methods

used for a variety of cancer types, and it has been reported in previous studies that chemotherapy is related to physical symptoms like fatigue and psychological distress (Barsewick, 2007; Kim et al., 2009; Oh & Cho, 2018). In a study, cancer patients' psychological distress was assessed firstly they got chemotherapy, secondly, they finish their chemotherapy treatment and lastly six months after chemotherapy. The results demonstrated that psychological distress of cancer patients increased during chemotherapy and declined six months after (Oh & Cho, 2018). All these psychological distress apparently seem to diminish quality of life of cancer patients and their caregivers. Therefore, it will be noteworthy and required to closely look at that factor, as well. With this regard, the next section will be continued with investigating quality of life in cancer cases in a more detail way.

1.2. Health-related quality of life

World Health Organization defined health as ''a state of complete physical, mental and social well-being, and not merely the absence of disease and infirmity." The second part of this definition requires not having any diseases or any related treatments which potentially damage one's health condition. In cancer cases, it is obvious that the diagnosis of the disease is perceived as a death threat and the treatment process of the disease is long and tiring. Since health becomes a problem for these people, this problematic aspect of their lives also starts to influence their quality of life. That is, their perceived quality of life is mostly affected by their health status, not by other factors like economic or political conditions which can be also counted as parameters of quality of life (Karimi & Brazier, 2016). Therefore, this phenomenon has been described as health-related quality of life, and an example of its definitions could be "how well a person functions in their life and his or her perceived wellbeing in physical, mental, and social domains of health" (Hays and Reeve, 2010). In a study conducted with a large sample, the level of quality of life was ordered from worst to the best in the following sequence: cancer patients who were currently under treatment, cancer patients who were not receiving treatment at that time and those with no cancer diagnosis (Baker et al., 2003). It can be identified that apart from the negative impacts of cancer diagnosis on the quality of life of patients, being in cancer treatment also affects the

quality of life of patients rather than just having cancer. In this long process, like having treatment or not, some other factors such as cancer type, gender, being not married, number of chemotherapy sessions also play differentiated effects on quality of life among cancer patients (Üstündağ & Zencirci, 2014). As highlighted above under the psychological distress section, the quality of life of the caregivers are also just one step behind cancer patients in the sequence in terms of being negatively influenced by cancer process. In their study trying to assess physical, social, emotional and functional well-being dimensions of quality of life among cancer patients and their caregivers, Ellis et al. (2021) found lower physical and functional well-being among cancer patients and lower emotional well-being among caregivers with respect to quality of life and emphasized the burden of their patients' illness and caregiving on caregivers. Different results regarding aforementioned dimension of the quality of life were also reported in the literature. For example, caregivers stated social well-being as the highest burden (Goldstein et al., 2004). On the contrary, in a study carried out in Turkey, caregivers reported higher scores on social well-being compared with other dimensions of quality of life, which means that they had better social well-being (Hacialioglu et al., 2010). Different measures have been utilized in the purpose of measuring health-related quality of life and the MOS SF-36 is one of them frequently used worldwide (Ware & Sherbourne, 1992). Among subscales of the SF-36, mental health dimension assesses feelings related to psychological well-being, loss of behavioral and emotional control, anxiety and depression (Baker et al., 2003). In line with the research mentioned above, mental health of cancer caregivers was more likely to be negatively affected than cancer patients (Papadopoulas et al., 2011). Due to the devastating nature of cancer, which has been described up to this point, the psychological effects on patients and their caregivers were emphasized. These psychological effects were manifested as increasing the psychological distress of individuals and decreasing their quality of life. The levels of these factors can be measured either by concrete methods (e.g., a higher cortisol level in the blood as a sign of higher stress) or by self-report measurements. By self-reports, patients or caregivers are simply asked to what extent they experience the symptoms based on their judgements. They rate how stressful they are in response to an event based on their perception of the event (Shaughnessy et al., 2015). At this point, people's perception of the event could be related to their emotional sufferings. Specifically, with regarding the purpose of the current paper, this event could be cancer for patients and their family members. Therefore, illness perception is another factor to be investigated as influencing patients' and caregivers' lives.

1.3. Perception of A Stressful Event: Cancer Disease

Psychological distress is sometimes induced by characteristics of the individual, events or life conditions (Drapeau et al., 2012). People's characteristics might make them vulnerable to psychological distress, and when it is the case stress is exerted by an internal factor. For example, those with low self-esteem were found to be more prone to depression and anxiety (Struijs et al., 2021). On the other hand, events like unemployment or perceived discrimination (Silva et al., 2012), or experience of sexual harassment (Sheldon et al., 2021) also lead to stress. These factors are known as external factors because they are happening in the environment of the indivifual. Similar to these external factors, diseases are also happening in human life.

When there is an existing health problem mostly due to an illness such as cancer, patients are more likely to be overwhelmed by issues like having discussions with others in the environment, seeking information through media or losing their functionality in daily activities due to disease symptoms. This situation leads to activate patients' cognitive schemas related to that illness or previous experiences with that illness through their memory so that they come up with some ideas, beliefs about the trajectory of their illness or treatment phases. (Leventhal et at., 2016). These beliefs or cognitive schemas are generally called as mental representations of patients towards to their diseases. These mental representations of illness are often referred to as illness perception in the literature. The individual may have different illness perception dimensions, each focused on one aspect of the disease process. These include the extent to which the individual experiences the symptoms of the disease and how he/she labels his/her illness *(identity),* his/her belief about what caused his/her illness *(cause),* his/her estimation of the duration *(timeline),* the perception of self or treatment control over the trajectory of disease *(personal-treatment control),* the effects of the illness on his/her life *(consequence),* how much he/she understands the illness *(coherence)* and his/her emotional reactions to the illness *(emotional representations)* (Leventhal et al., 2016). This is a natural process in which patients try to make sense of their diseases. For example, in a study conducted with more than 100 oral-digestive cancer survivors, 43% of the participants answered yes to the question "Have you ever tried to

understand why you have cancer?", most participants (73%) found causes specific to the causes of the cancer, like cigarettes for example (Moye et al., 2018). There has been a large body of the literature examining the associations of illness perception with health-related outcomes in cancer population, and these studies also shed light on specific role of these different dimensions of the illness perception on cancer patients. It has been determined that those who perceive that their illness has a great impact on their lives, that the disease processes will take a long time, that the symptoms and concerns of their illness are high, and that they give excessive emotional reactions to their illness, have stated higher symptoms of anxiety and depression in the 3rd and 12th month follow-ups (Zhang et al., 2019). Similarly, the perception of breast cancer patients about their personal control over their disease trajectory was found to be linked with their depression after 12 months (Park et al., 2021). Besides, some other studies assessing coping behaviors of cancer patients and their perception on various aspects of illness are documented. Hopman and Rijken (2015) found that the more chronic the illness (timeline), the more it affects his life (consequence), and the more negative emotional reactions he or she perceives to the illness, the more passive coping strategies are used (for example, helplessness/hopelessness, preoccupation with anxiety, or fatalism/fatalism). Furthermore, with these respectful longitudinal study, the changing patterns of illness perception has been also detected both in cancer groups and other chronic illness groups. For example, significant differences illness perception over a period of time was found in obesity and chronic obstructive pulmonary disease (Bonsaken et al., 2013) and in patients with acute in coronary syndrome in a cardiac rehabilitasion (Lukoseviciute & Smigelskas, 2019). Similarly, Dempster et al. (2011) investigated the changes in illness perception of oesophageal cancer survivors during one year and identified some clusters. Among these clusters, the group that showed a decrease in both *personal and treatment control* dimensions at the end of one year, but also showed more negative symptoms in the *consequence* dimension were found to be even more depressed and anxious compared to other participants over a one-year period. It is expected that cancer patients have different illness perceptions, and as aforementioned longitudinal studies reported, the illness perception patterns would also change overtime. Some factors might be accounted for this case. For example, in a cross-sectional study, significant relationships were found between cancer type and illness perception dimensions: those with nasopharyngeal cancer stated that their disease had more negative effects than other types of diseases (Zhang et al., 2016). Some other factors that might be associated with and change the severity of illness

perception are type D personality and gender (Lukoseviciute & Smigelskas, 2019), cancer stage (Park et al., 2021), age (Zhang et al., 2016), or other psychological factors like coping strategies (Hopman & Rijken, 2015). These factors are generally either disease-related or related to characteristics of patients. As can be seen, these factors, which are thought to be related to the illness perception in some way, are about two of the main actors in the cancer scenario: the disease and the patient. However, as explained in the beginning, there is also a third party in the cancer scenario, which is the caregiver. Even if they have not been diagnosed with cancer, caregivers also have various perceptions about cancer, just as those who are on street have certain perceptions about cancer when they are randomly asked to. Unlike a person on the street, what brings the investigation of the illness perception in caregivers to significant levels is that almost all the processes of cancer, from diagnosis to treatment, take place right next to them. Thus, understanding illness perception in family context have more importance both for caregivers and patients. The next part allows some piece of the literature review to shed light on illness perception of the caregivers, as well.

1.4. Similarity or Discrepancy Between Illness Perception of Patient and Caregiver

Studying illness perception in caregivers can be similar to studies conducted with patients. In other words, the effect of caregiver's perception of illness on their psychological distress or quality of life would be investigated. For example, Bassi et al., (2015) found out that caregivers of patients with multiple sclerosis rated their psychological well-being higher when they also perceived higher treatment control over the disease. Thus, their less threatened illness perception was linked to their greater psychological well-being. Furthermore, in terms of familial context, caregivers' illness perception also influences patients' mental representation about their disease and thus, its role on illness-related behaviors was emphasized (Ellis et al., 2014). For example, when the caregivers' illness perception about to what degree they understand the disease (coherence) was more similar to patients' perception of coherence, patients with head and neck cancer reported better health-related quality (Richardson et al., 2015). That is, the way how the caregivers perceive the cancer is somehow related to some outcomes in terms of the patients, as well. In fact, these studies have placed the illness perception in a ground that can be examined in family

context by dealing with the similarity or differences between the illness perceptions of family members (both the patient and the caregiver) rather than just examining its effects on patients. Understanding illness perception in familial context had been probed with other diseases, as well. For example, the question whether or not having similarity or discrepancy between the illness perceptions of women with rheumatoid arthirits and their caregiver husbands was investigated by Sterba et al. (2008), and it was found that a discrepancy between the illness perceptions of the two parties was significantly predictor of low psychological adjustment in patients. Based on the results, the authors emphasized the role of caregivers in understanding the world which the patients are in. Thus, it also important to bring illness perception in ground that might be figured out within familial dynamics. Taken these findings together, it seems that illness perception of caregivers also plays a vital role in patients' health-related outcomes, and the current paper tries to capture this mission accordingly.

1.5. Aim of the Study

To the best of our knowledge, even though there have been studies examining illness perception among cancer patients (e.g., Kus et al., 2017) and among hemodialysis group (Keskindağ et al., 2020), there is no study yet on the similarities or differences in the illness perception of cancer patients and their caregivers in Turkey. Investigating whether or not a similarity or congruence in the illness perceptions of cancer patients and their caregivers will have a relationship with psychological distress and health-related quality of life of cancer patients and their caregivers is the main goal of this study. With this respect, the hypotheses of the study are as follow:

1.5.1. Hypotheses

Hypothesis 1: The congruence between illness perception of cancer patients and their caregivers negatively predicts anxiety and depression of the patients, and positively predicts their health-related quality of life.

Hypothesis 2: The congruence between illness perception of cancer patients and their caregivers negatively predicts anxiety and depression of the caregivers, and positively predicts their health-related quality of life.

Hypothesis 3: Worsened illness perceptions of cancer patients has positively associated with their anxiety and depression while negatively associated with their health-related quality of life.

Apart from these hypotheses, additional exploratory analysis will be run for depicting the relationships of socio-demographic factors such as gender, age, education, cancer type or cancer stage with psychological distress, quality of life, and the causal attributions of cancer.

2. METHOD

2.1. Participants

Sample size for this study is determined by using G*Power 3.1.9.7 software program for windows. When the values of effect size, probability and power are taken as .15, .05, and .80, respectively and when there is considered to be 7 predictors (illness perception congruence as the main independent variable plus some variables on socio-demographic information including age, gender, education level, cancer stage, time since diagnosis), the minimum sample size required for the current paper is to be 98 for multiple hierarchical regression analysis. Since the main element of this study is to measure the perception of illness between partners, samples from studies that deal with patients and caregivers as pairs in the literature were also examined. Accordingly, it has been found that studies dealing with this subject are generally based on a longitudinal design, and the participants who completed the study (as a couple, as a spouse, in pairs) were 165, 70, or 41 (Sterba et al., 2008; Meier et al., 2019; and Richardson et al., 2016). As can be noticed, the number of participants in the current study, which is 106 patient-caregiver dyads, is in the range of sample size of previous studies. Therefore, the calculation made via G*Power is believed to end up desired number of participants. Among cancer patients whose ages are between 18 and 65 years, who are already in the process of receiving chemotherapy treatment as outpatient, who know Turkish language fluently both in writing and in speaking will be recruited in this study. Moreover, those who have major psychiatric disorders like bipolar disorder and with cognitive impairments like delirium or any types of dementia measured through self-reporting or medical records will be excluded from the study.

2.2. Measurement Tools

Socio-demographic characteristics of participants including age, gender, education level, marital status, time since diagnoses, relationship degree, income level was measured with socio-demographic information form *(see Appendix 1 & 2)*.

2.2.1. The Hospital Anxiety and Depression Scale (HADs)

This measurement tool was developed by Zigmond and Snaith (1983) for utilization in hospital settings. HAD scale consists of 14 items with odd numbered items (1, 3, 5, 7, 9, 11, and 13) measuring anxiety and even numbered items measuring depression. The items are scored from 0 to 3, with higher scores indicating greater levels of anxiety and depression. Scores on the scale are classified as three group of pathologies, with a score between 0-7 is considered as normal, a score between 8-10 is considered as probable pathology and a score between 11-21 is considered as possible pathology (Çınkır & Elboğa, 2020). For this study, Turkish version of HAD scale which was adapted by Aydemir et al. (1997) will be used. The Turkish version has a satisfied reliability (Cronbach' alpha for anxiety subscale was .85 and for depression subscale was .79), and a satisfied concurrent validity with Spielberger's Trait Anxiety Inventory (.75) and with Beck Depression Inventory (.72), for the anxiety and depression subscales, respectively. In this study, Cronbach's Alpha values for the HAD scale were found to be satisfactory. It was found .85 for anxiety and .80 for depression.

2.2.2. The Short Form 12-Item (Version 2) Health Survey

Health-related quality of life (HRQoL) assessments are generally divided into two categories: disease-specific and generic, and generic assessments of HRQoL can be used both for patient and healthy groups since it is independent of having any diseases or treatment (Soylu & Kütük, 2021). Ware et al. (1993) developed the Short Form-36 Health Survey as a generic assessment in order to assess functionality and well-being of individuals. Then, the authors decided to develop a practical version of SF-36 which can be implemented in shorter time and developed SF-12 which also includes the same subscales of SF-36 by reducing item numbers from 36 to 12 items (Ware et al., 1995). Then new version of SF-12 was developed as the Short Form 12-Item Version 2 (SF-12v2) (Ware et al., 1996). SF-12v2 measurement tool encompasses eight dimensions of HRQoL which are as followed: *Physical Functioning (PF), Role-physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role-emotional (RE) and Mental Health (MH).* Two umbrella subscales are formulated out of these eight dimensions: The Physical Component Summary (PCS) and the Mental Component Summary (MCS). PCS includes *General Health, Physical Functioning, Role-Physical,* and *Bodily Pain* while MCS includes *Social Functioning, Role-*

Emotional, Mental Health, and *Vitality*. In the original study, validity and reliability of the new SF-12v2 was successfully tested and Cronbach Alpha was found as 0.92 for the PCS and as 0.88 for the MCS. The validity and reliability study of Turkish version of SF-12v2 has been done by Soysal Gündüz et al. (2021), and the results had reached sufficient levels with internal consistency coefficients for PCS as 0.80 and for MCS as 0.88, and as well as with acceptable construct and criterion validity. In the current study, Cronbach's alpha values for PCS and MCS are respectively as .82 and .78.

2.2.3. The Brief Illness Perception Questionnaire (BIPQ)

For the assessment of illness perception among cancer patients, the Brief Illness Perception Questionnaire (BIPQ) was implemented to be implemented. The BIPQ has eight subscales with each of them having one item. These formulated subscales are based on different aspects of an illness. They are as following: *Consequence* (the impact of the illness on the person's life), *Timeline* (perceived disease duration), *Personal Control* (perceived personal control over one's illness), *Treatment Control* (perceived treatment control over one's illness), *Identity* (experienced symptoms of the disease), *Coherence* (understanding the disease), *Concern* (degree of anxiety about the disease), *Emotional Representation* (emotional reactions to illness) and *Cause* (Causal attributions of illness) (Zhang et al., 2019). The first eight items are scored from 0 to 10, with higher scores reflecting that a person feels more threatened by the illness while the ninth item (causal attribution) is categorical and requires the patient to list the most important causes of their disease (Broadbent et al., 2006). *Personal Control, Treatment Control* and *Coherence* are the reversed items. That is, higher scores on these three subscales reflects a less threatened illness perception. When they are reversed, higher scores in total reflect a more threatened illness perception. The BIPQ was developed by Broadbent et al. (2006) with different illness backgrounds including myocardial infraction, renal failure, diabetes, asthma and minor illnesses like colds, and the Cronbach's alpha was found to be highly reliable ranging between 0.80 and 0.85. The Turkish validity and reliability study of the BIPQ was done by Karataş et al. (2017), and the scale resulted in exclusion of one item *(Timeline)* due to overlapping and resulted in with two factors different from the original study in which Cognitive Illness Perception Representations covers consequence, timeline, personal

control, treatment control, and illness identity while Emotional Illness Representation covers concern and emotional response. However, in the Turkish validation study, the first factor Emotional Illness Representation includes *Consequence, Identity, Concern* and *Emotional Representation* items. The second one is Cognitive Illness Representation comprising of *Personal Control, Treatment Control* and *Coherence.* A satisfactory score for the reliability was achieved as 0.85 in the study (0.83 for emotional, 0.80 for cognitive representations) and as well as with sufficient language equivalence and content validity (Karataş et al., 2017). In the current study, Cognitive and Emotional Illness Representation subscales were not used seperately. Instead, the Brief Illness Perception Questionnaire score was evaluated as a whole., and Cronbach's alpha was found to be .71 in the current study.

2.2.4. The Brief Illness Perception Questionnaire (BIPQ) for caregivers

As mentioned above, the BIPQ was given to cancer patients to assess their illness perception. Additionally, the reworded version of the BIPQ was given to the primary caregivers so as to measure their perception toward their patients' illness. For example, in the original form of the BIPQ, the question 'How concerned are you about your illness' is asked to patients. However, in the reworded version of the BIPQ for caregivers, the same question will be asked to the caregiver as 'What do you think how concerned your patient is about her/his illness'. Thereby, similarity/discrepancy or namely congruence between the illness perception of the two parties was examined. Based on the methods preferred and used in the literature (Sterba et al., 2008; Richardson et al., 2016; Meier et al., 2019; Romero et al., 2008), the congruence between the illness perception of cancer patients and their caregivers was handled by a simple calculation for statistical analysis. The method is that for every dyads (one patient and his/her caregiver), scores of each party on the seven items of the Brief Illness Perception Questionnaire was subtracted from one another. For example, if a patient gives 3 out of 10 to the question 'How concerned are you about your illness', and his/her caregiver gives 7 out of 10 to the revised question, which try to catch the perception of the caregiver, 'What do you think how concerned your patient is about her/his illness', patient's score (3) will be subtracted from caregiver's score (7) and the results will be 4, and then since the total score is 10 for each question, a further step of substracting will be run; therefore, 4 will be also subtracted from the total score (10) and the result 6 will be giving

the level of congruence between each party (*see Appendix 2*). The reworded version of Brief Illness Perception Questionnaire for caregivers score was evaluated as a whole., and Cronbach's alpha was found to be .63 in the current study. The new formed illness perception congruence scale was found to show .60 Cronbach's alpha value for both cancer and caregiver group, and for total participants.

2.3. Procedure

The study was carried out at the outpatient chemotherapy unit of the Ankara City Hospital. All data was gathered by convenience sampling. Every day, tens of patients with different cancer types and stages visited that unit and take their chemotherapy or radiotherapy sessions. Moreover, a family member mostly accompanies with the patient, and this person is generally just the primary caregiver. The data collection was done according to cross-sectional design; thus, relevant information was taken both from patients and their caregivers at one time interval. Measurements tools including Socio-demographic Form, the Hospital Anxiety and Depression Scale (HADs), the Short Form 12-Item (Version 2) Health Survey, the Brief Illness Perception Questionnaire (BIPQ) and the reworded version of BIPQ for cancer caregivers were given to both patients and their primary caregivers after collecting informed consents (*see Appendix 2*) from all the participants. Since there would be some patients unaware of their diseases, questions regarding cancer such as cancer type, cancer stage were gathered from medical records. Instead, an additional question about awareness of cancer was asked to patients in the socio-demographic form. The study was carried out after ethical approvals from both ethical committee of local health authority of Ankara and Scientific Research and Publishing Ethical Committee of Başkent University Social and Human Sciences.

2.4. Analyses

First of all, Pearson Correlation was computed through IMB SPSS Software program to analyze the correlations between continuous variables of the study. For categorical variables like gender t-test analysis was run, and for categorical variables with more than two levels

like education one-way analysis of variance (ANOVA) was computed. The main independent variable of the present study is the illness perception congruence whilst anxiety, depression and health-related quality of life is dependent variables. In line with the study hypotheses emphasizing the predictor effect of illness perception congruence, a series of hierarchical multiple regression analysis was carried out to look at the predictive role of illness perception congruence on anxiety, depression and health-related quality of life of patients and caregivers. In the first step, sociodemographic characteristics of participants such as age or gender will be added to the model. In the second step, the illness perception congruence as the main predictor will be entered to the model to seize its unique predictor effect.

The last item of BIPQ which asked participants which three factors are mostly contribute their disease is a categorical variable. The responses to this item would change from environmental factors such as smoking to more internal factors such as stress. For example, in a recent study by Staal et al. (2021), causal attributions of cancer survivors to their colorectal diseases were categorized as internal causal attributions (e.g., genetic or smoking), as external causal attributions (e.g., environment, luck or previous health condition), as controllable factors (e.g., lifestyle, smoking or stress), or as uncontrollable factors (e.g., genetic, environment or ageing). With descriptive statistics, the most frequent responses among cancer patients and their caregivers will be figured out.

3. RESULTS

3.1. Preliminary and Descriptive Statistics

The data was collected from 246 participants (123 cancer patients and 123 their caregivers). Thus, the number of patient-caregiver dyads is 123. All of the data was collected in paper-and-pencil format in the out-patient chemotherapy clinic which is comprised of many separate wards. At first glance before missing analysis, more than one missing item was detected in the forms of 13 patient-caregiver pairs after data collection was over. The exclusion of 13 patient-caregiver dyad is resulted in 110 patient-caregiver dyad. Medical information on cancer type and cancer stage of patients were gathered from the co-advisor of the thesis. After he checked the data, he realized that even though one patient was taking chemotherapy, he was referred from the hematology unit and so not a cancer patient. He also did not find any medical records of one patient. Then when the forms of this patient and her caregiver were examined, it was realized that both the patient and caregiver confused the forms, the patient filled the caregiver's form. Therefore, these two patient-caregiver dyads were excluded from the study. The remaining participants (108 patient-caregiver dyads) were entered into the SPSS. Through the SPSS program, there were found 11 more missing data among 216 participants; however, this time, there are only one missing item for each participants. Therefore, for overcoming this missing data, missing analysis was run via the SPSS program. First, a missing completely at random test (MCAR) was analyzed through SPSS in order to test the hypothesis that missing values are randomly distributed or not. It has been found that all missing values are random, that is, they are not systematically distributed (p = .855). Moreover, since the percentage of each missing value is less than %5, series mean method was calculated for each missing value and was assigned to each missing value after the reverse items assignment (Kline, 2015). In addition, there are some missing values on the variables related to characteristics of patient group such as time since diagnosis, cancer type, and cancer stage. Missing completely at random (MCAR) analysis was run in order to see whether these missings are systematic or not. It was found that they are randomly distributed (p = .684). To treat the missings, suggestions by Quintero and Leboulluec (2018) were applied. Specifically, for ordinal variables like cancer stage in the current paper, they have found that random selection was the most apropriate compared to

other methods like multiple imputation. The same method was also applied for the missing value in cancer stage variable. For cancer type as a nominal variable and time since diagnosis as continuous variable, mode of the that variable data set and mean of the that variable dataset were suggested, respectively (Quintero & Leboulluec, 2018). In the present study, these methods have been applied, as well.

The second, third, and fifth items of the BIPQ are reversely coded. These items belong to *personal control*, *treatment control* and *coherence* subscales respectively. Moreover, first, eighth, ninth, and tenth items of the SF-12v2 are reversely coded. These items belong to *general health*, *bodily pain*, *mental health*, and *vitality* subscales, respectively. For the HADs, item 1, 3, 5, 11 and 13 which are items of anxiety subscale are reverse items, and they are scored from 3 to 0. On the other hand, item 6, 8, 10 which are items of depression subscale are reverse item. All reverse items are recoded and the further analysis also including the assignment of series mean to the missing value are run with their new values. As mentioned in the analysis section above, to measure the illness perception congruence of a patient and his/her caregiver, a simple calculation suggested in the literature (e.g., Richardson et al., 2016) was used. In this calculation, each score on one item of the BIPQ that the patient filled out was subtracted from the score of caregiver on the same item of the BIPQ-Caregiver Version questionnaire. The results were shown in absolute values because the aim here is just to catch the concordance rather than direction (e.g., after the subtraction, both -3 and +3 were treated the same). When the difference between patients and their caregivers' score is 3, their illness |perception congruence would be lower than when the difference is 2. That is, the lower the difference, the greater the congruence. Therefore, in order to make it more understandable the result of that subtraction was also subtracted from 10, resulting in transitioning the aforementioned value 3 to 7, and 2 to 8. Now the greater number indicates greater congruence. The formulation is as follow: The congruence score = 10 - ⎪patient's item score – caregiver's item score⎪. This formulation was calculated for all data via Microsoft Excel Program in order to achieve illness perception congruence between patients and their caregivers. The scoring of SF-12v2 results in two main subscales: physical component summary (PCS) and mental component summary (MCS), and items are scored according to the norms of USA population. Both MCS and PCS take values from 0 to 100 where greater numbers indicate better health quality (Ware et al., 2002). However, it is not the main purpose of the current study to compare health-related

quality of participants to USA population, rather it is simply aimed to shed light on how health-related quality of life is influenced by illness perception. Therefore, the scoring of SF-12v2 was not made based upon the norm values of USA population. It was scored accordingly as suggested by the authors of the study which testes the Turkish reliability and validity (Sosyal-Gündüz et al., 2021).

Scores of numeric variables related to characteristics of participants such as age, gender, income level, education level, marital status, cancer stage, and scores of other variables like illness perception, anxiety, depression, health-related quality of life and illness perception congruence are converted to z-scores in order to detect outliers. An absolute value of ±3.29 is the standard value used to identify outliers (Tabachnick & Fidell, 2013). All Z-scores are within ±3.29 meaning that there are no univariate outliers in the related variables., except for the variable "time since diagnosis". Two cases from that variable exceeded ±3.29 Z-score. In fact, two patients reported the time since their diagnosis as 72 months ago and 84 months ago. For multivariate analysis, a mahalanobis distance analysis was run separately for patient and caregiver groups. Firstly, the mahalanobis distance was calculated for ten variables including age, gender, education level, income level, physical health-related quality of life, mental health-related quality of life, illness perception, illness perception congruence, anxiety and depression in caregiver group. In order to compare with the χ^2 value, degree of freedom and significance level was taken 10 (for 10 corresponding variables) and .0001, respectively. All the scores were found to be lower than χ^2 value (χ^2 = 29.588, *Min*. 4.384, *Max.* 20.546). Adding cancer stage and time since diagnosis variables into the equation, χ^2 value was determined as 32.909, and for the patient group, only two cases exceeded this cut off. They are the same cases in which there was also univariate outliers, as described above due to the time since diagnosis variable. Because they violate the assumptions of the analysis, these two cases were removed from the data set. After removing two patient-caregiver dyads from the data set there are finally 106 patient-caregiver dyads left for the final analysis.

In the literature, normality test of a given data is also provided by looking at skewness and kurtosis values of relevant variables (Mishra et al., 2019). For testing the normality of the data, each variable's Skewness and Kurtosis values were taken, separately for patient and caregiver groups, and it has been found that all the values were between –1 and +1. In fact, in patient group, Skewness and Kurtosis values for anxiety, depression, illness

perception, and health-related quality of life respectively as follow: (+0.518, –0.032), (+0.186, –0.651), (–0.629, +0.125), (+0.102, –0.463). On the other hand, in caregiver group, Skewness and Kurtosis values for anxiety, depression, illness perception, and health-related quality of life respectively as follow: (+0.164, –0.382), (–0.067, –0.648), (–0.500, +0.223), (–0.068, –0.057). The values are between –1 and +1; therefore, it is assumed that the data are normally distributed (Kline, 2015).

Sociodemographic characteristics of both patient and caregivers are analysed through frequency statistics (see *Table 1*).

Table 1. Sociodemographic Characteristics of Participants

Variables	Patients (n = 106)		Caregivers (n = 106)	
	Frequency	%	*Frequency*	%
Gender				
Male	42	39.6	52	49.1
Female	64	60.4	54	50.9
Education				
None	4	3.8	1	0.9
Primary School	34	32.1	25	23.6
Secondary School	13	12.3	9	8.5
High School	27	25.5	26	24.5
University	28	26.4	45	42.5
Income				
Low	29	27.4	33	31.1
Medium	77	72.6	67	63.2
High	0	0	6	5.7
Cancer Stage				
Earliest Stage	2	1.9		
First Stage	14	13.2		
Second Stage	25	23.6		
Third Stage	29	27.4		
Fourth Stage	33	31.1		
Not Staged Yet	3	2.8		

Cancer Types					
Bile Duct	1	0.9			
Bladder	1	0.9			
Breast	32	30.2			
Cervical	3	2.8			
Colorectal	10	9.4			
Esophageal	2	1.9			
Leukemia	2	1.9			
Liver	1	0.9			
Lung	13	12.3			
Lymphoma	3	2.8			
Malign Neoplasm	1	0.9			
Multiple Myeloma	3	2.8			
Ovarian	10	9.4			
Pancreatic	4	3.8			
Skin	1	0.9			
Soft Tissue Sarcomas	1	0.9			
Stomach	9	8.5			
Testicular	4	3.8			
Uterine	4	3.8			
Vulvar	1	0.9			
Marital Status					
Married	90	84.9		79	74.5
Single	14	13.2		27	25.5
Divorced/widow	2	1.9		0	0
Relationship Degree To Caregiver			Relationship Degree To Patient		
Spouse	52	49.1		52	49.1
Parents	33	31.1		8	7.5
Children	8	7.5		33	31.1
Sibling	8	7.5		8	7.5
Other	5	4.7		5	4.7

Before investigating the predictive effect of illness perception congruence on anxiety, depression, and health-related quality of life of participants, correlations among all

continuous variables were performed through Pearson's Correlation Coefficient analysis. The analysis was performed separately for patient and caregiver groups. Moreover, descriptive statistics of related variables were also analysed. With respect to multiple regression assumptions, for a more precise prediction, significant correlations of IVs to the dependent variables but non-significant correlations or not strong correlations among themselves were tried to measure.

Among study variables, only illness perception congruence and illness perception were found to have statistically significant correlations with study DVs in patient group. Specifically, there was a statistically significant positive correlation between illness perception congruence and anxiety (r = .282, p < .01). On the other hand, illness perception has statistically significant positive correlations with anxiety (r = .511, p < .001), and with depression (r = .565, p < .001). Also, it has statistically significant negative correlations with physical health-related quality of life (r = -.479, p < .001), and with mental health-related quality of life (r = -.487, p < .001). On the contrary, both age and time since diagnosis have no statistically significant correlations with anxiety, depression and health-related quality of life. Furthermore, correlations among IVs were also non-significant, except the correlation between illness perception and illness perception congruence. Since illness perception congruence is derived from the scores given to the participants' illness perception scales (BIPQ and BIPQ for caregivers), it can be considered that illness perception congruence and illness perception variables have a common denominator. Thereby, it is likely that there is a high correlation between these two variables. Therefore, in hierarchical regression analysis, these two variables were not included in the model at the same time to provide the assumption that the independent predictors should not show high correlation with each other. At the final step, in the regression model where predictive effect of illness perception congruence on anxiety, depression, and health-related quality of cancer patients is investigated, age and time since diagnosis do not need to be entered into the model as control variables (*see Table 2*).

Table 2. Correlations of Continuous Variable in Cancer Group

	Variable	*N*	*M*	*SD*	1	2	3	4	5	6	7	8
1.	Age	106	49.60	11.35	–	.078	.073	-.010	-.107	-.011	-.062	-.072
2.	Time Since Diagnosis[a]	106	7.47	8.14		–	.008	.065	.140	.048	-.103	.011
3.	Illness Perception Congruence	106	54.00	8.74			–	.404**	.282**	.130	-.060	-.028
4.	Illness Perception	106	29.86	12.03				–	.511***	.565***	-.479***	-.487***
5.	Anxiety	106	7.54	4.56					–	.643***	-.288**	-.471***
6.	Depression	106	7.69	4.67						–	-.553***	-.673***
7.	Physical HRQOL[b]	106	43.13	20.42							–	.601***
8.	Mental HRQOL[c]	106	47.23	19.87								–

[a] Time since diagnosis in month.

[b] Physical Health-Related Quality of Life.

[c] Mental Health-Related Quality of Life.

** Correlation is significant at $p < .01$ (2-tailed).

*** Correlation is significant at $p < .001$ (2-tailed).

On the other hand, for caregiver group, statistically significant negative correlations between age and physical-health-related quality of life (r = -.368, $p < .001$), and illness perception congruence and depression (r = -.215, $p < .001$), were only found. There was no statistically significant correlation between age and illness perception congruence which are both IVs of interest (*see Table 3*). Therefore, in the regression model where predictive effect of illness perception congruence on anxiety, depression, and health-related quality of caregivers is investigated, age will be entered as control variable into the model only for physical-health related quality of life.

Table 3. Correlations of Continuous Variables in Caregiver Group

	Variable	*N*	*M*	*SD*	1	2	3	4	5	6
1.	Age	106	42,97	12.51	–	-.127	-.056	.138	-.368***	-.120
2.	Illness Perception Congruence	106	54.00	8.74		–	-.128	-.215*	.037	.042
3.	Anxiety	106	9.57	4.33			–	.688***	-.411***	-.609***
4.	Depression	106	8.74	4.38				–	-.460***	-.555***
5.	Physical HRQoL[a]	106	59.03	20.80					–	.634***
6.	Mental HRQoL[b]	106	52.18	19.93						–

[a] Physical Health-Related Quality of Life.
[b] Mental Health-Related Quality of Life.
** Correlation is significant at $p < .01$ (2-tailed).
*** Correlation is significant at $p < .001$ (2-tailed).

Descriptive statistics of illness perception subscales and correlations of illness perception congruence subscales are displayed in *Table 4* and *Table 5*. Statistically significant correlations were only obtained in cancer group. Respectively, *identity* congruence was significantly positively associated with anxiety ($r = .278$, $p = .004$) and depression ($r = .193$, $p = .047$) while significantly negatively associated with mental HRQoL (($r = -.196$, $p = .044$). *Concern* congruence shares significant positive correlations with anxiety ($r = .364$, $p = .000$) and depression ($r = .196$, $p = .045$). Moreover, while emotional representation is significantly associated with anxiety ($r = .275$, $p = .004$) in a positive direction, its significant association with mental HRQoL ($r = -.210$, $p = .030$) in a negative direction. Moreover, when we looked average scores of both patients and caregivers on the subscales in *Table 4*, it can be noticed that both patients and caregivers' scores on consequence, identity, concern and emotional representation are above 5 out of 10 (remember each subscale of BIPQ is scored from 0 to 10). On the other hand, scores on personal control, treatment control and coherence are below 5 out of 10 for both patients and caregivers.

Table 4. Descriptive Statistics of BIPQ Subscales

	Patients (n = 106)		Caregivers (n = 106)	
Illness Perception	*M*	*SD*	*M*	*SD*
Consequence	6.11	2.88	7.08	2.48
Personal Control	3.64	2.71	3.00	2.41
Treatment Control	1.33	1.71	1.34	1.89
Identity	5.23	3.04	6.24	2.72
Concern	5.60	3.44	7.13	2.73
Coherence	2.00	2.52	1.65	2.05
Emotional Representation	5.93	3.25	7.26	2.91

Table 5. Correlations of BIPQ Congruence Subscales with Dependent Variables

	Patients (n = 106)				Caregivers (n = 106)			
Illness Perception Congruence	Anxiety	Depression	Physical HRQoL	Mental HRQoL	Anxiety	Depression	Physical HRQoL	Mental HRQoL
Consequence	.093	.176	-.167	-.070	-.032	.039	.000	.051
Personal Control	.036	-.060	.140	.211*	.060	-.033	-.054	-.120
Treatment Control	.036	-.123	.086	.180	-.188	-.188	.007	.006
Identity	.278**	.193*	-.107	-.196*	-.083	-.146	.067	.019
Concern	.364**	.196*	-.044	-.074	-.013	-.177	.033	.045
Coherence	-.158	-.153	.026	.178	-.188	-.021	-.019	.131
Emotional Representation	.275**	.144	-.115	-.210*	-.100	-.183	.083	.029

**Statistically significant at p < .05*

***Statistically significant at p < .01*

Before examining the group difference of gender, education, income and cancer stage on the dependent variables, some non-parametric correlation analyses were run. Point

biserial correlation was used for the relationship between a nominal dichotomous variable (e.g., gender in this study) and a continuous variable. Spearman's Rho was used in relationship analyses where at least one of variable is ordinal/ranked (e.g., cancer stage in this study). Accordingly, female cancer patients tended to report more anxiety symptoms than male cancer patients (r_{pb} = .216, p = .026); however, there was no significant correlation of gender with depression, physical and mental HRQOL. Moreover, when education level increased, cancer patients' depression levels decreased significantly (r_s = -.211, p = .030), and their physical HRQOL increased significantly (r_s = .223, p = .022). There wasn't a statistically significant correlation relationships of education with anxiety and mental HRQOL of cancer patients. On the other hand, when income level increased, cancer patients' anxiety levels decreased significantly (r_s = -.209, p = .032), and their depression levels also decreased significantly (r_s = -.193, p = .047) while their physical HRQoL increased significantly (r_s = .256, p = .008). There was no statistically significant relationship between income and mental HRQoL of cancer patients. Similarly, not statistically significant correlations of cancer stage to anxiety, depression, physical and mental HRQoL of cancer patients were found.

For caregiver group, gender had no statistically significant correlations with anxiety, depression, physical and mental HRQoL. However, when caregivers' education level increased, their depression levels decreased significantly (r_s = -.216, p = .026) while their physical HRQoL increased significantly (r_s = .304, p = .002). There were no significant associations of education to anxiety and mental HRQoL of caregivers. Lastly, when income levels of caregivers increased, both their anxiety levels (r_s = -.340, p < .001), and their depression levels (r_s = -.288, p = .003), decreased significantly. On the contrary, increased income levels were found to be significantly related to increased physical HRQoL (r_s = .197, p = .043), and increased mental HRQoL (r_s = .290, p = .003), in caregivers (see *Table 6*).

Table 6. Correlations of Categoric Variables in Participants

Variables	Cancer Patients (n = 106)				Caregivers (n = 106)			
	Anxiety	Depression	Physical HRQoL	Mental HRQoL	Anxiety	Depression	Physical HRQoL	Mental HRQoL
Gender	.216*	.098	-.105	-.129	.168	-.003	-.002	-.029
Education	-.077	-.211*	.223*	.078	-.138	-.216*	.304**	.158
Income	-.209*	-.193*	.256**	.152	-.340**	-.288**	.197*	.290**
Cancer Stage	.017	.109	.113	.027				

* Correlation is significant at $p < .05$ (2-tailed), ** Correlation is significant at $p < .01$ (2-tailed).

3.2. T-test for Gender Differences in the Dependent Variables

T-test analysis was performed for gender difference in anxiety, depression, physical and mental health-related quality of life of cancer patients. All skewness and kurtosis values were between – 1 and + 1 Z value. Specifically, they were ranging from – .508 to + .826. That is, all dependent variables are normally distributed both in male and female patient group. Levene's test for equality of variances were nonsignificant for all dependent variables: anxiety (p = .550), depression (p = .601), physical health-related quality of life (p = .703), and mental health-related quality of life (p = .968). That is, equal homogeneity of variance assumption of *t*-test has been met for all dependent variables. Accordingly, anxiety levels of female patients (M = 8.34, SD = 4.59) was statistically higher than anxiety levels of male patients (M = 6.33, SD = 4.30), $t(104) = -2.252$, p = .026. However, there were no statistically significant differences between male and female patients in terms of depression, physical and mental health-related quality of life (see *Table 7*). Therefore, for the final multiple regression analysis, gender as a control IV will be entered into the model only in case where anxiety of patients is criterion variable.

Table 7. Differences Between Male and Female Patients

Dependent Variables	Male (n = 42)		Female (n = 64)		t(104)	p	Cohen's d
	M	*SD*	*M*	*SD*			
Anxiety	6.333	4.297	8.335	4.588	-2.252	.026*	0.045
Depression	7.130	4.572	8.057	4.724	-1.001	.319	0.019
Physical HRQoL	45.758	20.425	41.406	20.389	1.074	.285	0.021
Mental HRQoL	50.372	20.523	45.166	19.319	1.324	.188	0.026

* Significant at p < .05

T-test analysis was performed for gender difference in anxiety, depression, physical and mental health-related quality of life of caregivers. All skewness and kurtosis values were between – 1 and + 1 z value. Specifically, they were ranging from – .866 to + .715. That is all dependent variables are normally distributed both in male and female caregiver group. Levene's test for equality of variances were found not to be significant for all dependent variables (p values as .185, .837, and .747 for depression, physical and mental-health related quality of life respectively), except for anxiety (p = .026). That is, equal homogeneity of variance assumption of t-test has not met only for anxiety. Therefore, for the anxiety variable "equal variances not assumed" was accepted. The difference between male and female caregivers' anxiety scores was not significant. Similarly, there are no significant differences between male and female caregivers' scores with respect to their depression, mental and physical-health related quality of life (see *Table 8*). Therefore, gender of caregivers will not be entered into the final regression model for all dependent variables.

Table 8. Differences Between Male and Female Caregivers

Dependent Variables	Male (n = 52)		Female (n = 54)		t(104)	p	Cohen's d
	M	*SD*	*M*	*SD*			
Anxiety	8.827	3.677	10.278	4.799	-1.751	.083	0.034
Depression	8.754	4.101	8.726	4.676	.033	.974	0.000
Physical HRQoL	59.074	21.061	58.996	20.724	.019	.985	0.000
Mental HRQoL	52.764	20.163	51.620	19.873	.294	.769	0.005

3.3. Group Differences for More Than Two Categorical Variables

Group difference effect of categorical variables (e.g., education, cancer stage, see *Table 1*) on anxiety, depression and health-related quality of life, one-way analysis of variance (ANOVA) was carried out. For testing normality of the dependent variables across these five groups, skewness and kurtosis values were looked at. Violation of normality assumption for anxiety was only seen in the secondary school graduate group (education). Therefore, Kruskal-Wallis test which is a non-parametric alternative for ANOVA test in case of violation of normality (Blair & Higgins, 1980; Lix et al. 1996) was performed for comparing anxiety across five levels of education. For testing equal homogeneity of variance assumption, Levene's test was looked at, and all dependent variables met this assumption. According to the analysis, anxiety scores of patients did not differ significantly across five levels of education [χ^2 (4) = 3.337, p = .503]. There were also no statistically significant differences between five levels of education for depression [F(4, 101) = 1.889, p = .118] for physical HRQoL [F(4, 101) = 1.938, p = .110] and for mental HRQoL [(F(4, 101) = 1.208, p = .312]. Thus, for the final multiple regression analysis of patient group, education will not be entered into the model for more precise results in all dependent variables.

Similar procedure was done for caregiver group as well. Before conducting one-way ANOVA for education, skewness and kurtosis and Levene's test were analysed for assumptions of normality and homogeneity of variances, respectively. Accordingly, all dependent variables are normally distributed across four levels of education (there is only one participant in 'no education' level, therefore this group was excluded in SPSS, see *Table*

1). On the other hand, Levene's test is statistically significant at $p < .05$ only for mental HRQoL ($p = .034$) but not statistically significant at $p < .05$ for anxiety ($p = .139$), for depression ($p = .850$), and for physical HRQoL ($p = .137$). Thus, only for mental HRQoL, equal homogeneity of variance assumption was violated and thus Welch's *F* test was looked at. Welch's test is an alternative parametric test to ANOVA *F* test when the homogeneity of variances is violated while the normality assumption is not violated (Alexander & Govern, 1994). According to the ANOVA results, anxiety scores of caregivers did not statistically change across four levels of education, $F(3, 101) = .757$, $p = .521$. There were no statistically significant differences in depression scores between four education groups, $F(3, 101) = 2.083$, $p = .107$. There were also no statistically significant differences in mental HRQoL scores between four education groups, Welch's $F(3, 32.209) = .986$, $p = .412$. On the contrary, group difference was only seen in physical health-related quality of life, $F(3, 101) = 4.380$, $p = .006$. (see *Table 9*). When the variance is homogenous and there is unequal sample size in groups, Hochberg's GT2 post-hoc comparison is suggested and used (Lee, 2022). In order to see the exact statistical difference between four groups of education, a Hochberg's GT2 post-hoc comparison was run, and only statistically significant difference was found between primary school graduate and university graduate ($p = .009$). Therefore, for the final multiple regression models education will be entered into the model only for physical health-related quality of life, not for others.

Table 9. Group Differences in Caregivers by Education

	Primary School (n = 25)		Secondary School (n = 26)		High School (n = 9)		University (n = 45)		*F(3, 101)*	η^2
Dependent Variables	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*		
Anxiety	10.08	4.45	9.44	3.32	10.35	3.40	8.89	4.92	.757	.02
Depression	10.32	4.15	8.78	4.18	9.00	4.43	7.65	4.40	2.083	.06
Physical HRQoL	50.43	21.95	58.68	9.73	53.85	17.79	66.74	21.26	4.380*	.16
Mental HRQoL	47.13	18.35	53.47	18.78	50.24	14.41	55.63	23.46	.986[a]	.03

[a] *Welch's F test*

* *Statistically significant p < .01*

Cancer stage has five levels plus one level reflecting those who are not staged yet. Number of participants in 'earliest stage' and 'not staged yet' groups are 2 and 3, respectively (see *Table 1*). For group mean comparison, these two groups were decided to be excluded from one-way ANOVA due to smaller number of participants in each. Tests of normality was run via Shapiro-Wilk due to numbers of participants less than 50 in each cell. *P* values of anxiety, depression, physical and mental HRQoL were bigger than .05, meaning normality assumption has been met for all dependent variables. Levene's test of homogeneity of variances was statistically significant just for anxiety (p = .007) but not statistically significant for depression (p = .989), for physical HRQoL (p = .806), and for mental HRQoL (p = .974). Therefore, Welch's F was looked at for anxiety variable while regular ANOVA F test was looked at for depression, physical and mental HRQoL. Accordingly, anxiety, depression, physical and mental HRQoL scores of cancer patients did not differ significantly across four levels of cancer stages, Welch's $F(3, 47.488) = .900$, p = .448, $F(3, 97) = 1.350$, p = .263, $F(3, 97) = 1.593$, p = .196, $F(3, 97) = .589$, p = .624, respectively. Therefore, cancer stage as a control IV will not be entered into the final regression model where all dependent variables are outcomes.

Income has three levels (low, medium and high). For patient group, there were no participants in 'high' group while for caregiver group there was small number of participants in 'high' group (*see Table 1*). That is, for patient group income variable is a dichotomous variable like gender but with very unequal sample size in each group, 29 in low and 77 in medium group. On the other hand, this disproportionate sample size is even more salient in caregiver group (33, 67, 6). Therefore, for avoiding much more statistical faults despite of non-parametric tests, income variable will be added to regression analysis as dummy-coded variable. Thereby, its extraneous effect on outcome variables will be controlled. Given the fact that when income level of a family decreases, the risk for worse mental health increases (Gresenz et al., 2001), medium-level income was taken as reference variable in the dummy coding. Thereby, through its comparison with low-income level and high-income level groups, any changes would be demonstrated respectively as increases or decreases variances in outcome variables.

3.4. Multiple Hierarchical Regression Analysis for Cancer Group

Based on Pearson's, point biserial and Spearman's correlation analyses where significant or non-significant relationships of all independent variables with dependent variables are revealed, only the IVs that have significant correlations with the DVs were entered into the model.

3.4.1. Predictive effect of illness perception congruence on anxiety of cancer patients

According to Biserial-point and Spearman's analyses only gender and income as control variables demonstrated significant correlations with anxiety. Therefore, a hierarchical multiple regression analysis was run to measure the predictive effect of illness perception congruence on anxiety of cancer patients while controlling only gender and income. This is a two steps regression analysis where gender and income were added in the first place, then illness perception congruence was added in the second place. According to the first model, gender and income together significantly predicted anxiety levels of cancer patients, $F(2, 103) = 5.307$, $p = .006$, $R^2 = .093$. That is, approximately 9% of variance in anxiety levels of patients is accounted for gender and income. In the second model, addition of illness perception congruence increased the total variance in anxiety by around 6%. And this increase is statistically significant, $F(1, 102) = 8.075$), $p = .005$, $\Delta R^2 = .067$. The regression model demonstrated that illness perception congruence is a unique incremental predictor of anxiety in cancer patients. Specifically, when illness perception congruence increases, cancer patients' anxiety levels also increase, $B = .135$, $t = 2.842$, $p = .005$ (see *Table 10*).

Table 10. Illness Perception Congruence as Predictor of Patients' Anxiety

Predictor	*B*	*SE B*	*β*	*t (p)*	R^2	ΔR^2	*F* Change *(p)*
Step 1					.093	.093	5.307 (.006)
(Constant)	5.476	,772		7.095 (.000)			
Gender[a]	2.402	.888	.259	2.705 (.008)			
Income[b]	2.250	.974	.221	2.309 (.023)			
Step 2					.160	.067	8.075 (.005)
(Constant)	-1.672	2.624		-.637 (.526)			
Gender	2.233	.861	.241	2.594 (.011)			
Income	2.098	.944	.206	2.223 (.028)			
Congruence[c]	.135	.048	.259	2.842 (.005)			

[a] *Male coded as 0, female coded as 1. Male as reference group.*
[b] *Low-level income group. There are no participants in High-level income group. Medium-level income as reference group*
[c] *Illness perception Congruence*

3.4.2. Predictive effect of illness perception congruence on depression of cancer patients

Independent variables that were controlled by entering in the first block are only income and education because of their significant correlations with depression (see *Table 6).* However, significant group difference of education on depression was not seen according to ANOVA analysis (see *Section 3.3*). Nevertheless, in order to prevent any extraneous effects of education, it was added in the first step with income. In the second step, illness perception congruence was added. Like income, education was also categorical; thus, it was dummy-coded where the reference group was university graduate group. According to hierarchical multiple regression results, Model 1 where predictors are income and education was not statistically significant at predicting depression of cancer patients, $F(5, 100) = 1.912$, $p = .099$, $R^2 = .087$. Similarly, Model 2 where predictors are income, education and illness perception congruence were not also statistically significant at predicting depression of cancer patients, $F(6, 99) = 1.979$, $p = .076$, $R^2 = .107$. Moreover, addition of illness

perception did not lead to statistically significant increases in variance of depression, $F(1, 99) = 2.199$, $p = .141$, $\Delta R^2 = .020$.

3.4.3. Predictive Effect of Illness Perception Congruence on Physical HRQoL of Cancer Patients

Income and education were found to have a positive relationship with physical HRQoL of cancer patients; therefore, their predictive effects are controlled by adding them in the first step of regression model (see *section 3.3).* Illness perception congruence was entered in the second step. According to hierarchical multiple regression results, Model 1 where predictors are income and education was not statistically significant at predicting physical HRQoL of cancer patients, $F(5, 100) = 2.112$, $p = .070$, $R^2 = .096$. Similarly, Model 2 where predictors are income, education and illness perception congruence were not also statistically significant at predicting physical HRQoL of cancer patients, $F(6, 99) = 1.819$, $p = .099$, $R^2 = .103$. Moreover, addition of illness perception did not lead to statistically significant increases in variance of physical HRQoL, $F(1, 99) = .419$, $p = .519$, $\Delta R^2 = .004$.

3.4.4. Predictive Effect of Illness Perception Congruence on Mental HRQoL of Cancer Patients

According to correlational, t-test and ANOVA analyses, there is not any independent variables that significantly have correlations with mental HRQoL (see *Table 6* and *section 3.3).* Therefore, illness perception congruence was added into the model as just one predictor of mental HRQoL of cancer patients without controlling other IVs. Accordingly, regression model was statistically non-significant, $F(1, 104) = .082$, $p = .775$, $R^2 = .001$.

3.5. Multiple Hierarchical Regression Analysis for Caregiver Group

Based on Pearson's, point biserial and Spearman's correlation analyses where significant or non-significant relationships of all independent variables with dependent

variables are revealed, only the IVs that have significant correlations with the DVs were entered into the model.

3.5.1. Predictive effect of illness perception congruence on anxiety of caregiver group

According to the previous correlational analyses, only income as a control variable has a statistically negative correlation with caregivers' anxiety. Other predictor variables like age, gender, education was found not to have significant relationship with anxiety of caregivers (see *Table 6*). Therefore, income as dummy-coded variable was entered in the first block, then illness perception congruence was added to the regression model. The results revealed that second model where income and illness perception congruence are predictors was statistically significant at predicting anxiety of caregivers, $F(3, 102) = 4.649$, $p = .004$, $R^2 = .120$. However, adding of illness perception congruence did not result in statistically significant increment in the model, $F(1, 102) = .842$, $p = .361$, $\Delta R^2 = .007$.

3.5.2. Predictive effect of illness perception congruence depression of caregiver group

Spearman's correlation analysis released statistically significant negative correlations of both income and education with depression levels of caregivers (see *Table 6*). However, one-way ANOVA did not find group differences in depression levels of caregivers across education levels (see *Table 9*). To prevent the regression model from any extraneous effects, education was also added to the model as dummy-coded variable where the reference group is university graduate. In the first place, income and education were added, and then illness perception congruence was added. According to the findings, Model 2 where income, education and illness perception congruence are predictors was statistically significant at predicting depression of caregivers, $F(7, 98) = 2.347$, $p = .029$, $R^2 = .144$. However, addition of illness perception congruence was not statistically significant at increasing the variance in depression level, $F(1, 98) = 2.017$, $p = .159$, $\Delta R^2 = .018$.

3.5.3. Predictive effect of illness perception congruence on physical HRQoL of caregiver group

According to Pearson's correlational analysis, age has statistically negative relationship with physical HRQoL while Spearman's correlational analysis extracted statistically significant relationship of both income and education with physical HRQoL (see *Table 6*). One-way ANOVA found significant group differences in physical HRQoL of caregivers across education levels, and this difference is only statistically significant between primary and university graduates (see *Table 9*). Therefore, in the first model, age, income and education were added, and then illness perception of congruence was added to the second model. The results demonstrated that Model 2 where age, income, education and illness perception congruence are the predictors was statistically significant at predicting physical HRQoL of caregivers, $F(8, 97) = 3.646$, $p = .001$, $R^2 = .231$. However, addition of illness perception congruence was not statistically significant at increasing the variance in physical HRQoL level, $F(1, 97) = .471$, $p = .494$, $\Delta R^2 = .004$.

3.5.4. Predictive effect of illness perception congruence on mental HRQoL of caregiver group

Among predictive variables like age, gender, education, only income has statistically significant positive correlation with mental HRQoL of caregivers (see *Table 6*). Therefore, only income was added to the regression model as control variable. Then, illness perception congruence was added to the model. The model where both income and illness perception congruence are predictors was not statistically significant at predicting mental HRQoL, $F(3, 102) = 2.495$, $p = .068$, $R^2 = .068$.

3.6. Causal Attributions of Cancer

3.6.1. Classification of causal attributions

As described in the introduction section, the last item of the Brief Illness Perception Questionnaire (BIPQ) is an open-ended question. This item requires the patient to write down the three most important reasons that s/he believes caused her/his illness, in order. As the creator of BIPQ stated that whether or not asking this item to participants depends on the aim of the study (Broadbent et al., 2006), this item was asked to participants as optional in the current study. The responses to that item were entered into SPSS as string values. Because there are a wide variety of responses, the need to make a classification and bring the responses into umbrella categories was born. In the literature, a recent method used by Lukoseviciute and Smigelskas (2020) was applied. The authors made the classification based on template analysis. At the end, they have reached seven broad categories: *lifestyle* (smoking, nutrition, fatigue, lack of rest, physical inactivity, neglecting treatment adherence or checkups etc.), *psychological causes* (stress, conflicts related to family, bereavement, type A personality etc.), *natural causes* (genetic or age), *working conditions* (working a lot or hard), *body changes* (obesity, blood pressure, high cholesterol, influenza etc.), *environmental factors* (e.g., radiation), and other causes (financial, low salaries, economic situation of the country or non-specific responses etc.). In the current study, it is worth noting to mention that responses like Covid-19 injections, giving many births, menopause or irregular menstrual cycles were categorized under "body change" factor. Moreover, early marriage, having problems with relatives, issues about other family members are classified under "psychological causes", as the author suggested. The pandemic (referred to Covid-19) was categorized under "environmental factors". According to the *Attribution Theory*, people are in attempt to making sense of the world by attributing causes to events happening around them (Kelley & Michela, 1980), and these attributions could be also categorized by controllability (Ferruci et al., 2011). According to the authors (Lukoseviciute & Smigelskas, 2020), while lifestyle and working condition are under individual's control, psychological, natural and environmental factors are hard to avoid, therefore, not under the control. The authors did not specify whether body changes category or other category is under control or not. In another similar study, the researchers kept the content of the body changes category

the same and used a different name, and they called it prior health condition and defined it as a factor beyond the person's control (Ferruci et al., 2011). Therefore, “body changes” category in this study was classified as out of one’s control. Responses of the current study that were categorized under “other” category are based on existential (coming from God or my life exam), working conditions or financial issues. Responses based on existential attributions were separated from the ‘other’ category and named as existential. Existential category is something out of one’s control (Ferruci et al., 2011). Those who responded as “I do not know, none or other causes” were treated as missing because they cannot be specified as controllable or not. The final classification is as seen in *figure 1*:

Figure 1. Classification of Causal Attributions of Cancer

Categories	In or Out of Individual's Control
Lifestyle	In
Psychological Causes	Out
Natural Causes	Out
Working Conditions	In
Body Changes	Out
Environmental Factors	Out
Existential Factors	Out
Other Causes	Not applicable

Among 106 cancer patients, 93 responded the cause item while among 106 caregivers, only 81 responded the item. As can be seen in *Table 11*, 55% of the respondent patients (*n* = 52) ascribed psychological causes to their illness Similarly, 45.9% of the respondent caregivers (*n* = 37) also thought that psychological causes lead to their patient’s illness.

Table 11. Causal Attributions of Cancer

Categories	Patients (n = 93)		Caregivers (n = 81)	
	Frequency	%	Frequency	%
Body Changes	4	4.3	7	8.6
Environmental	3	3.2	1	1.2
Existential	5	5.4	4	4.9
Lifestyle	19	20.4	18	22.2
Natural	5	5.4	12	14.8
Other	2	2.2	1	1.2
Psychological	52	55.9	37	45.7
Working Conditions	3	3.2	1	1.2
	Patients (n = 91)		Caregivers (n = 80)	
Controllability	Frequency	%	Frequency	%
In of Individual's Control	22	24.2	19	23.8
Out of Individual's Control	69	75.8	61	76.3

3.6.2. Group differences between controllable and uncontrollable causal attribution groups.

The relationships of continuous variables of the study with the causal attribution styles (controllable vs. uncontrollable) in patients was examined with *t*-test analysis. Normality assumption of t-test was supported with Shapiro-Wilk test, and the values for all variables were found to be more than .05, except age and time since diagnosis. Therefore, non-parametric test of t-test which is Mann-Whitney U test was run for the analyses of these two variables. It was provided by Levene's test that the variances of all the variables included in the analysis were equally homogeneously distributed. The results shows that anxiety levels were found to be more in patients (M = 7.94, SD = 4.41) who ascribed the disease cause to uncontrollable factors than those (M = 5.77, SD = 3.74) who ascribed it to controllable factors, $t(89) = -2.085$, $p = .040$. On the other hand, younger patients were found to be more likely to attribute the disease cause to uncontrollable factors than older patients, U = 481.000,

p = .010 (see *Table 12*). There were no statistically significant differences between those who made attributions to controllable factors and those who made attributions to uncontrollable factors in terms of time since diagnosis, depression, quality of life, illness perception and illness perception congruence.

Table 12. Group Differences in Causal Attributions of Patients

Continious Variables[a]	Controllable Factors (n = 22)		Uncontrollable Factors (n = 69)		*t*(89)	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Physical HRQoL	47.58	20.54	43.25	21.15	.842	.402	.207
Mental HRQoL	53.97	18.82	46.42	20.18	1.553	.124	.386
Illness Perception	29.66	11.71	30.16	12.23	-.167	.867	.041
Anxiety	5.77	3.74	7.94	4.41	-2.085	.040*	.695
Depression	6.00	3.87	7.90	4.79	-1.696	.093	.436
Illness Perception Congruence	54.90	8.88	54.10	8.51	.383	.702	.127
Continuous Variables[b]	Controllable Factors (n = 22)		Uncontrollable Factors (n = 69)				
	Rank Average	Rank Total	Rank Average	Rank Total	U	*p*	
Age	58.64	1290.00	41.97	2896.00	481.000	.010*	
Time Since Diagnosis	46.93	1032.50	45.70	3153.50	738.500	.849	

[a]Variables that meet normality assumption of t-test. [b]Variables that do not meet normality assumption of t-test; thus, analysed by Mann-Whitney U test. *Statistically significant at $p < .05$

T-test analysis was carried out for age, physical HRQoL, mental HRQoL, illness perception, anxiety, depression, Mann-Whitney *U* test was run for illness perception congruence in order detect group difference effect of causal attribution in caregivers. Satisfactory equal homogeneity of variance values was obtained with Levene's test for all variables. According to the results, age [$t(78) = -.188$, $p = .851$], physical HRQoL [$t(78) = -1.891$, $p = .062$], mental HRQoL [$t(78) = -.797$, $p = .428$], illness perception [$t(78) = .545$, $p = .587$], anxiety [$t(78) = 1.128$, $p = .263$], depression [$t(78) = 1.083$, $p = .282$], and illness perception congruence [$U = 506.000$, $p = .406$] were not significantly differed based on the causal attribution style.

4. DISCUSSION

Cancer diagnosis brings psychological disturbances to both patients and their caregivers. Previous studies have underlined higher levels of anxiety, depression, and worse quality of life among cancer patients (Singh et al., 2015; Baker et al., 2003) as well as among caregivers (Burnette et al., 2016; Ellis et al., 2021). Therefore, the factors that lead to the exacerbation of the psychological well-being (e.g., anxiety and depression) of populations affected by the cancer process have been extensively discussed in the literature. One of them is how patients and caregivers perceive their illness (Leventhal, 2016). The relationship of how patients perceive cancer, or whether they perceive it well or badly, with their psychological well-being has been documented in previous studies (e.g., Zhang et al., 2019). Researchers have also tried to depict the picture in a view of family context. It is understandable that cancer has effects not only on patients but also on their family members. When looking from a familial context, family members' perception of cancer disease also plays a vital role for both patients and them. When considered in the family context, one approach to investigate illness perception is to look at the effect of similarities or differences between patients' and their caregivers' perceptions of illness on them (e.g., Richardson et al., 2016). However, how a similarity or discrepancy between cancer perception of patients and their caregivers have not yet studied in Turkey. Therefore, this paper's main goal was to investigate this question. Granted of the study hypotheses, it was expected that higher illness perception congruence between the cancer patients and caregivers would forecast less anxiety and depression in both groups while predicting higher health-related quality of life. For this purpose, a study was conducted on 106 patient-caregiver pairs from a various socio-demographic characters and the results are explained in detail below.

Severity of anxiety and depression based on scores obtained from the Hospital Anxiety and Depression scale (HADs) have been subjected to cut-off points for categorization. The highest score is 21 for each subscale, and scores between 0 and 7 are classified as indicator of no anxiety and no depression (normal levels) while scores between 8 and 10 are categorized as indicator of mild anxiety or depression level (Stern, 2014). According to the results, overall average anxiety and depression levels of patients were at normal levels. Similar findings were also found in previous studies which used HADs scale

as a screening tool. For example, in a recent study, male participants' mean anxiety and depression scores were found to be 5.5 and 5, while the scores of female patients were found to be 6.8 and 5.5 (Hinz et al., 2019). Low levels of anxiety were also obtained in a Turkish cancer population, and the authors attributed the results to family structure of Turkey which can provide both physical and emotional support to affected patients and family (Saritas & Özdemir, 2018). Furthermore, caregivers reported mild levels for both anxiety and depression symptoms in the current study. Similar to these results have been also obtained in the literature. Sklenarova et al. (2015) found that caregivers' anxiety level was significantly higher than patients' anxiety level; however, they found no differences in terms of depression. The authors suggested that the increased anxiety of the caregiver could occur because they are threatened by death of a loved one (Sklenarova et al., 2015).

Results of correlational analyses of socio-demographic variables such as gender, age, education and income with cancer patients' anxiety, depression, physical and mental HRQoL were found to be as follow: female cancer patients reported significantly more anxiety levels than male cancer patients and more increased income level is associated higher physical HRQoL of patients while associated with more decreased anxiety and depression levels. Regarding medical variables such as time since diagnosis and cancer stage, anxiety, depression and physical and mental HRQoL of the patients did not significantly change across cancer stages (earliest, first, second, third, and fourth stage). Studies probing the relationship between cancer stage and emotional distress are mixed. For example, it was found that anxiety and depression did not differ significantly across different cancer stages (Renna et al., 2022). Furthermore, in a systematic review, anxiety and depression levels were found not to differ between early stages and metastatic stages in patients with breast and gastrointestinal cancers; however, emotional suffering was found to differ between early stages and advanced stages in patients with lung cancer (Vodermaier et al., 2011). Therefore, the authors concluded that cancer type might be a moderator on the effect of cancer stage on psychological disturbances (Vodermaier et al., 2011). Similarly, in the current study, there were participants with various types of cancer so the effect of cancer stage on anxiety, depression, and quality of life might haven't been precisely detected due to diverse cancer types.

For the caregivers, when age increases, physical HRQoL of caregivers decreases. Moreover, university graduate caregivers reported significantly better physical HRQoL than primary graduate caregivers. When income levels also increase, the caregivers' anxiety and depression levels tend to decrease while their physical and mental HRQoL tend to increase. Given that more increased amount of money spent and more financial problems faced by cancer population than general population (Shankaran & Ramsey, 2015), the findings on income sounds reasonable. In this process, there are studies in the literature finding out economic difficulties predict worse quality of life of patients (Fenn et al., 2014).

In this study, illness perception was defined as certain ideas that patients perceive about cancer. For example, these ideas can be basic representations of how much control the patient has over the cancer or how much the cancer disease affects his or her life. The results indicated that cancer patients' illness perception was found to be associated with their anxiety, depression, physical and mental HRQoL at significantly moderate levels. Specifically, worse illness representations toward cancer were found to be associated with increased anxiety and depression while it was found to be associated with decreased physical and mental HRQoL. The findings are congruent with previous studies. Positive correlations of illness perception with anxiety and depression among Indian cancer patients had been documented (Chittem et al., 2015). Moreover, negative correlations of illness perception with both physical and emotional quality of life had been also found among patients with hepatocellular carcinoma (Fan et al., 2013). That is, the worse illness perception, the more increased anxiety and depression while the poorer quality of life. Similar results have been reached for Turkish population, as well. It has been found that illness perception was positively related to anxiety and depression in breast cancer survivors (Kus et al., 2017). Moreover, the investigation done on a larger sample of cancer patients revealed that more threatened illness perception had association with increased state anxiety levels (Saritas & Özdemir, 2018).

Scarcity of studies that tried to examine the illness perception similarity/discrepancy in cancer population was one of the main motivations of the current paper. In this study, the caregivers' illness perception corresponds to their perception of how cancer patients perceive the disease. That is, if the patient believes that they have a great deal of control over their illness, the caregiver may think that the patient does not have much control over their illness.

As seen in the example, there is not much match/congruence between the perceptions of the two parties. Therefore, it can be said that the illness perception congruence is low. The results (pearson correlations) revealed positive correlations between illness perception congruence and anxiety of cancer patients. On the contrary, no associations of illness perception congruence with depression, physical and mental HRQoL are found in cancer patients. With regression models, illness perception congruence is found to be a significant predictor of only anxiety in cancer group, not of depression, physical and mental HRQoL. However, this predictor effect is in a positive direction where more similarity in the illness perception of patients and caregivers leads to much more anxiety in cancer patients. In fact, it has been found in the literature that the discrepancy between the patient's and caregiver's perception of the disease has been generally associated with negative outcomes. The conclusion that the divergent illness perception affects the patient negatively were also valid in different patient groups such as myocardial infarction (Figueiras & Weinman, 2003) or rhematoid arthritis (Sterba et al. 2008). This pattern in the illness perception was also found in the cancer patient group. Specifically, they found that when the difference between cancer patients' and their caregivers' illness perception was greater at the time of diagnosis, patients' HRQoL was negatively affected in the following six months (Richardson et al., 2016). The explanations that the more dissimilar illness perceptions might be related to the disconnected communication between the patient and the caregiver, and this may lead to conflicts, inability to establish close relationships, or to feel lonelier, can be considered as the basis of these studies (Richardson et al., 2016). Therefore, the finding of the current study on illness perception seems to be opposite to these studies. An explanation for this might be whether the illness perception congruence is positive or negative. A similar or congruent illness perception can occur in two situations: both the patient and the caregiver either have the similar low illness perception scores or have the similar high illness perception scores. The relationship between these two situations (similarity in low scores vs. similarity in high scores) with other cancer-related outcomes is not necessarily the same. In fact, the reverse results were reported in some studies examining other disease groups. For example, when illness perception congruence between patients with Addison's disease and their partners were lower, the patients reported higher scores on psychological adjustment, physical and social functioning (Heijmans et al., 1999). It is worth noting that the dissimilarity in illness representation found in the study manifested itself as the partner's worse illness perception and the patients' having a better illness perception (Heijmans et al., 1999). Researchers have

identified the partner's attitude of taking the disease more seriously than the patient as problem maximization, exaggeration, or overprotective behavior (Coyne et al., 1988; Thompson & Pitts, 1992), and concluded that it would generally lead to negative consequences for patients (Heijmans et al., 1999). Researchers also concluded that if both patients and their caregivers have similar negative illness perception, this could be even related to poorer well-beings (Karademas et al., 2009). That means that if both party have worse illness perception, even if their illness perception are similar or congruent in this case, this situation might again lead to negative psychological well-beings. Therefore, for the current study, the assocaiton of more similar illness perception with higher anxiety might be resulted from both parties holding similar negative illness perception. In fact, pearson correlation analyses revealed that similarity in *identity*, *concern* and *emotional representation* subscales of illness perception congruence is significantly associated with higher anxiety of cancer patients (see *Table 5*). Moreover, descriptive statistics analyses extracted that both the patients and caregivers gave scores of greater than 5 to aforementioned subscales (see *Table 4*). Specifically, the caregivers' scores seem to be higher than the patients' ones, which might reflect that problem-maximization patterns in caregivers as described above. However, determining the direction of illness perception; that is, which party's perception inclines to maximize or minimize the disorder was beyond the scope of the current paper. It is recommended for future studies to probe this issue with more sophisticated statistical methods. Additionally, among aforementioned subscales including identity, concern, and emotional representation, concern is the one that is mostly connected to worries an individual has about the disease. In the original study, predictive validity of BIPQ was calculated with Cardiac Anxiety Questionnaire, and it was found that of all the subscales, only consequence, identity, concern and emotional representation significantly predicted anxiety levels (Broadbent et al., 2006). Therefore, positive relationship of these three subscales with higher anxiety might result from their own specific features already related to anxiety.

The predictor effect of illness perception congruence was not found for the patients' depression, physical and mental HRQoL and for the caregivers' anxiety, depression, physical and mental HRQoL. Studies in this topic were mixed. Similar findings were attained with different patient groups. For example, illness perception congruence related to coherence and consequence of rheumatoid arthritis did not significantly predict patients'

psychological adjustment (Sterba et al., 2008). Moreover, similarities in illness perception related to measuring bowel and sexual function and bother for prostate cancer patients were not found to be related to physical HRQoL (Merz et al., 2011).

With respect to causal attribution of cancer, it was seen that the majority of the participants had ideas about what caused their disease. Approximately 88% of the patients and 76% of the caregivers had an opinion on this issue. For cancer groups, the most common causes attributed to cancer are psychological factors at first place, secondly lifestyle followed by existential/natural causes. Given the literature which generally has focused on one specific type of cancer, the most common types of cancer seen in the current study were respectively as breast (n = 32), lung (n = 13), colorectal (n = 10), and ovarian cancers (n = 10). With respect to the literature, current paper's finding that would be similar in one respect were also found in different cancer groups. For example, breast cancer patients mostly attributed the cause of their disease to stress, genetics and lifestyle (Corter et al., 2013), while in the colorectal cancer group, lifestyle and heredity are among the most attributed causes of cancer (Mols et al., 2012). Both studies highlighted psychological, natural and lifestyle factors. For lung cancer, smoking and bad luck were the most considered causes of cancer (Hoogerwerf et al., 2012). As can be noticed, smoking is under lifestyle category. Gynecological cancer patients tended to see genetic, heredity and stress as the causes of the disease (Costanzo et al., 2005). These factors are corresponding to the natural and psychological factors Another study had founded that the response rate of breast cancer patients to psychological factors such as psyhcological, psychiatric, stress or personality was around 48% (Peuker et al., 2016). Regarding the fact that the vast majority of participants were breast cancer in the current study, seeing psychological factors including stress as being the most associated cause of cancer sounds reasonable. Moreover, findings of other aforementioned studies were also consistent. That is, factors seen to be related to cancer by lung, gynecological and colorectal cancer patients are actually about lifestyle, psychological and natural causes. Similarly, stress was seen among the most attributed cause of the disease among Turkish cancer patients (Armay et al., 2020).

Further classification of attributional factors leading to cancer resulted in those which are in control of the individual. (e.g., lifestyle and working conditions) and those which are out control of the individual. Out of the respondent participants on causal items of BIPQ,

around 76% respondent patients and caregivers attributed the cause of cancer to uncontrollable factors such as psychological factors while around 24% of respondent patients and caregivers attributed it to controllable factors such as lifestyle. Researchers emphasized that uncontrollable factors like psychological ones would weaken psychological adjustment and increase distress of patients (Peuker et al., 2016). In parallel with that notion, anxiety levels of those cancer patients who thought uncontrollable factors lead to their disease were significantly higher than those claiming controllable factors. Moreover, older cancer patients (mean age is 58) were more likely to consider controllable factors as the cause than younger cancer patients (mean age is 41). The same results were also obtained in another study where a larger sample of 606 cancer patients with 10 different types. The researchers found that those who were older than 55 tended to make more controllable attributions to cancer than those younger than 55 (Ferruci et al., 2011).

The current paper has some limitations and strengths that are worth mentioning for recommendations for future studies and clinical implications. First of all, the sample size is not big enough for getting much more variance observed in the dependent variables. It also comprises of patients with several cancer types rather than one specific type, which in turn, preventing it from getting detailed insights on specific cancer types. Therefore, examining illness perception congruence with larger sample sizes in cancer groups are recommended for future investigations. It will be worth examining not just the congruence but also direction of similarity in the illness perception of carers and patients. Illness perception congruence has been generally achieved by substracting caregivers' scores from patients' scores; however, this method might not reflect differences in the perception of partners precisely (Karademas et al., 2009). Therefore, more sophisticated way of measuring illness perception of carers would produce more readable outcomes. Some researchers attempted to devise new measurement tools based on revised-Illness Perception Questionnaire (IPO-R) for this purpose. For example, for husbands of women with rhematoid arthritis (Sterba & DeWelliss, 2009), for partners of those with asthma (Heyduck-Weides et al., 2019), and for healthy people (Figueiras & Alves, 2007) have been developed. Similar developments in measuring caregivers' illness perception, especially as being based on the Brief Illness Perception Questionnaire due to its short number of items, are suggested in cancer field, as well. Additionally, Open-ended question of Brief Illness Perception Questionnaire about notion of cancer causes has opened the door of much detailed investigations, but qualitative

research is required for that. However, findings on the important role of negative illness perception on leading to increased anxiety and depression as well decreased quality of life cancer patients was also emphasized in the current paper. Moreover, the study can be considered among a few studies investigating illness perception in a familial conxtext in Turkey. The perception of a cancer patient may be one of several factors that increase one's anxiety and depression, but there may also be other factors that affect the quality-of-life process. Measurements can also be taken on variables such as social support or hope that may be associated with quality of life. In the literature, psychological intervention based upon Cognitive Behavioral Therapy (CBT) resulted in better quality of life and less distress among cancers by changing negative illness perceptions into better illness perceptions (Stagl et al., 2015). As mentioned previously, illness representations are ideas or beliefs patients hold toward their diseases. In fact, cognitive behavior therapies target these ideas or beliefs, namely schemas, and if they are distorted like an unrealistic illness perception in case of the current paper, tries to fix them (Beck, 2021). Hence, similar experimental studies and psychological interventions aiming to mitigate unhealthy illness perception held by patients as well by caregivers are strongly recommended in this regard.

In conclusion, as previous studies have pointed out that a negative illness perception toward cancer disease was found to be associated with higher anxiety, depression and worse health-related quality of life among cancer patients. Moreover, as being contradictory with majority of previous study, illness perception congruence between patients and their caregivers have association with increased anxiety in cancer patients. However, when much closer examination was considered on the way each group perceive the illness, it is noticed that both cancer patients and their caregivers perceive the illness in a negative way. Therefore, this leads to more anxiety in cancer patients. Among the causal attributions of cancer, psychological factors followed by factors-related to lifestyle are the most attributed causes of cancer both by patients and their caregivers. Moreover, older cancer patients have more tendency to ascribe controllable causes to cancer than younger cancer paetients. Additionally, those who attributes uncontrollable factors to cancer demonstrates higher anxiety levels than those who think controllable factors lead to cancer.

REFERENCES

Armay Z, Özkan M, Kocaman N, Özkan S. (2007). Hastalık algısının ölçeğinin kanser hastalarında türkçe geçerlik ve güvenirlik çalışması. *Klinik Psikiyatri, 10*,192-200

Aydemir, Ö., Güvenir, T., Küey, L., & Kültür, S. (1997). Hastane Anksiyete ve Depresyon Ölçeği Türkçe Formunun Geçerlilik ve Güvenilirlik Çalışması. *Türk Psikiyatri Dergisi, 8(4),* 280-287

Baker, F., Haffer, S. C., & Denniston, M. (2003). Health-related quality of life of cancer and noncancer patients in Medicare managed care. *Cancer, 97*(3), 674–681. https://doi.org/10.1002/cncr.11085

Barsevick, A. M. (2007). The elusive concept of the symptom cluster. *Oncology Nursing Forum*, *34*(5), 971–980. https://doi.org/10.1188/07.onf.971-980

Bassi, M., Falautano, M., Cilia, S., Goretti, B., Grobberio, M., Pattini, M., Pietrolongo, E., Viterbo, R. G., Amato, M. P., Benin, M., Lugaresi, A., Minacapelli, E., Montanari, E., Patti, F., Trojano, M., & Delle Fave, A. (2016). Illness Perception and Well-Being Among Persons with Multiple Sclerosis and Their Caregivers. *Journal of clinical psychology in medical settings*, *23*(1), 33–52. https://doi.org/10.1007/s10880-015-9425-8

Beck, J. S. (2021). *Cognitive behavior therapy: Basics and beyond*. The Guilford Press.

Bevans, M., & Sternberg, E. M. (2012). Caregiving burden, stress, and health effects among family caregivers of adult cancer patients. *JAMA*, *307*(4). https://doi.org/10.1001/jama.2012.29

Bonsaksen, T., Lerdal, A., & Fagermoen, M. S. (2013). Trajectories of illness perceptions in persons with chronic illness: An explorative longitudinal study. *Journal of Health Psychology*, *20*(7), 942–953. https://doi.org/10.1177/1359105313504235

Broadbent, E., Petrie, K. J., Main, J., & Weinman, J. (2006). The brief illness perception questionnaire. *Journal of Psychosomatic Research*, *60*(6), 631–637. https://doi.org/10.1016/j.jpsychores.2005.10.020

Bronner, M. B., Nguyen, M. H., Smets, E. M. A., van de Ven, A. W. H., & van Weert, J. C. M. (2017). Anxiety during cancer diagnosis: Examining the influence of monitoring coping style and treatment plan. *Psycho-Oncology*, *27*(2), 661–667. https://doi.org/10.1002/pon.4560

Burnette, D., Duci, V., & Dhembo, E. (2016). Psychological distress, social support, and quality of life among cancer caregivers in Albania. *Psycho-Oncology*, *26*(6), 779–786. https://doi.org/10.1002/pon.4081

Cancer Today. Global Cancer Observatory. (n.d.). Retrieved February 18, 2022, from https://gco.iarc.fr/today/online-analysis-pie?v=2020&mode=cancer&mode_population=continents&population=900&populations=900&key=total&sex=0&cancer=39&type=0&statistic=5&prevalence=0&population_group=0&ages_group%5B%5D=17&nb_items=7&group_cancer=1&include_nmsc=0&include_nmsc_other=1&half_pie=0&donut=0

Chen, Q., Terhorst, L., Lowery-Allison, A., Cheng, H., Tsung, A., Layshock, M., Buysse, D. J., Geller, D. A., Marsh, J. W., Wang, Y., & Steel, J. L. (2019). Sleep problems in advanced cancer patients and their caregivers: Who is disturbing whom? *Journal of Behavioral Medicine*, *43*(4), 614–622. https://doi.org/10.1007/s10865-019-00088-3

Chittem, M., Norman, P., & Harris, P. R. (2015). Illness representations and psychological distress in Indian patients with cancer: does being aware of one's cancer diagnosis make a difference?. *Psycho-oncology*, *24*(12), 1694–1700. https://doi.org/10.1002/pon.3837

Çinkir, H. Y. & Elboğa, G. (2020). The Illness Perception and its Association with Distress in Cancer Patients Receiving Chemotherapy. *Turkish Journal of Oncology*, *35(1)*, 1-7 https://doi.org/10.5505/tjo.2019.2024

Corter, A. L., Findlay, M., Broom, R., Porter, D., & Petrie, K. J. (2013). Beliefs about medicine and illness are associated with fear of cancer recurrence in women taking adjuvant endocrine therapy for breast cancer. British Journal of Health Psychology, 18, 168–181. doi:10.1111/ bjhp.12003

Costanzo, E. S., Lutgendorf, S. K., Bradley, S. L., Rose, S. L., & Anderson, B. (2005). Cancer attributions, distress, and health practices among gynecologic cancer survivors. *Psychosomatic medicine*, *67*(6), 972–980. https://doi.org/10.1097/01.psy.0000188402.95398.c0

Coşar, Z. B. (2015). *Cerrahi operasyon geçirmiş meme kanseri hastalarında travma sonrası gelişimi yordayan faktörlerin incelenmesi* (Order No. 28742944). Available from ProQuest Dissertations & Theses Global. (2606899447). Retrieved from https://www.proquest.com/dissertations-theses/cerrahi-operasyon-geçirmiş-meme-kanseri/docview/2606899447/se-2?accountid=13014

Coyne, J.C., Wortman. C.B. and Lehman, D.R. (1988). The other side of support. Emotional involvement and miscarried helping. In: B.H. Gottlieb (Ed.), Marshalling Social Support: Formats. Pmesses and Efecrs (pp. 305-330). Newbury Pa&: Sage Publications.

Cunningham, L. L., Andrykowski, M. A., Wilson, J. F., McGrath, P. C., Sloan, D. A., & Kenady, D. E. (1998). Physical symptoms, distress, and breast cancer risk perceptions in women with benign breast problems. *Health Psychology*, *17*(4), 371–375. https://doi.org/10.1037/0278-6133.17.4.371

Dempster, M., McCorry, N. K., Brennan, E., Donnelly, M., Murray, L. J., & Johnston, B. T. (2011). Do changes in illness perceptions predict changes in psychological distress among oesophageal cancer survivors? *Journal of Health Psychology*, *16*(3), 500–509. https://doi.org/10.1177/1359105310386633

Dunn, J., Ng, S. K., Holland, J., Aitken, J., Youl, P., Baade, P. D., & Chambers, S. K. (2012). Trajectories of psychological distress after colorectal cancer. *Psycho-Oncology*, *22*(8), 1759–1765. https://doi.org/10.1002/pon.3210

Drapeau, A., Marchand, A., & Beaulieu-Prévost, D. (2012). Epidemiology of Psychological Distress.

Ellis, D. A., King, P., Naar-King, S., Lam, P., Cunningham, P. B., & Secord, E. (2014). Effects of family treatment on parenting beliefs among caregivers of youth with

poorly controlled asthma. *Journal of Developmental & Behavioral Pediatrics*, *35*(8), 486–493. https://doi.org/10.1097/dbp.0000000000000093

Ellis, K. R., Oh, S., Hecht, H. K., & Northouse, L. (2021). Symptom distress and quality of life among Black Americans with cancer and their family caregivers. *Psycho-Oncology*, *30*(8), 1356–1365. https://doi.org/10.1002/pon.5691

Erin L. Merz , Vanessa L. Malcarne , Celine M. Ko , Melody Sadler , Lisa Kwack , James W. Varni & Georgia Robins Sadler (2011) Dyadic concordance among prostate cancer patients and their partners and health-related quality of life: Does it matter?, Psychology & Health, 26:6, 651-666, DOI: 10.1080/08870441003721251

Fan, S. Y., Eiser, C., Ho, M. C., & Lin, C. Y. (2013). Health-related quality of life in patients with hepatocellular carcinoma: the mediation effects of illness perceptions and coping. *Psycho-oncology*, *22*(6), 1353–1360. https://doi.org/10.1002/pon.3146

Fenn, K. M., Evans, S. B., McCorkle, R., DiGiovanna, M. P., Pusztai, L., Sanft, T., Hofstatter, E. W., Killelea, B. K., Knobf, M. T., Lannin, D. R., Abu-Khalaf, M., Horowitz, N. R., & Chagpar, A. B. (2014). Impact of financial burden of cancer on survivors' quality of life. *Journal of Oncology Practice*, *10*(5), 332–338. https://doi.org/10.1200/jop.2013.001322

Ferrucci, L. M., Cartmel, B., Turkman, Y. E., Murphy, M. E., Smith, T., Stein, K. D., & McCorkle, R. (2011). Causal attribution among cancer survivors of the 10 most common cancers. *Journal of psychosocial oncology*, *29*(2), 121–140. https://doi.org/10.1080/07347332.2010.548445

Figueiras, M. J., & Alves, N. C. (2007). Lay perceptions of serious illnesses: An adapted version of the Revised Illness Perception Questionnaire (IPQ-R) for Healthy People. *Psychology & Health*, *22*(2), 143–158. https://doi.org/10.1080/14768320600774462

Goldstein, N. E., Concato, J., Fried, T. R., Kasl, S. V., Johnson-Hurzeler, R., & Bradley, E. H. (2004). Factors associated with caregiver burden among caregivers of terminally ill patients with cancer. *Journal of Palliative Care*, *20*(1), 38–43. https://doi.org/10.1177/082585970402000108

Grassi, L., Berardi, M. A., Ruffilli, F., Meggiolaro, E., Andritsch, E., Sirgo, A., Caruso, R., Juan Linares, E., Bellé, M., Massarenti, S., & Nanni, M. G. (2015). Role of psychosocial variables on chemotherapy-induced nausea and vomiting and health-related quality of life among cancer patients: A European study. *Psychotherapy and Psychosomatics, 84*(6), 339–347. https://doi.org/10.1159/000431256

Gresenz, C. R., Sturm, R., & Tang, L. (2001). Income and Mental Health: Unraveling Community and Individual Level Relationships. *The journal of mental health policy and economics, 4*(4), 197–203.

Hacialioglu, N., Özer, N., Yilmaz karabulutlu, E., Erdem, N., & Erci, B. (2010). The quality of life of family caregivers of cancer patients in the east of Turkey. *European Journal of Oncology Nursing, 14*(3), 211–217. https://doi.org/10.1016/j.ejon.2010.01.017

Hajdu, S. I., Vadmal, M., & Tang, P. (2015). A note from history: Landmarks in history of cancer, part 7. *Cancer*, *121*(15), 2480–2513. https://doi.org/10.1002/cncr.29365

Hays RD, Reeve BB. Measurement and modeling of health-related quality of life. In: Killewo J, Heggenhougen HK, Quah SR, editors. Epidemiology and demography in public health. San Diego: Academic Press; 2010. p. 195–205

Heijmans, M., Ridder, D. de, & Bensing, J. (1999). Dissimilarity in patients' and spouses' representations of chronic illness: Exploration of relations to patient adaptation. *Psychology & Health, 14*(3), 451–466. https://doi.org/10.1080/08870449908407340

Heyduck-Weides, K., Bengel, J., Farin, E., & Glattacker, M. (2019). Measuring illness perceptions in the family context: Psychometric properties of the IPQ-R adapted for adolescent–caregiver Dyads. *Psychology & Health*, *34*(1), 1–23. https://doi.org/10.1080/08870446.2018.1494830

Hinz, A., Herzberg, P. Y., Lordick, F., Weis, J., Faller, H., Brähler, E., Härter, M., Wegscheider, K., Geue, K., & Mehnert, A. (2019). Age and gender differences in anxiety and depression in cancer patients compared with the general population. *European Journal of Cancer Care*, *28*(5). https://doi.org/10.1111/ecc.13129

Hoogerwerf, M. A., Ninaber, M. K., Willems, L. N. A., & Kaptein, A. A. (2012). “Feelings are facts”: Illness perceptions in patients with lung cancer. Respiratory Medicine, 106, 1170–1176. doi:10.1016/j.rmed.2012.04.006

Hopman, P., & Rijken, M. (2014). Illness perceptions of cancer patients: Relationships with illness characteristics and coping. *Psycho-Oncology*, *24*(1), 11–18. https://doi.org/10.1002/pon.3591

Iwatani, T., Matsuda, A., Kawabata, H., Miura, D., & Matsushima, E. (2012). Predictive factors for psychological distress related to diagnosis of breast cancer. *Psycho-Oncology*, *22*(3), 523–529. https://doi.org/10.1002/pon.3023

JoÃo Figueiras, M., & Weinman, J. (2003). Do similar patient and spouse perceptions of myocardial infarction predict recovery? *Psychology & Health*, *18*(2), 201–216. https://doi.org/10.1080/0887044021000057266

Karademas, E. C., Zarogiannos, A., & Karamvakalis, N. (2010). Cardiac patient–spouse dissimilarities in illness perception: Associations with patient self-rated health and coping strategies. *Psychology & Health*, *25*(4), 451–463. https://doi.org/10.1080/08870440802652089

Karatas, T., Özen, S., & Kutlutürkan, S. (2017). Factor structure and psychometric properties of the brief illness perception questionnaire in Turkish cancer patients. *Asia-Pacific Journal of Oncology Nursing*, *4*(1), 77–83. https://doi.org/10.4103/2347-5625.199080

Karimi, M., & Brazier, J. (2016). Health, health-related quality of life, and quality of life: What is the difference? *PharmacoEconomics*, *34*(7), 645–649. https://doi.org/10.1007/s40273-016-0389-9

Kelley, H. H., & Michela, J. L. (1980). Attribution theory and research. Annual Review of Psychology,31, 457–501

Keskindağ, B., Farrington, K., Oygar, D. D., Mertan, B., Hucker, A., & Sharma, S. (2020). Illness perceptions of Turkish Cypriot patients receiving haemodialysis: A qualitative study. *Journal of Renal Care*, *47*(2), 113–122. https://doi.org/10.1111/jorc.12351

Kim SH, Lee R, Lee KS. Symptom clusters in patients with breast cancer. Korean J Adult Nurs. 2009;21(6):705–717

Kline, R. B. (2015). *Principles and practice of structural equation modeling.* The Guilford Press.

Kus, T., Aktas, G., Ekici, H., Elboga, G., & Djamgoz, S. (2017). Illness perception is a strong parameter on anxiety and depression scores in early-stage breast cancer survivors: A single-center cross-sectional study of Turkish patients. *Supportive Care in Cancer*, *25*(11), 3347–3355. https://doi.org/10.1007/s00520-017-3753-1

Lawrence, D. P. (2004). Evidence reports on the occurrence, assessment, and treatment of fatigue in cancer patients. *Journal of the National Cancer Institute Monographs*, *2004*(32), 40–50. https://doi.org/10.1093/jncimonographs/lgh027

Leventhal, H., Phillips, L. A., & Burns, E. (2016). The common-sense model of self-regulation (CSM): A Dynamic Framework for understanding illness self-management. *Journal of Behavioral Medicine*, *39*(6), 935–946. https://doi.org/10.1007/s10865-016-9782-2

Lukoševičiūtė, J., & Šmigelskas, K. (2019). Illness perception and its changes during six months after cardiac rehabilitation. *European Journal of Health Psychology*, *26*(3), 90–100. https://doi.org/10.1027/2512-8442/a000034

Lukoševičiūtė, J., & Šmigelskas, K. (2020). Causal item of Brief Illness Perception Questionnaire (BIPQ) scale: The main categories. *Health psychology research*, *8*(1), 8485. https://doi.org/10.4081/hpr.2020.8485

Marinho, M., Marques, J., & Bragança, M. (2017). Depression among cancer patients–A reality where therapeutic nihilism cannot be accepted. *European Psychiatry*, *41*(S1). https://doi.org/10.1016/j.eurpsy.2017.01.2254

Mazzotti, E., Sebastiani, C., Antonini Cappellini, G. C., & Marchetti, P. (2012). Predictors of mood disorders in cancer patients' caregivers. *Supportive Care in Cancer*, *21*(2), 643–647. https://doi.org/10.1007/s00520-012-1663-9

Meier, F., Cairo Notari, S., Bodenmann, G., Revenson, T. A., & Favez, N. (2019). We are in this together — aren't we? congruence of common dyadic coping and psychological distress of couples facing breast cancer. *Psycho-Oncology*, *28*(12), 2374–2381. https://doi.org/10.1002/pon.5238

Mirowsky, J., & Ross, C. E. (2003). *Education, social status, and health.* Aldine de Gruyter.

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of cardiac anaesthesia*, *22*(1), 67–72. https://doi.org/10.4103/aca.ACA_157_18f

Mols, F., Denollet, J., Kaptein, A. A., Reemst, P. H., & Thong, M. S. (2012). The association between Type D personality and illness perceptions in colorectal cancer survivors: A study from the population-based PROFILES registry. Journal of Psychosomatic Research, 73, 232–239. doi:10.1016/j.jpsychores.2012.07.004

Moye, J., Jahn, A., Norris-Bell, R., Herman, L. I., Gosian, J., & Naik, A. D. (2018). Making meaning of cancer: A qualitative analysis of oral-digestive cancer survivors' reflections. *Journal of Health Psychology*, *25*(9), 1222–1235. https://doi.org/10.1177/1359105317753717

Naser, A. Y., Hameed, A. N., Mustafa, N., Alwafi, H., Dahmash, E. Z., Alyami, H. S., & Khalil, H. (2021). Depression and anxiety in patients with cancer: A cross-sectional study. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.585534

Ogden, L. E. (2015). Cross-disciplinary approaches in cancer research. *BioScience*, *65*(8), 750–756. https://doi.org/10.1093/biosci/biv091

Oh, P.-J., & Cho, J.-R. (2018). Changes in fatigue, psychological distress, and quality of life after chemotherapy in women with breast cancer. *Cancer Nursing*, *43*(1). https://doi.org/10.1097/ncc.0000000000000689

Papadopoulos, A., Vrettos, I., Kamposioras, K., Anagnostopoulos, F., Giannopoulos, G., Pectasides, D., Niakas, D., & Economopoulos, T. (2011). Impact of cancer patients' disease awareness on their family members' health-related quality of life: A cross-sectional survey. *Psycho-Oncology*, *20*(3), 294–301. https://doi.org/10.1002/pon.1731

Park, S. K., Min, Y. H., & Lee, S. B. (2021). Longitudinal trends in illness perception and depression during adjuvant breast cancer endocrine therapy: A prospective observational study. *Healthcare*, *9*(9), 1223. https://doi.org/10.3390/healthcare9091223

Peuker, A. C., Armiliato, M. J., de Souza, L. V., & de Castro, E. K. (2016). Causal attribution among women with breast cancer. *Psicologia: Reflexão e Crítica*, *29*(1). https://doi.org/10.1186/s41155-016-0007-y

Quintero, M., & LeBoulluec, A. (2018). Missing data imputation for Ordinal Data. *International Journal of Computer Applications*, *181*(5), 10–16. https://doi.org/10.5120/ijca2018917522

Renna, M. E., Shrout, M. R., Madison, A. A., Alfano, C. M., Povoski, S. P., Lipari, A. M., Carson, W. E., Malarkey, W. B., & Kiecolt-Glaser, J. K. (2022). Depression and anxiety in colorectal cancer patients: Ties to pain, fatigue, and inflammation. *Psycho-Oncology*, *31*(9), 1536–1544. https://doi.org/10.1002/pon.5986

Richardson, A.E., Morton, R.P., & Broadbent, E. (2015). Caregivers' Illness Perceptions Contribute to Quality of Life in Head and Neck Cancer Patients at Diagnosis. *Journal of Psychosocial Oncology, 33*, 414 - 432.

Richardson, A. E., Morton, R. P., & Broadbent, E. A. (2016). Changes over time in head and neck cancer patients' and caregivers' illness perceptions and relationships with

quality of life. *Psychology & Health*, *31*(10), 1203–1219. https://doi.org/10.1080/08870446.2016.1203686

Riedl, D., & Schuessler, G. (2021). Prevalence of depression and cancer – A systematic review. *Zeitschrift Für Psychosomatische Medizin Und Psychotherapie*. https://doi.org/10.13109/zptm.2021.67.oa11

Romero, C., Lindsay, J. E., Dalton, W. T., Nelson, D. V., & Friedman, L. C. (2008). Husbands' perceptions of wives' adjustment to breast cancer: The impact on wives' mood. *Psycho-Oncology*, *17*(3), 237–243. https://doi.org/10.1002/pon.1224

Saritas, S. C., & Özdemir, A. (2018). Identification of the correlation between illness perception and anxiety level in cancer patients. *Perspectives in Psychiatric Care*, *54*(3), 380–385. https://doi.org/10.1111/ppc.12265

Shankaran, V., & Ramsey, S. (2015). Addressing the Financial Burden of Cancer Treatment: From Copay to Can't Pay. *JAMA oncology*, *1*(3), 273–274. https://doi.org/10.1001/jamaoncol.2015.0423

Shaughnessy, J. J., Zechmeister, E. B., & Zechmeister, J. S. (2015). *Research methods in psychology*. McGraw-Hill Education.

Sheldon, E., Simmonds-Buckley, M., Bone, C., Mascarenhas, T., Chan, N., Wincott, M., Gleeson, H., Sow, K., Hind, D., & Barkham, M. (2021). Prevalence and risk factors for mental health problems in university undergraduate students: A systematic review with meta-analysis. *Journal of affective disorders*, *287*, 282–292. https://doi.org/10.1016/j.jad.2021.03.054

Silva, M., Loureiro, A., & Cardoso, G. (2016). Social determinants of mental health: A review of the evidence. *The European Journal of Psychiatry*, *30*(4), 259–292.

Singh, H., Singh, R. P. B., Singh, C. J., & Kaur, K. T. (2015). Screening of psychological distress in cancer patients during chemotherapy: A cross-sectional study. *Indian Journal of Palliative Care*, *21*(3), 305. https://doi.org/10.4103/0973-1075.164887

Sklenarova, H., Krümpelmann, A., Haun, M. W., Friederich, H.-C., Huber, J., Thomas, M., Winkler, E. C., Herzog, W., & Hartmann, M. (2015). When do we need to care about the caregiver? supportive care needs, anxiety, and depression among informal caregivers of patients with cancer and cancer survivors. *Cancer*, *121*(9), 1513–1519. https://doi.org/10.1002/cncr.29223

SOYSAL GÜNDÜZ, Ö., MUTLU, S., ASLAN BASLI, A., GÜL, C., AKGÜL, Ö., YILMAZ, E., & AYDEMİR, Ö. (2021). Validation of the Turkish form of Short Form-12 Health Survey Version 2 (SF-12V2). *Archives of Rheumatology*, *36*(2), 280–286. https://doi.org/10.46497/archrheumatol.2021.8458

Soylu, C., & Kütük, B. (2021). Reliability and validity of the Turkish version of SF-12 health survey. *Turkish Journal of Psychiatry*. https://doi.org/10.5080/u25700

Staal, D. P., Vlooswijk, C., Mols, F., Lidington, E., van der Graaf, W. T., Bijlsma, R. M., & Husson, O. (2020). Diagnosed with a common cancer at an unusual age: Causal attributions of survivors of adolescent and Young Adult Colorectal Cancer. *Supportive Care in Cancer*, *29*(1), 409–416. https://doi.org/10.1007/s00520-020-05502-0

Stagl, J. M., Bouchard, L. C., Lechner, S. C., Blomberg, B. B., Gudenkauf, L. M., Jutagir, D. R., Glück, S., Derhagopian, R. P., Carver, C. S., & Antoni, M. H. (2015). Long-term psychological benefits of cognitive-behavioral stress management for women with breast cancer: 11-year follow-up of a randomized controlled trial. *Cancer*, *121*(11), 1873–1881. https://doi.org/10.1002/cncr.29076

Sterba, K. R., & DeVellis, R. F. (2009). Developing a spouse version of the Illness Perception Questionnaire-Revised (IPQ-R) for husbands of women with rheumatoid arthritis. *Psychology & Health*, *24*(4), 473–487. https://doi.org/10.1080/08870440701867788

Sterba, K. R., DeVellis, R. F., Lewis, M. A., DeVellis, B. M., Jordan, J. M., & Baucom, D. H. (2008). Effect of couple illness perception congruence on psychological

adjustment in women with rheumatoid arthritis. *Health Psychology*, *27*(2), 221–229. https://doi.org/10.1037/0278-6133.27.2.221

Stern, A. F. (2014). The hospital anxiety and depression scale. *Occupational Medicine*, *64*(5), 393–394. https://doi.org/10.1093/occmed/kqu024

Struijs, S. Y., Jong, P. J. de, Jeronimus, B. F., Does, A. J. W. van der, Riese, H., & Spinhoven, P. (2021). Psychological risk factors and the course of depression and anxiety disorders: a review of 15 years of NESDA research. Journal Of Affective Disorders, 295, 1347-1359. doi:10.1016/j.jad.2021.08.086

Sudhakar, A. (2009). History of cancer, ancient and modern treatment methods. *Journal of Cancer Science & Therapy*, *01*(02), i-iv. https://doi.org/10.4172/1948-5956.100000e2

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics*. Pearson/Allyn & Bacon.

Thompson, S.C. and Pins, J.S. (1992). In sickness and in health: chronic illness, marriage. and spousal caregiving. In: S. Spacapan and S. Oskamp (Eds.). Helping and Being Helped: Naturalisric Studies (pp. 1 15-151). Newbury Park: Sage publications

van den Beuken-van Everdingen, M. H. J., Hochstenbach, L. M. J., Joosten, E. A. J., Tjan-Heijnen, V. C. G., & Janssen, D. J. A. (2016). Update on prevalence of pain in patients with cancer: Systematic Review and meta-analysis. *Journal of Pain and Symptom Management*, *51*(6). https://doi.org/10.1016/j.jpainsymman.2015.12.340

van der Kloot, W. A., Uchida, Y., Inoue, K., Kobayashi, K., Yamaoka, K., Nortier, H. W., & Kaptein, A. A. (2016). The effects of illness beliefs and chemotherapy impact on quality of life in Japanese and Dutch patients with breast or lung cancer. *Chinese clinical oncology*, *5*(1), 3. https://doi.org/10.3978/j.issn.2304-3865.2016.01.01

Vodermaier, A., Linden, W., MacKenzie, R., Greig, D., & Marshall, C. (2011). Disease stage predicts post-diagnosis anxiety and depression only in some types of

cancer. *British journal of cancer*, *105*(12), 1814–1817. https://doi.org/10.1038/bjc.2011.503

Ware, J. E., & Sherbourne, C. D. (1992). MOS 36-item short-form health survey. *PsycTESTS Dataset*. https://doi.org/10.1037/t06708-000

Ware, J. E., Snow, K. K., Kosinski, M., & Gandek, B. (1993). *Sf-36 Health Survey: Manual and interpretation guide*. Health Institute, New England Medical Center.

WARE, J. O. H. N. E., KOSINSKI, M. A. R. K., & KELLER, S. U. S. A. N. D. (1996). A 12-item short-form health survey. *Medical Care*, *34*(3), 220–233. https://doi.org/10.1097/00005650-199603000-00003

Weis, J. (2011). Cancer-related fatigue: Prevalence, assessment and treatment strategies. *Expert Review of Pharmacoeconomics & Outcomes Research*, *11*(4), 441–446. https://doi.org/10.1586/erp.11.44

World Health Organization. Constitution of the World Health Organization. 48th ed. Geneva: Basic documents of the World Health Organization; 2014

Üstündag, S., & Zencirci, A. D. (2015). Factors affecting the quality of life of cancer patients undergoing chemotherapy: A questionnaire study. *Asia-Pacific Journal of Oncology Nursing*, *2*(1), 17–25. https://doi.org/10.4103/2347-5625.152402

Zhang, N., Fielding, R., Soong, I., Chan, K. K. K., Tsang, J., Lee, V., Lee, C., Ng, A., Sze, W. K., Tin, P., & Lam, W. W. (2016). Illness perceptions among cancer survivors. *Supportive Care in Cancer*, *24*(3), 1295–1304. https://doi.org/10.1007/s00520-015-2914-3

Zhang, Z., Yang, L., Xie, D., Wang, Y., Bi, L., Zhang, T., Wang, D., Shi, H., Li, G., & Yu, D. (2019). Illness perceptions are a potential predictor of psychological distress in patients with non-muscle-invasive bladder cancer: A 12-month prospective, longitudinal, observational study. *Psychology, Health & Medicine*, *25*(8), 969–979. https://doi.org/10.1080/13548506.2019.1707242

Zigmond, A. S., & Snaith, R. P. (1983). Hospital Anxiety and Depression Scale. *PsycTESTS Dataset*. https://doi.org/10.1037/t03589-000

APPENDİX 1: PATIENT SOCİO-DEMOGRAPHİC INFORMATİON FORM

DEMOGRAFİK BİLGİ FORMU (H)

1. Yaşınız: _____
2. Cinsiyetiniz:

   Erkek ☐

   Kadın ☐

   Diğer ☐

3. Eğitim Durumunuz:

   Yok ☐

   İlkokul Mezunu ☐

   Ortaokul Mezunu ☐

   Lise Mezunu ☐

   Üniversite Mezunu ☐

4. Gelir Seviyeniz:

   Düşük ☐

   Orta ☐

   Yüksek ☐

5. Medeni Haliniz:

   Evli ☐ Bekar ☐

   - Eşiniz hayatta mı?

     Evet ☐

     Hayır ☐

6. Hastalığınızın tanısı ne zaman koyuldu? _____

7. Hastalığınızın ne olduğu hakkında bilginiz var mı?

APPENDIX 2 : CAREGIVER SOCİO-DEMOGRAPHİC INFORMATİON FORM

DEMOGRAFİK BİLGİ FORMU (BV)

1. Yaşınız: _____

2. Cinsiyetiniz:

   ☐Erkek

   ☐Kadın

   ☐Diğer

3. Eğitim Durumunuz:

   ☐Yok

   ☐İlkokul Mezunu

   ☐Ortaokul Mezunu

   ☐Lise Mezunu

   ☐Üniversite Mezunu

4. Gelir Seviyeniz:

   ☐Düşük

   ☐Orta

   ☐Yüksek

5. Medeni Haliniz:

   ☐Evli ☐Bekâr

   -Eşiniz hayatta mı?

   ☐Evet

   ☐Hayır

APPENDIX 3: INFORMED CONSENT FORM IN TURKISH

Gönüllü Katılım Formu

Bu araştırma, Başkent Üniversitesi Sosyal Bilimler Enstitüsü Klinik Psikoloji Anabilim Dalı'nda yürütülmekte olan araştırmacı Mehmet Salduz'un yüksek lisans tezi kapsamında ve Dr. Öğretim Üyesi Tuğba Uyar Suiçmez danışmanlığında yapılmaktadır. Bu çalışma, kişinin kendi hastalığı veya bakımvereni olduğu başka birinin hastalığı hakkındaki algısının psikolojik uyum ve yaşam kaliteleri üzerindeki etkisinin incelenmesini amaçlamaktadır.

Çalışmada kimlik belirleyici hiçbir bilgi istenmemektedir. Anket formları gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir. Anketler yaklaşık 15-20 dk. kadar bir zaman alacaktır. Elde edilecek bilgiler sadece bilimsel yayınlarda kullanılacaktır. Çalışmada genel olarak kişisel rahatsızlık verecek bir durum söz konusu değildir. Ancak, katılım sırasında herhangi bir nedenden ötürü kendinizi rahatsız hissederseniz çalışmayı yarıda bırakabilirsiniz. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz.

Çalışma hakkında daha fazla bilgi almak isterseniz araştırmacı Mehmet Salduz'a ulaşabilirsiniz.

Yukarıdaki bilgileri okudum ☐

Bu çalışmaya tamamen gönüllü olarak katılıyorum ☐

APPENDIX 4: HOSPITAL ANXİETY AND DEPRESSION SCALE (HADs)

Hasta Adı Soyadı: Tarih:

Bu anket sizi daha iyi anlamamıza yardımcı olacak. Her maddeyi okuyun ve son birkaç gününüzü göz önünde bulundurarak nasıl hissettiğinizi en iyi ifade eden yanıtın yanındaki kutuyu işaretleyin. Yanıtınız için çok düşünmeyin, aklınıza ilk gelen yanıt en doğrusu olacaktır.

1-) Kendimi gergin "patlayacak gibi" hissediyorum

☐ Çoğu zaman
☐ Birçok zaman
☐ Zaman zaman, bazen
☐ Hiçbir zaman

2-) Eskiden zevk aldığım şeylerden hala zevk alıyorum

☐ Aynı eskisi kadar
☐ Pek eskisi kadar değil
☐ Yalnızca biraz eskisi kadar
☐ Neredeyse hiç eskisi kadar değil

3-) Sanki kötü bir şey olacakmış gibi bir korkuya kapılıyorum

☐ Kesinlikle öyle ve oldukça da şiddetli
☐ Evet, ama çok da şiddetli değil
☐ Biraz, ama beni endişelendiriyor
☐ Hayır, hiç de öyle değil

4-) Gülebiliyorum ve olayların komik tarafını görebiliyorum

☐ Her zaman olduğu kadar
☐ Şimdi pek o kadar değil
☐ Şimdi kesinlikle o kadar değil
☐ Artık hiç değil

5-) Aklımdan endişe verici düşünceler geçiyor

☐ Çoğu zaman
☐ Birçok zaman
☐ Zaman zaman, ama çok sık değil
☐ Yalnızca bazen

6-) Kendimi neşeli hissediyorum

☐ Hiçbir zaman
☐ Sık değil
☐ Bazen
☐ Çoğu zaman

7-) Rahat rahat oturabiliyorum ve kendimi gevşek hissediyorum

☐ Kesinlikle
☐ Genellikle
☐ Sık değil
☐ Hiçbir zaman

8-) Kendimi sanki durgunlaşmış gibi hissediyorum

☐ Hemen hemen her zaman
☐ Çok sık
☐ Bazen
☐ Hiçbir zaman

9-) Sanki içim pır pır ediyormuş gibi bir tedirginliğe kapılıyorum

☐ Hiçbir zaman
☐ Bazen
☐ Oldukça sık
☐ Çok sık

10-) Dış görünüşüme ilgimi kaybettim

☐ Kesinlikle
☐ Gerektiği kadar özen göstermiyorum
☐ Pek o kadar özen göstermeyebilirim
☐ Her zamanki kadar özen gösteriyorum

11-) Kendimi sanki bir şey yapmak zorundaymışım gibi huzursuz hissediyorum

☐ Gerçekten de çok fazla
☐ Oldukça fazla
☐ Çok fazla değil
☐ Hiç değil

12-) Olacakları zevkle bekliyorum

☐ Her zaman olduğu kadar
☐ Her zamankinden biraz daha az
☐ Her zamankinden kesinlikle daha az
☐ Hemen hemen hiç

13-) Aniden panik duygusuna kapılıyorum

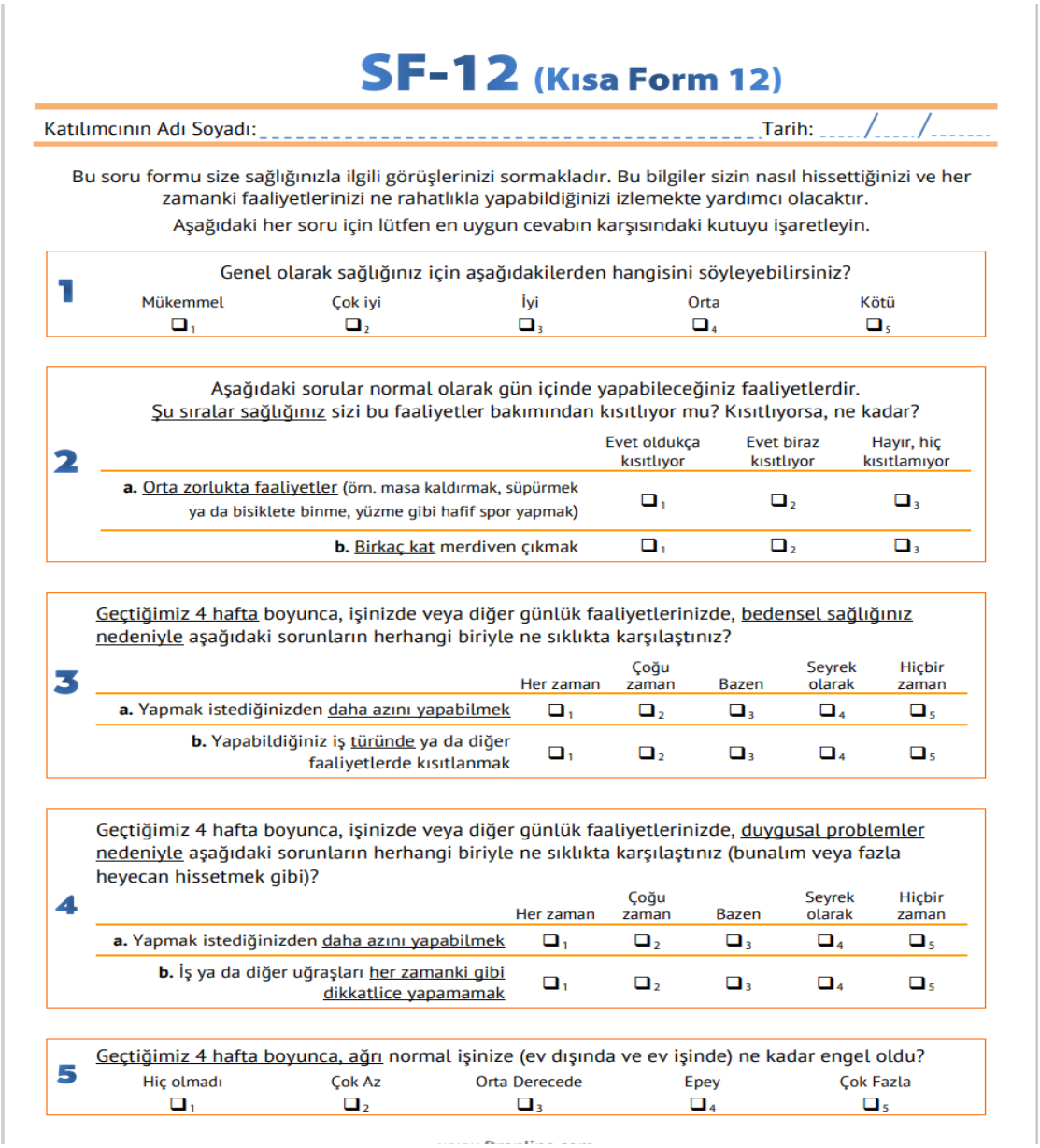
☐ Gerçekten de çok sık
☐ Oldukça sık
☐ Çok sık değil
☐ Hiçbir zaman

14-) İyi bir kitap, televizyon ya da radyo programından zevk alabiliyorum

☐ Sıklıkla
☐ Bazen
☐ Pek sık değil
☐ Çok seyrek

APPENDIX 5: SF-12V2 HEALTH SURVEY

Directions: This survey asks for your views about your health. This information will help you keep track of how you feel and how well you are able to do your usual activities. If you need to change an answer, completely erase the incorrect mark and fill in the correct circle. If you are unsure about how to answer a question, please give the best answer you can.



SF-12 (Kısa Form 12)

Katılımcının Adı Soyadı: _____ Tarih: ____/____/_____

Bu soru formu size sağlığınızla ilgili görüşlerinizi sormakladır. Bu bilgiler sizin nasıl hissettiğinizi ve her zamanki faaliyetlerinizi ne rahatlıkla yapabildiğinizi izlemekte yardımcı olacaktır.
Aşağıdaki her soru için lütfen en uygun cevabın karşısındaki kutuyu işaretleyin.

1 Genel olarak sağlığınız için aşağıdakilerden hangisini söyleyebilirsiniz?

Mükemmel	Çok iyi	İyi	Orta	Kötü
❑1	❑2	❑3	❑4	❑5

2 Aşağıdaki sorular normal olarak gün içinde yapabileceğiniz faaliyetlerdir.
Şu sıralar sağlığınız sizi bu faaliyetler bakımından kısıtlıyor mu? Kısıtlıyorsa, ne kadar?

	Evet oldukça kısıtlıyor	Evet biraz kısıtlıyor	Hayır, hiç kısıtlamıyor
a. Orta zorlukta faaliyetler (örn. masa kaldırmak, süpürmek ya da bisiklete binme, yüzme gibi hafif spor yapmak)	❑1	❑2	❑3
b. Birkaç kat merdiven çıkmak	❑1	❑2	❑3

3 Geçtiğimiz 4 hafta boyunca, işinizde veya diğer günlük faaliyetlerinizde, bedensel sağlığınız nedeniyle aşağıdaki sorunların herhangi biriyle ne sıklıkta karşılaştınız?

	Her zaman	Çoğu zaman	Bazen	Seyrek olarak	Hiçbir zaman
a. Yapmak istediğinizden daha azını yapabilmek	❑1	❑2	❑3	❑4	❑5
b. Yapabildiğiniz iş türünde ya da diğer faaliyetlerde kısıtlanmak	❑1	❑2	❑3	❑4	❑5

4 Geçtiğimiz 4 hafta boyunca, işinizde veya diğer günlük faaliyetlerinizde, duygusal problemler nedeniyle aşağıdaki sorunların herhangi biriyle ne sıklıkta karşılaştınız (bunalım veya fazla heyecan hissetmek gibi)?

	Her zaman	Çoğu zaman	Bazen	Seyrek olarak	Hiçbir zaman
a. Yapmak istediğinizden daha azını yapabilmek	❑1	❑2	❑3	❑4	❑5
b. İş ya da diğer uğraşları her zamanki gibi dikkatlice yapamamak	❑1	❑2	❑3	❑4	❑5

5 Geçtiğimiz 4 hafta boyunca, ağrı normal işinize (ev dışında ve ev işinde) ne kadar engel oldu?

Hiç olmadı	Çok Az	Orta Derecede	Epey	Çok Fazla
❑1	❑2	❑3	❑4	❑5

SF-12 (Kısa Form 12) (Sayfa 2)

6 Aşağıdaki sorular geçtiğimiz 4 hafta boyunca kendinizi nasıl hissettiğinizle ve işlerin sizin için nasıl gittiğiyle ilgilidir. Lütfen, her soru için nasıl hissettiğinize en yakın olan cevabı verin. Geçtiğimiz 4 hafta içinde ne sıklıkla...

	Her zaman	Çoğu zaman	Bazen	Seyrek olarak	Hiçbir zaman
a. Sakin ve huzurlu hissettiniz?	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5
b. Çok enerjiniz oldu?	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5
c. Çökkün ve kederli oldunuz?	❑ 1	❑ 2	❑ 3	❑ 4	❑ 5

7 Geçtiğimiz 4 hafta boyunca, bedensel sağlığınız ya da duygusal problemleriniz, ne sıklıkla sosyal faaliyetlerinize (arkadaş, akraba ziyareti gibi) engel oldu?

Her zaman	Çoğu zaman	Bazen	Seyrek olarak	Hiçbir zaman
❑ 1	❑ 2	❑ 3	❑ 4	❑ 5

Soysal Gündüz Ö, Mutlu S, Aslan Basli A, GÜL C, Akgül Ö, Yilmaz E, et al. Validation of the Turkish Form of Short Form-12 Health Survey Version 2 (SF-12v2). Archives of Rheumatology. 2021. doi: 10.46497/ArchRheumatol.2021.8458.

APPENDIX 6: BRIEF ILLNESS PERCEPTION QUESTIONNAIRE

Kısa Hastalık Algısı Anketi

Aşağıda yer alan soruların her biri için, size en uygun olan cevabı lütfen daire içine alınız:

1- Hastalığınız yaşamınızı ne kadar etkiliyor? (Sonuçlar)

0 1 2 3 4 5 6 7 8 9 10

Hiç etkilemiyor Çok fazla

2- Hastalığınız üzerinde ne kadar kontrolünüz olduğunu düşünüyorsunuz? (Kişisel Kontrol)

0 1 2 3 4 5 6 7 8 9 10

3- Tedavinizin hastalığınıza ne kadar iyi geleceğini düşünüyorsunuz? (Tedavi Kontrolü)

0 1 2 3 4 5 6 7 8 9 10

4- Hastalığınız ile ilgili ne kadar belirti yaşıyorsunuz? (Hastalık Kimliği)

0 1 2 3 4 5 6 7 8 9 10

Belirti hiç yok Belirti çok

5- Hastalığınız hakkında ne kadar endişe duyuyorsunuz? (Endişe)

0 1 2 3 4 5 6 7 8 9 10

Hiç endişe duymuyorum Çok fazla endişe

6- Hastalığınızı ne kadar iyi anladığınızı düşünüyorsunuz? (Hastalık Anlaşılabilirliği)

0 1 2 3 4 5 6 7 8 9 10

Hiç anlamıyorum Çok iyi

7- Hastalığınız sizi duygusal olarak ne kadar etkiliyor? (Örneğin; hastalığınız sizi üzüyor, korkutuyor, sinirlendiriyor ya da bunaltıyor mu?) (Duygu Durumu)

0 1 2 3 4 5 6 7 8 9 10

Duygusal olarak Duygusal olarak

8- Lütfen hastalığınıza neden olduğuna inandığınız en önemli üç faktörü sırasıyla yazınız.

Benim için en önemli nedenler:

1……
2……
3……

APPENDIX 7: THE BRIEF ILLNESS PERCEPTION QUESTIONNAIRE WITH REPHRASED ITEMS FOR CAREGIVERS

Aşağıda yer alan soruların her biri için, size en uygun olan cevabı lütfen daire içine alınız:

1- Aile üyenizin hastalığı, onun yaşamını ne kadar etkiliyor? (Sonuçlar)

0 1 2 3 4 5 6 7 8 9 10

Hiç etkilemiyor — Çok fazla etkiliyor

2- Aile üyenizin kendi hastalığı üzerinde ne kadar kontrolü olduğunu düşünüyorsunuz? (Kişisel Kontrol)

0 1 2 3 4 5 6 7 8 9 10

Hiç kontrolü yok — Çok fazla kontrolü var

3- Aile üyenizin hastalığına yönelik tedavinin onun hastalığına ne kadar iyi geleceğini düşünüyorsunuz? (Tedavi Kontrolü)

0 1 2 3 4 5 6 7 8 9 10

Hiç iyi gelmeyecek — Çok iyi gelecek

4- Aile üyeniz hastalığı ile ilgili ne kadar belirti yaşıyor? (Hastalık Kimliği)

0 1 2 3 4 5 6 7 8 9 10

Belirti hiç yok — Belirti çok fazla

5- Aile üyeniz hastalığı hakkında ne kadar endişe duyuyor? (Endişe)

0 1 2 3 4 5 6 7 8 9 10

Hiç endişe duymuyor — Çok fazla endişe duyuyor

6- Aile üyenizin kendi hastalığını ne kadar iyi anladığını düşünüyorsunuz? (Hastalık Anlaşılabilirliği)

0 1 2 3 4 5 6 7 8 9 10

Hiç anlamıyor — Çok iyi anlıyor

7- Aile üyenizin kendi hastalığı onu duygusal olarak ne kadar etkiliyor? (Örneğin; hastalığı onu üzüyor, korkutuyor, sinirlendiriyor ya da bunaltıyor mu?) (Duygu Durumu)

0 1 2 3 4 5 6 7 8 9 10

Duygusal olarak hiç etkilemiyor — Duygusal olarak çok fazla etkiliyor

8- Lütfen aile üyenizin kendi hastalığına neden olduğuna inandığı en önemli üç faktörü sırasıyla yazınız.

Aile üyem için en önemli nedenler:

1……
2……
3……

APPENDIX 8: ETHICAL PERMISSION

Evrak Tarih ve Sayısı: 09.08.2022-150117

1993
BAŞKENT ÜNİVERSİTESİ
Tıp ve Sağlık Bilimleri Araştırma Kurulu

Sayı : E-94603339-604.01.02-150117
Konu : Proje Onayı 09.08.2022

SOSYAL BİLİMLER ENSTİTÜSÜ MÜDÜRLÜĞÜNE

Psikoloji Anabilim Dalı / Klinik Psikoloji Tezli Yüksek Lisans Programı öğrencisi Mehmet Salduz tarafından yürütülecek olan KA22/321 nolu "Kanser hastaları ve bakım verenlerinin hastalık deneyimlerini algılamalarındaki uyumun psikolojik iyi oluşlarına etkisinin incelenmesi" başlıklıaraştırma projesi Kurulumuz ve Girişimsel Olmayan Klinik Araştırmalar Etik Kurulu'nun 03/08/2022 tarih ve 22/145 sayılı kararı ile uygun görülmüştür. Projenin başlama tarihi ile çalışmanın sunulduğu kongre ve yayımlandığı dergi konusunda Kurulumuza bilgi verilmesini rica ederim.

Not: Çalışma bildiri ve/veya makale haline geldiğinde "Gereç ve Yöntem" bölümüne aşağıdaki ifadelerden uygun olanının eklenmesi gerekmektedir.

— Bu çalışma Başkent Üniversitesi Tıp ve Sağlık Bilimleri Araştırma Kurulu ve Etik Kurulu tarafından onaylanmış (Proje no:…) ve Başkent Üniversitesi Araştırma Fonunca desteklenmiştir.

— This study was approved by Baskent University Institutional Review Board and Ethics Committee (Project no:…) and supported by Baskent University Research Fund.

Prof. Dr. Hakan ÖZKARDEŞ
Kurul Başkanı

1993
BAŞKENT ÜNİVERSİTESİ

GİRİŞİMSEL OLMAYAN KLİNİK ARAŞTIRMALAR ETİK KURULU KARARI		
PROJE NO	**KARAR SAYISI**	**KARAR TARİHİ**
KA22/321	22/145	03/08/2022

Sosyal Bilimler Enstitüsü / Psikoloji Anabilim Dalı / Klinik Psikoloji Tezli Yüksek Lisans Programı öğrencisi Mehmet Salduz tarafından yürütülecek olan KA22/321 nolu "Kanser hastaları ve bakım verenlerinin hastalık deneyimlerini algılamalarındaki uyumun psikolojik iyi oluşlarına etkisinin incelenmesi" başlıklı araştırma projesi Girişimsel Olmayan Klinik Araştırmalar Etik Kurulu tarafından incelendi ve etik açıdan uygun olduğuna karar verildi.

Prof. Dr. Hakan ÖZKARDEŞ

Prof. Dr. Ayşe Elif Küpeli

Prof. Dr. Mehtap AKÇİL OK

Prof. Dr. Neslihan ARHUN

Prof. Dr. H. Seyra ERBEK

Prof. Dr. Taner SEZER

Dr. Öğr. Üyesi Rafay V. YILDIRIM

APPENDIX 9: ANKARA BILKENT CITY HOSPITAL'S PERMISSION

T.C. SAĞLIK BAKANLIĞI ANKARA BİLKENT ŞEHİR HASTANESİ - T.C. SAĞLIK BAKANLIĞI ANKARA BİLKENT ŞEHİR HASTANESİ
07/12/2022 10:54 - E-72300690 - 799 - 83642
00179903616

T.C.
ANKARA VALİLİĞİ
İL SAĞLIK MÜDÜRLÜĞÜ
Ankara Bilkent Şehir Hastanesi Başhekimliği

Sayı : E-72300690-799
Konu : Tez Çalışması (Mehmet SALDUZ Hk.)

ANKARA İL SAĞLIK MÜDÜRLÜĞÜNE
(Ankara Eğitim ve Tescil Birimi)

İlgi : 22.08.2022 tarih ve E-90739940-799-1791 sayılı yazınız.

İlgide kayıtlı yazınıza istinaden, Başkent Üniversitesi Sosyal Bilimler Enstitüsü Klinik Psikoloji Anabilim Dalı Yüksek Lisans Programı Öğrencisi Mehmet SALDUZ'un, Dr. Öğr. Üyesi Tuğba UYAR SUİÇMEZ danışmanlığında "Kanser Hastaları ve Bakım Verenlerin Hastalık Deneyimlerini Algılamalarındaki Uyumun Psikolojik İyi Oluşlarına Etkisinin İncelenmesi" konulu tez çalışmasını Hastanemizde yapma talebi, Eğitim Planlama Kurulumuzun 02.12.2022 tarih ve 2 sayılı toplantısında görüşülmüş olup, uygun bulunmuştur.

Bilgilerinize arz ederim.

Dr.Öğr.Üyesi Aziz Ahmet SUREL
Koordinatör Başhekim