Evaluating the World Health Organization International Classification of Functioning, Disability and Health Framework as a Participation Model for Cancer Survivors in Turkey

by

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DEDICATION

I dedicate this dissertation to my lovely wife “Saniye Kaya,” my sons “Ahmet Yasin Kaya” and Mustafa Taha Kaya,” my father “Ramazan Kaya,” my mother “Nebihe Kaya” and my advisor, mentor, colleague, and friend “Dr. Fong Chan.”

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ABSTRACT

Cancer is one of the most prominent diseases around the world. As results of improvements in diagnosis and treatment options, cancer survivors are now living longer and require services to help them live an active and meaningful life in the community. The purpose of this study was to evaluate the World Health Organization's International Classification of Functioning, Disability and Health (ICF) framework as a participation model for cancer survivors in Turkey. Results from simultaneous regression analyses indicated that educational attainment, fatigue, perceived stress, role functioning, social functioning, core self-evaluations, independent self-construal, social support and autonomy support were significantly associated with participation. Secondary analyses indicated that core self-evaluations was significantly associated with emotional and cognitive functioning; social support was significantly associated with emotional functioning; and autonomy support was significantly associated with social functioning. The results also indicated that impairment and activity/functioning variables mediated the association between personal/environmental factors and participation in Turkish cancer survivors. Providing cancer education, rehabilitation medicine, and psychosocial interventions could increase participation levels of Turkish cancer survivors. Specifically, the provision of pain treatment, stress management, sleep treatment and psychological counseling could reduce the effect of stress and fatigue on levels of participation. Future research using a mixed methods design to identify culturally relevant P X E variables that can be included in this ICF-based participation model appears to be warranted.

CHAPTER ONE

Introduction

The purpose of the present study is to examine predictors of participation in a sample of cancer survivors in Turkey. This chapter provides an overview of the importance of participation for cancer survivors within a World Health Organization (WHO) International Classification of Functioning, Disability, and Health (ICF) framework. Significance of the problem, theoretical framework, problem statement and purpose of the study are explained.

Significance of the Problem

Cancer is one of the most prevalent and prominent diseases around the world (WHO, 2015). However, with advanced diagnosis and treatment options, cancer survivors are now living longer (Center for Disease and Control Prevention [CDC], 2015). Therefore community reintegration and participation become important issues for cancer survivors. National Coalition for Cancer Survivorship (2015) defined cancer survivors as people who are living with, through and beyond a cancer diagnosis. This broad definition of cancer survivors will be used in the present study. Participation is significantly positively related with life outcomes including physical and psychological well-being; life satisfaction; and quality of life for people with chronic illness and disability (Chan, Cardoso, & Chronister, 2009; Chan, Chan, Ditchman, Phillips, & Chou, 2013; Lindahl-Jacobsen, Hansen, la Cour, & Sondergaard, 2014; Meulenkamp, Cardol, van der Hoek, Francke, & Rijken, 2013; Schmitz et al., 2005). However, participation of cancer survivors is significantly lower than people without cancer. Therefore, it is important to investigate factors influencing participation for cancer survivors.

Cancer is one of the leading causes of morbidity and mortality worldwide, with approximately 14 million new cases and 8.2 million cancer-related deaths in 2012 (Stewart &

Wild, 2014). It is the second leading cause of death in the United States, exceeded only by heart disease (Centers for Disease Control and Prevention [CDC], 2014). Cancer is also the second leading cause of death in Turkey, with 148,000 new cases each year and 306,700 surviving five years after diagnosis; the most common cancer for men in Turkey is lung cancer; for women, it is breast cancer (Bray, Ren, Masuyer, & Ferlay, 2013; Ferlay et al., 2013). With early diagnosis and more effective treatment methods, it is expected cancer survivors live longer in Turkey (Yilmaz et al., 2011).

However, advances in cancer diagnosis and treatment in recent years have extended and enhanced the lives of millions of cancer survivors (Bray et al., 2013; Ferlay et al., 2013; Strauser et al., 2010). National Cancer Institute (NCI) data indicated that the five-year relative survival rate by year of diagnosis increased from 48.9% during the 1975 to 1977 period, to 68.3% between 2004 and 2010 (NCI, 2014). The United States' national health agenda articulated in *Healthy People 2020* has set a target to increase the five-year survival rate for cancer survivors to 72.8% by 2020 (American Cancer Society [ACS], 2014a). Clearly, cancer survivors are living longer and working longer than ever before. Given the increased survival rates and the consequent rise in the number of people with a history of cancer, the concept of participation introduced by the WHO in its ICF framework may be useful in cancer outcome research that aims to assess the social health aspect of the WHO's definition of health (van der Mei, Dijkers, & Heerkens, 2011) and the general concept of health-related quality of life.

Cancer treatments could cause short- and long-term health related physical, intellectual, and emotional problems, leading to lower levels of functioning and participation (Burris & Andrykowski, 2011; Ness et al., 2005; van der Mei, 2011). Physical effects of cancer include fatigue, pain, and sleep problems. Emotional problems include depression and anxiety, which have relatively high prevalence immediately after cancer diagnosis and slowly decrease over time (Mitchell et al., 2013). Cognitive problems include attention, concentration, and memory problems; executive functioning problems; and problems with speed of processing information (Ahles & Saykin, 2001; Baxter, Dulworth, & Smith, 2011; Chan, Cardoso, Copeland, Jones, & Fraser, 2009; Tannock, Ahles, Ganz, & van Dam, 2004). The prevalence of these physical and psychological sequelae has been reported at 33% at initial diagnosis, 15% at one year following diagnosis, and 45% after cancer recurrence (Burgess et al., 2005). The purpose of rehabilitation is to increase independence, self-sufficient life with dignity, employment participation, and quality of life (Chan, Gelman, Ditchman, Kim, & Chiu, 2009; Chan, Tarvydas, Blalock, Strauser, & Atkins, 2009; Tate & Forchheimer, 2002).

As cancer survivors are living longer, cancer is now considered a chronic illness. As rehabilitation health professionals work with people with chronic illness and disability in a variety of settings including hospitals and outpatient rehabilitation facilities, helping cancer survivors to live well with their disability and to increase their participation is, therefore, becoming an important rehabilitation practice area for rehabilitation counselors and psychologists, and also an important area of research for rehabilitation researchers.

Participation is a human right for every individual including people with chronic illness and disability and increased participation is an important goal for healthy and satisfying life (Hauken, Holsen, Fismen, & Larsen, 2014). Recent research indicated that participation is key indicator of health and well-being and a critical desired outcome in the rehabilitation process (Chang & Coster, 2014). Increasing participation is complementary with current rehabilitation psychology and counseling practices of empowerment and autonomy as participation will lead to a more autonomous and independent life.

Participation is defined by ICF as involvement into life situations including following components: learning and applying knowledge, general tasks and demands, communication, mobility, self-care, domestic life, interpersonal interactions and relationships, major life areas, community, social and civic life. Other researchers described participation as multifaceted interactive process between physical, social and attitudinal environments; and individuals' engagement in various life situations and roles, such as parenting, interpersonal relationships, academic pursuits, employment, recreation, worship, political expression, and volunteering (Scherer & Glueckauf, 2005).

Participation is described as a dynamic process that involves constant negotiation between competing needs and values across individual social and societal level. This dynamic process is led by personal choices (e.g., an individual with disability may value some activities more than some other activities) and environmental opportunities (e.g., an individual may not have enough social support or accessibility to attend some activities). Although rehabilitation health researchers debate what constitutes participation, they agree that it is a construct influenced by personal and environmental factors, and no clear definition for the set of activities and frequency of engagement that indicates full participation has been fully established especially for cancer survivors (Hammel et al., 2008).

Participation has numerous positive effects on the lives of people with chronic illness and disability. It is associated with better physical, psychological health, quality of life (Chan et al., 2009; Lindahl-Jacobsen et al., 2014; Meulenkamp et al., 2013; Schmitz et al., 2005) and life satisfaction for people with various chronic illness and disability including stroke, spinal cord injury, polio, and cancer (Bergström, von Koch, Andersson, Tham, & Eriksson, 2015; Chan et al., 2013; Lund & Lexell, 2009; Nikolić, Ilić-Stošović, Kolarević, Djurdjević, Ilić, & Djuričić, 2015). It is noteworthy to mention that improvements in physical, psychological, social health and well-being may increase survival time and rate, reduce healthcare costs associated with chronic illness and disabilities and finally, increased participation may lead to higher return-to-employment rates which is an ultimate outcome of the rehabilitation process. Recent research indicates that participation particularly may have numerous benefits for cancer survivors compromising improvements in quality of life and life satisfaction.

As expected, participation level of cancer survivors is significantly lower when compared to people without cancer. Ness, Wall, Oakes, Robison and Gurney (2006) indicated that short-term (i.e., cancer history with < 5 years since diagnosis) and long-term (i.e., cancer history with > 5 years since diagnosis) cancer survivors have significantly higher levels of performance limitations and participation restrictions in performing household chores, attending social events, and outdoor events like shopping, seeing a movie, and attending sporting events than people with no cancer history. Comparing to their siblings, long-term childhood cancer survivors had significantly higher difficulties in performing routine activities, attending social events, and engaging in work and school activities (Ness et al., 2006). Given the benefits participation on health-related quality of life, it is imperative to investigate predictors of participation and psychosocial mechanisms, which explain the relationship between functional disability and participation of cancer survivors (Chan, Tarvydas et al., 2009).

Theoretical Framework

Participation is a multifaceted phenomenon influenced by various personal and environmental factors (Chan, Gelman et al., 2009). Therefore, the development and evaluation of a multifactorial model that focuses on functioning and personal (P) and environmental (E) factors and their relationships with participation is warranted. Although there are several models of disabilities, including medical and social models that attempt to identify biological and psychological factors influencing community integration of people with chronic illness and disability, these models fail to adequately account for the contribution P-E as contextual factors affecting the relationship between functional disability and participation. Recently, the WHO's ICF model has begun to gain prominence among rehabilitation professionals and researchers because of its emphasis on P x E contextual factors on health and functioning of people with chronic illnesses and disabilities (Chan, Gelman, et al., 2009; Chan, Tarvydas, et al., 2009; Elliott, Kurylo, & Rivera, 2002; Peterson & Elliott, 2008). The ICF model of health and functioning is consistent with the current view of cancer researchers as well (Campbell et al., 2012; Gilchrist et al., 2009). However, there is currently no comprehensive, empirically validated ICF model of participation for cancer survivors.

The ICF is a widely accepted model that employs a multidimensional approach. Two main parts of the ICF model are (a) functioning and disability and (b) contextual factors. Functioning and disability is composed of body functions, body structure, activities and participation. Contextual factors are composed of P X E factors (Peterson, 2005). Body functions refer to physiological functions of body system; body structures refer to anatomical part of the body. Impairments refer to problems in body functions and structures. Activity refers to execution of a task and participation refers to involvement into a life situation. Personal factors are refers inner and individual features of a person with a disability and environmental factors refers to physical social and attitudinal environments that are external to a person with disability. The ICF constructs are shown in Figure 1.

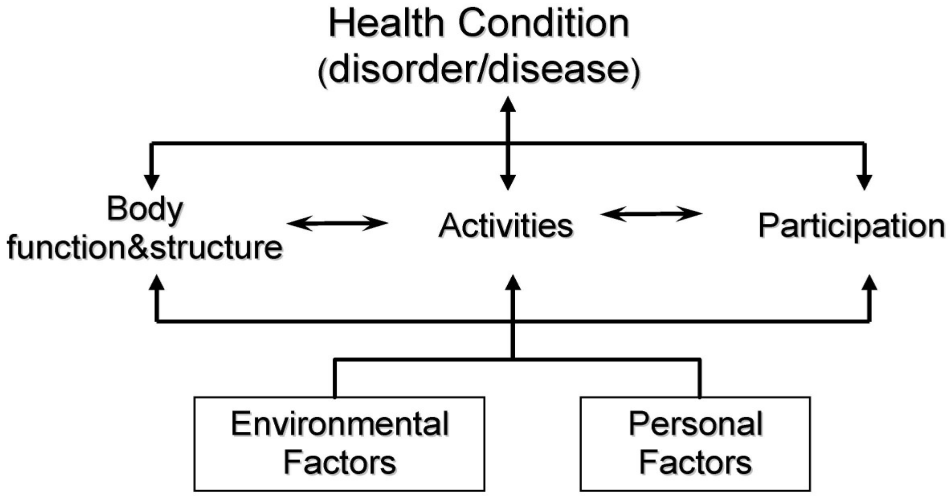
The ICF brings a new perspective into disability studies, shifting focus of disablement from cause to impact, from disability to health/function, and from a static process to dynamic process (Gilchrist et al., 2009). According to ICF, it is the P X E factors and their interactions that determine level of functioning and participation. For example, two people with same functioning disability may have different life outcomes such as participation, health-related quality of life, and life satisfaction, because of the mediation effects of P X E contextual factors between body functioning/activities and participation.

The ICF has been used for a variety of purposes in oncology rehabilitation including evaluating functioning in cancer survivors, guiding assessments in oncology rehabilitation, and assessing comprehensiveness of outcomes measures utilized in rehabilitation context (Bornbaum, Doyle, Skarakis-Doyle & Theurer, 2013). Researchers recommended use of the ICF model to understand and document how structural and anatomical deficit manifest itself in activity limitations (e.g., grooming, dressing, and child care) and participation restriction (e.g., attending community activities and reduced job expectations) for cancer survivors (Gilchrist, 2009). In fact, the International Psycho-oncology Society called for development of instruments that assess functional status of cancer survivors in relation to activities and participation. However, very few studies have comprehensively evaluated the relationships among ICF constructs to inform the design and validation of ICF-based psychosocial interventions for cancer survivors and currently no one has evaluated ICF as a participation model for cancer survivors.

Purpose of the Study

The aim of the present study is to examine predictors of participation in a sample of cancer survivors in Turkey. Industrialization, globalization, and rapid economic growth are beginning to shift Turkey from a collectivistic to more of an individualistic culture. The WHO’s ICF, developed to capture the full range of human functioning, has gained wide acceptance among international rehabilitation and health researchers and professionals as a framework that

Figure 1. *The ICF Model*



can be used to support a systematic approach to understanding chronic illness and disability across cultures (Chan, Sasson, Ditchman, Kim, & Chiu, 2009; Reeds et al., 2005).

The ICF emphasizes P X E factors and their interactions on functioning level of people with disabilities. According to the model, impairment, P X E factors, and their interactions predict functioning. As the ICF is a cross-cultural and multifactorial model of health and disability emphasizing personal and environmental factors, it is well suited to investigate the participation of cancer survivors. Consequently, this study aims to investigate factors influencing participation of cancer survivors. Findings of this study could potentially generate knowledge about factors influencing participation of individuals with cancer in Turkey, and the information can potentially be used to inform the development of innovative interventions to improve participation.

Research Questions

1. What is the relationship between demographic covariates (i.e., age, gender, education level, income level) and participation?
2. What is the relationship between impairment (i.e., type of cancer, cancer stage, types of cancer treatment, number of treatments, patient type, onset time since diagnosis, secondary health conditions, perceived stress, pain, sleep disturbance, and fatigue) and participation?
3. What is the relationship between functioning/activity (i.e., physical, role, emotional, cognitive and social functioning activities) and participation?
4. What is the relationship between personal factors (i.e., core self-evaluations, resilience, spirituality, meaning in life, and independent and interdependent self-construal) and participation?
5. What is the relationship between environmental factors (i.e., perceived stigma, perceived

social support and perceived autonomy support) and participation?

6. What is the relationship between ICF constructs (i.e., demographic covariates, impairments, person-environment factors, and functioning) and participation?

CHAPTER TWO

Literature Review

This chapter is divided into three sections: (a) theoretical framework of the study, (b) implementation of theoretical framework as a participation model, and (c) a literature review of variables of interest. The first section of the chapter describes the World Health Organization's (WHO) International Classification of Functioning, Disability and Health (ICF) model to provide a comprehensive conceptual framework for the study. Next, I explain the application of the ICF framework as a participation model for cancer survivors and discuss ways to optimize ICF constructs for this context. Chapter two ends with a review of the literature regarding the variables of interest. The literature review, in particular, focuses on information regarding the relationships between demographic/impairment related variables, activity related variables, personal and environmental factors, and participation for cancer survivors. While the current focus of the literature review is participation, research findings related to other life outcomes such as quality of life and life satisfaction are also provided.

ICF: A Comprehensive Multifactorial Model

Background and History

The International Classification of Diseases (ICD-10) framework, a companion of ICF, has been used by the World Health Organization (WHO) to collect epidemiological health data from its members to facilitate the development and implementation of public policies around the world. However, ICD-10 was less effective for reporting the health status of living population in WHO member countries as it focused on causes of death and mortality rates. Particularly, the ICD-10 was missing information about non-fatal health outcomes, disability and functioning (Üstün, Chatterji, Bickenbach, Kostanjsek, & Schneider, 2003). As the limitations of the ICD-10 framework became apparent, the international zeitgeist shifted toward a more comprehensive biopsychosocial approach to study illness and disability. Consequently, WHO initiated the development of a new framework for classifying impairments, disabilities, and functioning. The new model was designed to shift the focus from impairment to health and disability and incorporate contextual factors (i.e., personal and environmental factors) to explain functioning. Through international collaboration, numerous field trials, and data analysis, the International Classification of Functioning, Disability and Health (ICF) was developed and ICF was endorsed by all 192 members of WHO in 2001 (Üstün et al., 2003).

Application of the ICF in Rehabilitation Health Research and Practice

The ICF model was developed in response to the growing international consensus that neither the medical model nor the social model explains disability and functioning accurately (Chan, Sasson, Ditchman, Kim, & Chiu, 2009). The medical model approaches disability as an illness or disease that needs to be fixed or cured. Rather than integrate people with disabilities into daily life, the medical model seeks medical interventions to cure disabilities (Sullivan, 2001). However, disability cannot solely be seen as a disease or illness resulting from physical impairment or problems. In contrast, the social model attributes disability to the complex social structure that governs interaction between person and environment. Disability is not a personal attribute; it is a social construct, more pointedly: a “sophisticated form of social oppression” (Bickenbach, Chatterji, Badley, & Üstün, 1999, p. 1173). People with disabilities, depending upon their circumstances, experience different limitations in various areas of life including education, transportation, and work. These limitations are not the products of their medical condition, but rather the results of social attitudes, neglect, and stereotypical images about the capacities and needs of people with disabilities (Bickenbach et al., 1999). However, the social model neither clearly describes who the person living with disability is nor how the disability is measured. In response to the limitations of each of these models, the ICF model integrates aspects from each to address biological, individual, and societal components of disability (Chan et al, 2009; Peterson, 2000). In other words, acknowledging that disability has medical roots and social components, the ICF model provides a more comprehensive biopsychosocial view of disability.

In addition to providing a comprehensive biopscyhosocial framework, ICF is universally applicable to health and functioning (Campbell et al., 2011). ICF promotes interdisciplinary collaboration by offering a common language of universally applicable terminology for the classification of health, disability, and anticipated outcomes. Moreover, the universally applicable terminology promotes international comparison research that investigates and compares life outcomes for people with chronic illness and disability utilizing different cultural lenses (Chan & Ditchman, 2013).

Most importantly, ICF emphasizes effects of personal and environmental factors and their interactions on functioning and participation (WHO, 2001). Personal and environmental characteristics for people with chronic illness and disabilities and the interactions between these characteristics may significantly influence functioning and participation. Therefore, a comprehensive model determining individual and environmental factors as possible facilitators of and barriers to participation for people with chronic illness and disabilities is needed. Therefore, as a biopsychosocial model, ICF is a promising tool for investigating the factors affecting the degree to which cancer survivors participate in their communities.

The ICF Constructs

The ICF can be used as a framework to describe health and health-related states. It includes health and health-related domains to provide a broader perspective of human functioning. As a classification system it groups physical and anatomical structures, activities, tasks, areas of life, and contextual factors (Chan et al., 2009). ICF describes three disabilities and health-related components (i.e., body functions and body structures, activity, and participation) and two types contextual factors (i.e., personal and environmental factors). Functioning, disability, impairment, and health/disability related components (i.e., body functions, body structures, activity, and participation) and contextual factors (i.e., personal and environmental factors) are explained below (Chan et al., 2009).

Functioning, disability and impairment. In the ICF model, functioning is an overarching term used to describe body functions and body structures, as well as activities and participation. In contrast to functioning, disability is a term that refers to the interaction between the individual, context, and a health condition or health conditions. It includes body function and body structures, and activity limitations and participation restrictions (WHO, 2001). Impairment, the term ICF uses to denote problems in body functions and structures, is classified based on the effected biological structure and function (WHO, 2001). Rather than representing pathology, it refers to manifestation of pathology within the body. As impairments represent deviations in body functions and structures from generally accepted standards, they are determined by qualified health and mental health professionals (WHO, 2001).

Body functions and structures. Body function and body structure is the first component of the ICF model. Body function refers to physiological functions of body systems including psychological functions (Chan et al., 2009). As "body" refers to the human organism as a whole, the brain and its function are described under "body functions." Body functions include eight components including but not limited to mental functions, sensory functions and pain, and voice and speech function (WHO, 2001). Body structures refer to anatomical parts of the body such as organs and their components (Chan et al., 2009). Body structures are classified into one of eight categories based on body systems rather than organs or their component parts. The ICF uses body functions and structures to determine the biological and functioning component of a given health condition (WHO, 2001). For instance, under the ICF model vision would be classified as a body function (i.e., seeing function) and the eyes and related structures would be described as the related body structures. Then, the ICF model provides a rating system for determining the intensity of impairments in body function and structures related to a disability (WHO, 2001). Detailed information regarding body functions and structure domains can be found in Table 2.1.

Activity and participation. The second and third components of the ICF model are activity and participation (Peterson, 2005). The activity and participation components are described in the context of health and disability. In the context of health, the World Health Organization defines activity as the execution of a task or action by a person and participation as involvement in life situations (WHO, 2001). In the context of disability, activity limitations refer to difficulties that an individual may have in executing activities and participation restrictions refer to problems that a person may experience while engaging in life situations (Sung, 2012). The activity and participation components are described with a single list of life domains, which can denote (a) activity, (b) participation, or (c) both (WHO, 2001). There are nine life domains listed under activities and participation, which are presented in Table 2.2. Activity and participation domains are operationalized by capacity and performance qualifiers (Peterson, 2005). A capacity qualifier refers to the individual’s ability to execute a task or action. It denotes a person’s highest probability of functioning in a particular domain at a particular moment.

Performance qualifiers describe what an individual can do in his/her current environment (Peterson, 2005). In other words, it refers to a person's involvement in life situations in the actual context where he/she lives. The difference between capacity and performance reflects what can be done to a person's environment to improve individual performance.

Contextual factors. Contextual factors describe any situation or characteristic that is related to a person's life (Chan et al., 2009). Accounting for these factors allows health professionals to represent a person's complete background. Contextual factors are divided into two parts: (a) personal factors and (b) environmental factors (Peterson, 2005).

Personal factors. Personal factors describe a person's background, gender, race/ethnicity, age, education, profession, religion, fitness, lifestyle, habits, upbringing, social background, past experiences (i.e., past life events and concurrent events), overall behavior pattern, coping style, character style, individual psychological assets, and other characteristics (Bornbaum et al., 2013). Although personal factors are considered to be an important part of the ICF model, unlike the other ICF constructs, individual factors are not yet classified in the ICF model due to the complexity of individual factors and divergence between people. Individual factors are depicted in the ICF model to show their substantial contribution to the model. The classification of personal factors is currently in progress (Bornbaum et al., 2013).

Environmental factors. Environmental factors are composed of external influences on a person's health, including the physical, social, and attitudinal environments in which he/she lives (Chan et al., 2009). Environmental factors are classified into individual and societal levels. The individual level refers to a person's immediate environment, including work, school, or home. It also includes physical and material aspects of the immediate environment, as well as direct contact with others such as family members and friends (Sung, 2012). The societal level refers to

Table 2.1

One Level Classification of Body Function and Body Structures

Chapters	**Body functions**	**Body structures**
Chapter 1	Mental functions	Structures of nervous system
Chapter 2	Sensory functions and pain	The eye, ear and related structures
Chapter 3	Voice and speech function	Structures involved in voice and speech
Chapter 4	Functions of the cardiovascular, hematological, immunological and respiratory systems	Structures of cardiovascular, immunological and respiratory systems
Chapter 5	Functions of digestive, metabolic and endocrine system	Structures related to the digestive, metabolic and endocrine systems
Chapter 6	Genitourinary and reproductive functions	Structures related to the genitourinary and reproductive systems
Chapter 7	Neuromusculoskeletal and movement related functions	Structures related to movement
Chapter 8	Functions of skin and related functions	Skin and related structures

Table 2.2

One Level Classification of Activities and Participation

Chapters	**Activities and Participation**
Chapter 1	Learning and applying knowledge
Chapter 2	General tasks and demands
Chapter 3	Communication
Chapter 4	Mobility
Chapter 5	Self-care
Chapter 6	Domestic life
Chapter 7	Interpersonal interactions and relationships
Chapter 8	Major life areas
Chapter 9	Community, social and civic life

formal and informal social rules, structures, services, and general systems built in the community or society. It includes cultural factors, work environment, community organizations, governmental agencies, communication and transportation services, and laws, as well as formal and informal rules, attitudes, ideologies, and societal beliefs (WHO, 2001).

The ICF as a Participation Model

In response to the call for theory-driven research and scientifically rigorous evidence in rehabilitation studies (Chan, Tarvydas, Blalock, Strauser, & Atkins, 2009; Dunn & Elliott, 2008), this study is designed to systematically examine the factors that are likely to impact participation in the hope that doing so will yield more precise rehabilitation interventions for cancer survivors in Turkey. To this end, the ICF model holds significant promise in illuminating the effects of multiple biopsychosocial factors, the interactions among those factors, and their impact on participation and the health-related quality of life of people with chronic illness or disability, including cancer survivors (Chan et al., 2009; Bruyere et al., 2005; Bornbaum et al., 2013). In addition to employing a comprehensive multifactorial approach, the ICF model provides a means of identifying the most and least influential variables on participation (Sung, 2012). For these reasons, the ICF framework provides an ideal overarching framework for studying participation. Therefore, I am interested in evaluating the ICF framework as a participation model for cancer survivors.

Oncology researchers also indicated that ICF is a potentially useful framework for investigating the impact of cancer and treatment options on functioning and participation for cancer survivors (Gilchrist et al., 2009). ICF provides a useful framework to guide patient care by providing a broader perspective of human functioning through its emphasis on personal and environmental factors (Bornbaum et al., 2013). Therefore, the ICF framework has been incorporated for a variety of purposes in oncology rehabilitation. Most currently, it has been utilized to delineate functioning problems that are specifically related to breast and head and neck cancer. Although an ICF framework for oncology rehabilitation has been proposed (Gilchrist et al., 2009), there is currently no comprehensive, empirically validated ICF model of participation for cancer survivors.

With its emphasis on human functioning, the ICF classification system provides a framework to delineate how life outcomes such as participation are influenced by impairment, activity, and personal and environmental factors (Chan et al., 2009; Sung, 2012). In the current study, the ICF framework was operationalized to allow health and rehabilitation professionals to understand the relationships between specific variables and participation for cancer survivors: 1) body functions and structures include cancer related impairment variables; 2) activities include functioning and ability related variables; 3) personal factors include positive human traits; and 4) environmental factors include commonly studied environmental factors that are related to participation for people with chronic illness and disabilities.

In the present study, *body functions and structure* serve as categories for describing impacts of cancer on the body and function for cancer survivors. Particularly, cancer stage, types of cancer treatment (i.e., surgery, chemotherapy, and radiotherapy), number of cancer treatments, length of treatment, inpatient or outpatient status, pain, stress, sleep disturbance, fatigue, and secondary health conditions are considered indicators of impairment/functioning status. *Activities* describe the skills and abilities of cancer survivors that are needed for participation, including physical, role, cognitive, emotional, and social functioning. *Personal factors* include positive human traits, including core self-evaluation, self-construal type (i.e., independent and interdependent), resiliency, religiosity, and purpose in life. *Environmental factors* refer to external factors in the environment, including perceived social stigma, perceived social support, and perceived supportive healthcare climate.

Participation was operationalized to refer to participation. Participation included indoor autonomy, family role, outdoor autonomy, social life and relationships, and work and education activities (Kersten et al., 2007). Specifically, indoor autonomy indicated ability to perform indoor activities such as in-home mobility and self care. Family role described activities in and around the house (e.g. chores) and money management. Autonomy outdoors described outdoor activities such as visiting friends and family, leisure time activities, and taking a vacation. Social life and relationship measured quality and quantity of social activities such as talking to people and having intimate relationships. Work and education described paid and voluntary work activities, education, and training (Kersten et al., 2007).

The ICF model can be used in cancer rehabilitation to determine factors influencing the participation of cancer survivors. Integrating the ICF framework with theoretical and empirical evidence, this study investigates effects of the identified impairment/functioning-related factors and the personal and environmental factors and their interactions on participation of cancer in Turkey.

Factors Contributing to Participation: A Proposed Framework based on ICF

There is a paucity of research investigating factors influencing participation for cancer survivors using the ICF framework; however, related literature will be reviewed to identify important factors that can be used to operationalize major constructs in the proposed ICF participation model for cancer survivors in Turkey. The following factors will be reviewed in relation to participation: (a) demographic characteristics, (b) impairment-related factors, (c) personal factors, and (d) environmental factors.

Demographic Variables

Age. Age has a significant relationship with the participation of cancer survivors. Cancer is more likely to occur at older ages. In addition, as people become older, functional capacity for participating in physical and social activities decreases as well (Deimling et al., 2007). Ness (2006) indicated that participation restrictions for cancer survivors increase with age, and cancer survivors between the ages of 20 and 39 were three to 10 times less likely to experience participation restrictions than people between the ages of 40 and 49. Deimling et al. (2007) also found that older cancer survivors reported fewer cancer related symptoms; however, age was associated with decreased functioning and increased participation restrictions for cancer survivors.

Gender. Although more research is needed to clarify the relationship between gender and participation restrictions for cancer survivors, research suggests that women may experience overall greater participation restrictions. Ness et al. (2006) did not find gender differences for participation restrictions after cancer diagnosis and treatment; however, Deimling et al. (2007) found that gender was significantly associated with participation restrictions, with females having greater participation restrictions. Based on this contradictory evidence, it is clear that further research is needed to determine the influence of gender on participation restrictions.

Education. Research findings regarding the relationship between education level and functional limitations and participation restrictions are mixed. Toptas (2014) revealed that cancer survivors with a high school education or higher had higher physical, role, and emotional functioning than those with less than high school education. Conversely, Citak and Tulek (2013) observed statistically higher role functioning in people with lower education levels. Deimling et al. (2007) also demonstrated a significant negative correlation between education level and activity limitations and participation restrictions; however, after controlling for the effects of other individual characteristics, education was not significantly associated with participation restrictions. Looking specifically at sports activities, Balenger, Plotnikoff, Clark, and Courneya (2012) found that there was not a significant difference in participation based on education level. Overall, the research provides mixed results regarding the relationship between education level and participation for cancer survivors.

Income level. Although few studies have investigated income level as a predictor of participation for cancer survivors, there is some evidence that higher levels of income are related to higher levels of participation. Cancer patients with annual incomes of less than 20,000 US dollars were three times more likely to experience participation restrictions than people who had annual incomes of US$75,000 or higher (Ness et al., 2006). Moreover, Smith, Nolan, Robison, Hudson, and Ness (2011) found that cancer survivors with income levels lower than 20,000 U.S dollars were physically less active than people with no cancer history. These results are borne out in a 2011 study by Goker, Guveanal, Yanikekrem, Turhan, and Koyuncu that found that cancer survivors with higher income had better physical and cognitive functioning than those with lower incomes.

Role of Impairment/Severity in Participation

Treatment type and number of treatments. Research indicates that treatment type predicts functional limitations and participation restrictions (Smith et al., 2011). Ness et al., (2005) reported that participants who had undergone radiotherapy experienced more performance limitations and participation restrictions than people who received only surgery. Additionally, participants who received both surgery and radiotherapy were more likely to report physical performance limitations and participation restrictions than participants who only received surgery. Although radiation had less effect on participation restrictions than chemotherapy, when other variables (i.e., demographics, cancer type, cancer stage at diagnosis, years since diagnosis, total number of treatment types, health condition, and current cancer symptom) were controlled for, neither was significantly correlated with participation restrictions (Deimling et al., 2007). Regarding the impact of the number of treatments, however, the results of Deimling et al. (2007) provide further evidence that the number of treatments is related to the extent of the participation restrictions experienced by cancer survivors.

Secondary health conditions. Having a secondary disability or comorbid conditions may have a significant negative effect on activity limitations or participation restrictions. Hewitt, Rowland, and Yancik (2003) found that comorbid health conditions were significantly related to poorer health status for cancer survivors. In fact, comorbid health conditions, even those unrelated to cancer, play a prominent role in explaining functioning difficulties and participation restrictions for cancer survivors (Deimling et al., 2007). Cancer survivors with comorbid conditions were 5 to 10 times more likely to report a disability than the general adult population (Hewitt et al., 2003). Smith et al. (2011) reported that five-year cancer survivors with a comorbid physical condition were more likely to be physically inactive than people with no cancer history. Lastly, Belanger et al. (2013) found that cancer survivors with higher numbers of comorbid conditions were significantly less likely to participate in sports. Overall, research has shown that the participation of cancer survivors is negatively affected by secondary or comorbid health conditions.

Years since diagnosis. The number of years since diagnosis appears to have a complex interaction with activity limitations and participation restrictions. While some studies indicate a significant association between the number of years since diagnosis and cancer-related symptoms (Deimling et al., 2007), others have revealed a more complicated relationship between these variables. More recent cancer survivors experienced a greater number of current cancer related symptoms, which significantly predicted participation restrictions among cancer survivors (Deimling et al, 2007). Ness et al. (2006) reported that, during the first four years post diagnosis, the physical performance limitations and participation restrictions gradually decreased; however, in the fifth and sixth year the statistics showed an increase in participation restriction, from 6 to 12 years there was a decreasing trend, between 12 to 18 years the pattern was stable, and participation restrictions slightly increased again between 19 to 25 years post diagnosis. Similarly, in a 2003 study conducted by Hewitt et al., high levels of functional limitations and problems in activities of daily living were reported by cancer survivors who were less than 2 years from the date of diagnosis. The level of difficulty cancer survivors faced decreased between 2 and 4 years after diagnosis, but showed an increase between 5 and 9 years post diagnosis. These studies show a complex interaction between time since diagnosis and participation restrictions, and further is needed to clarify this relationship.

Perceived stress. Having a chronic disease such as cancer is very stressful. Research suggests that stress predicts participation restrictions and poor health-related outcomes for cancer survivors. According to Brunet, Love, Ramphal, and Sabiston (2014), stress was negatively associated with involvement in support groups and physical activity behaviors. Kreitler, Peleg, and Ehrenfeld (2007) documented the significant effect perceived stress had a significant effect on quality of life, physical state, sense of control, and meaningfulness, as well as pain and negative orientation. Conversely, Faul, Jim, Williams, Loftus and Jacobsen (2010) found that cancer patients who were better able to manage stress had lower levels of anxiety and depression and better overall mental states. Because perceived stress has been shown to have strong association with physical and psychological well-being, stress management should be targeted as an important psychosocial intervention for cancer survivors (Zhou et al., 2010). Overall, the results indicate that perceived stress has significant effects on physical health, mental health, quality of life, and participation of cancer survivors.

Pain. Pain is one of the long-term effects of cancer. It is composed of sensory, affective, cognitive, and behavioral components and affects every aspects of a person’s life (Carr et al., 2002; Ovayolu et al., 2013). Procedural, treatment-associated, and cancer-related pains are well-documented complications of cancer, which limit daily activities and reduce quality of life for cancer survivors (Blayer & Barr, 2007). In a study of breast cancer patients, common cancer-related impairments such as pain and limb numbness were determining factors in the activity limitations (Karki, Simonen, Malkia, & Selfe, 2005). Regarding quality of life, Binkley et al. (2012) listed pain along with activity limitations, upper extremity motion restrictions, and fatigue as common side effects of breast cancer that had a persistent impact after cancer treatment. As one of the most common and well-documented effects of cancer and cancer treatment, pain is an important variable for a study of cancer survivors' participation.

Fatigue. Like pain, fatigue is also one of the most common side effects of cancer and has both physical and psychological components (Carr et al., 2002). Moreover, it is a complicated symptom to treat because of its multifactorial origin (Lucia, Earnest, & Perez, 2003). In a study that documented the effects of cancer-related fatigue, Blayer and Barr (2007) indicated that fatigue can cause cancer survivors to reduce their levels of activity and participation, can contribute to the morbidity of disease, and can negatively influence quality of life. According to Fialka-Moser, Crevenna, Korpan, and Quittan (2003), fatigue is one of the most prominent activity-limiting symptoms of cancer and negatively affects cancer patients’ self-care, social activity, and quality of life. More specifically, cancer-related fatigue has been found to interfere with activities of daily living, including walking, completing household chores, cooking, running errands, socializing, and engaging in leisure activities (Mustian et al., 2008). Overall, cancer researchers have demonstrated that fatigue is also one of the most common complications of cancer that interferes with activities of daily living and participation in the community.

Sleep disturbance. Sleep disorders, including difficulty falling asleep, problems maintaining sleep, poor sleep efficiency, early awakening, and excessive daytime sleepiness, are common side effects of cancer. Sleep problems are associated with a variety of factors including biochemical changes associated with cancer, anticancer treatments, and symptoms that frequently accompany cancer, such as pain, fatigue, and depression (Roscoe, 2007). Richardson, Wingo, Zack, Zahran, and King (2008) indicated that inadequate sleep days, painful days, and physically unhealthy days were common symptoms of cancer that were related to reduced health-related quality of life for cancer survivors. Worsening sleep due to cancer-related symptoms has been associated with higher level of depression and declines in overall quality of life for women with ovarian cancer (Clevenger et al., 2013). In a study of breast cancer patients, Fortner, Stepanski, Wang, Kasprowicz, and Durrence (2002) observed that patients who reported a higher level of sleep disturbance had greater difficulty in performing work and daily tasks due to physical limitations associated with poor quality of sleep. Based on the available research in this area, sleep disturbance frequently limits physical functioning, activities of daily living, and quality of life.

Depression. Cancer survivors experience a relatively high rate of emotional distress such as depression and anxiety. According to Smith, Gomm, and Dickens (2003), anxiety and depression are independently associated with global health status, emotional and cognitive functioning, and fatigue, after controlling for the effects of pain and illness severity for people with advanced cancer. If not treated, these emotional problems may lead to negative health outcomes (Carr et al., 2002; Dastan & Buzlu, 2011; Hong & Tian, 2014). Brown, Kroenke, Theobald, Wu, and Tu (2010) indicated that depression and anxiety had independently contributed to mental health issues and somatic symptoms for cancer patients. Moreover, cancer patients with depression and anxiety reported a greater number of disability days. Emotional distress has long-term effects on cancer patients as well. Arrieta et al. (2013) found that cancer patients with depression and anxiety had overall shorter survival time and poorer treatment compliance in addition to lower health-related quality of life when compared to cancer patients without depression. Although the effects of emotional distress are clearly documented, Gray et al. (2011) argued that depression and other physiological symptoms (e.g., fatigue) are the most modifiable factors that affect quality of life of cancer survivors. Because cancer-related emotional problems (e.g., depression and anxiety) may lead to poor treatment compliance, prolonged hospital stays, and reduced quality of life, it is important to investigate the influence of emotional distress on the functioning and participation of cancer survivors.

Effect of Environmental Factors on Participation

Perceived social stigma. Stigma is the social phenomenon in which members of a particular group are treated as abnormal and shameful and disqualified from full social acceptance (Ciftci, Jones & Corrigan, 2013; Jones & Corrigan, 2014). Because of social stigma individuals with physical and sensory disabilities are often devalued, marginalized, and treated as inferior (Livneh, Chan, & Kaya, 2014). Stigma, from a chronic illness or disability (e.g., cancer) viewpoint, has been equated with marginality, devaluation, and inferiority (Livneh et al., 2014). It is based on a belief system that enables people to justify stigmatization based on the notion that the stigmatized group deserves its marginal status (Joachim & Acorn, 2000). For example, people with lung cancer deserve stigma because they caused their condition by smoking. Stigma, consequently, may result in negative behaviors including prejudice and discrimination (Ciftci et al., 2013).

People with a chronic illness or disability are frequently subjected to social stigma, which have negative consequences for people with chronic illness and disability including cancer (Else-quest & Jackson, 2014). Health-related stigmas may prevent people from participating in treatment and other activities and may lead to social isolation, as people who are stigmatized may be alienated and shunned by family, friends, and other loved ones. It may also prevent health and human service agencies and organizations from providing funds for screening and treatment based on the assumption that stigmatized group is not deserving of financial support. If cancer patients internalize the negative messages associated with stigma, it may lead to maladaptive beliefs or behaviors that may result in mental health problems. Lastly, when people with chronic illness and disability experienced and internalized stigma, they anticipated more stigma from health care workers, were less likely to seek medical attention for symptoms, and experienced decreased quality of life (Earnshaw & Quinn, 2012).

Currently, there is a lack of research regarding the influence of stigma on participation of cancer survivors. Research on the effects of stigma on cancer survivors has mostly focused on psychological adjustment and quality of life. In a systematic review, Chambers et al. (2012) found that the stigma associated with lung cancer was related to poor health-related quality of life and higher psychological distress. Stigma has also been associated with poorer psychological adjustment to breast, prostate, and lung cancer (Else-Quest, LoConte, Schiller, and Hyde, 2009). Kim and Yi (2014) indicated that higher levels of perceived public stigma increased levels of internalized shame and self-blame and lowered levels of social support availability for cancer survivors. After controlling for stressful life events, Lebel et al. (2013) found that stigma was positively associated with psychological distress and was negatively associated with well-being for lung and head and neck cancer survivors. Based on the research on this topic, it is likely that stigma has deleterious effects on psychological adjustment and quality of life for cancer patients, which may in turn have significant negative effect on participation for cancer survivors.

Social support. Social support is the provision of resources to people with the intention of helping them to deal with stress and life challenges (Chronister, 2009). Social support primarily includes three forms of support: emotional, informational, and instrumental support. Emotional support includes being there, listening, empathizing, reassuring, and comforting—in other words, showing verbal or non-verbal caring and concern. Informational support involves guidance and knowledge, and instrumental support refers to the provision of materials and goods (Helgeson & Cohen, 1999).

Social support may have numerous benefits for cancer survivors. Social support provides a context where people receive emotional care (e.g., security, love, and comfort) (Usta, 2012), information, knowledge, and advice. Social support networks may also indirectly connect people with material support from other people and organizations. Although there have not been many studies investigating the relationship between social support and participation for cancer survivors, ample research demonstrates the significant effect social support on different aspects of the lives of cancer survivors. Studies have demonstrated the positive effect of social support in physical, psychological, social, and spiritual well-being (Nazik, Nazik, Ozdemir, and Soydan, 2014); cancer recovery progression (Nausheen, Gidron, Peveler, and Moss-Morris, 2009); psychological adjustment to cancer (Helgeson & Cohen, 1999), and overall quality of life

(Courtens, Stevens, Crebolder and Philipsen, 1996). By contrast, Penedo et al. (2012) indicated that increased social isolation can be a risk factor for poorer adjustment, physical recovery, and treatment-related side effects for head and neck cancer survivors. Based on this evidence, Penedo et al. (2012) argued that social support is a vital aspect of psychosocial interventions. Because social support is associated with the psychological adjustment, the quality of life, and the overall physical and psychological well-being of cancer survivors, it is reasonable to anticipate that social support would play a major role in participation for cancer survivors.

Health care climate. Health care climate refers to a supportive environment that encourages autonomy in treatment adherence (Deci & Ryan, 2012). The healthcare climate and available services may have a significant positive effect on health care behaviors (i.e., treatment compliance, and cooperativeness) that can improve participation (Crow et al., 2003). Sharing health related information with people with chronic illness and disability, encouraging them to make self-determined decisions about their health and respecting their choices may result in appropriate health care behaviors. Research shows that when patients are provided more autonomy support, they are more likely to engage in desirable health behaviors (Deci & Ryan, 2012). Therefore, the health care climate may be an important factor in the participation of cancer survivors. However, it should be noted that the effect of health care climate may be affected by cultural values of people in Turkey. For example, in a hierarchical society, support and encouragement of the physicians may significantly influence patients' motivation to engage in medical treatments and other meaningful activities. Since Turkey has a unique health care system and cultural structure, first, an overview of the Health Transformation Program (HTP), the Turkish health care system, and then a brief review of cultural health beliefs regarding cancer, and its impact on cancer survivors is provided.

Turkish health care system. As result of rapid economic developments and social changes in recent years, Turkey has made significant changes to its health care system. Starting in 2003, a new health care system called the Health Transformation Program was initiated in Turkey. The program aimed to expand health insurance coverage and access to the health care system for all citizens, including the poorest members of the population. Through HTP, five previously established health insurance programs were consolidated under a unified general health insurance program (Atun et al., 2013).

In Turkey, health care services are now financed through the newly established governmental program called the General Health Insurance Scheme (GHIS). GHIS provides health insurance to the majority of the population in Turkey, including employees of the public and private sector and their families, the elderly, the needy, and people with low income. Payments for the insurance are made by an overarching governmental social security organization called the Social Security Institution (SSI). SSI is currently a major single purchaser of health care services for Turkish citizens in the public and private sector (Atun et al., 2013; Tatar et al., 2011).

Through the recent changes in health care system, the total health care expenditure increased from 2.7% of gross domestic product (GDP) to 6.1% of GDP. Along with it, the number of hospital beds increased from 134,950 in 2000 to 194,504 in 2011 and access to health care increased from 2.4 million in 2003 to 10.2 million in 2011 (Atun et al., 2013). Similarly, there have been improvements in oncology care. Currently, oncology care and chemotherapy drug are free for working class and economically disadvantaged citizens under the Turkish health care system. Moreover, despite increased access, there is no shortage of chemotherapy drugs in Turkey (Turhal, 2012). However, it should be noted as Turkey has a free public health care system, there is a high demand for services and patients face significant challenges to receive timely health care services.

Health care services are split into three levels in Turkey: primary, secondary, and tertiary health care services. Based on severity of the disease or illness, patients are referred to primary, secondary and tertiary health care services in a sequential process. Primary health care services usually include family care, secondary health care services usually include city hospitals, and tertiary health care services usually include major health care facilities. University hospitals are major providers of tertiary health care services in Turkey. Most of the health care facilities, including city and university hospitals, are public hospitals. These facilities are led and supervised by the Ministry of Health. Therefore, public sector institutions provide most of the health care services. However, it should be noted that in recent years, with policy changes, the private sector has increased its provision of health care services to SSI (Tatar et al., 2011).

As can be seen from this overview, Turkey has a hierarchical, public-based health care system. In hierarchical systems, patients are more likely to perceive health care professionals as authority figures, expect to be told what to do, and establish a warm and paternalistic relationship with health care professionals (Carteret, 2011). However, research indicates that being involved in decision-making and being knowledgeable about treatment options has a positive effect on the health behaviors of people with chronic illness and disability (Surbone, Zwitter, Rajer, & Stiefel, 2012).

On the other hand, some researchers have argued that rather than following a universal norm, the relationships between patients and health care professionals are significantly influenced by historical and cultural factors, including beliefs and values. For example, patients with more collectivist tendencies may prefer to involve their families in their treatment decisions.

Therefore, a health care professional may choose to balance the patient's needs, decide case-by-case, and find a balance in relationships with patients (Kara, 2007).

With the recent economic and societal changes, Turkey is shifting from a more collectivist society to an individualistic society. Currently, there is an emphasis on patients' rights and incorporating patient views into treatment in health care services (The Organisation for Economic Co-operation and Development [OCED], 2014). For this reason, it is important to investigate whether providing opportunities for choice and independent problem-solving and involving patients in decision-making influences participation for cancer survivors.

Cultural health beliefs. Health-care behaviors and societal perceptions toward people with chronic illness or disability (e.g. cancer survivors) are influenced by cultural health beliefs (Khalil, 2013). Specifically, perceptions and myths regarding cancer in Turkish society may have predominant influence on lives of cancer survivors. Therefore, in order o explain participation of cancer survivors, an understanding of Turkish cultural health beliefs and myths regarding cancer and its impact on lives of cancer survivors is needed.

Despite the improvements in cancer diagnosis and treatment options, cancer is still one the most feared fatal diseases in Turkey (Gürsoy et al., 2011; Kav, Tokdemir, Tasdemir, Yalili, & Dinc, 2012). For some people, it is perceived as a punishment from Allah due to committing sinful acts. Research shows that many cancer survivors in Turkey believed that having cancer were their own fault for the reasons like "not valuing life," "stressing out," or "divorcing from a spouse" (Afsaroglu, Okutur, & Demir, 2010). Some cancer survivors equated their diagnoses with loss of their loved ones and the resulting grief, sadness, and depression. However, these beliefs could lead to high levels of anger and stress because the perceptions that they need to be positive all the times. Moreover, research showed that these myths and beliefs (e.g., cancer is an inescapable destiny to death) were specifically more prevalent among women and people from lower socioeconomic status (Afsaroglu et al., 2010). Because of stigma and myths are more prominent among the disadvantage groups, cancer survivors from these SES groups may be more likely to stay home and avoid activities in the community.

Despite its economic growth and resulting changes, a large segment of the Turkish society still adhere to traditional cultural values and emphasize interdependency among family members (Chhokar, Brodbeck, & House, 2014). For example, family members usually accompany with cancer survivors to hospitals in order to take care of them even if cancer survivors are highly functional (Terzioglu, 2008). It is a common practice for Turkish families to ask their doctors not to share the diagnosis of cancer with patients (Ozdogan et al., 2006). When learned, it is initially only shared between immediate family members. Moreover, after learning their diagnosis, cancer survivors avoid to share their cancer related problems with their families in order not to burden them (Ozdogan et al., 2006). However, this practice may increase feelings of loneliness and isolation among cancer survivors. Although, interdependency is practiced in Turkish society, receiving help from people outside of the close family network is not desired. Cancer survivors feel lack of family support if other people help them. Consequently, cancer survivors may avoid engaging in social interactions with other people and are reluctant to share their illness experiences with people outside of the family (Terzioglu, 2008). Therefore, cancer diagnosis can be a source of stigma and isolation and deterrence for participation for cancer survivors (Daher, 2012).

Various myths of cancer exist among Turkish people. The three most prevailing cancer myths in Turkish society are cancer is always painful, it is contagious and most commonly an inherited disease (Turhal et al. 2010). In addition to that, treating cancer can be a futile act and even worse than the disease itself (Kav et al., 2012). Terzioglu (2008) argued that those myths interact with education level and socioeconomic status of people in Turkey. People with higher educational attainment are more likely to receive treatment and want to normalize the cancer experience, whereas individuals with lower levels of educational attainment will be more influenced by myths and stigmas related to cancer that affects their motivation to seek treatment and normalize their cancer experience. Consequently, after being diagnosed with cancer, cancer survivors who come from middle to low socioeconomic background will be highly likely to avoid learning more about cancer, continue treatment, and engage in health promoting behaviors and participation (Terzioglu, 2008).

Turkey has a hierarchical public health system where the physicians are perceived to be on the top of the hierarchy. Rather than an equal relationship, physicians are considered superior of the patients. There is lack of collaborative communication, shared decision-making and two-way communication of information between cancer survivors and physicians (Terzioglu, 2008). Turhal et al. (2010) indicated the major source of knowledge about cancer was television, which was followed by physicians in Turkey. However, physicians in Turkey frequently use a paternalistic approach and cancer survivors assume that physicians would make the best decision for their treatment process. Turkish people even accept that physicians are not required to disclose cancer diagnosis or to have a consensus about treatment process with patients and to respects their autonomy (Guven, 2010).

Perceived autonomy support. Perceived autonomy support is a self-determination theory construct that is related to internalize the regulation of important behaviors (Pelletier, Fortier, Vallerand, & Briere, 2001). Perceived autonomy support is defined as the belief of people such as learners and students that the authority figures they interact with acknowledge their feelings, provide opportunities for choice, encourage independent problem solving, and involve them in decision making while minimizing use of pressures and demands (Mageau & Vallerand, 2003; Hagger et al., 2007). In the context of rehabilitation, key variables of autonomy support are defined as acknowledging patients' feelings, allowing patients to express their views, and involving them in the treatment decision-making process (Levy, Polmen, & Borkoles, 2008). Perceived autonomy support is also significantly related to self-motivation, satisfaction, and performance in various settings (Baard, Deci, & Ryan, 2005). When patients perceive their health care professionals as more empathetic they are more likely to comply with treatment guidelines and be satisfied with the outcomes (Levy et al., 2008). Informed decision-making and shared decision-making use by health care professionals resulted in higher satisfaction and quality of life for cancer survivors than paternalistic decision-making (Ashraf et al., 2013). Taken as a whole, these results indicate that autonomy support is associated with positive outcomes such as treatment adherence, life satisfaction, and quality of life for people with chronic illness and disability. As Turkey has a hierarchical public health system and physicians take a paternalistic role, it is important to investigate whether providing autonomy support is associated with participation outcome for cancer survivors.

Role of Personal Factors on Participation

Core self-evaluations. Core self-evaluations is people's fundamental evaluation of themselves that affect all other evaluations and beliefs in their life (Judge, Locke, and Durham, 1997; Smedema, Chan, & Phillips, 2014). People who evaluate themselves positively act upon life situations more positively than people who negatively evaluate themselves. Core self-evaluations is a higher-order construct composed of four lower level constructs: self-esteem, generalized self-efficacy, emotional stability, and internal locus of control.

Research related to core self-evaluations and participation is scarce. However, existing research indicates that a relationship between core self-evaluations and participation is likely. Recently, Smedema et al. (2014) conducted a study of the motivational model of hope for people with spinal cord injury and concluded that core self-evaluations had a significant direct effect on participation and life satisfaction. As there are not many studies about core self-evaluations and participation for cancer survivors, research related to the four lower-order constructs of core self-evaluations are examined.

Self-esteem refers to “feelings of affection for oneself” (Brown, Dutton, & Cook, 2001, p. 616). As cancer may cause alterations in bodily experience, disrupt interpersonal relationships, and bring out self-concept discrepancies and emotional problems, low self-esteem levels are an expected outcome of cancer (Katz, Rodin, & Devin, 1995). Self-esteem was found to have significant associations with other psychological constructs for cancer survivors. Wojtyna, Zycinska and Stawiarska (2007) indicated that this expected decrease in self-esteem is followed by decreases in quality of life. Low levels of self-esteem have also been shown to be a predictor of poor quality of life and were associated with a higher degree of worry in long-term cancer survivors (Langeveld, Grootenhuis, Voute, Han, and Van Den Bos, 2004). Kobayashi, Sugimoto, Matsuda, Matsushima, and Kishimoto (2008) indicated that anxiety and depression levels of people with head and neck cancer with low self-esteem were significantly higher than patients with higher self-esteem before and 6 months after the surgery. Through an experimental-control group study, Wamaloon, Nattharungsri, Thepe-apiruk and Ngeoywijit (2008) found that use of a hope and self-esteem strengthening program resulted in decreases in depression levels in cancer survivors. Overall, studies show that self-esteem is linked to the overall well-being of cancer survivors; thus, it is plausible that self-esteem will influence community reintegration and participation as well.

Generalized self-efficacy refers to positive beliefs in one's ability to successfully cope and overcome various challenges and unfavorable events (Boehmer, Luszczynska, & Schwarzer, 2007). Self-efficacy determines whether a person will display coping behaviors for difficult tasks and adverse events, and if so, the amount of effort and durability of those behaviors (Bandura, 1977). Self-efficacy may play a major role in lives of cancer survivors. Higher levels of self-efficacy have been linked to adherence to treatment, increased care behaviors, and decreased physical and psychological symptoms (Lev, 1997). Boehmer et al. (2007) indicated that self-efficacy beliefs were predictive of physical, emotional, and social well-being of gastrointestinal, colorectal, and lung cancer survivors. Coping self-efficacy has been shown to be a significant predictor of depression for cancer survivors (Phillip et al., 2013) and moderately to strongly correlated with social-family, emotional, and functional well-being for cancer survivors (Heitzmann et al., 2011). Haas (2011) indicated that self-efficacy played a mediating role between fatigue and physical activity and indirectly influenced quality of life for cancer survivors. Overall, research in this area has documented that self-efficacy is a significant predictor of physical and psychological well-being of cancer survivors.

Emotional stability is defined as "the propensity to feel calm and secure" (Chang, Ferris, Johnson, Rosen, & Tan, 2012; p. 83). It is related to feeling happy and optimistic. Research regarding emotional stability and cancer is limited; however, researchers have explored the relationship between neuroticism, the tendency to respond with negative emotions to threat, frustration, or loss (Lahey, 2009), and health outcomes. In a 2006 study Nakaya and his colleagues found a significant association between neuroticism and risk of death among women;

however, in their 2010 study, they found no significant association between neuroticism and cancer risk or survival after cancer. Recently a study conducted in the U.S. indicated that neuroticism was related to higher cancer mortality rates (McCann, 2014). Stensvold et al. (2010) indicated that neuroticism significantly predicted side effects of curatively intended treatment for people with head and neck cancer. Overall, more research is needed in this area.

A person's locus of control, his/her belief that he/she has influence and control over his/her environment (Kumpfer, 1998; Smedema et al., 2014), is related to both physical and psychological outcomes for cancer survivors. In Watson, Pruyn, Greek, and Borne's 1990 study of cancer survivors, participants with high internal loci of control were more likely to experience fewer physical and psychological problems and have higher levels of self-esteem. Emotional status and quality of life have also been linked to internal locus of control (Neip, Lopez-Roig, and Pastor, 2007). By contrast, Burish et al. (1984) indicated that, after receiving relaxation training and/or biofeedback, cancer survivors with higher external loci of control experienced lower levels of physiological arousal in comparison to cancer survivors without such a locus of control. They concluded that an external locus of control might be advantageous when there is little control over a medical situation. Overall, the research indicates that both internal and external loci have advantages in certain situations.

Resilience. Resilience refers to the ability to bounce back from adverse events or to recover from stress (Smith et al., 2008). In an evaluation of Snyder's hope theory, Chan et al. (2013) observed that resilience is positively associated with agency thinking, and agency thinking is positively associated with participation. Although the application of resilience in oncology is still relatively new (Stefanic, Caputi, Iverson, Lane, & Oades, 2012), various studies have demonstrated the benefits of resiliency on the lives of cancer survivors. Min et al. (2013)

found that psychological resilience independently contributed to low emotional distress for cancer survivors. In a study of prostate cancer survivors, participants with higher levels of resiliency reported lower levels of psychological distress during both three- and six-month follow-up visits (Ragnarsdóttir, 2012) Resilience is also positively related to personal growth and constructive changes (e.g., growth in social actualization) in the lives of cancer survivors (Costanzo, Ryff, & Singer, 2009; Rowland & Baker, 2005; Wenzel et al., 2011). Kucukkaya (2010) reported that resilience is associated with higher levels of self-perception, empowerment, life appreciation, and friendship after being diagnosed with breast cancer. The results indicated that resilience may have positive influences on emotional functioning and psychological distress for cancer survivors. In addition, cancer survivors may experience positive changes in their lives after being diagnosed with cancer, which may influence participation.

Spirituality, religiosity and meaning in life. Spirituality, despite difficulties in defining and measuring it, has garnered attention in oncology. Puchalski provides an insightful definition of spirituality: “the ways that people find meaning and purpose and how they experience their connectedness to self, others, the significant, or the sacred” (2012, p. iii49). Moreover, she contends that spirituality “is an essential element of person-centered care and a critical factor in the ways in which patients with cancer cope with their illness from diagnosis through treatment, survival, recurrence, and dying” (Puchalski, 2012, p. iii49). Many studies have explored the effects of spirituality, religiosity, and meaning in life on outcomes for cancer patients. Wenzel et al. (2002) indicated that spiritual well-being was significantly positively associated with personal growth and mental health and negatively associated with a declining health status. According to Rippentrop, Altmaier, and Burns (2006), both spirituality and religiosity influence quality of life for cancer patients, but spirituality has a greater impact on the quality of life of cancer survivors.

In another study, religious coping was a predictor for psychological well-being and overall quality of life of cancer survivors (Peteet & Balboni, 2013). Nelson et al. (2009) found a stronger relationship between spirituality and depression than between religiosity and depression. The authors concluded that meaning of life mediated the relationship between spirituality and depression. Meraviglia (2006) found that meaning in life was positively associated with physiological responses to cancer; a patient's sense that life is meaningful mediated the impact of cancer on physical and psychological functioning in a sample of breast cancer survivors. Overall the results indicate that spirituality, religiosity and meaning of life may have a substantial impact on physical and mental well-being of cancer survivors.

Self-construal. Self-construal refers to how people define themselves in relation to others (Zhao, Huh, Murphy, Chatterjee, & Baezconde-Garbanati, 2014). Markus and Kitayama (1991) divided the concept of self-construal into two types: (a) independent self-construal and (b) interdependent self-construal. Individuals with independent self-construal act based on their own internal thoughts, feelings, and actions. Independent self-construal emphasizes uniqueness over similarity. Individualism, autonomy, and self-containment reflect independent self-construal. Interdependent self-construal refers to seeing oneself as a part of a larger group and regulating behaviors based on the thoughts, feelings, and actions of other members of the group(s) with which one identifies. Sociocentricism, holism, and collectivism reflect interdependent self-construal.

Research about self-construal and chronic illness and disability and, specifically, about cancer, is very scarce. However, self-construal may play an important role in rehabilitation and health behaviors, as it influences the very nature of people's actions, including cognition, emotion, and motivation (Zhao et al., 2014). Uskul and Oyserman (2010) observed that people from individualistic cultures value health, as it is related to being autonomous and is regarded as a personal responsibility, whereas people in collectivistic cultures value health because illness or disability may result in failure to properly fulfill social obligations. Uskul and Hynie (2007) found people who defined themselves as collectivistic were more concerned about how their illnesses affected family members and people in their groups, whereas people who defined themselves as more individualistic were more concerned about illness-related personal matters. Moreover, when asked, people with interdependent self-construal recalled more information about their health and its consequences when that information related to their relationships with other people other-related health information and consequences. Building on this research, Han and Jo (2012) demonstrated that cancer prevention messaging was more effective when combined with an appropriate individualistic or collectivist appeal. When health-threatening information is encountered, self-enhancement is more common in societies with independent self-construal (Jacobson et al., 2012). The results indicated that people with independent and interdependent self-construal may conceptualize illnesses (e.g. cancer) from different perspectives and react to it in different ways. As Turkey is shifting from a more collectivist society to an individualistic society, it is important to investigate the effect of independent and interdependent self-construal on participation for cancer survivors.

Conclusion

Cancer is one of the most prevalent and prominent diseases around the world. However with advanced diagnosis and treatment options, cancer survivors are living longer. Therefore, community reintegration and participation of cancer survivors becomes an important issue for rehabilitation and health professionals. On the other hand, cancer survivors have significantly lower levels of participation than people without cancer. Participation is defined as involvement in life situations and meaningful engagement in various roles and activities is a multidimensional construct influenced by personal and environmental factors; therefore, in order to investigate participation, a multidimensional model with emphasis on personal and environmental factors is needed. Among rehabilitation researchers, ICF is a widely accepted biopsychosocial model that emphasizes functioning, not disability, and considers both personal and environmental factors. For these reasons, this study utilized the ICF framework to investigate participation for cancer survivors in Turkey.

In the current study, the ICF framework was operationalized to investigate influence of each ICF construct on participation of cancer survivors. Body functions/ body structures were operationalized to include impairment related variables (e.g. cancer stage, fatigue, pain), and activities were operationalized to include ability related variables (e.g. physical functioning, role functioning). Personal factors were operationalized to include positive psychological factors (e.g. core self-evaluations, purpose in life). Environmental factors were operationalized to include mostly studied environmental factors (i.e., social support, health care climate and a perceived stigma). Consequently, this study aimed to investigate the relationship between ICF components and participation for cancer survivors in Turkey. The findings of this study may facilitate the development of a participation model for cancer survivors.

CHAPTER THREE

Method

This chapter provides a description of the research design, procedures, sampling plan, participant's characteristics, measurement tools, and statistical analysis used in this study.

Design

Using ICF as a framework, this study evaluated the relationships between ICF constructs and for cancer survivors in Turkey. A quantitative descriptive research design employing multiple regression and correlational analysis was used to investigate relationships between impairment, activity, environmental factors, and personal factors as they relate to participation.

Procedures

Data for this study was collected as part of an ICF project sponsored by the Rehabilitation Research and Training Center on Evidence-Based Practice in Vocational Rehabilitation (RRTC-EBP-VR). The research proposal was submitted to the institutional review board (IRB) at the University of Wisconsin-Madison. Upon approval, the researcher contacted a major oncology institute and a non-profit cancer organization in Turkey. The two collaborative organizations are leading cancer organizations located in two cosmopolitan cities of Turkey (i.e., Istanbul and Ankara). The collaborators were informed about the research process and were asked to provide help in recruiting participations. The collaborators agreed to help and provided support letters for use in recruiting participants for the study. To recruit participants, the collaborators reached out to their affiliates (i.e., cancer survivors) either one-on-one or via internet, informed them about the study, and provided them with instructions for participation. In addition to direct recruitment, flyers were used to promote the study. The individuals who volunteered to participate in the study completed a survey packet via a secure online survey tool (http://www.surveymonkey.com/). A consent form explaining the nature of the study and the potential risks and benefits of participating in the study was placed as the first page of the survey packet before the demographic information and questionnaire section of the study. The consent form emphasized that participating in this study was voluntary and that not participating in the study would not have any negative effect on the participants. The investigator's email address and telephone number were provided to allow participants to ask any questions or express concerns that arose. All responses were secured through a website. The average completion time was approximately 30-45 minutes.

To be eligible for participation in the study, the participants had to meet the following criteria: (a) be between 18 and 65 years of age; (b) be diagnosed with cancer; (c) have a self-reported 6th-grade reading level or above; and (d) be a citizen of Turkey. Participants who were not diagnosed with cancer or were diagnosed with any other disability were not included in the sample.

Sample

A total of 533 cancer survivors attempted to participate in the online survey. Out of 533 cancer survivors, 192 completed the survey. The participants had a mean age of 45.82 (*SD* = 11.46). Eighty-two percent of the participants were female, and 65% of them were married. Twenty-two percent had less than a high school education, 21.4% were high school graduates, 15.1 % had a post-secondary education/associate's degree, 27.1% had a bachelor's degree, and 14.1% had master's degree or higher. Fifty-two percent of the participants were in the low-income range, 37% were in the medium-income range, and 23% were in high-income range. A large percentage of the participants indicated that they belonged to the low-income bracket (51.6%). As Turkey is a developing country, many people with a college education still earn a relatively low salary. Eighty-six percent of the participants were outpatient and 14% were inpatient. Fifty-two percent of the participants had breast cancer, and the remaining had other types of cancer (i.e., head and neck, lung), with 34% of the patients in Stage 1, 25% in Stage 2, 29% in Stage 3, and 12% in Stage 4. Seventy-three percent of the participants had surgery, 78.1% had chemotherapy, and 53.1% had radiotherapy. One percent of the participants received no treatment, 27.1% received one type of treatment modality (e.g., chemotherapy), 32.3% received two types of treatment modalities (e.g., chemotherapy and surgery), and 39.6% received three types of treatment modalities (i.e., chemotherapy, surgery, and radiotherapy). The mean number of months since diagnosis among the participants was 27.16 months (SD = 24.8), with a range of 1 to 164 months. Sample and disability-related characteristics of the participants are shown in table 3.1.

Measures

This study investigated the participation of cancer survivors as an outcome variable. The ICF components (i.e., body functions and body structures, activities, personal and environmental factors) were operationalized to determine factors that influence the participation of cancer survivors. The independent variables of this study included demographic covariates (i.e., age, gender, education level, and income level), impairment-related variables (i.e., type of cancer, cancer stage, type of treatments, number of treatments, patient type, onset time since diagnosis, secondary health conditions, perceived stress, pain, sleep disturbance, and fatigue), activity-related variables (i.e., physical, role, emotional, cognitive and social functioning activities), personal factors (i.e., core self-evaluations, resilience, religiosity, purpose in life, and independent and interdependent self-construal) and environmental factors (i.e., perceived social stigma, perceived social support and supportive health care climate). Measures are shown in Appendix E.

Demographic Questionnaire

A demographic questionnaire was used to identify socio-demographic and cancer-related characteristics of the participants. The demographic questionnaire included items related to age, gender, educational attainment, marital status, employment status, income level, type of cancer, cancer stage, types of treatment (i.e., chemotherapy, radiotherapy, and surgery), patient type (i.e., inpatient and outpatient), onset time since diagnosis, length of treatment, and secondary disabilities. Of these, the following characteristics were included in the regression analysis: age, gender, educational attainment, income level, type of cancer, cancer stage, type of treatment(s), number of treatments, patient type, onset time since diagnosis, and secondary disabilities.

Impairment-Related Factors

Pain. Pain was measured by the two-item Pain Scale included in the *European Organization for Research and Treatment of Cancer Quality of Life Questionnaire* (*EORTC QLQ*). Participants were asked to rate whether they had pain and if pain interfered with daily life using a 4-point Likert type scale ranging from 1 (not at all) to 4 (very much)**.** Responses are summed and divided by number of items in the scale to obtain its factor-based score and then standardized to range from 0 to 100 with higher scores indicating higher levels of pain. The internal consistency reliability coefficient (Cronbach's alpha) for the pain scale was reported to be .72 for cancer patients in Turkey (Cankurtaran et al., 2008). The Cronbach`s alpha of the pain scale was .82 with the sample in the present study.

Fatigue. Fatigue was measured by the *Brief Fatigue Inventory* (BFI) developed by Mendoza et al. (1999). It is composed of nine items. The first three items measuring severity of

Table 3.1

Demographic and Impairment Related-Characteristics of Participants (*N* =192)

Demographic Covariates	*N (%)*	*Mean (SD)*
Age		45.82(11.46)
Gender		
Men	33(17.2%)	
Women	159(82.8%)	
Marital status		
Married	124(64.6%)	
Not married	68(35.4%)	
Education		
<High school	43(22.4%)	
High school graduate	41(21.4%)	
Post-secondary education/Associate`s degree	29(15.1%)	
Bachelor`s degree	52(27.1%)	
Master`s degree or above	27(14.1%)	
Income level		
Low	99(51.6%)	
Medium	70(36.5%)	
High	23(11.9%)	

Table 3.1 (Continued).

Demographic and Impairment Related-Characteristics of Participants

Crosstabs of Age, Gender and Cancer Type					
Age	Male		Female		Total
	Breast	Other	Breast	Other	
18-35	0 (0%)	5 (2.6%)	16 (8.6%)	12 (6.4%)	33 (17.7%)
36-55	0 (0%)	21 (11.2%)	70 (37.6%)	24 (12.9%)	115 (61.8%)
>55	0 (0%)	7(3.7%)	13 (6.9%)	18 (9.6%)	38 (20.4%
Total	0 (0%)	33(17.7%)	99(53.2%)	54(29.0%)	186 (100%)

Table 3.1 (Continued).

Demographic and Impairment Related-Characteristics of Participants (*N* =192)

Disability-related Variables	*N (%)*	*Mean (SD)*
Type of cancer		
Breast cancer	100(52.1%)	
Other	92(47.9%)	
Cancer stage		
First stage	65(33.9%)	
Second stage	49(25.5%)	
Third stage	55(28.6%)	
Fourth stage	23(12.0%)	
Patient type		
Inpatient	27(14.1%)	
Outpatient	165(85.9%)	
Type of treatment		
Surgery	152(79.2%)	
Chemotherapy	150(78.1%)	
Radiotherapy	102(53.1%)	
Number of treatments received		
0	2(1%)	
1	52(27.1%)	
2	62(32.3%)	
3	76(39.6%)	
Secondary disabilities		
Yes	92(47.9%)	
No	94(48.9%)	
Type of secondary disabilities		
Anxiety disorders	22(11.5%)	
Arthritis and rheumatism	22(11.5%)	
Asthma and other allergies	18(9.3%)	
Attention-deficit hyperactivity disorder	11(5.7%)	
Blood disorders	11(5.7%)	
Cardiac and other conditions of circulatory system	17(8.8%)	
Depression and other mood disorders	37(19.2%)	
Diabetes Mellitus	14(7.2%)	
Digestive	16(8.3%)	
Eating Disorders	14(7.2%)	
End-stage renal disease and other genitourinary system	10(5.2%)	
Onset time since diagnosis	Range 1-64 month	27.16(SD=24.8)

fatigue were used in this study. Individuals are asked to rate severity of their fatigue at its "worst," "usual," and "now," ranging from 0 (no fatigue) to 10 ("fatigue as bad as you can imagine"). The other six items measure the extent to which fatigue has interfered with various aspects of the individual's life during the past 24 hours or the past week. The interference items include general activity, mood, walking ability, normal work (including both work outside the home and housework), relations with other people, and enjoyment of life. The items are rated on an 11-point Likert-type scale ranging from 0 (does not interfere) to 10 (completely interferes). The BFI was significantly correlated with both the Functional Assessment of Cancer Therapy (FACT) ($r = -.88$, $p < 0.001$) and the Profile of Mood States (POMS) ($r = .84$, $p < 0.001$) fatigue subscales. The internal consistency reliability (Cronbach's alpha) coefficient was reported to be .96 (Mendoza et al., 1999). A Cronbach`s alpha of .94 was found with the sample in this study.

Sleep. Sleep was measured by a 12 items the *Medical Outcomes Study-Sleep Scale* (MOS-Sleep) developed by Hays and Stewart (1992) to assess various sleep dimensions. The first two items assess how long it takes for individuals to fall sleep and how many hours they sleep per night. The other ten items assess various aspects of sleep, including sleep disturbance, snoring, and sleep adequacy. The sleep disturbance scale was used to measure sleep problems in this study. Sample items include "Do you feel drowsy or sleepy during the day?" and "do you have trouble falling asleep?" Each item is rated on 6-point rating scale ranging from 1 (all of the time) to 6 (none of the time). Scoring consists of two steps. First, all items are scored and then converted to a 0 to 100 range, with a high score reflecting sleep problems. Second, seven scales are created by averaging particular items within each scale. Internal consistency reliability coefficients (Cronbach's alpha) were reported to range from .71 to .81 for a sample of people with Type I and Type II diabetes and with painful, distal, symmetrical, and sensorimotor polyneuropathy in Germany, Hungary, Poland, Australia, the United Kingdom, and South Africa (Viala-Danten, Martin, Guillemin, & Hays, 2008). The Cronbach's alpha for the sample in the present study was found to be .73.

The Perceived Stress Scale (PSS-10). The PSS was developed by Cohen and Williamson (1988) to measure the extent to which situations in one's life are appraised as stressful. The scale was validated with a large national probability sample. Sample items include: "In the last month, how often have you felt that you were unable to control the important things in your life," and "In the last month, how often have you felt that difficulties were piling up so high, you cannot overcome them." Each item is rated on a 5-point Likert-type scale ranging from 0 (never) to 4 (very often). Four positive items (# 4, 5, 7, and 8) are reverse-scored The responses are summed over the 10 items to produce a PSS-10 total score, which can range from 0 to 40, with higher scores indicating higher perceived stress. The internal consistency reliability estimate, a Cronbach's alpha of .86 was reported for newly diagnosed breast cancer patients and was consistent with the alphas reported in the general literature ranging from .75 to .86 (Cohen, Kamarek, & Mermelstein, 1983). In another test of the measure, a Cronbach's alpha of .84 was reported for a sample of Turkish college students (Orucu & Demir, 2008). The Cronbach's alpha was found to be .81 for the sample in the present study.

Activities

The European Organization for Research and Treatment of Cancer (EORTC) Quality of Life Questionnaire (QLQ-C30). EORTC QLQ-C30 was developed to assess the health-related quality of life of cancer patients participating in international clinical trials. The QLQ-C30 includes five functional scales (physical, role, cognitive, emotional, and social), three symptom scales (fatigue, pain, and nausea and vomiting), a global health status scale, and a number of items measuring additional symptoms reported by cancer patients (dyspnea, loss of appetite, insomnia, constipation, and diarrhea) and perceived financial impact of disease (Aaronson et al., 1993). Functional and symptoms scales are rated on a 4-point Likert-type scale ranging from 1 (not at all) to 4 (very much). The global health status/quality of life scale is rated on a 7-point Likert-type scale ranging from 1 (very poor) to 7 (excellent). For each scale, responses are summed and divided by number of items in each scale to obtain a factor-based score and then standardized to range from 0 to 100 with higher scores indicating higher level of functioning and health-related quality of life. For the purpose of this study only the five functioning scales were used to operationalize the construct of activity. The reported internal consistency reliability coefficients (Cronbach’s alpha) for the QLQ subscales ranged from .56 to .85 for a sample of cancer patients in Turkey (Cankurtaran et al., 2008). Similar levels of Cronbach`s alphas ranging from .66 to .90 were found for the sample in the present study.

Personal Factors

Core Self-Evaluations Scale (CSES). CSES was developed by Jugde, Erez, Bono, and Thoresan (2003). It is composed of 12 items designed to briefly assess broad, integrative personality traits including self-esteem, generalized self-efficacy, neuroticism, and locus of control. Each item is rated on 5-point rating scale ranging from 1 (strongly disagree) to 5 (strongly agree). Six negative items (# 2, 4, 6, 8, 10, and 12) are reverse-scored. The items are summed to produce a total score that ranges from 12 to 60, with higher scores indicating higher CSE. The internal consistency reliability coefficients (Cronbach’s alpha) were reported to be above .80, with an average reliability of .84. Test re-test reliability over a one-month interval was reported to be .81, indicating good stability over time (Jugde et al., 2003). The Cronbach’s alpha of the scale for the sample in the present study was .74.

Brief Resilience Scale (BRS). The BRS was developed by Smith et al. (2008) to assess a person's ability to bounce back or recover from stress. The scale is comprised of 6 items (e.g., "I tend to bounce back quickly after hard times") rated on a 5-point Likert scale, ranging from 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). Items 2, 4, and 6 are reverse-scored and the items are summed and averaged to generate a factor-based score. The authors reported good internal consistency, with Cronbach's alpha ranging from .87 for a sample of undergraduate students to .80 for a sample of cardiac rehabilitation patients and .91 for a sample of 50 participants comprised of women with fibromyalgia and healthy controls. The Cronbach's alpha for the sample in the study was .90.

Purpose in Life. Purpose in life was measured by the purpose in life subscale of the *Psychological Well-Being Scale* developed by Ryff and Keyes (1995). The abbreviated three-item version of the purpose in life subscale, reported in the National Survey of Midlife Development (MIDUS II), was used in this study. Sample items include statements such as "I live life one day at a time and don't really think about the future". Each item is rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Responses are summed over three items after reversing one item to produce a total score which range 3 to 21, with higher scores indicating stronger purpose in life. The internal consistency reliability coefficient (Cronabach's alpha) was reported to be between .25 and .32 (MIDUS, 2004-2006). The modest alpha coefficients are the result of the small number of indicators per scale (Ryff & Keyes 1995).

Self-Construal Scale (SCS). The SCS was developed by Singelis (1994) to measure independent (emphasis on separateness and individuality) and interdependent (emphasis on connectedness and relations) self-construal. The National Survey of Midlife Development in the United States (MIDUS II) used a 6-item abbreviated version of the SCS called the Self-Construal

Measure, which will be used in this study. Sample items include, “My happiness depends on the happiness around me” and “I act in the same way no matter who I am with.” Each item is rated on a 7-point Likert rating scale ranging from 1 (strongly agree) to 7 (strongly disagree). Factor-based scores are used for each subscale, with higher scores reflecting higher standing on the scale. The internal consistency reliability coefficients (Cronbach’s alpha) were reported to range between .17 to .27 for independence and .31 to .37 for interdependence subscales (Ryff et al., 2012; MIDUS, 2004-2006). The Cronbach`s alphas for the independence and interdependence subscales for the sample in the present study were .55 and .75 respectively.

Duke University Religion Index (DUREL). DUREL is a brief, comprehensive**,** and easily used measure of religiosity. It was developed by Koenig, Meador, and Parkerson (1997) to assess three dimensions of religiosity: (a) organizational religious activity (ORA), (b) non-organizational religious activity (NORA), and (c) intrinsic religiosity (IR). The three-item IR subscale was used in this study. Each item is rated on a 6-point Likert-type scale ranging from 1 (definitely true of me) to 6 (definitely not true). Sample items include “I try hard to carry my religion over into all other dealings in life.” IR responses were reverse-scored and summed over the 3 items to produce an IR total score, which ranged from 3 to 18, with higher scores indicating higher personal religious commitment and motivation. It is recommended that correlations with health outcomes should be analyzed at the subscale level (Koenig & Bussing, 2010). Higher scores on DUREL or on its subscales have been found to be associated with faster remission of depression, lower rates of depression, and slower progression of disability over time. Internal consistency reliability coefficients (Cronbach's alpha) were reported to range between .78 and .91. The two-week test-retest reliability (intra-class correlation) was reported to be .91 (Koenig & Bussing, 2010). The Cronbach`s alpha for the sample in the present study was found to be .86.

Environmental Factors

Multidimensional Scale of Perceived Social Support (MSPSS). The MSPSS was developed by Zimet, Dahlme, Zimet, and Farley (1988) to measure social support from multiple sources. The MSPSS is composed of 12 items organized into three major sources of social support: (a) Family, with 4 items (e.g., "I can talk about my problems with my family"); (b) Friends, with 4 items (e.g., "I can count on my friends when things go wrong"); and (c) Significant Others, with 4 items (e.g., "There is a special person who is around when I am in need"). Each item is rated on a 7-point type Likert scale ranging from 1 (very strongly disagree) to 7 (very strongly agree). Scores for each subscale are represented by the mean of the raw scores for items in the subscale. The total score is represented by the mean of the scores obtained on the three subscales, with higher means reflecting greater perceived social support. Internal consistency (Cronbach's alpha) of the full and individual subscales was reported to range from .87 to .92, with .92 for the full scale, .87 for the family subscale, .90 for the friends subscale, and .92 for the significant other subscale in a sample of Turkish school administrators (Basol, 2008). A Cronbach's alpha of .90 was found for the composite scale with the sample in the present study.

Perceived Disability Stigma Scale (PDSS). The PDSS was developed by Chan and Fujikawa (2013) to assess perceived disability stigma. Items were adapted from the *Stigma Scale for Chronic Illness* (SCCI: Rao et al., 2009). The PDSS is a 14-item questionnaire given to people with disabilities to assess perceived stigma in their communities (e.g., "People in my community feel uncomfortable with persons with disabilities," and "People in my community think persons with disabilities are dangerous"). Each item is rated on a 5-point Likert-type scale ranging from 1 (never) to 5 (always), and responses are summed over the 14 items to produce a

PDSS total score, which ranges from 14 to 70, with higher scores indicating higher level of stigma experienced by the individual. The Cronbach's alpha for the sample in the present study was found to be .83.

Health Care Climate Questionnaire (HCCQ). HCCQ was developed by Williams, Virgina, Zachary, Deci, and Ryan (1996) to measure patients' perceptions of their health care provider's support for autonomy. The HCCQ was originally validated to assess health care professionals' support for autonomy in a weight-loss study by Williams et al. (1996); however, several versions of the questionnaire have since been used and adapted in nutrition counseling, exercise, smoking cessation, medication adherence, and diabetes care research studies (Schmidt et al., 2012). It is composed of 15 items (e.g., "I feel that the staff has provided me with choices and options"). Items are rated on a 7-point rating scale ranging from 1 (strongly disagree) to 7 (strongly agree); item 13 is a reverse-scored item. A factor-based score is computed to yield an average score ranging between 1 and 7. Higher average scores represent a higher level of perceived autonomy support. For this study, the items were modified to target health behavior related to participation. The internal consistency reliability estimate for the HCCQ was reported to be .95. The Cronbach's alpha for the sample in the present study was found to be .95.

Participation

Impact on Participation and Autonomy Scale (IPA). The IPA was developed by Cardol, de Haan, van den Bos, de Jong, and de Groot (1999) to assess patients' participation as defined by the World Health Organization's (WHO) ICF. It is comprised of 32 items and five subscales: (a) autonomy indoors, 7 items (e.g., "My chances of getting around in my house where I want to are"); (b) family role, 7 items (e.g., "My chances of fulfilling my role at home as I would like are"); (c) autonomy outdoors, 5 items (e.g., "My chances of going on the sort of trips and holidays I want to are"); (d) social life and relationships, 7 items (e.g., "The respect I receive from people who are close to me is"); and (e) work and education, 6 items (e.g., "My chances of getting or keeping a paid or voluntary job that I would like to do are"). Each item is rated on a 5-point Likert-type rating scale ranging from 1 (very good) to 5 (very poor). The English version of the IPA was validated by Sibley et al. (2006). Reported internal consistency reliability estimates (Cronbach's alpha) for the five subscales ranged from .86 to .91 (Kersten et al., 2007). Although, the IPA is comprised of five subscales, a total score was used in this study. A Cronbach's alpha of .95 was found for the composite scale with the sample in the present study.

Data Analysis

The measurement tools in this study differed in scoring formats and range of total scores. To facilitate understanding and interpretation of participants' scores on these measurements were reported as mean item scores. The Statistical Package for Social Sciences (SPSS) 20.0 was utilized to conduct statistical analysis in this study. Descriptive statistics, preliminary data screening, simultaneous regression analysis, and hierarchical regression analysis were used to examine the data. Descriptive statistics was used to examine the data distribution (normality, skewness, and kurtosis), central tendency (mean, median, mode), and dispersion (range, variance, standard deviation) of all independent and dependent variables. In addition, frequencies, percentages, means, and standard deviations of demographic and other study variables were calculated to provide an overall summary of the data. Data screening included checking for missing variables and outliers and testing the assumptions of the hierarchical regression, including normality (kurtosis and skewness), linearity, and homoscedasticity assumptions. Missing variables were replaced using regression analysis, and multivariate outliers were deleted using squared Mahalanobis distance. Cronbach's alpha was used to estimate the internal consistency reliability of all the measurement tools.

Sample size. To determine the sample size, an a priori power analysis was conducted using the G*Power software. Using an alpha of .05, a statistical power of .80, and a medium effect size of f^2=.15 (Cohen, 1988), a total number of 190 participants was determined to be needed for 31 predictor variables. The 31 predictor variables included four demographic variables (i.e., age, gender, education level, income level), 13 impairment related factors (i.e., type of cancer, cancer stage, type of treatment (i.e., chemotherapy, surgery, radiotherapy), number of treatments, patient type, onset time since diagnosis, secondary health conditions, perceived stress, pain, sleep disturbance and fatigue), five activity variables (i.e., physical, role, emotional, cognitive and social functioning activities), six personal factors (i.e., core self-evaluations, resilience, spirituality, meaning in life, and independent and interdependent self-construal), and three environmental factors (i.e., perceived stigma, perceived social support and supportive health care climate). This sample size was determined to be adequate to test a regression model with moderately correlated and sufficiently reliable measures.

Regression analysis. Regression analysis was used to determine the relationships between the independent variables and the dependent variable (Cohen, Cohen, West, & Aiken, 2003). Regression analysis is a statistical procedure that allows researchers to test the influence of predictor variables individually and as a whole on the dependent variable (Hoyt, Imel, & Chan, 2008). Hoyt et al. (2008) indicated that regression analysis can be used to answer various questions in rehabilitation and counseling and that it can be particularly useful for testing theories in applied rehabilitation settings. The regression analysis helps to determine the best predictors of independent variables. Because of those characteristics, regression analysis has

Table 3.2

Measurement Scale Summary

Scales and Statements					
Impairment	**Number of Items**	**Range**	**Ratings Scale**	**Mean (SD)**	**Alpha Reliability**
Brief Fatigue Inventory	3	0 - 30	0 - 10	4.65 (2.55)	.96
EORTC QLQ Pain	2	0 - 100	1 - 4	34.06 (28.50)	.74
Medical Outcomes Study-Sleep Scale	12	0 - 100	1 - 6	37.48 (22.03)	.71 - .81
Perceived Stress Scale	10	10 - 40	0 - 4	2.90 (0.57)	.75 - .86
Activity					
EORTC QLQ					
Physical functioning	5	0 - 100	1 - 4	66.17 (22.65)	.81
Role functioning	2	0 - 100	1 - 4	75.71 (27.45)	.85
Emotional functioning	4	0 - 100	1 - 4	62.50 (25.59)	.85
Cognitive functioning	2	0 - 100	1 - 4	73.60 (23.94)	.56
Social functioning	2	0 - 100	1 - 4	66.50 (27.28)	.74
Personal Factors					
Core Self-Evaluation Scale	12	12 - 60	1 - 5	3.33 (0.55)	.80 - .84
Brief Resilience Scale	6	6 - 30	1 - 5	3.34 (0.79)	.80 - .91
Purpose in Life Scale	3	3 - 21	1 - 7	4.56 (1.07)	.25 - .32
Duke University Religiosity Index	3	3 - 18	1 - 5	4.01 (1.19)	.78 - .91
Self-Construal Scale-Independent	3	3 - 21	1 - 7	5.04 (1.48)	.17 - .27
Self-Construal Scale-Interdependent	3	3 - 21	1 - 7	5.10 (1.33)	.31 - .37
Environmental Factors					
The Multidimensional Scale of Perceived Social Support	12	12 - 84	1 - 7	5.54 (1.33)	.92
The Perceived Disability Stigma Scale	14	14 - 70	1 - 5	2.39 (0.66)	n.a
The Health Care Climate Questionnaire	15	15 - 105	1 - 7	4.71 (1.65)	.95
Participation					
Impact on Participation and Autonomy Questionnaire	32	32 - 160	1 - 5	3.65 (0.65)	.86 - .91

been commonly used in counseling and rehabilitation research. Consequently, simultaneous regression analysis was used for research questions 1 to 5 to examine relationships between the ICF constructs and participation. In particular, following regression analyses were conducted:

- The *demographic covariates* including age, gender, education level, and income level were entered in a simultaneous regression model to determine effect of each demographic covariate on participation.
- The *impairment-related* variables including type of cancer, cancer stage, type of treatments (i.e., surgery, chemotherapy, radiotherapy) number of treatments, patient type (i.e., inpatient, outpatient), onset time since diagnosis, secondary health conditions, perceived stress, pain, sleep disturbance, and fatigue were entered in a simultaneous regression model to determine effect of each impairment-related variable on participation.
- The *personal factors* including core self-evaluations, resilience, religiosity, purpose in life, and independent and interdependent self-construal were entered in a simultaneous regression model to determine effect of each personal factor on participation.
- The *environmental factors* including perceived social support, perceived stigma, and supportive health care climate was entered in a simultaneous regression model to determine effect of each environmental factor on participation.
- The *activity-related* variables including physical, role, emotional, cognitive, and social functioning activities were entered in a simultaneous regression model to determine effect of each activity-related variable on participation.

Hierarchical regression analysis. Hierarchical regression analysis (HRA) was used to determine the relationships between the ICF constructs (i.e., demographic covariates, impairment-related variables, activity-related variables, and personal and environmental factors) and participation for cancer survivors. HRA is a flexible statistical analysis procedure that is particularly recommended for testing theory-based models (Keegan, Chan, Ditchman, & Chiu, 2012; Petrocelli, 2003). HRA allows researchers to determine the influence of multiple groups of predictor variables that on an outcome variable in a sequential way. As the purpose of HRA is to test theory-based models rather than maximizing explained variance, research relevance and causal priority is utilized to determine order of predictor variables. In this study, the order of the predictor variables was determined based on expected relationships between ICF constructs and participation for cancer survivors. Additionally, the malleability of the predictor variables was taken into account when entering them into the regression model. Consequently, the following *priori* specifications were used in the analysis.

In *Step 1*, the *demographic covariates* including age, gender, education level, and income level were entered into the model.

In *Step 2*, the *impairment-related* variables including type of cancer, cancer stage, type of treatments (i.e., surgery, chemotherapy, radiotherapy) number of treatments, patient type (i.e., inpatient, outpatient), onset time since diagnosis, secondary health conditions, perceived stress, pain, sleep disturbance and fatigue were entered into the model. In this step, the effects of impairment-related variables on participation were determined, after controlling for the effect of demographic covariates.

In *Step 3*, the *personal factors* including core self-evaluations, resilience, religiosity, purpose in life, and independent and interdependent self-construal were entered into the model. In this step, the effects of personal factors on participation were determined, after controlling for the effect of the demographic covariates and impairment-related variables.

In *Step 4*, *environmental factors* including perceived social support, perceived stigma and supportive health care climate were entered into the model. In this step, the effects of environmental factors on participation were determined, after controlling for the effect of demographic covariates, impairment related variables, and personal factors.

In *Step 5*, *activity-related* variables including physical, role, emotional, cognitive and social functioning activities were entered into the model. In this step, the effects of activity/ability related variables on participation were determined, after controlling for the effect of demographic covariates, impairment related variables, personal factors, and environmental factors.

CHAPTER FOUR

RESULTS

This study aimed to evaluate ICF as a participation model for cancer survivors in Turkey. In particular, the relationship between ICF constructs and participation for cancer survivors in Turkey was investigated. To do so, five separate simultaneous regression analyses were conducted to determine the independent effects of the demographic covariates, impairment-related variables, activity-related variables, personal factors, and environmental factors on participation for cancer survivors. Subsequently, a simultaneous regression analysis was conducted to determine the combined effect of the predictor set from each ICF construct on participation.

In addition, incremental influence of the ICF constructs (i.e., demographic covariates, impairment-related variables, activity-related variables, and personal and environmental factors) on participation was examined through a hierarchical regression analysis. In particular, based on a *priori* specification, the effect of the personal and environmental factors and activity variables on participation after controlling for the other variables was examined

This chapter presents results of the statistical analysis. It begins with the preliminary data screening and analyses and descriptive statistics results. Then, the results of the simultaneous regression analyses and the hierarchical regression analysis are discussed. The chapter ends with providing results of a set of secondary mediation analyses.

Preliminary Data Screening and Analysis

All of the statistical analysis including preliminary screening and analysis were conducted using Statistical Package for the Social Sciences (SPSS.20) software program. First, the data were screened to verify accurate entry, check for compliance with the normality assumption, and determine multivariate outliers. A visual inspection of the data confirmed that no data entry errors existed within the data set. Presence of multicollinearity was determined by calculating the variance inflation factors (VIF) and tolerance indices. All of the VIF scores for the predictor variables were below 10 and none of the tolerance scores was higher than .10, indicating there was no multicollinearity in the data. To examine normality and linearity assumptions, histograms scatter plots of the residuals, and skewness and kurtosis statistics were used. The data met the normality and linearity assumptions for multivariate analyses. Squared Mahalanobis distance with 31 predictor variables using alpha rate of $p < .01$ resulted in the removal of six cases with multivariate outliers. Deleting the six multivariate outliers reduced the sample size to 186 participants. To determine the adequacy of the sample size for a multiple regression, a *priori* power analysis for 31 predictor variables (power = .80, alpha = .05 and a medium effect size, $f^2 = .15$; Cohen, 1988) was conducted using G*Power (Faul et al., 2007), a software designed to conduct power analysis. The results yielded a sample size of 190. The sample size of 186 was found to be adequate for regression analysis.

Descriptive Statistics

The results indicated that on average participants had a relatively high level of participation (*M* =3.15, *SD* = .65). The participants experienced a moderate level of fatigue (*M* = 4.65, *SD* = 2.55), sleep disturbance (*M* = 37.48, *SD* = 22.03), and stress (*M* = 2.90, *SD* = .57) as well as a low to moderate level of pain (*M* = 34.06, *SD* = 28.50). Participants had a moderate level of physical functioning (*M* = 66.17, *SD* = 22.65), emotional functioning (*M* = 62.50, *SD* = 25.69), and social functioning (*M* = 66.50, *SD* = 27.28), and a moderate to high level of role functioning (*M* = 75.71, *SD* = 27.45) and cognitive functioning (*M* = 73.60, *SD* = 23.94). The participants had a moderate level of core self-evaluations (*M* = 3.33, *SD* = .55), a moderate level of resiliency (*M* = 3.34, *SD* = .79), and a moderate to high level of purpose in life (*M* = 4.56, *SD* = 1.07), interdependent (*M* = 5.10, *SD* = 1.33) and independent self-construal (*M* = 5.04, *SD* = 1.48), and a high level of religiosity (*M* = 4.01, *SD* = 1.19). The participants had a high level of perceived social support (*M* = 5.54, *SD* = 1.33), a low to moderate level of perceived stigma (*M* = 2.39, *SD* = 0.66), and a moderate to high level of autonomy support (*M* = 5.54, *SD* = 1.33). It should be noted that the descriptive statistics results were based on the ratings of the scales and not normative data.

Correlational Analyses

The correlational analyses indicated strengths of the correlations between the variables ranged from no significant correlation to moderate correlation (Pearson *r* = .02 to .61) with one exception of the high correlation (*r* = .81) between number of treatments and radiotherapy. The correlation results between the variables are shown in tables 4.2, 4.4, 4.6, 4.8, 4.10, and 4.12. The results indicated participation was significantly positively correlated with core self-evaluations and resiliency (*r* = .29 and .24, *p* < .01) and significantly negatively correlated with interdependent and independent self-construal (*r* = -.14 and -.19, *p* < .01). However, the correlations of participation with religiosity (*r* = -.13; *p* = .06) and purpose in life (*r* = .22, *p* = .76) were not significant. Participation also had significant positive correlations with perceived social support and autonomy support (*r* = .21 and .32, *p* < .01) and a significant negative correlation with perceived social stigma (*r* = -.20 *p* < .01). Lastly, participation was significantly positively correlated with all of the functioning variables. The correlations for physical, role, emotional, cognitive, and social functioning variables were *r* = .44, .49, .36, .36, and .50, *p* < .01, respectively. Since a total participation score used in this study, a correlational analysis among the subscales of IPA scale was conducted. The results indicated that subscales were moderately to highly correlated (ranging from .40 to .73), providing support for the use of the total IPA score to measure participation. The correlations between the IPA scales are shown in Table 4.1.

Simultaneous Regression Analysis

Using ICF as a framework, five simultaneous regression analyses were conducted to investigate factors influencing participation for cancer survivors in Turkey. In particular, the study investigated the relationship between community participation and demographic variables (i.e., age, gender, education level, and income level), impairment-related variables (i.e., type of cancer, cancer stage, type of treatments [surgery, chemotherapy, radiotherapy], number of treatments, patient type [inpatient, outpatient], onset time since diagnosis, secondary health conditions, perceived stress, pain, sleep disturbance and fatigue), activity-related variables (i.e., physical, role, emotional, cognitive and social functioning activities), and personal (i.e., core self-evaluations, resilience, religiosity, purpose in life, and independent and interdependent self-construal) and environmental factors (i.e., social support, perceived stigma and autonomy support). Additionally, a sixth simultaneous regression including all of the tested predictor variables was conducted.

The simultaneous regressions were used to investigate the influence of each the predictor variable sets within the ICF constructs on participation for cancer survivors in Turkey. The results of the simultaneous regression analyses including standardized coefficients (β), and the R^2 values in each analysis are shown in tables 4.3, 4.5, 4.7, 4.9, 4.11, and 4.13.

Demographic covariates. Among the demographic variables, educational attainment ($r = .23$, $p < .01$) and income level ($r = .20$, $p < .01$) were significantly associated with participation. A simultaneous regression analysis was conducted to investigate the significance of the demographic variables on participation for cancer survivors in Turkey. The results

Table 4.1

Correlations Between the IPA Subscales

Variable	1	2	3	4	5
1. Autonomy outdoors	1.00				
2. Family role	.65**	1.00			
3. Autonomy indoors	.66**	.73**	1.00		
4. Social life and relationship	.54**	.59**	.73**	1.00	
5. Work and education	.40**	.52**	.55**	.43**	1.00

Note. $^{**}p < .01$

indicated that demographic variables accounted for 8% of the variance in participation: $R= .29$, $R^2 = .08$, $F\ (4, 181) = 4.15$, $p < .01$. The examination of the standardized partial regression coefficients revealed that, after controlling for the effect of other variables in the regression model, only education attainment ($\beta = .18$, $t\ (186) = 2.23$, $p < .05$) was significantly associated with participation. Cancer survivors who had higher education levels were more likely to have a higher level of participation. Although income was significantly associated with participation, this relationship was rendered nonsignificant after controlling for the effect of other demographic variables in the simultaneous regression. The effect of income was mediated mainly by educational attainment.

Impairment-related variables. Among the impairment-related variables, cancer type ($r = .21$, $p < .01$), cancer stage ($r = -.24$, $p < .01$), surgery ($r = .29$, $p < .01$), radiotherapy ($r = .22$, $p < .01$), number of treatments ($r = .22$, $p < .01$), secondary disability ($r = -.14$, $p < .01$), fatigue ($r = -.46$, $p < .01$), pain ($r = -.36$, $p < .01$), sleep disturbance ($r = -.33$, $p < .01$), and stress ($r = -.41$, $p < .01$) were significantly associated with participation. A simultaneous regression was conducted to investigate the effect of the impairment-related variables on participation for cancer survivors in Turkey. The impairment-related variables accounted for 33% of variance in participation $R= .57$, $R^2 = .33$, $F\ (12, 173) = 7.13$, $p < .01$. The examination of the standardized partial regression coefficients revealed that, after controlling for the other variables in the regression model, fatigue ($\beta = -.22$, $t\ (186) = -2.79$, $p < .01$) and perceived stress ($\beta = -.16$, $t\ (186) = -2.15$, $p < .05$) were significantly associated with participation. Cancer survivors who had lower levels of fatigue and stress were more likely to have higher levels of participation. After controlling for the other variables, cancer type, cancer stage, types of treatment, number of treatments, secondary disability, pain, and sleep disturbance were no longer associated with

Table 4.2

Correlations Between Demographic Variables and Participation

Variable	1	2	3	4	5
1. Age	1.00				
2. Gender	.04	1.00			
3. Education level	-.20**	-.31**	1.00		
4. Income level	-.08	-.13	.38**	1.00	
5. Participation	.04	-.13	.23**	.20**	1.00

Note. **p* < .05; ***p* < .01

Table 4.3

Regression Model with Demographic Variables as Predictors (*N* = 186)

Variable	R^2	*B*	*SE B*	β
Demographic variables	.08**			
Age		0.00	0.00	.09
Gender		-0.10	0.12	-.06
Education level		0.08	0.03	.18 *
Income level		0.13	0.07	.13

Note. F (4, 181) = 4.15, $p < .01$, *$p < .05$; **$p < .01$

Table 4.4

Correlations between Impairment Related Variables and Participation

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Type of cancer	1.00													
2. Cancer stage	-.20**	1.00												
3. Number of treatments	.46**	-.00	1.00											
4. Surgery	.41**	-.21**	.61**	1.00										
5. Chemotherapy	.03	.32**	.43**	-.20**	1.00									
6. Radiotherapy	.41**	-.10	.81**	.37**	.07	1.00								
7. Patient type	-.23**	-.05	-.27**	-.02	-.29**	-.19**	1.00							
8. Onset time	.05	.06	-.00	.04	-.01	-.03	-.05	1.00						
9. Secondary health	-.23**	.05	-.28**	-.04	-.13	-.32**	.05	.14	1.00					
10. Perceived stress	-.14*	.13	-.13	-.20**	.08	-.12	-.00	.01	.22**	1.00				
11. Fatigue	-.13	.19*	-.10	-.18*	.14	-.14*	-.05	-.02	.18**	.50**	1.00			
12. Pain	-.19**	.20**	-.07	-.13	.18**	-.16*	-.04	.09	.17*	.43**	.51**	1.00		
13. Sleep disturbance	-.20**	.16*	-.11	-.17*	.14*	-.16*	-.02	.07	.16*	.39**	.43**	.35**	1.00	
14. Community Participation	.21**	-.24**	.22**	.29**	-.12	.22**	-.02	.07	-.14*	-.41**	-.46**	-.36**	-.33**	1.0

Note. **p* < .05; ***p* < .01

Table 4.5

Regression Model with Impairment-Related Variables as Predictors (*N* = 186)

Variable	R^2	*B*	*SE B*	β
Impairment-related variables	.33			
Type of cancer		0.00	0.10	.00
Cancer stage		-0.17	0.05	-.11
Number of treatments		0.09	0.09	.12
Surgery		0.11	0.17	.07
Chemotherapy		-0.08	0.15	.05
Patient type		-0.04	0.13	-.02
Onset time since diagnosis		0.00	0.00	.08
Secondary health problems		-0.01	0.09	.00
Perceived stress		-0.18	0.08	$-.16^{*}$
Fatigue		-0.05	0.02	$-.22^{**}$
Pain		-0.00	0.00	-.10
Sleep disturbance		-0.00	0.00	-.08

Note. $F(12, 173) = 7.13$, $p < .01$, $^{*}p < .05$; $^{**}p < .01$

participation. It appears that the functional impact of these variables was mediated by fatigue and stress. The direction of the relationships between the impairment-related variables and participation was as expected.

Activity-related variables. All of the activity-related variables including physical, role, emotional, cognitive, and social functioning variables (r = .44, .49, .36, .36, and .50, $p < .01$) were significantly associated with participation. A simultaneous regression analysis was conducted to investigate the effect of the activity-related variables on participation for cancer survivors in Turkey. The activity-related variables accounted for 31% of the variance in participation R= .55, R^2 = .31, F (5, 180) = 16.35, $p < .01$. The examination of the standardized partial regression coefficients revealed that, after controlling for the effect of other variables, role functioning (β = .23, t (186) = 2.60, $p < .05$) and social functioning variables (β = .22, t (186) = 2.26, $p < .05$) were significantly associated with participation. Cancer survivors who had higher levels of role and social functioning were more likely to have higher levels of participation. After controlling for the effect of other variables, physical, emotional and cognitive functioning was not significantly associated with participation.

Personal factors. Among personal factors, core self-evaluations (r = .29, $p < .01$), resiliency (r = .24, $p < .01$), and independent self-construal (r = -.19, $p < .01$) and interdependent self-construal (r = -.14, $p < .05$) were significantly associated with participation. A simultaneous regression was conducted to investigate the effect of the personal factors on participation for cancer survivors in Turkey. The personal factors accounted for 13% of the variance in participation R= .37, R^2 = .13, F (6, 179) = 4.73, $p < .01$. The examination of the standardized partial regression coefficients revealed that, after controlling for the effect of other variables, core self-evaluations (β = .23, t (186) = 2.75, $p < .01$) and independent self-construal (β = -.16, t

(186) = 2.00, $p < .05$) was significantly associated with participation. Cancer survivors who had higher levels of core self-evaluations and cancer survivors who had lower levels of independent self-construal were more likely to have higher participation levels. After controlling for the other variables, resiliency, religiosity, purpose in life, and interdependent self-construal were not significantly associated with participation.

Environmental factors. All of the environmental factors including perceived social support ($r = .21$, $p < .01$), perceived social stigma ($r = -.20$, $p < .01$) and autonomy support ($r = .32$, $p < .01$) were significantly associated with participation. A simultaneous regression analysis was conducted to investigate the effect of the environmental factors on participation for cancer survivors in Turkey. The environmental factors accounted for 14% of variance in participation $R = .38$, $R^2 = .14$, F (3, 182) = 10.38, $p < .01$. The examination of the standardized partial regression coefficients revealed that, after controlling for the effect of other variables, perceived social support ($\beta = .14$, t (186) = 2.00, $p < .05$) and autonomy support ($\beta = -.27$, t (186) = 3.93, $p < .01$) was significantly associated with participation. Cancer survivors who had higher level of perceived social support and autonomy support were more likely to have a higher level of participation. After controlling for the other variables, perceived stigma was not significantly associated with participation.

Additionally, a simultaneous regression analysis was conducted to determine the effect of all of the significant predictor variables (i.e., educational attainment, fatigue, perceived stress, role functioning, social functioning, core self-evaluation, independent self-construal, perceived social support and autonomy support) on participation. These variables accounted for 40% of the variance in participation $R = .63$, $R^2 = .40$, F (9, 176) = 13.21, $p < .01$. The examination of the standardized partial regression coefficients revealed that, after controlling for the effect of other

Table 4.6

Correlations Activity/Functioning Variables and Participation

Variable	1	2	3	4	5	6
1. Physical functioning	1.00					
2. Role functioning	$.62^{**}$	1.00				
3. Emotional functioning	$.47^{**}$	$.45^{**}$	1.00			
4. Cognitive functioning	$.43^{**}$	$.41^{**}$	$.67^{**}$	1.00		
5. Social functioning	$.62^{**}$	$.66^{**}$	$.56^{**}$	$.57^{**}$	1.00	
6. Participation	$.44^{**}$	$.44^{**}$	$.39^{**}$	$.36^{**}$	$.50^{**}$	1.00

Note. *$p < .05$; **$p < .01$

Table 4.7

Regression Model with Activity-Related Variables as Predictors ($N = 186$)

Variable	R^2	B	$SE\ B$	β
Activity related variables	.31			
Physical functioning		0.003	0.002	.11
Role functioning		0.006	0.002	$.23^{*}$
Emotional functioning		0.001	0.002	.03
Cognitive functioning		0.002	0.002	.06
Social functioning		0.005	0.002	$.22^{*}$

Note. $F(5, 180) = 16.35$, $p < .01$, $^{*}p < .05$; $^{**}p < .01$

Table 4.8

Correlations between Personal Factors and Participation

Variable	1	2	3	4	5	6	7
1. Core self-evaluations	1.00						
2. Resiliency	$.56^{**}$	1.00					
3. Religiosity	-.08	$-.14^{*}$	1.00				
4. Purpose in life	.08	.02	.00	1.00			
5. Independent self-construal	-.02	-.07	-.01	-.03	1.00		
6. Interdependent self-construal	-.03	-.07	.13	.11	$.52^{**}$	1.00	
7. Participation	$.29^{**}$	$.24^{**}$	-.13	.02	$-.19^{**}$	$-.14^{**}$	1.00

Note. *$p < .05$; **$p < .01$

Table 4.9

Regression Model with Personal Factors as Predictors (*N* = 186)

Variable	R^2	*B*	*SE B*	β
Personal factors	.13			
Core self-evaluations		0.27	0.10	$.23^{**}$
Resiliency		0.06	0.07	.08
Religiosity		-0.05	0.03	-.10
Purpose in life		-0.00	0.04	.00
Independent self-construal		-0.07	0.03	$-.16^{*}$
Interdependent self-construal		-0.01	0.04	-.03

Note. F (6, 179) = 4.86, $p < .01$, $^{*}p < .05$; $^{**}p < .01$

Table 4.10

Correlations between Environmental Factors and Participation

Variable	1	2	3	4
1. Social support	1.00			
2. Perceived stigma	-.19**	1.00		
3. Autonomy support	.17*	-.20**	1.00	
4. Participation	.21**	-.20**	.32**	1.00

Note. *$p < .05$; **$p < .01$

Table 4.11

Regression Model with Environmental Factors as Predictors (*N* = 186)

Variable	R^2	*B*	*SE B*	β
Environmental factors	.14			
Perceived social support		0.07	0.03	$.14^{*}$
Perceived autonomy support		0.11	0.02	$.27^{**}$
Perceived stigma		-0.12	0.07	-.12

Note. F (3, 182) = 10.38, $p < .01$, $^{*}p < .05$, $^{**}p < .01$

variables, educational attainment ($\beta = .13$, $t\,(186) = 2.29$, $p < .05$), fatigue ($\beta = -.19$, $t\,(186) = 2.74$, $p < .01$), role functioning ($\beta = .20$, $t\,(186) = 2.49$, $p < .05$), and autonomy support ($\beta = .13$, $t\,(186) = 2.02$, $p < .05$) were significantly associated with participation. Educational attainment, role functioning, and autonomy support were positively associated with participation, whereas fatigue was inversely associated with participation. Cancer survivors who had higher levels of education, role functioning, and autonomy support and lower levels of fatigue were more likely to have a higher level of participation. After controlling for the other variables, perceived stress, social functioning, core self-evaluations, independent self-construal, and perceived social support were not significantly associated with participation.

Hierarchical Regression Analysis

A hierarchical regression analysis was performed to examine the incremental influence of ICF constructs on participation. Based on the expected relationships between the ICF constructs and participation and considering the malleability of the variables, the ICF constructs were entered in a hierarchical regression as follows: (a) demographic covariates, (b) impairment-related variables, (c) personal factors, (d) environmental factors, and (e) activity-related variables. As it was hypothesized that personal and environmental factors would significantly influence performance on activity variables, these factors were entered before entering the activity variables to determine the extent the set of activity variables could predict participation above and beyond the personal and environmental factors. Values of change in R^2 (ΔR^2), unstandardized regression coefficients (B), standard error of beta coefficients (SE B), and standardized regression coefficients (β) for the predictor variables at each step are shown in table 4.14.

For the first step, demographic variables (i.e., age, gender, education attainment and income level) were entered in the regression model. The demographic variables accounted for

Table 4.12

Correlations between Significant Variables within the ICF Constructs and Participation

Variable	1	2	3	4	5	6	7	8	9	10
1. Education	1.00									
2. Fatigue	-.09	1.00								
3. Perceived stress	-.09	.50**	1.00							
4. Core self-evaluations	.15	-.24**	-.55**	1.00						
5. Independent self-construal	-.00	.14	.04	-.02	1.00					
6. Perceived social support	.04	-.10	-.20**	.30**	-.08	1.00				
7. Autonomy support	.08	-.25**	-.24**	.31**	-.24	.17*	1.00			
8. Role functioning	.16*	-.47**	-.52**	.27**	-.14	.08	.19**	1.00		
9. Social functioning	.15*	-.49**	-.58**	.34**	-.16*	.10	.28**	.66**	1.00	
10.Participation	.23**	-.46**	-.41**	.29**	-.19**	.21**	.32**	.49**	.50**	1.00

Note. $*p < .05$; $**p < .01$

Table 4.13

Regression Model with All Significant Variables as Predictors (*N* = 186)

Variable	R^2	*B*	*SE B*	β
	$.40^{**}$			
Demographic variables				
Education		0.06	0.02	$.13^{*}$
Impairment-related variables				
Fatigue		-0.05	0.01	$-.19^{**}$
Perceived stress		-0.03	0.09	-.02
Personal factors				
Core self-evaluations		0.01	0.08	.01
Independent self-construal		-0.02	0.02	-.06
Environmental factors				
Perceived social support		0.05	0.03	.11
Autonomy support		0.05	0.02	$.13^{*}$
Activity variables				
Role functioning		0.00	0.00	$.20^{**}$
Social functioning		0.00	0.00	.16

Note. F (9, 176) = 13.21, $p < .01$, $^{*}p < .05$, $^{**}p < .01$

8% of the variance in participation $R = .29$, $R^2 = .08$, $F\,(4, 181) = 4.15$, $p < .01$. The examination of the standardized partial regression coefficients revealed that, after controlling for the other variables, only educational attainment was significantly associated with participation ($\beta = .18$, $t\,(186) = 2.23$, $p < .05$).

In the second step, the impairment-related variables were introduced to the regression model. Demographic and impairment-related variables explained 35% of variance in participation $R = .59$, $R^2 = .35$, $\Delta R^2 = .27$, $F\,(16, 169) = 5.68$, $p < .01$. Impairment-related variables explained significantly more variance (27% of more variance) than variance explained by the demographic variables: $F\,(12, 169) = 5.76$, $p < .01$. The examination of the standardized partial regression coefficients revealed that, after controlling for the other variables, perceived stress ($\beta = -.15$, $t\,(186) = 2.04$, $p < .05$) and fatigue ($\beta = -.24$, $t\,(186) = 2.99$, $p < .01$) was significantly associated with participation. After controlling for the effect of other demographic and impairment related variables, educational attainment was no longer significant ($\beta = .12$, $t\,(186) = 1.63$, $p = .10$).

In the third step, the personal factors were entered in the regression model. Demographic variables, impairment-related variables, and personal factors explained 37% of variance in participation, $R = .61$, $R^2 = .37$, $\Delta R^2 = .02$, $F\,(22, 163) = 4.45$, $p < .01$. Personal factors accounted for an additional 2% of the variance in participation scores. However, the change in the variance explained by personal factors was not significant, $F\,(6, 163) = 1.10$, $p = .35$. The examination of the standardized partial regression coefficients revealed that, after controlling for the other variables, only fatigue ($\beta = -.22$, $t\,(186) = -2.69$, $p < .01$) was significantly associated with participation. Stress was not significant in this analysis ($\beta = -.12$, $t\,(186) = -1.27$, $p = .20$).

In the fourth step, the environmental factors were introduced in the regression model. Demographic variables, impairment-related variables, personal factors and environmental factors explained 40% of variance in participation $R = .63$, $R^2 = .40$, $\Delta R^2 = .03$, $F\ (25, 160) = 4.26$, $p < .01$. Environmental factors accounted for an additional 3% of the variance in participation scores. However, the change in the variance explained by environmental factors was not significant, $F\ (3, 160) = 2.18$, $p = .09$. The examination of the standardized partial regression coefficients revealed that, after controlling for the other variables, fatigue ($\beta = -.21$, $t\ (186) = -2.50$, $p < .01$) and perceived autonomy support ($\beta = .14$, $t\ (186) = 1.98$, $p < .05$) were significantly associated with participation.

Finally, the activity-related variables were entered in the regression model. Demographic variables, impairment-related variables, personal and environmental factors, and activity variables explained 45% of the variance in participation $R = .67$, $R^2 = .45$, $\Delta R^2 = .05$, $F\ (30, 155) = 4.36$, $p < .01$. Activity-related variables accounted for an additional 5% of variance in participation scores. The change in the variance explained by activity-related variables was significant $F\ (5, 155) = 4.36$, $p < .01$. The examination of the standardized partial regression coefficients revealed that, after controlling for other variables in the regression model, fatigue ($\beta = -.20$, $t\ (186) = -2.44$, $p < .01$) and role functioning ($\beta = .20$, $t\ (186) = 2.12$, $p < .05$) were significantly associated with participation. In this step, autonomy support was no longer significant ($\beta = .12$, $t\ (186) = 1.79$, $p = .07$). The results indicated that impairment and activity-related variables were most significantly associated with participation, and demographics personal and environmental factors had minimal effect on participation after controlling for the effect of impairment and activity variables.

Table 4.14

Hierarchical Regression Analysis for Prediction of Participation (*N* = 186)

			At Entry Into Model			Final Model		
Variable	R^2	ΔR^2	B	SE B	β	B	SE B	β
Step 1	.29	.08**						
Age			0.00	0.00	.09	0.00	0.00	.10
Gender			-0.10	0.12	-.06	-0.02	0.12	-.01
Education level			0.08	0.03	.18*	0.03	0.03	.08
Income level			0.13	0.07	.13	0.04	0.06	.04
Step 2	.35	.27**						
Type of cancer			-0.00	0.11	-.00	-0.05	0.11	-.03
Cancer stage			-0.07	0.04	-.12	-0.05	0.04	-.09
Surgery			0.15	0.12	.09	0.15	0.12	.09
Chemotherapy			0.03	0.11	.02	0.06	0.11	.04
Radiotherapy			0.09	0.09	.07	0.09	0.09	.07
Patient type			0.00	0.13	.00	0.04	0.13	.02
Onset time since diagnosis			0.00	0.00	.08	0.00	0.00	.01
Secondary health problems			0.01	0.09	.01	0.02	0.09	.01
Perceives stress			-0.18	0.08	-.15*	0.01	0.11	.01
Fatigue			-0.06	0.02	-.24**	-0.05	0.02	.20*
Pain			-0.00	0.00	-.07	0.00	0.00	.08
Sleep Disturbance			-0.00	0.00	-.08	-0.00	0.00	-.02
Step 3	.37	.02						
Core self-evaluations			0.11	0.09	.09	0.05	0.10	.04
Resiliency			-0.07	0.03	-.07	-0.03	0.07	-.04
Purpose in life			0.03	0.03	.05	-0.01	0.04	-.03
Religiosity			-0.01	0.03	-.03	-0.04	0.03	-.07
Independent self-construal			-0.05	0.03	-.12	-0.01	0.03	-.03
Interdependent self-construal			-0.00	0.03	-.01	-0.00	0.03	-.00
Step 4	.40	.03						
Social support			0.03	0.03	.08	0.05	0.03	.10
Stigma			-0.04	0.07	-.04	-0.04	0.07	-.04
Autonomy support			0.05	0.02	.14*	0.05	0.02	.12
Step 5	.45	.05*						
Physical functioning			0.00	0.00	.03	0.00	0.00	.03
Role functioning			0.00	0.00	.20*	0.00	0.00	.20*
Emotional functioning			-0.00	0.00	-.10	-0.00	0.00	-.10

Cognitive functioning	0.00	0.00	.08	0.00	0.00	.08
Social functioning	0.00	0.00	.20	0.00	0.00	.20

Note. $F\ (30, 155) = 4.36$, $p < .001$ for the full model; $F\ (4, 181) = 4.15$, $p < .001$, for Step 1; $\Delta F(12, 169) = 5.76$, $p < .001$ for Step 2; $\Delta F(6, 163) = 1.10$, $p < .001$ for Step 3; $\Delta F(3, 160) = 2.18$, $p < .001$ for Step 4; $\Delta F(5, 155) = 3.30$, $p < .001$ for Step 5.
$^{*}p \leq .05$, $^{**}p \leq .01$

Secondary Analysis

The results of the simultaneous and hierarchical regressions indicated that activity-related variables were significantly associated with participation for cancer survivors in Turkey. However, personal and environmental factors did not have significant associations with participation after controlling demographic and impairment-related variables. Activity-related variables, in that vein, may be the most important avenue for interventions to increase participation for cancer survivors. Therefore, it is important to understand factors influencing activity-related variables that included physical, role, cognitive, emotional and social functioning.

The ICF model is based on the assumption that personal and environmental factors may mediate the relationship between impairment and activities (Chan et al., 2011). In the current study, it was hypothesized that personal and environmental factors mediate the relationship between impairment-related variables and activity-related variables. Consequently, several mediation analyses were conducted to investigate the mediation effect of personal and environmental factors for the relationship between impairment and activity. In this study, three personal factors (i.e., core self-evaluations, purpose in life and religiosity) and two environmental factors (i.e., perceived social support and autonomy support) were analyzed.

Five hierarchical regression analyses were conducted to investigate the mediation effect of those personal factors between impairment-related variables and activity-related variables and five hierarchical regression analyses were conducted to investigate mediation effect of those environmental factors between impairment-related variables and activity-related variables. To test the mediation hypothesis, a mediation analysis procedure recommended by Hoyt, Imel, and Chan (2008) was followed. Following their suggestion, the set of mediators (P X E variables) were entered in the first step and the set of predictors (impairment-related variables) were entered in the second step of a hierarchical regression analysis. If after controlling for the effect of the P X E variables in step 1, the R^2 change (ΔR^2) in step 2 was not significant, it would support the mediational effect of P X E on the relationship between impairment and activity.

Mediation analysis between personal factors and functioning variables. Mediation effect of the personal factors between the impairment-related variables and the activity-related variables were examined using five hierarchical regression analyses. The personal factors (i.e., core self-evaluations, purpose in life, and religiosity) were entered in the first step, and the impairment-related variables (i.e., pain, fatigue, stress, and sleep disturbance) were entered in the second step of a HRA for each activity-related variable (i.e., physical, role, emotional, cognitive, and social functioning).

The first hierarchical regression was conducted to test whether personal factors mediated the relationship between impairment-related variables and physical functioning. The personal factors, entered in the first step of the regression analysis, explained 8% of the variance R= .28, R^2 = .08, F (3, 182) = 5.37, p < .01. After controlling for the other variables, core self-evaluations (β = .26, t (186) = 3.75, p < .01) were significantly associated with physical functioning. The impairment-related variables were entered in the second step of the regression analysis. Personal factors and impairment-related variables explained 51% of the variance R= .71, R^2 = .51, F (7, 178) = 27.22, p < .01. After controlling for the other variables, pain (β = -.53, t (186) = - 8.48, p < .01) and fatigue (β = -.17, t (186) = -2.56, p < .05) were significantly associated with physical functioning. However, the change in the variance explained by impairment-related variables after controlling for the effect of personal factors was significant

$\Delta R^2 = .43$, $p < .01$, indicating the personal factors did not completely mediate the relationship between the impairment-related variables and physical functioning.

The second hierarchical regression tested whether personal factors mediated the relationship between impairment-related variables and role functioning. The personal factors, entered in the first step of the regression analysis, explained 7% of the variance $R= .27$, $R^2 = .07$, F (3, 182) = 4.93, $p < .01$. After controlling for the other variables, core self-evaluations ($\beta = .26$, t (186) = 3.74, $p < .01$) was significantly associated with community role functioning. The impairment-related variables were entered in the second step of the regression analysis. The personal factors and impairment-related variables explained 51% of variance $R= .71$, $R^2 = .51$, F (7, 178) = 26.94, $p < .01$. After controlling for the other variables, purpose in life ($\beta = .13$, t (186) = 2.47, $p < .01$), pain ($\beta = -.48$, t (186) = - 7.63, $p < .01$) and perceived stress ($\beta = -.27$, t (186) = -.3.84, $p < .01$) were significantly associated with role functioning. However, the change in the variance explained by the impairment-related variables was significant $\Delta R^2 = .43$, $p < .01$, indicating that the personal factors did not mediate the relationship between the impairment-related variables and role functioning.

The third hierarchical regression tested whether personal factors mediated the relationship between impairment-related variables and emotional functioning. The personal factors, entered in the first step of the regression analysis, explained 23% of the variance $R= .48$, $R^2 = .23$, F (3, 182) = 31.89, $p < .01$. After controlling for the other variables, core self-evaluations ($\beta = .45$, t (186) = 6.96, $p < .01$) and purpose in life ($\beta = -.18$, t (186) = -2.90, $p < .01$) were significantly associated with emotional functioning. The impairment-related variables were entered in the second step of the regression analysis. The personal factors and impairment-related variables explained 55% of the variance $R= .74$, $R^2 = .55$, F (7, 178) = 31.89, $p < .01$.

After controlling for the other variables, core self-evaluations ($\beta = .17$, t (186) = 2.94, $p < .05$), purpose in life ($\beta = -.11$, t (186) = - 2.19, $p < .05$), pain ($\beta = -.40$, t (186) = - 6.64, $p < .01$) and perceived stress ($\beta = -.26$, t (186) = -.3.76, $p < .01$) were significantly associated with emotional functioning. However, the change in the variance explained by the impairment-related variables was significant $\Delta R^2 = .31$, $p < .01$ indicating the personal factors did not completely mediate the relationship between the impairment related variables and emotional functioning.

The fourth hierarchical regression was introduced to test whether personal factors mediated the relationship between impairment-related variables and cognitive functioning. The personal factors, entered in the first step of the regression analysis, explained 16% of variance $R = .40$, $R^2 = .16$, F (3, 182) = 11.78, $p < .01$. After controlling for the other variables core self-evaluations ($\beta = .40$, t (186) = 5.86, $p < .01$) was significantly associated with community cognitive functioning. The impairment-related variables were entered in the second step of the regression analysis. The personal factors and impairment-related variables explained 38% of the variance $R = .61$, $R^2 = .38$, F (7, 178) = 15.68, $p < .01$. After controlling the other variables, core self-evaluations ($\beta = .15$, t (186) = 2.12, $p < .05$), pain ($\beta = -.28$, t (186) = - 4.00, $p < .01$), and perceived stress ($\beta = -.24$, t (186) = -.2.99, $p < .01$) were significantly associated with cognitive functioning. However, the change in the variance explained by the impairment-related variables was significant $\Delta R^2 = .21$, $p < .01$, indicating the personal factors did not completely mediate the relationship between the impairment-related variables and cognitive functioning.

The fifth hierarchical regression was set up to test whether personal factors mediated the relationship between impairment-related variables and social functioning. The personal factors, entered in the first step of the regression analysis, explained 13% of the variance $R = .34$, $R^2 = .12$, F (3, 182) = 8.36, $p < .01$. After controlling for the other variables, core self-evaluations ($\beta =$

.34, t (186) = 4.95, $p < .01$) was significantly associated with social functioning. The impairment-related variables were entered in the second step of the regression analysis. The personal factors and impairment-related variables explained 50% of the variance $R = .70$, $R^2 = .50$, F (7, 178) = 25.68, $p < .01$. After controlling for the other variables, pain ($\beta = -.37$, t (186) = - 5.86, $p < .01$) and perceived stress ($\beta = -.33$, t (186) = -4.51, $p < .01$) were significantly associated with social functioning. However, the change in the variance explained by the impairment-related variables was significant $\Delta R^2 = .38$, $p < .01$, indicating that the personal factors did not completely mediate the relationship between the impairment-related variables and social functioning.

Mediation analysis between environmental factors and activity/functioning variables. To determine the mediating effect of environmental factors on the relationship between impairments and activity/functioning variables, a mediation analysis through five hierarchical regression analyses were conducted. The environmental factors (i.e., perceived social support and autonomy support) were entered in the first step, and impairment-related variables (i.e., pain, fatigue, perceived stress and sleep disturbance) were entered in the second step of the HRA for each functioning variable (i.e., physical, role, emotional, cognitive, and social functioning).

The first hierarchical regression tested whether environmental factors mediated the relationship between impairment-related variables and physical functioning. The environmental factors, entered in the first step of the regression analysis, explained 5% of the variance $R = .23$, $R^2 = .05$, F (2, 183) = 5.50, $p < .01$. After controlling for the other variables, autonomy support ($\beta = .22$, t (186) = 3.08, $p < .01$) was significantly associated with physical functioning. The impairment-related variables were entered in the second step of the regression analysis.

Table 4.15

Mediation Analysis Between Personal Factors and Functioning Variables

			At Entry Into Model			Final Model		
	R^2	ΔR^2	B	SE B	*β*	B	SE B	*β*
Physical functioning								
Step 1	.08	.08**						
Core self-evaluations			10.94	2.91	.26**	1.72	2.58	.04
Purpose in life			-0.00	0.46	-.00	0.64	0.34	.09
Religiosity			-1.43	1.35	-.07	-0.48	0.99	-.02
Step 2	.51	.43**						
Pain			-0.42	0.05	-.53**	-0.42	0.05	-.53**
Fatigue			-1.52	0.59	-.17*	-1.52	0.59	-.17*
Perceived stress			-1.22	2.85	-.03	-1.22	2.85	-.03
Sleep disturbance			-0.09	0.06	-.09	-0.09	0.06	-.09
Role functioning								
Step 1	.07	.07**						
Core self-evaluations			13.27	3.54	.26**	-2.73	3.14	-.05
Purpose in life			0.27	0.57	.03	1.04	0.42	.13*
Religiosity			0.00	1.62	.00	1.21	1.21	.05
Step 2	.51	.43**						
Pain			-0.46	0.06	.48**	-0.46	0.06	-.48**
Fatigue			-0.79	0.72	-.07	-0.79	0.72	-.07
Perceived stress			-13.34	3.47	-.27**	-13.34	3.47	-.27**
Sleep disturbance			-0.10	0.07	-.08	-0.10	0.07	-.08
Emotional functioning								
Step 1	.23	.23**						
Core self-evaluations			20.89	3.00	.45**	8.23	2.79	.17**
Purpose in life			-1.40	0.48	-.18**	-0.82	0.37	-.11*
Religiosity			1.51	1.39	.07	0.44	1.07	.02
Step 2	.55	.32**						
Pain			-0.36	0.05	-.40**	-0.36	0.05	-.40**
Fatigue			-1.19	0.64	-.11	-1.19	0.64	-.11
Perceived stress			-11.64	3.09	-.26**	-11.64	3.09	-.26**
Sleep disturbance			0.03	0.06	.02	0.03	0.06	.02

Table 4.15 (continued)

Mediation Analysis Between Personal Factors and Functioning Variables

	R^2	ΔR^2	At Entry Into Model B	 SE B	 β	Final Model B	 SE B	 β
Cognitive functioning								
Step 1	.16	.16**						
Core self-evaluations			17.24	2.93	.40**	6.59	3.09	.15*
Purpose in life			0.20	0.47	.02	0.66	0.41	.09
Religiosity			0.48	1.36	.02	1.23	1.19	.06
Step 2	.38	.21**						
Pain			-0.36	0.05	-.40**	-0.24	0.06	-.28**
Fatigue			-1.19	0.64	-.11	-0.77	0.71	-.08
Perceived stress			-11.64	3.09	-.26**	-10.23	3.42	-.24**
Sleep disturbance			0.03	0.06	.02	-0.06	-0.07	-.05
Social functioning								
Step 1	.12	.12**						
Core self-evaluations			13.01	3.43	.34**	0.77	0.16	.01
Purpose in life			-0.48	1.59	-.02	0.46	0.42	.05
Religiosity			-0.23	0.55	-.02	0.61	1.21	.02
Step 2	.50	.38**						
Pain			-0.46	0.06	.48**	-0.36	0.06	-.37**
Fatigue			-0.79	0.72	-.07	-0.99	0.72	-.09
Perceived stress			-13.34	3.47	-.27**	-15.75	3.49	-.33**
Sleep disturbance			-0.10	0.07	-.08	-0.11	0.07	-.08

Note. Physical functioning, F (7, 178) = 27.22, $p < .01$ full model, F (3, 182) = 5.37, $p < .01$, for Step 1; ΔF(4, 178) = 40.13, $p < .01$ for Step 2,
Role functioning, F (7, 178) = 26.94, $p < .01$ full model, F (3, 182) = 4.93, $p < .01$, for Step 1; ΔF(4, 178) = 40.26, $p < .01$ for Step 2,
Emotional functioning, F (7, 178) = 31.89, $p < .01$ full model, F (3, 182) = 18.56, $p < .01$, for Step 1; ΔF(4, 178) = 32.02, $p < .01$ for Step 2,
Cognitive functioning, F (7, 178) = 15.68, $p < .01$ full model, F (3, 182) = 11.78, $p < .01$, for Step 1; ΔF(4, 178) = 15.74, $p < .01$ for Step 2
Social functioning, F (7, 178) = 25.68, $p < .01$ full model, F (3, 182) = 8.36, $p < .01$, for Step 1; ΔF(4, 178) = 34.09, $p < .01$ for Step 2

Together, the environmental factors and impairment-related variables explained 51% of the variance $R = .71$, $R^2 = .51$, $F(6, 179) = 31.36$, $p < .01$. After controlling for the other variables, pain ($\beta = -.53$, $t(186) = -8.46$, $p < .01$) and fatigue ($\beta = -.15$, $t(186) = -2.24$, $p < .05$) were significantly associated with physical functioning. The change in the variance explained by the impairment-related variables was significant $\Delta R^2 = .45$, $p < .01$, indicating that the environmental factors did not mediate the relationship between the impairment-related variables and physical functioning.

The second hierarchical regression was conducted to determine whether environmental factors mediated the relationship between impairment-related variables and role functioning. The environmental factors, entered in the first step of the regression analysis, explained 4% of the variance $R = .20$, $R^2 = .04$, $F(2, 183) = 3.84$, $p < .05$. After controlling for the other variables, autonomy support ($\beta = .18$, $t(186) = 2.52$, $p < .01$) was significantly associated with role functioning. The impairment-related variables were entered in the second step of the regression analysis. Together, the environmental factors and impairment-related variables explained 49% of the variance $R = .70$, $R^2 = .49$, $F(6, 179) = 29.28$, $p < .01$. After controlling for the other variables, pain ($\beta = -.46$, $t(186) = -7.26$, $p < .01$) and perceived stress ($\beta = -.25$, $t(186) = -3.80$, $p < .01$) were significantly associated with role functioning. The change in the variance explained by the environmental factors was significant $\Delta R^2 = .45$, $p < .01$, indicating that the environmental factors did not mediate the relationship between the impairment-related variables and physical functioning.

The third hierarchical regression was performed to test whether environmental factors mediated the relationship between impairment-related variables and emotional functioning. The environmental factors, entered in the first step of the regression analysis, explained 8% of the variance $R = .28$, $R^2 = .08$, $F(2, 183) = 8.24$, $p < .05$. After controlling for the other variables, perceived social support ($\beta = .18$, $t(186) = 2.61$, $p < .05$) and autonomy support ($\beta = .18$, $t(186) = 2.69$, $p < .05$) were significantly associated with emotional functioning. The impairment-related variables were entered in the second step of the regression analysis. Together, the environmental factors and impairment-related variables explained 54% of variance $R = .73$, $R^2 = .54$, $F(6, 179) = 35.14$, $p < .01$. After controlling for the other variables, perceived social support ($\beta = .11$, $t(186) = 2.26$, $p < .05$), pain ($\beta = -.43$, $t(186) = -7.00$, $p < .01$), and perceived stress ($\beta = -.32$, $t(186) = -5.20$, $p < .01$) were significantly associated with emotional functioning. The change in the variance explained by the impairment-related variables was significant $\Delta R^2 = .45$, $p < .01$, indicating the environmental factors did not completely mediate the relationship between the impairment-related variables and emotional functioning.

The fourth hierarchical regression was conducted to test whether personal factors mediated the relationship between impairment-related variables and cognitive functioning. The environmental factors, entered in the first step of the regression analysis, explained 3% of the variance $R = .19$, $R^2 = .03$, $F(2, 183) = 3.52$, $p < .05$. None of the environmental factors were significantly associated with cognitive functioning. The impairment-related variables were entered in the second step of the regression analysis. The environmental factors and impairment-related variables explained 35% of the variance $R = .59$, $R^2 = .35$, $F(6, 179) = 16.24$, $p < .01$. After controlling for the other variables, pain ($\beta = -.28$, $t(186) = -3.88$, $p < .01$) and perceived stress ($\beta = -.32$, $t(186) = -4.35$, $p < .01$) were significantly associated with cognitive functioning. The change in the variance explained by the impairment-related variables was significant $\Delta R^2 = .31$, $p < .01$, indicating that the environmental factors did not mediate the relationship between impairment-related variables and cognitive functioning.

The fifth hierarchical regression measured the mediating effect of environmental factors in the relationship between impairment-related variables and social functioning. The environmental factors, entered in the first step of the regression analysis, explained 8% of the variance R= .29, R^2 = .08, F (2, 183) = 8.58, p < .05. After controlling for the other variables, autonomy support (β = .27, t (186) = 3.85, p < .01) was significantly associated with social functioning. The impairment-related variables were entered in the second step of the regression analysis. The environmental factors and impairment related variables explained 35% of the variance R= .71, R^2 = .51, F (6, 179) = 31.26, p < .01. After controlling for the other variables, autonomy support (β = .12, t (186) = 2.24, p < .05), pain (β = -.37, t (186) = - 5.89, p < .01) and perceived stress (β = -.32, t (186) = -5.05, p < .01) were significantly associated with social functioning. The change in the variance explained by the impairment-related variables was significant ΔR^2 = .42, p < .01, indicating the environmental factors did not completely mediate the relationship between the impairment-related variables and social functioning.

Summary of the Results

The effect of each of the ICF constructs on participation was investigated through five simultaneous regression analyses. The simultaneous regression results indicated that education attainment, perceived stress, fatigue, role functioning, social functioning, core self-evaluations, independent self-construal, social support and autonomy support were significantly associated with participation. When these significant predictors were entered in a sixth simultaneous regression; only education attainment, fatigue, autonomy support and role functioning was significantly associated with participation. The effect of perceived stress, social functioning, core self-evaluations, independent self-construal and social support may be strongly mediated by educational attainment, fatigue, autonomy support and role functioning.

Table 4.16

Mediation Analysis Between Environmental Factors and Functioning Variables

			At Entry Into Model			Final Model		
	R^2	ΔR^2	B	SE B	β	B	SE B	β
Physical functioning								
Step 1	.05	$.05^{**}$						
Social support			0.83	1.24	.04	0.17	0.91	.01
Autonomy support			3.27	0.99	$.22^{**}$	1.22	0.75	.08
Step 2	.51	$.45^{**}$						
Pain			-0.42	0.05	$-.53^{**}$	-0.42	0.05	$-.53^{**}$
Fatigue			-1.34	0.60	$-.15^{*}$	-1.34	0.60	$-.15^{*}$
Perceived stress			-1.86	2.54	-.04	-1.86	2.54	-.04
Sleep disturbance			-0.08	0.06	-.08	-0.08	0.06	-.08
Role functioning								
Step 1	.04	$.04^{**}$						
Social support			1.04	1.51	.05	-0.28	1.13	-.01
Autonomy support			3.08	1.22	$.18^{*}$	0.62	0.92	.03
Step 2	.49	$.45^{**}$						
Pain			-0.45	0.06	$-.46^{**}$	-0.45	0.06	$-.46^{**}$
Fatigue			-0.70	0.74	-.06	-0.70	0.74	-.06
Perceived stress			-11.97	3.14	$-.25^{**}$	-11.97	3.14	$-.25^{**}$
Sleep disturbance			-0.09	0.07	-.07	-0.09	0.07	-.07
Emotional functioning								
Step 1	.08	$.08^{**}$						
Social support			3.62	1.38	$.18^{*}$	2.27	1.00	$.11^{*}$
Autonomy support			2.89	1.11	$.18^{*}$	0.51	0.82	.03
Step 2	.54	$.45^{**}$						
Pain			-0.38	0.05	$-.43^{**}$	-0.38	0.05	$-.43^{**}$
Fatigue			-1.03	0.65	-.10	-1.03	0.65	-.10
Perceived stress			-14.54	2.79	$-.32^{**}$	-14.54	2.79	$-.32^{**}$
Sleep disturbance			0.02	0.06	.02	0.02	0.06	.02

Table 4.16 (continued)

Mediation Analysis Between Environmental Factors and Functioning Variables

			At Entry Into Model			Final Model		
	R^2	ΔR^2	B	SE B	β	B	SE B	β
Cognitive functioning								
Step 1	.03	.03*						
Social support			2.10	1.32	.11	0.81	1.14	.04
Autonomy support			1.93	1.06	.13	-0.02	0.91	.00
Step 2	.35	.31**						
Pain			-0.23	0.06	-.28**	-0.23	0.06	-.28**
Fatigue			-0.61	0.73	-.06	-0.61	0.73	-.06
Perceived stress			-13.51	3.10	-.32**	-13.51	3.10	-.32**
Sleep disturbance			-0.06	0.07	-.05	-0.06	0.07	-.05
Social functioning								
Step 1	.08	.08**						
Social support			1.19	1.47	.05	-0.34	1.10	-.01
Autonomy support			4.58	1.18	.27**	2.03	0.90	.12*
Step 2	.51	.42**						
Pain			-0.23	0.06	-.28**	-0.35	0.06	-.37**
Fatigue			-0.61	0.73	-.06	-0.72	0.72	-.06
Perceived stress			-13.51	3.10	-.32**	-13.53	3.07	-.32**
Sleep disturbance			-0.06	0.07	-.05	-0.10	0.07	-.08

Note. Physical functioning, F (6, 179) = 31.36, $p < .01$ full model, F (2, 183) = 5.50, $p < .01$, for Step 1; $\Delta F(4, 179) = 41.83$, $p < .01$ for Step 2,
Role functioning, F (6, 179) = 29.28, $p < .01$ full model, F (2, 183) = 3.84, $p < .01$, for Step 1; $\Delta F(4, 179) = 40.35$, $p < .01$ for Step 2,
Emotional functioning, F (6, 179) = 35.14, $p < .01$ full model, F (2, 183) = 8.24, $p < .01$, for Step 1; $\Delta F(4, 179) = 44.66$, $p < .01$ for Step 2,
Cognitive functioning, F (6, 179) = 16.24, $p < .01$ full model, F (2, 183) = 3.52, $p < .01$, for Step 1; $\Delta F(4, 179) = 21.80$, $p < .01$ for Step 2
Social functioning, F (6, 179) = 31.26, $p < .01$ full model, F (2, 183) = 8.58, $p < .01$, for Step 1; $\Delta F(4, 179) = 39.02$, $p < .01$ for Step 2

The incremental influence of the ICF constructs on participation was investigated through a hierarchical regression analysis. The results indicated neither personal factors nor environmental factors explained significantly more of variance than variance explained by the demographic and impairment-related variables. However, the activity-related variables were able to explain significantly more variance than variance explained by the demographic variable, impairment-related variables, personal and environmental factors. The results indicated activity-related variables were central in determining participation of cancer survivors in Turkey.

Consequently, to develop participation interventions for cancer survivors in Turkey, it was imperative to understand factors influencing activity-related variables. Following conceptualization of ICF, I hypothesized that personal and environmental factors may mediate the relationship between impairment-related variables and activity-related variables. The results indicated several personal and environmental factors (core self-evaluations, autonomy support, and social support) were able to partially mediate the relationship between impairment-related variables and activity-related variables. The implications for these results are discussed in Chapter 5.

CHAPTER FIVE

Summary, Discussion, Implications

This chapter provides a summary, discussion of the findings and the implications of this study in regard to cancer rehabilitation in Turkey. While discussing the results, cultural factors are taken into account and implications for how the research findings may inform clinical rehabilitation practices and future research in Turkey are presented. Finally, the limitations of the study and how the limitations may impact the applicability and generalizability of the findings are discussed.

Summary

Cancer and its treatment options may affect participation of cancer survivors. Participation is related to physical and psychological well-being. Higher levels of participation are significantly associated with quality of life and life satisfaction. With advanced diagnosis and treatment options, cancer survivors are living longer and healthier than before. As participation is associated with positive life outcomes, it is important to investigate factors influencing participation for cancer survivors.

Participation is a multidimensional construct that refers to involvement in life situations, engagement in meaningful life activities, and assumptions of meaningful life roles. It is influenced by multiple factors (e.g., personal and environmental factors). Therefore, in order to investigate participation, a model that incorporates medical, personal and environmental factors and their interactions on participation is needed. Recently, the ICF model gained acceptance among rehabilitation researchers, as it is complementary with a holistic approach to rehabilitation counseling and have strong emphasis on biological as well as personal and social-environmental factors. Oncology researchers have also recommended ICF for use in cancer rehabilitation. However, to date, no studies have used the ICF framework to investigate factors influencing participation for cancer survivors. As ICF is cross-culturally applicable, this study aimed to evaluate the ICF framework as a participation model for cancer survivors in Turkey. In particular, this study began by using simultaneous regression analysis to investigate the relationship between each ICF construct (i.e., body functions and structure, activity, personal and environmental factors) and participation and then used hierarchical regression to measure the incremental influence of the ICF constructs on participation. Findings of this study provide insight regarding the development of culturally sensitive interventions and practices to improve the participation of cancer survivors. Additionally, the findings may help to improve overall cancer rehabilitation practices in Turkey.

Relationships between ICF Factors and Participation

The relationship between demographic covariates, impairment-related variables, activity-related variables, personal and environmental factors, and participation was investigated using five simultaneous regression analyses. In addition, follow up analyses were used to further explain the relationships between each of the ICF constructs and participation.

Demographic covariates. The effect of demographic covariates including age, gender, education attainment, and income level on participation was investigated using a simultaneous regression. The sample for this study comprised mainly women; people who are relatively well educated; and people who belongs to the low income-class. The results indicated that after controlling for other variables only education attainment was significantly associated with participation. Although the zero-order correlation between income and participation was significant, the effect of income on participation was mediated by the presence of educational attainment in the regression analysis. Overall, this finding is consistent with other research findings that indicate that people who have high levels of education attainment might be more knowledgeable about health issues and have a more supportive social environment (Goker et al., 2011). It is also possible that cancer survivors with higher educational attainment perceive cancer as a treatable disease, are equipped with better coping skills and more motivated to normalize their cancer experience, while cancer survivors from low socio-economic status (SES) are more conditioned to play the “sick role” and see cancer as a direct path to death (Hirschman; 2001; Larsen, 2009; Stegenga & Macpherson, 2014). In addition to that cancer survivors with higher education level might have ability to navigate through Turkish health care system, and follow health care professionals’ treatment recommendations more easily (Terzioglu, 2008). However, not necessarily cancer survivors with higher education level have more cancer related knowledge or better coping skills, it might simply be that people with higher education have a higher level of participation. Stigma and myths associated with cancer hold by cancer survivors, from low SES backgrounds and their caregivers in Turkey and other Middle Eastern countries, could also hinder their motivation to assume active roles in the community (Dahr, 2012). Some of these myths and stigmas include cancer as a punishment due to a person`s own faults, cancer is always fatal; and cancer survivors are too ill to work (Dahr, 2012). As a result, cancer survivors especially those with low education would try to avoid social interactions, discussing cancer with other people and isolate themselves from the public.

Impairment-related variables. The effect of impairment-related variables on participation was investigated using a simultaneous regression. The results indicated that only fatigue and perceived stress were significantly associated with participation after all other variables were controlled. This finding is consistent with other research findings that show a significant association between fatigue and cancer survivors’ ability to function in their usual roles and activities (Beck, Dudley, & Parsevik, 2005) and perceived stress is also significantly associated with psychological adjustment, emotional well-being, and other mental health states for cancer survivors affecting participation (Kreitler et al., 2007; Penedo et al., 2013; Treager et al., 2009; Zhou et al., 2010). Cancer survivors in Turkey might experiences lots of stress because continuity of their lives is unexpectedly interrupted, they suddenly would need to overcome bureaucratic challenges to receive cancer treatment through the Turkish health care system, assume a dependent role, and deal with financial and societal challenges related to cancer (Terzioglu, 2008). These stressors might cause participation restrictions and negatively affect their daily life and participation activities (Brunet et al., 2014). Although type of cancer, cancer stage, number of treatments, surgery, radiotherapy, secondary health problems, pain, and sleep disturbance were all significantly related with participation at the zero-order correlation level, they were not significant in the simultaneous regression. The effect of those variables might be mediated by fatigue and perceived stress.

Cancer-related fatigue is caused by cancer, its treatment options, and other cancer related factors. It is described as more severe than the fatigue of daily life; it lasts longer, causes greater distress, and persists despite rest or sleep (ACS, 2014b). Fatigue seems to be a construct that has physical and psychological components (Carr et al., 2002). Therefore, the effects of impairment-related factors (e.g., type of cancer, cancer stage, number of treatment and secondary health issues) may manifest as fatigue and thus have an impact on participation. In addition, as major cancer hospitals are located in larger cities in Turkey, cancer survivors might need to commute a long distance to see their oncologists, further depleting their energies to attend community activities (Terzioglu, 2008). Moreover, cancer survivors with low socioeconomic status might need to use public transportation, further affecting their energy levels. The literature also indicates that cancer-related pain, sleep disturbance, and fatigue are related physical symptoms. Particularly, mediation analysis shows that cancer-related pain and sleep disturbance has direct effect on fatigue (Beck et al., 2005; Kim & Jang, 2012). Therefore, pain and sleep disturbance might indirectly affect participation by causing variations in the levels of fatigue for Turkish cancer survivors. It should be noted that pain, fatigue, and sleep disturbance levels of cancer survivors may also interact with time since diagnosis as cancer survivors may experience higher levels of pain, fatigue and sleep disturbance in the early stage of their cancer treatment. In addition, secondary health conditions experienced by cancer survivors could also interact with impairments to affect participation.

Controlling for the effect of other impairment related variables, perceived stress had a significant direct effect on participation. Research indicates that pain, sleep disturbance, fatigue, and stress are common cancer-related symptoms that cluster together and negatively influence functioning and quality life of cancer survivors (Lin, Chan, Yang, & Zhou, 2011). Pain, sleep disturbance, and fatigue may cause psychological distress in cancer survivors (Rainbow et al., 2013). The findings of this study indicate that the effects of pain and sleep disturbance on participation might also be mediated by perceived stress. Perceived stress is thus an important variable influencing participation as a mediator and also an independent variable. Overall, the results indicated that physiological factors (i.e., fatigue) and psychological factors (i.e., perceived stress) significantly influence the participation of cancer survivors in Turkey. These findings are consistent with cancer research in Western countries (Deimling et al., 2007; Kurtz, Kurtz, Stommel, Given, & Given, 2001).

Activity-related variables. The effects of activity-related variables on participation were investigated using a simultaneous regression. After controlling for the other variables, role and social functioning variables were significantly associated with participation. This finding is in line with other research findings indicating that role and social functioning play a prominent role in overall quality of life of cancer survivors (Osoba et al., 2006). Although physical functioning, cognitive functioning, and emotional functioning were significantly associated with participation at the zero-order correlation level, they were not significant in the simultaneous regression. The effect of those variables might be mediated by role and social functioning.

Research indicates that role functioning has a strong association with physical functioning; and social functioning is closely associated with physical, role, and cognitive functioning in Turkish cancer survivors (Guzelant et al., 2004). In fact, this study found that role and social functioning mediated the relationships between physical, emotional, and cognitive functioning and participation. The findings suggest that role and social functioning activities may be higher order constructs than physical, emotional, and cognitive functioning. It supports the findings of Demirci et al. (2011) indicating role functioning is a significant indicator of global health status. As Turkey is a more collectivist society, the ability to perform family life, social roles, and daily activities may be a more important influence on participation for Turkish cancer survivors (Chhokar et al., 2014; Terzioglu, 2008). Because, performing role and social functioning activities might help cancer survivors to feel a valued member to contribute their close network, and attend more of participation activities (Terzioglu, 2008). However, the physical, emotional, and cognitive functioning may have indirect effects on the participation of cancer survivors through their effect on role and social functioning activities. In other words, physical, emotional, and cognitive functioning may allow cancer survivors to perform daily, family role, and social activities that influence participation positively.

Personal factors. The effect of personal factors on participation was investigated using a simultaneous regression. After controlling for the other variables, core self-evaluations and independent self-construal were significantly associated with participation. The finding that core self-evaluations as a higher order construct comprised of locus of control, emotional stability, generalized self-efficacy, and self-esteem is a significant variable related to participation outcomes of cancer survivors is consistent with core self-evaluations research conducted with other disability groups (Smedema, 2014; Smedema, Chan, & Phillips, 2014). In previous research, core self-evaluations significantly mediated the effect of other positive psychology variables and was found to have significant direct effect on participation (Smedema et al., 2014).

As for independent self-construal, in a collectivist culture, cancer survivors who hold individualist values may not receive appropriate social support and approval from the society (Chhokar et al., 2014) and therefore this quality might have a negative association with participation. Although resilience and interdependent self-construal had bivariate significant associations with participation, the effect of those variables might be mediated by core self-evaluations and independent self-construal in the simultaneous regression.

Research indicates that people who have higher core self-evaluations perceive fewer stressors and have better coping strategies in response to those stressors (Kammeyer-Mueller, Judge, & Scott, 2009). People with high levels of core self-evaluations are found to have high levels of job performance, job satisfaction and life satisfaction (Kammeyer-Mueller et al., 2009). Therefore, Turkish cancer survivors with high levels of core self-evaluations would have better self-esteem, coping abilities, generalized self-efficacy, and psychological health that may facilitate participation in community activities. In particular, cancer survivors in Turkey might be more likely to believe that cancer is an inescapable destiny (Afsaroglu et al., 2013). However, people with higher levels of internal strengths might be less affected by this belief. Cancer survivors with high levels of core self-evaluations might also have higher levels of psychological and other coping resources to manage cancer-related challenges, allowing to normalize their cancer experiences better than people with lower levels of core self-evaluations. Core self-evaluations may also reduce the effect of perceived public stigma on self-stigma (i.e., internalization of public stigma) allowing cancer survivors to have better psychological adjustment assuming a normalized lifestyle in the community as a cancer survivor (Kim & Yi, 2014; Lebel et al., 2013)

From the results, it can also be inferred that the effect of resiliency might be mediated by core self-evaluations in this study. Core self-evaluation might be a higher order construct of resiliency in Turkish cancer survivors. Consequently, the effect of resiliency on participation may not be observable in the presence of core self-evaluations as it is expected that people who have higher core self-evaluations would also have higher levels of resiliency.

Cancer survivors who had more individualistic characteristics had low levels of participation. As Turkey is considered to be a more collectivist society, cancer survivors with more individualistic characteristics may desire to be more independent and may not prefer to attend community activities in a society where people maintain a higher level of interconnectedness with and dependency on one another (Black, Mrasek, & Ballinger, 2003; Chhokar et al., 2014). In addition, cancer survivors with higher levels of independent self-construal would have lower levels of family and social support and may have conflicts with their treating physicians who function within Turkish hierarchical public health system (Fernández, Paez, & González, 2005).

Environmental factors. The effect of environmental factors on participation was investigated using a simultaneous regression. After controlling for the other variables, social support and autonomy support were significantly associated with participation. This finding is consistent with the findings of previous studies: social support positively influences psychological adjustment to cancer, improves cancer survivor's coping and quality of life, and, thus, is a fundamental factor for living well with cancer (Courtens et al., 1996; Filazoglu & Griva, 2008; Nazik et al., 2014; Usta, 2012). This study also demonstrated that autonomy support had a significant positive effect on participation. Research shows that autonomy support is significantly associated with self-motivation, satisfaction, and performance in various settings (Baard et al., 2005), which may significantly affect participation. Turkey has a hierarchical public health care system in which physicians are perceived to be superior to the patients (Terzioglu, 2008). In most cases, there is lack of communication between cancer survivors and health care professionals and cancer survivors are hesitant to question their treatment (Guven, 2010). Cancer survivors in Turkey lack information about their diagnosis and are not satisfied with the information shared with them (Guven, 2010; Khalil, 2013). However, when cancer survivors are provided more autonomy support, cancer survivors may feel closer to their health care professionals, have a more open relationship, and be able to ask specific questions and learn more about their diagnosis and treatment process (Terzioglu, 2008). In particular, such a close relationship may change cancer survivors` perceptions about their diagnosis, increase their comfort and instill optimism to fight cancer. Furthermore, as cancer survivors obtain more information regarding cancer and are involved in to treatment decision-making, they are more likely to have internal motivation to adhere to their oncology and rehabilitation treatment and have higher treatment satisfaction (Deci & Ryan, 2005; Levy et al., 2008). Although stigma had a significant bivariate association with participation, the simultaneous regression revealed that the effect of stigma might be mediated by social support and autonomy support for cancer survivors.

Cancer is perceived to most of feared, fatal disease that in Turkey (Gürsoy et al., 2011; Kav et al., 2012). It is caused by sinful past acts as a punishment from God (Afsaroglu et al., 2010). Cancer survivors tend to share their disease related information with their family members and friends that are major source of social support in Turkey (Ozdogan et al., 2006). Research indicates that higher level of perceived social stigma predicts a lower level of social support, and social support may serve as a mediator between perceived stigma and psychological distress (Kim & Yi, 2014). This study found that social support may partially mediate the relationship between perceived social stigma and participation. It is possible that cancer survivors who perceive and internalize a higher level of social stigma avoid close relationships, miss opportunities for social support (Kim & Yi, 2014), and thus have lower level of participation. Turkish cancer survivors may avoid having sharing their cancer experiences with other people as cancer is equated with death and cancer survivors are considered too sick to fulfill their social obligations (Terzioglu, 2008). However, cancer survivors who have high level of social support may have a higher chance to view cancer as part of life and able to pursue a normalized life possible because people who are surrounding them are not prejudiced about them. It should be noted that "time since diagnosis" can be related to self-stigma, because early in the treatment cancer survivors may experience significant physical and psychological changes and have to cope with societal myths and stigmas toward cancer.

The findings indicated that autonomy support might partially mediate the relationship between stigma and participation. Currently, limited research is available about the relationship between stigma, autonomy support, and participation. One possible explanation for this finding is that cancer survivors who perceived a higher level stigma might also avoid to learn more about their diagnosis and have collaborative relationship with their health care professionals, which may have discouraged participation and negatively affected life satisfaction (Baard et al., 2005; Terzioglu, 2008). However, more research is needed in this area.

Effects of the Tested Predictors. The effect of all of the significant variables within each ICF construct on participation was investigated with a simultaneous regression model. Having a higher level of education, low level of fatigue, sufficient autonomy support, and the ability to perform role functioning activities strongly predicted the participation of cancer survivors; however, perceived stress, core self-evaluations, independent self-construal, social support, and social functioning were not significantly associated with participation in the presence of other variables. The effect of those variables may be mediated by the significant variables.

After controlling for the other variables, significant associations were found between educational attainment, fatigue, autonomy support, and role functioning and participation for cancer survivors. These findings are in line with Toptas's (2014) and Deimling et al.'s (2007) findings that a higher level of education is positively associated with quality of life and negatively associated with activity limitations and participation restrictions. Although, Deimling et al. (2007) found no significant association between education level and participation, this study found education was positively associated with participation even after controlling the other variables (e.g. impairment related variables and physical functioning). Therefore, education level plays an important role for participation of cancer survivors in Turkey.

Fatigue was also a critical factor in determining the participation level of cancer survivors in Turkey. Fatigue is strongly associated with physical and psychological wellbeing and other cancer-related impairment factors (i.e., pain and sleep disturbance) and has a large impact on every aspect of daily life (Blayer & Barr, 2007; Beck et al., 2005; Fialka-Moser et al., 2003; Kim & Jang, 2012; Mustian et al., 2008). Cancer-related fatigue might limit the ability of the individual to perform daily tasks and engage in community activities (Terzioglu, 2008), it may limit attending community activities. Therefore, fatigue should be accounted for and included in rehabilitation health interventions for cancer survivors in Turkey.

Autonomy support is another significant factor in participation outcomes. The results indicated that when health care professionals acknowledged cancer survivors' feelings, allowed them to express their views, and involved them in the treatment decision-making process, cancer survivors were more likely to participate in community activities. Although Turkey has a more hierarchical public health care system in which health care professionals are more likely to be perceived as authority figures (Atun et al., 2013; Carteret, 2011, Turhal, 2012), the findings imply that cancer survivors may prefer to have a more equal and caring relationship with health care professionals. In fact, when physician encourage self-determined decision-making and help cancer survivors to normalize their life experience, it is more likely that cancer survivors would be motivated to engage in participation activities. This shift toward greater autonomy reflects the recent cultural changes in Turkish society (OCED, 2014; Ogce, Ozkan, & Baltalarli, 2007).

Role functioning was a significant factor underlining the importance of role functioning in the participation level of cancer survivors in Turkey. Functioning has also been a critical factor in the quality of life and participation of cancer survivors (Deimling et al., 2007). Particularly role functioning were found to be strongly associated with physical functioning, fatigue and global health status (Cankurtaran et al., 2008; Demirci et al., 2011; Guzelant et al., 2004). Because Turkey is still a more collectivist society, being able to perform work and daily activities to meet social expectations may be prominent in lives of cancer survivors. It is likely that cancer survivors who had higher level of physical functioning tend to perform role functioning activities to meet with social responsibilities, which may have a stronger influence on the degree to which Turkish cancer survivors participate in their communities.

Lastly, the results indicated that perceived stress, core self-evaluations, independent self-construal, perceived social support, and social functioning were not significantly associated with participation in the presence of the other variables. The effect of those variables may be mediated by the significant variables for participation of cancer survivors in Turkey. Turkey is a more collectivist society where in group coherence and looking for each other is important. Family ties are strong and family members are expected to strive for well being of their families (Chhokar et al., 2014). Despite the fact that interdependency between the members of society is important, receiving help from outside of close circle is not desired (Terzioglu, 2008). Therefore, family members tend to support their close network and strive not to be burden on them (Ozdogan et al., 2014). Given that Turkey is a developing country where most of the people have low to medium income, contributing to family or close circle is strongly valued (Chhokar et al., 2014). Therefore, performing role functioning (e.g. work) is central to Turkish people`s lives, and soft skills (i.e., personal factors) and environmental factors are valued, if they can be utilized and directed to meet demands of role functioning. In case of cancer, Turkish people believe that it comes from Allah and it is more likely perceived as punishment and there is nothing they could do but accept the reality (Afsaroglu et al., 2013). Therefore, after the diagnosis of the cancer, it is likely that cancer survivors who have ability to perform role functioning activities and not fatigued would be more likely to participate in community activities, otherwise they may prefer to isolate themselves not to share their cancer experiences with other people and not to be a burden on their family members (Ozdogan et al., 2014).

Hierarchical Regression Analysis

The sequential influence of each of the ICF constructs on the participation level of cancer survivors was examined using a hierarchical regression analysis. Considering the malleability of the factors and based on the expected relationship between the variables, the ICF constructs were entered into the regression model as follows: (1) demographic variables, (2) impairment-related variables, (3) personal factors, (4) environmental factors, and (5) activity variables. The results indicated that neither personal factors nor environmental factors explained a significant amount of variance over and above demographic and impairment-related variables. However activity variables explained a significant amount of variance over and above the variance explained by demographic variables, impairment-related variables, personal factors, and environmental factors. In addition, after controlling for the other variables, fatigue and role functioning were significantly associated with participation.

The results indicated that personal and environmental factors were not able to adequately explain the levels of participation for cancer survivors in Turkey. On the other hand, impairment-related variables and activity-related variables were significantly associated with participation, indicating that impairment and functioning play a significant role in participation cancer survivors in Turkey. Although the contemporary biopsychososical model focuses on ability and considers the way functioning and participation are influenced by impairment-related, personal, and environmental factors as well as interactions between these factors (WHO, 2001; Peterson, 2005), it is possible that in general, cancer survivors as members of the Turkish society are still strongly influenced by the medical view of chronic illness and disability. If this is the case, then cancer survivors in Turkey may believe full functioning and ability are necessary to participate in community activities. In such a scenario, it is possible that cancer survivors do not attend community events not because they are not able to or because they do not have the appropriate accommodations, but more simply because they are diagnosed with cancer and believe that this diagnosis precludes participation. Personal and environmental factors may not carry as much weight in this context as functioning and ability. In other words, functioning and ability may override the effect of personal and environmental factors for cancer survivors.

When impairment-related variables were entered in the regression model, education level was no longer a significant factor. The results indicate that impairment-related variables may mediate the relationship between education and participation. The cancer survivors with more education might have more knowledge and ability to cope with cancer related impairments better, less likely to believe cancer is a direct path to death (Terzioglu, 2008; Ozdogan et al., 2006) and thus have a higher level of participation in community activities. In addition, autonomy support turned out to be not significant when activity variables were entered in the regression model. It is possible that cancer survivors who are involved in their treatment and have a strong relationship with health care professionals might be more knowledgeable about their diagnosis (Terzioglu, 2008), have higher treatment adherence and thus have a higher level of functioning (Deci & Ryan, 2005; Levy et al., 2008).

Secondary Analysis

The results indicated that activity/functioning variables play a prominent role in the participation of cancer survivors in Turkey. Therefore, it is important to investigate the factors that influence activity and functioning variables. Following the ICF model, it was hypothesized that personal and environmental factors mediate the relationship between impairment-related variables and participation. Consequently, several mediation analyses were conducted to investigate the possibility of a meditation relationship between personal and environmental factors and participation. The results indicated that impairment-related variables explained a significant amount of variance over and above personal and environmental factors in functioning, indicating that the personal and environmental factors did not completely mediate the relationship between impairment and functioning.

The analysis found that the influence of personal and environmental factors on functioning variables varied; however, some impairment variables significantly influenced activity variables for cancer survivors in Turkey. Pain and perceived stress were significant predictors of role, emotional, cognitive, and social functioning; and pain and fatigue were significant predictors of physical functioning. The findings underscore the significance of pain, fatigue, and perceived stress as significant predictors of functioning for cancer survivors (Alfano et al., 2007; Blayer & Barr, 2007; Karki et al., 2005). Diagnosis of cancer is a major cause of stress for cancer survivors as it affects various aspects of life. Research indicates that stress outcome occurs when a person does not have enough coping resources to deal with stress stimuli (Goh, Sawang, & Oei, 2010). Consequently, Turkish cancer survivors who perceive a higher level of stress might not have enough resources to cope with cancer related stressors (e.g. financial challenges) or see cancer as a disease that cannot be overcome (Afsaroglu et al., 2013). Stress might have different associations with role, emotional, cognitive and social functioning. Cancer survivors who have higher perceived stress might have higher level of worries, irritability, and tenseness regarding cancer; and might not able to concentrate and remember things. Cancer survivors with higher level of stress might not want to work or pursue their hobbies and avoid family and social functioning activities, as there might not be an exit for their diagnosis (Afsaroglu, 2013). Although fatigue was one of the most significant predictors of participation, it did not predict functioning. The follow up analysis indicated that the effect of fatigue and sleep disturbance on functioning might be mediated by pain. As pain has affective, cognitive, and behavioral components (Carr et al., 2002; Ovayolu et al., 2013), cancer-related fatigue and sleep disturbance might influence affective and cognitive components, causing cancer survivors to feel more intense pain.

The results indicated that core self-evaluation was an important variable determining functioning. This finding is supported by previous research that found a significant positive association between the constructs of core self-evaluations (i.e., self-efficacy, self-esteem) and functioning (Ha & Cho, 2014; Porter, Keefe, Garst, McBride, & Baucom, 2008). However, when impairment-related variables were controlled for, core self-evaluations did not have a significant association with physical and social functioning. However, core self-evaluation was significantly associated with cognitive and emotional functioning, even after impairment-related variables were controlled for. As core self-evaluation is significantly associated with life satisfaction (Judge, Bono, Erez, & Locke, 2005), it is expected that people who have higher core self-evaluations have higher emotional functioning. In addition, as human beings are biopsychosocial entities, higher levels of self-esteem and self-efficacy and better emotional functioning might also lead to better cognitive functioning (Judge et al., 2005; Tsaousis, Nikolaou, Serdaris & Judge, 2007).

Autonomy support was a significant environmental factor determining physical, role, emotional, and social functioning. As the autonomy support construct predicts adherence to treatment and treatment satisfaction (Levy et al., 2008), cancer survivors who had a higher level of autonomy support might have a higher level of adherence to treatment and treatment satisfaction and thus have better functioning. However, impairment-related variables completely mediated the relationship between autonomy support and physical, role, emotional, and social functioning. Autonomy support might influence adherence to treatment and treatment satisfaction and thus reduce the effect of impairment-related symptoms and increase functioning.

Another finding indicated that social support significantly predicted emotional functioning even after controlling for the effect of impairment-related variables. This finding confirms the stance of studies that emphasize the positive influence of social support on the psychological wellbeing of cancer survivors (Helgeson & Cohen, 1999; Nazik et al., 2014). Consequently, social support is an important factor for both functioning and participation of cancer survivors in Turkey.

Evaluation of the ICF as a Participation Model

This study evaluated the ICF as a participation model for cancer survivors in Turkey. The results indicated that ICF as disability model holds value for cancer survivors in Turkey. First, all of the ICF constructs individually contributed to the prediction of participation of Turkish cancer survivors. Using the biopscyhosocial model, ICF, this study illuminated that cancer as a chronic illness has biological, psychological and societal components that affect participation of cancer survivors in Turkey. In particular, impairment and functioning were significantly associated with participation. Second, the ICF model also proposes that the P x E contextual factors play an important role in mediate or moderate the effect of impairment and functioning on participation. However, findings of this study indicated that P x E factors had less than expected impact on participation in the presence of impairment and activity variables. However, P x E contextual factors were found to mediate the effect of impairments on cognitive and emotional functioning.

Overall, the results indicated that functioning, the proxy of activity, strongly predicted participation. Personal and environmental factors had indirect effect on participation through functioning. In particular role functioning, was the most significant predictor of participation. Turkish cancer survivors who were able to perform their role functioning activities were more likely to engage in participation activities, whereas cancer survivors with less role functioning skills may isolate themselves to avoid burdening their family and related social network (Afsaroglu et al., 2013; Khalil, 2013). Although personal and environmental factors did not have direct effect on participation, they contributed indirectly through their influence on functioning (i.e., cognitive and emotional functioning). The findings are consistent with the literature indicating personal and environmental factors are associated with wellbeing of cancer survivors (Bornbaum et al., 2013). In particular, core self-evaluation and social support predicted emotional and cognitive functioning of cancer survivors. Given Turkey might still be following the medical model; personal and environmental factors might have impact on functioning that have more internal strength components.

Implications

Implications for cancer rehabilitation. The results indicated that education level was positively associated with participation for cancer survivors. Cancer survivors with higher education levels might have more knowledge about cancer and its treatment options, be better equipped to cope with cancer-related impairment, and have better relationship with health care professionals to participate more fully in community events and activities. Therefore, health education workshops and interventions programs can be designed to increase cancer survivors' knowledge about cancer and its treatment options and to teach or improve coping skills to help survivors better manage cancer-related symptoms. Moreover, educational programs should be implemented across Turkey to improve access for those outside the metropolitan areas.

Fatigue and perceived stress were two impairment-related variables that were significantly associated with participation after controlling for the effect of other variables. Because fatigue has physical and psychological components (Carr et al., 2002), psychological interventions and behavioral management techniques provided in conjunction with medical treatment can help patients to reduce cancer-related fatigue and stress. Since, pain and sleeping problems also contribute to fatigue, pain management via physical therapy intervention must be considered for patients who report high levels of pain intensity and experience. In particular, psychological workshops and support groups can be designed to increase fatigue management skills and to reduce perceived stress among cancer survivors.

The results revealed a strong association between role and social functioning variables and the participation level of cancer survivors in Turkey. As Turkey is considered to be a collectivist society, role and social functioning may be more important in the lives of cancer survivors. Since role functioning may be significantly influenced by physical functioning, cognitive functioning, and emotional functioning, to increase the participation of cancer survivors in Turkey, intervention programs should first focus on impairment factors that affect physical, cognitive and emotional functioning through rehabilitation medicine and psychological interventions. Then, specific interventions including assistive technology that target social and role functioning should be implemented to improve cancer survivors' motivation and desire to actively engage in community activities and to normalize their cancer experience.

Among the personal factors studied, core self-evaluations was significantly positively associated with participation while independent self-construal was significantly negatively associated with participation. Cancer survivors with higher level of core self-evaluations might positively evaluate themselves and have a positive outlook toward cancer, which might help them better manage cancer-related impairments and have a higher level of participation. The positive psychology interventions aimed to increase generalized self-efficacy, self-esteem, emotional stability, and perceived control, which have recently gained prominence in rehabilitation may help to increase the core self-evaluations of cancer survivors in Turkey.

Among the environmental factors studied, social support and autonomy support were significantly associated with participation. Social support is an important factor in psychological adjustment to cancer. Therefore, support groups and group counseling sessions may help to increase the social support Turkish cancer survivors receive. However, seeking psychological help is associated with negative connotations and people who receive psychotherapy are perceived to have mental health issues in Turkey, therefore, cancer survivors may not state their psychological needs and want to attend counseling sessions (Terzioglu, 2008). If it is the case, as Turkey is a more collectivist society, friends, family members, and significant others may be important sources of social support. Moreover, cancer survivors may establish support groups to provide psychological and emotional help for one another. Therefore, rehabilitation and health professionals should consider including family members in the interventions. The results also indicated that autonomy support from health care professionals was effective in increasing the participation of cancer survivors. Cancer survivors who were involved in the treatment decision-making process, expressed their views, and felt cared for and understood by their treatment providers had higher levels of participation. Consequently, information and training sessions can be set up to teach health care professionals how to provide more autonomy support to cancer survivors in Turkey. It is recommended that these sessions be designed to be more interactive so that health care professionals can receive input and develop more innovative and culturally responsive autonomy support practices.

The final simultaneous regression results indicated that, after controlling for the other variables, educational attainment, fatigue, autonomy support, and role functioning were significantly associated with participation. Perceived stress, core self-evaluation, independent self-construal, perceived social support, and social functioning were not significant in the presence of the other variables. The findings imply that educational attainment, fatigue, autonomy support, and role functioning may be higher order constructs that accounted for the effect of perceived stress, core self-evaluations, independent self-construal, perceived social support, and social functioning. Since improving cancer survivors' performance on the lower order variables will improve the higher order functioning, it is important to first target lower order variables for treatment in order to improve performance in higher order functioning.

A hierarchical regression was conducted to investigate the sequential influence of each ICF construct on participation. The hierarchical regression results indicated that personal and environmental factors did not have a significant effect on participation in the presence of impairment and functioning variables. The results suggest that minimizing the effect of impairment and maximizing functioning are most effective in improving participation of cancer survivors in Turkey. This finding is consistent with the collectivist culture, which has a strong reliance on the medical doctors. Therefore, the use of rehabilitation medicine along with psychosocial interventions to treat stress, fatigue, pain, sleep problems and depression will be an important first step in helping cancer survivors to engage in the community.

As functioning plays an important role in the participation of cancer survivors in Turkey, several mediation analyses were conducted to investigate factors influencing their functioning.

The results revealed that pain and perceived stress were two prominent factors in the functioning of cancer survivors; therefore, physical and psychological interventions can also be helpful to increase cancer survivor’s pain and stress management skills. In particular, cancer survivors can be instructed regarding the components, causes, and structures of pain and pain management sessions can be designed to increase the functioning of cancer survivors.

The results also demonstrated that impairment-related variables played a particularly important role in explaining physical and social functioning. Therefore, impairment-related variables (i.e., pain, fatigue, and perceived stress) should be the first avenue to increase physical and social functioning. Unlike physical and social functioning, personal factors (e.g., core self-evaluations) had a significant influence on cognitive and emotional functioning in addition to impairment-related variables. Therefore, psychological interventions such as psychotherapy and counseling aimed to increase generalized self-efficacy and self-esteem might increase the emotional functioning of cancer survivors. Cognitive remediation training could be included to improve cognitive functioning of cancer survivors who may have cognitive impairments especially for survivors who received chemotherapy treatment. The results also pointed out that none of the environmental factors had a significant effect on physical, role, and cognitive functioning after impairment-related variables were controlled for. However, social support was significantly associated with emotional functioning and autonomy support was significantly associated with social functioning. Therefore, social support interventions might be helpful to increase emotional functioning of cancer survivors. Moreover, providing autonomy support, including involving cancer survivors in treatment decision-making process, helping them to express their thoughts and feelings, and making them feel cared for and understood might help increase social functioning for cancer survivors in Turkey.

Implications for future research. The results of this study indicated that in the presence of impairment and functioning variables, personal and environmental factors had less impact on participation of cancer survivors in Turkey. This situation might be explained by the emphasis of the medical model in Turkey. However, contemporary research indicates that personal and environmental factors and their interactions are prominent on lives of people with chronic illness or disability in western countries (Chan et al., 2009). In this study, we have identified some P X E variables that predict functioning (e.g., core self-evaluations), while some P X E variables are less useful in the prediction. For example, the purpose in life and religiosity scales were both three-item measures and these two variables were not found to be significant predictors of functioning and participation. However, the results could be affected by the brevity of the measures. Future research using more reliable and valid measurement of purpose in life and religiosity to confirm the usefulness of these constructs may be warranted. Recently, Corrigan and his colleagues (2009) has proposed a "why try" model in psychiatric rehabilitation. They postulated that perceived public stigma could lead to self-stigma and self-stigma affects self-esteem and perceived self-efficacy, and lack of self-esteem and perceived self-efficacy resulted in the "why try" behavior. Given the prominence of cancer stigma in Turkey, the "why try" model may be integrated into the ICF framework to predict participation. Autonomy support was found to be a significant environmental factor, underscoring the importance of self-determination and motivation. Therefore, incorporating motivational factors in the ICF model may also be warranted. It is also possible that some other P X E variables more relevant to Turkish people need to be identified and evaluated. Since the ICF constructs and participation are not well understood in the context of Turkish people and culture, it may be appropriate to conduct qualitative research or mixed methods research to identify P X E variables that are relevant to cancer survivors in Turkey. In addition, it is possible that P X E factors may be more predictive of life satisfaction and subjective well-being as those outcomes are more subjective and related to psychosocial factors. In this study, I have investigated predictors of participation with participants representing a range of cancer diagnosis. It may be more effective to evaluate the ICF participation model based on specific diagnosis (e.g., breast cancer vs. lung cancer).

Limitations

Several limitations of this study should be considered when interpreting and generalizing the results. A convenience sample was used in that the participants self-selected themselves for participation by responding to an online or email invitation to participate. It is likely that participants in study were in better health conditions. Also, the majority of the participants had breast cancer, representing a narrower band of cancer survivors and not an accurate picture of cancer survivors in Turkey. Furthermore, several important variables such as receipt of on-going treatment, and symptoms of post-traumatic stress disorders were not studied. Lastly, this study was conducted in Turkey. The cultural characteristics of the Turkish population may differ from other Middle Eastern countries and other European countries.

Participation was measured as composite score of five areas: indoor autonomy, family role, outdoor autonomy, social life and relationships, and work and education activities (Kersten et al., 2007). However, the IPA was considered a multidimensional measure, not a unidimensional measure. Predictors of participation may vary depends on which participation domain was predicted.

This study used a quantitative descriptive design. Causality between the significant predictors and participation cannot be established. The results of this study explained the directionality between the variables that was set based on theoretical framework of ICF and previous research. However, it should be noted that reverse directionality between the variables is always a possibility. The study used a large number of variables. It may be better to reduce the number of variables and focus on testing mediation and moderation hypotheses in a simple and clear manner.

Finally, this study used self-reported measures. Social desirability is a limitation of self-report measures. As Turkish society is a more collectivist society, social desirability might have a stronger effect on responses of the participants. Participants may report a higher level of well-being and fewer problems as not to be a burden on other members of community. Moreover, self-report measures are subject to errors in reporting data as it is based on the memory and perception of the participants. Therefore, self-report measures pose challenges in regard to whether reported conditions can be treated as objective data.

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APPENDICES

Appendix A: Support Letter

October, 21 2013

Cahit Kaya
University of Wisconsin-Madison
Department of Rehabilitation Psychology
& Special Education 1000 Bascom Mall,
4th floor Madison, WI. 53706

Dear Mr. Kaya:

Thank you for your interest in advertising your research project at Hacettepe University Institute of Oncology. We are excited to collaborate with you and support this important study. Participation of people with cancer continues to be critical issue that we address within our institute.

We can assist you with your research project by supporting your recruitment strategy. We can mention the study to our team members and let the patients of our institute know about the study and can post fliers on bulletin boards. We can post information about your study on our online community board.

Our institute has 1200 beds inpatient capacity and we see approximately 200 patients each day. Because participation, health and functioning of people with cancer are important to our patients, we know that there will be a number of patients interested in participating in your study.

We look forward to working with you on this important research. We are also delighted to have a research study promoting participation and functioning of people with cancer advertised in our institute,

Sincerely,

Sercan Aksoy
Deputy Director of Hacettepe University
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Appendix B: Email Recruitment

Dear Patients,

You are invited to participate in a research study about functioning and participation of cancer patients. The purpose of the research is to identify factors influencing functioning and participation of cancer patients. If you decide to participate in this research you will be asked to complete a survey packet designed ask questions about your functioning and participation in Turkey. Your participation will last approximately 30 min per session, and no identifying information will be asked. Participation is completely voluntary; however, your participation will help to identify factors influencing participation of people with cancer. Results of this study will be published in academic journals using group characteristics and may lead to changes for increasing participation of people with cancer. To participate in the survey see the attached link below. If you already attended the survey please disregard this e-mail.

https://www.surveymonkey.com/s/kanserarastirma

We, in advance, thank you for your participation,

Get well soon…

Dr. Sercan Aksoy

Dr. Kadri Altundag

Appendix C: Flyer

Research Study Participants Needed!

A group of researchers who are collaborating with Hacettepe University Oncology Institute are interested in studying factors that affect functioning, health and participation of cancer patients. I would like to invite you to participate in a research study. The study can be completed online at your convenience or we will work with you on scheduling an appointment to complete it in person. If you are interested in participating, please go to the following website: **https://www.surveymonkey.com/s/kanserarastirma**

Sincerely,

Fong Chan, Ph.D.

Cahit Kaya, M.A

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https://www.surveymonkey.c
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Appendix D: Informed Consent Form

UNIVERSITY OF WISCONSIN-MADISON
Research Participant Information and Consent Form

Title of the Study: Evaluating Functioning, Health and Participation of Cancer Patients in Turkey

Principal Investigator: Professor Fong Chan (phone: 001 608 262 2137) (email: chan@education.wisc.edu)

Student Researcher: Cahit Kaya (phone: 001 608 906 6363) (email: ckaya@wisc.edu)

DESCRIPTION OF THE RESEARCH

You are invited to participate in a research study about functioning and participation of cancer patients. The purpose of the research is to identify factors influencing functioning and participation of cancer patients using International Classification of Functioning, Disability, and Health (ICF) framework in Turkey. The ICF is structured around three broad components: (a) body functions and structure, (b) activities (related to tasks and actions by an individual) and participation (involvement in a life situation), and (c) individual level characteristics and environmental factors. Functioning is viewed as a complex interaction between the individual and the contextual factors of the environment, as well as personal factors. The emphasis of the ICF is on functioning in specific environments. You are eligible to participate in the study if you are a cancer patient, are 18 years of age or older and a Turkish citizen.

WHAT WILL MY PARTICIPATION INVOLVE?

We hope that you will participate in the study. However, participation is completely voluntary. Also, your responses will be completely confidential as no identifying information is requested to complete this survey. Thus, no one will know how you have answered any of the items or even whether you have chosen to participate by completing the survey.

If you decide to participate in this research you will be asked to complete a survey packet designed ask questions about your functioning and participation in Turkey. Your participation will last approximately 30 min per session and will require 1 session which will require 30 min in total.

ARE THERE ANY RISKS TO ME?

We don't anticipate any risk to you from participation in this study.

HOW WILL MY CONFIDENTIALITY BE PROTECTED?

While there will probably be publications as a result of this study, your name will not be used. Only group characteristics will be published.

WHOM SHOULD I CONTACT IF I HAVE QUESTIONS?

You may ask any questions about the research at any time. If you have questions about the research after you leave today you should contact Cahit Kaya (001 608 906 63 63 ; ckaya@wisc.edu) or Professor Fong Chan (001 608 262 2137; email: chan@education.wisc.edu) to discuss your concerns. If you are not satisfied with response of research team, have more questions, or want to talk with someone about your rights as a research participant, you should contact your district attorney.
If you feel discomfort after completing survey and need to consult with a mental or physical health professional please call +90 312 444 4 444 (for appointment or consultation, Hacettepe University, School of Medicine 06100 Sıhhiye – Ankara), or call +90 312 595 80 00 (for appointment or consultation), Ankara University School of Medicine, 06100 Sıhhıye Ankara. If you are not able to reach those institutions, please contact with a local hospital.

In case of emergency during survey completion, please terminate the survey and immediately call 112 (Emergency service number).

Your participation is completely voluntary. If you decide not to participate or to withdraw from the study it will have no effect on your treatment or relationship with the enstitute. You will receive a copy of this form for your records.

☐ I agree to participate the study.
☐ I do not agree to participate the study

Appendix E: Survey Packet in English

*1. UNIVERSITY OF WISCONSIN-MADISON

Research Participant Information and Consent Form

Title of the Study: Evaluating Functioning, Health and Participation of Cancer Patients in Turkey

Principal Investigator: Professor Fong Chan (phone: 001 608 262 2137) (email: chan@education.wisc.edu)

Student Researcher: Cahit Kaya (phone: 001 608 906 6363) (email: ckaya@wisc.edu)

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If you decide to participate in this research you will be asked to complete a survey packet designed ask questions about your functioning and participation in Turkey. Your participation will last approximately 30 min per session and will require 1 session which will require 30 min in total.

ARE THERE ANY RISKS TO ME?

We don't anticipate any risk to you from participation in this study.

HOW WILL MY CONFIDENTIALITY BE PROTECTED?

While there will probably be publications as a result of this study, your name will not be used. Only group characteristics will be published.

WHOM SHOULD I CONTACT IF I HAVE QUESTIONS?

You may ask any questions about the research at any time. If you have questions about the research after you leave today you should contact Cahit Kaya (001 608 906 63 63 ;ckaya@wisc.edu) or Professor Fong Chan (001 608 262 2137; email:

response of research team, have more questions, or want to talk with someone about your rights as a research participant, you should contact your district attorney.

If you feel discomfort after completing survey and need to consult with a mental or physical health professional please call +90 312 444 4 444 (for appointment or consultation, Hacettepe University, School of Medicine 06100 Sıhhiye – Ankara), or call +90 312 595 80 00 (for appointment or consultation), Ankara University School of Medicine, 06100 Sıhhıye Ankara. If you are not able to reach those institutions, please contact with a local hospital.

In case of emergency during survey completion, please terminate the survey and immediately call 112 (Emergency service number).

Your participation is completely voluntary. If you decide not to participate or to withdraw from the study it will have no effect on your treatment or relationship with the enstitute.

You will receive a copy of this form for your records.

○ Yes I want to participate in the study

○ No, I do not want to participate in the study

2. Gender

○ Male

○ Female

3. How old are you?

4. What is your marital status?

○ Single

○ Married

○ Divorced

○ Widowed

○ Separated

○ Other (please specify)

5. What is your approximate height and weight?

Height (cm)

Weight (kg)

6. What is the highest level of education?

○ No formal schooling

○ Elementary education

○ Middle school education

○ Secondary education, no high school diploma

○ High school graduate or equivalency certificate

○ Vocational/Technical certificate

○ Associate degree, no diploma

○ Associate degree

○ Bachelor degree

○ Master degree or higher

7. Current health insurance

○ No insurance

○ Green card

○ Bag-Kur

○ SIO

○ Retired Agency

○ Private Health Insurance

8. Which of the follow best describes your current employment status?

○ Employed full-time

○ Employed part-time

○ Unemployed seeking employment

○ Homemaker

○ Not employed:Volunteer

○ Not employed: Student, trainee or intern

○ Not seeking employment due to disability and/or health problems

○ Retired

9. Who do you live with?

○ With my family

○ With my relatives

○ With my friends/roommates

○ I am living alone

10. What is your annual household disposable income?

○ 0 - 8584 TL

○ 8585 - 14585 TL

○ 14586 - 20706 TL

○ 20707 - 29209 TL

○ 29210-59597 TL

○ 59598 TL and more

11. Type of cancer

12. Types of treatment

☐ Surgery

☐ Chemotherapy

☐ Radiation therapy

13. Patient type

○ Inpatient

○ Outpatient

14. Onset time since diagnosis

15. Length of the treatment

Length of the treatment (month)

16. Cancer stage

○ First stage

○ Second stage

○ Third stage

○ Fourth stage

17. Medication that you use

18. Do you have other secondary health conditions? Please select all that apply.

☐ Alcohol Abuse or Dependence

☐ Amputations

☐ Anxiety Disorders

☐ Arthritis and Rheumatism

☐ Asthma and other Allergies

☐ Attention Deficit Hyperactivity Disorder (ADHD)

☐ Autism

☐ Blood Disorders

☐ Cardiac and other Conditions of the Circulatory System

☐ Cerebral Palsy

☐ Congenital Condition or Birth Injury

☐ Cystic Fibrosis

☐ Depression and other Mood Disorders

☐ Diabetes Mellitus

☐ Digestive

☐ Drug Abuse or Dependence (other than alcohol)

☐ Eating Disorders (e.g., anorexia, bulimia, or compulsive overeating)

☐ EndStage Renal Disease and other Genitourinary System Disorders

☐ Epilepsy

☐ HIV and AIDS

☐ Immune Deficiencies excluding HIV/AIDS

☐ Mental Illness (not listed elsewhere)

☐ Intellectual Disability

☐ Multiple Sclerosis

☐ Muscular Dystrophy

☐ Parkinson's Disease and other Neurological Disorders

☐ Personality Disorders

☐ Physical Disorders/Conditions (not listed elsewhere)

☐ Polio

☐ Respiratory Disorders other than Cystic Fibrosis or Asthma

☐ Schizophrenia and other Psychotic Disorders

☐ Specific Learning Disability

☐ Spinal Cord Injury (SCI)

○ Stroke

○ Traumatic Brain Injury (TBI)

Other (please specify)

19. EORTC QLQ-C30

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

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

20. EORTC QLQ-C30

During the past week:

	Not at All	A Little	Quite a Bit	Very Much
6. Were you limited in doing either your work or other daily activities?	○	○	○	○
7. Were you limited in pursuing your hobbies or other leisure time activities?	○	○	○	○
8. Were you short of breath?	○	○	○	○
9. Have you had pain?	○	○	○	○
10. Did you need to rest?	○	○	○	○
11. Have you had trouble sleeping?	○	○	○	○
12. Have you felt weak?	○	○	○	○
13. Have you lacked appetite?	○	○	○	○
14. Have you felt nauseated?	○	○	○	○
15. Have you vomited?	○	○	○	○
16. Have you been constipated?	○	○	○	○
17. Have you had diarrhea?	○	○	○	○
18. Were you tired?	○	○	○	○
19. Did pain interfere with your daily activities?	○	○	○	○
20. Have you had difficulty in concentrating on things, like reading a newspaper or watching television?	○	○	○	○
21. Did you feel tense?	○	○	○	○
22. Did you worry?	○	○	○	○
23. Did you feel irritable?	○	○	○	○
24. Did you feel depressed?	○	○	○	○
25. Have you had difficulty remembering things?	○	○	○	○
26. Has your physical condition or medical treatment interfered with your family life?	○	○	○	○
27. Has your physical condition or medical treatment interfered with your social activities?	○	○	○	○
28. Has your physical condition or medical treatment caused you financial difficulties?	○	○	○	○

21. EORTC QLQ-C30

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

	1 (Very poor)	2	3	4	5	6	7 (Excellent)
29. How would you rate your overall health during the past week?							
30. How would you rate your overall quality of life during							

22. CORE

Below are several statements about you with which you may agree or disagree. Please indicate your degree of agreement (using a score ranging 1- 5) to the following statements.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. I am confident I get the success I deserve in life.	○	○	○	○	○
2. Sometimes I feel depressed. (r)	○	○	○	○	○
3. When I try, I generally succeed.	○	○	○	○	○
4. Sometimes when I fail I feel worthless. (r)	○	○	○	○	○
5. I complete tasks successfully.	○	○	○	○	○
6. Sometimes, I do not feel in control of my work. (r)	○	○	○	○	○
7. Overall, I am satisfied with myself.	○	○	○	○	○
8. I am filled with doubts about my competence. (r)	○	○	○	○	○
9. I determine what will happen in my life.	○	○	○	○	○
10. I do not feel in control of my success in my career. (r)	○	○	○	○	○
11. I am capable of coping with most of my problems.	○	○	○	○	○
12. There are times when things look pretty bleak and hopeless to me. (r)	○	○	○	○	○

23. MSPSS

We are interested in how you feel about the following statements. Read each statement carefully. Please indicate your degree of agreement (using a score ranging 1- 7) to the following statements.

	1 (Very Strongly Disagree)	2	3	4	5	6	7 (Very Strongly Agree)
1. There is a special person who is around when I am in need.	○	○	○	○	○	○	○
2. There is a special person with whom I can share my joys and sorrows.	○	○	○	○	○	○	○
3. My family really tries to help me.	○	○	○	○	○	○	○
4. I get the emotional help and support I need from my family.	○	○	○	○	○	○	○
5. I have a special person who is a real source of comfort to me.	○	○	○	○	○	○	○
6. My friends really try to help me.	○	○	○	○	○	○	○
7. I can count on my friends when things go wrong.	○	○	○	○	○	○	○
8. I can talk about my problems with my family.	○	○	○	○	○	○	○
9. I have friends with whom I can share my joys and sorrows.	○	○	○	○	○	○	○
10. There is a special person in my life who cares about my feelings.	○	○	○	○	○	○	○
11. My family is willing to help me make decisions.	○	○	○	○	○	○	○
12. I can talk about my problems with my friends.	○	○	○	○	○	○	○

24. SWLS

Below are several statements about you with which you may agree or disagree. Please indicate your degree of agreement (using a score ranging 1- 7) to the following statements.

	Strongly Disagree (1)	Disagree (2)	Slightly Disagree (3)	Neither agree nor disagree (4)	Slightly agree (5)	Agree (6)	Strongly gree (7)
1. In most ways my life is close to my ideal.	○	○	○	○	○	○	○
2. The conditions of my life are excellent.	○	○	○	○	○	○	○
3. I am satisfied with my life.	○	○	○	○	○	○	○
4. So far I have gotten the important things I want in life.	○	○	○	○	○	○	○
5. If I could live my life over, I would change almost nothing.	○	○	○	○	○	○	○

25. BRS

Please indicate your degree of agreement (using a score ranging 1- 5) to the following statements.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. I tend to bounce back quickly after hard times.	○	○	○	○	○
2. I have a hard time making it through stressful events.	○	○	○	○	○
3. It does not take me long to recover from a stressful event.	○	○	○	○	○
4. It is hard for me to snap back when something bad happens.	○	○	○	○	○
5. I usually come through difficult times with little trouble.	○	○	○	○	○
6. I tend to take a long time to get over set-backs in my life.	○	○	○	○	○

26. DUREL

The following section contains 3 statements about your religious beliefs or experience. Please mark the extent to which statement is true or not true for you.

	Definetely true of me	Tends to be true	Unsure	Tends not to be true	Definitely not true
1. In my life, I experience presence of divine (e.g. god).	○	○	○	○	○
2. My religious beliefs are what really behind my whole approach to life.	○	○	○	○	○
3. I try to hard to carry my religion over into all other dealings in life.	○	○	○	○	○

27. PIS

I would like you to rate your pain on a scale from zero to ten. 'Zero' means you have no pain at all.'Ten' means the worst possible pain you can imagine. What number would you give to your pain?

0 (None)	1	2	3	4	5	6	7	8	9	10 (Worst imaginable)
○	○	○	○	○	○	○	○	○	○	○

28. PSS-10

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by marking how often you felt or thought a certain way during last month.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
1. In the last month, how often have you been upset because of something that happened unexpectedly?	○	○	○	○	○
2. In the last month, how often have you felt that you were unable to control the important things in your life?	○	○	○	○	○
3. In the last month, how often have you felt nervous and "stressed"?	○	○	○	○	○
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	○	○	○	○	○
5. In the last month, how often have you felt that things were going your way?	○	○	○	○	○
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	○	○	○	○	○
7. In the last month, how often have you been able to control irritations in your life?	○	○	○	○	○
8. In the last month, how often have you felt that you were on top of things?	○	○	○	○	○
9. In the last month, how often have you been angered because of things that were outside of your control?	○	○	○	○	○
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	○	○	○	○	○

29. BFI

Throughout our lives, most of us have times when we feel very tired or fatigued.

	0 (No fatique)	1	2	3	4	5	6	7	8	9	10 (As bad as you can imagine)
1. Please rate your fatigue (weariness, tiredness) by marking the one number that best describes your fatigue right NOW.	○	○	○	○	○	○	○	○	○	○	○
2. Please rate your fatigue (weariness, tiredness) by marking the one number that best describes your USUAL level of fatigue during past 24 hours.	○	○	○	○	○	○	○	○	○	○	○
	○										
3. Please rate your fatigue (weariness, tiredness) by marking the one number that best describes your WORST level of fatigue during past 24 hours.	○	○	○	○	○	○	○	○	○	○	○

30. PIL

Please indicate your degree of agreement (using a score ranging 1-7) to the following statements.

	Strongly agree (1)	Somewhat agree (2)	A little agree (3)	Neither agree or disagree (4)	A little disagree (5)	Somewhat disagree (6)	Strongly disagree (7)
1- I live life one day at a time and do not really think about the future.	○	○	○	○	○	○	○
2- Some people wander aimlessly through life but I am not one of them.	○	○	○	○	○	○	○
3- I sometimes feel as if I have done all there is to do in life.	○	○	○	○	○	○	○

31. SCS

Please indicate your degree of agreement (using a score ranging 1- 7) to the following statements.

	Strongly agree (1)	Somewhat agree (2)	A little agree (3)	Neither agree or disagree (4)	A little disagree (5)	Somewhat disagree (6)	Strongly disagree (7)
1. My happiness depends on the happiness of those around me.	○	○	○	○	○	○	○
2. I often have the feeling that my relationships with others are more important than my own accomplishments.	○	○	○	○	○	○	○
3. It is important to listen to other`s opinions.	○	○	○	○	○	○	○
4. I act in the same way no matter who I am with.	○	○	○	○	○	○	○
5.I enjoy being unique and different from others in many respects.	○	○	○	○	○	○	○
6. Being able to take care of myself is a primary concern for me.	○	○	○	○	○	○	○

32. IPA

Please respond to the following items with best of your knowledge.

	Very good	Good	Fair	Poor	Very Poor
1a.My chances of getting around in my house where I want to are	○	○	○	○	○
1b. My chances of getting around in my house when I want to are	○	○	○	○	○
2a. My chances of getting washed and dressed the way I wish are	○	○	○	○	○
2b. My chances of getting washed and dressed when I want to are	○	○	○	○	○
2c. My chances of getting up and going to bed when I want to are	○	○	○	○	○
2d. My chances of going to the toilet when I wish and need to are	○	○	○	○	○
2e. My chances of eating and drinking when I want to are	○	○	○	○	○
3a. My chances of contributing to looking after my home the way I want to are	○	○	○	○	○
3b. My chances of getting light tasks done around the house (e.g. making tea or coffee), either by myself or by others, the way I want them done are	○	○	○	○	○
3c. My chances of getting heavy tasks done around the house (e.g. cleaning), either by myself or by others, the way I want them done are	○	○	○	○	○
3d. My chances of getting housework done, either by myself or by others, when I want them done are	○	○	○	○	○
3e. My chances of getting minor repairs and maintenance work done in my house and garden, either by myself or by others, the way I want them done are	○	○	○	○	○
3f. My chances of fulfilling my role at home as I would like are	○	○	○	○	○
4a. My chances of choosing how I spend my own money are	○	○	○	○	○
1c. My chances of visiting relatives and friends when I want to are	○	○	○	○	○
1d. My chances of going on the sort of trips and holidays I want to are	○	○	○	○	○
5a. My chances of using leisure time the way I want to are	○	○	○	○	○
6g. My chances of seeing people as often as I want are	○	○	○	○	○
10. My chances of living life the way I want to are	○	○	○	○	○
6a. My chances of talking to people close to me on equal terms are	○	○	○	○	○
6b. The quality of my relationships with people who are close to me	○	○	○	○	○
6c. The respect I receive from people who are close to me is	○	○	○	○	○
6d. My relationships with acquaintances are	○	○	○	○	○
6e. The respect I receive from acquaintances is	○	○	○	○	○
6f. My chances of having an intimate relationship are	○	○	○	○	○
7a. My chances of helping or supporting people in any way are	○	○	○	○	○
8a. My chances of getting or keeping a paid or voluntary job that I would like to do are	○	○	○	○	○
8b. My chances of doing my paid or voluntary work the way I want to are	○	○	○	○	○
8c. My contacts with other people at my paid or voluntary work are	○	○	○	○	○
8d. My chances of achieving or keeping the position that I want, in my	○	○	○	○	○

8e. My chances of getting different paid or voluntary work are,	○	○	○	○	○

9a. My chances of getting the education or training I want are	○	○	○	○	○

33. HCCQ

Please answer the questions below regarding your relationship with your health care practitioners about your illness. Practitioners have different styles in dealing with patients. Your responses will be kept confidential, so none of the practitioners will know your responses. Please indicate your degree of agreement (using a score ranging 1- 7) to the following statements.

	Strongly disagree (1)	Moderately disagree (2)	Slightly disagree (3)	Neutral (4)	Slightly agree (5)	Moderately agree (6)	Strongly agree (7)
1. I feel that my health care practitioner has provided me choices and options about my health.	○	○	○	○	○	○	○
2. I feel my health care practitioner understands how I see things with respect to my health.	○	○	○	○	○	○	○
3. I am able to be open with my health care practitioner about my health.	○	○	○	○	○	○	○
4. My health care practitioner conveys confidence in my ability to make changes regarding my health.	○	○	○	○	○	○	○
5. I feel that my health care practitioner accepts me whether I follow their recommendations or not.	○	○	○	○	○	○	○
6. My health care practitioner has made sure I really understand my health risk behaviors and the benefits of changing these behaviors without pressuring me to do so.	○	○	○	○	○	○	○
7. My health care practitioner encourages me to ask questions.	○	○	○	○	○	○	○
8. I feel a lot of trust in my health care practitioner.	○	○	○	○	○	○	○
9. My health care practitioner answers my questions related to my health fully and carefully.	○	○	○	○	○	○	○
10. My health care practitioner listens to how I would like to do things regarding my health.	○	○	○	○	○	○	○
11. My health care	○	○	○	○	○	○	○

emotions very well.							
12. I feel that my health care practitioner cares about me as a person.	○	○	○	○	○	○	○
13. I don’t feel very good about the way my health care practitioner talks to me about my health.	○	○	○	○	○	○	○
14. My health care practitioner tries to understand how I see my health before suggesting any changes.	○	○	○	○	○	○	○
15. I feel able to share my feelings with my health care practitioner.	○	○	○	○	○	○	○

34. PDSS

Please indicate your degree of agreement (using a score ranging 1- 5) to the following statements.

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
1. People in my community felt uncomfortable with persons with cancer.	○	○	○	○	○
2. People in my community were unkind to persons with cancer.	○	○	○	○	○
3. People in my community pity persons with cancer.	○	○	○	○	○
4. People in my community thought persons with cancer are dangerous.	○	○	○	○	○
5. People in my community treated persons with cancer unfairly.	○	○	○	○	○
6. People in my community treated persons with cancer like they are children.	○	○	○	○	○
7. People in my community thought that it was the fault of individuals with cancer to have disability.	○	○	○	○	○
8. People in my community avoided socializing with persons with cancer.	○	○	○	○	○
9. People in my community would treat persons with cancer just as they would anyone else	○	○	○	○	○
10. People in my community would be reluctant to date a person with a disability.	○	○	○	○	○
11. People in my community would hire persons with cancer if they are qualified for the job.	○	○	○	○	○
12. People in my community felt that persons with cancer are a burden to society.	○	○	○	○	○
13. People in my community tended to believe disability is a punishment of sin.	○	○	○	○	○
14. People in my community thought persons with cancer could not take care of themselves.	○	○	○	○	○

35. MOS

1. How long did it usually take for you to fall asleep during the past 4 week?

0-15 minutes	16-30 minutes	31-45 minutes	46-60 minutes	More than 60 minutes
○	○	○	○	○

36. MOS

2. On the average, how many hours did you sleep each night during the past 4 week?

Write in number of hours
per night.

37. MOS

How often during the past 4 week did you...

	All of the Tire	Most of the Time	A Good Bit of the Time	Some of the Time	A Little of the Time	None of the Time
3. feel that your sleep was not quiet (moving restlessly, feeling tense, speaking, etc., while sleeping)?	○	○	○	○	○	○
4. get enough sleep to feel rested upon waking in the morning?	○	○	○	○	○	○
5. awaken short of breath or with a headache?	○	○	○	○	○	○
6. feel drowsy or sleepy during the day?	○	○	○	○	○	○
7. have trouble falling asleep?	○	○	○	○	○	○
8. awaken during your sleep time and have trouble falling asleep again?	○	○	○	○	○	○
9. have trouble staying awake during the day?	○	○	○	○	○	○
10. snore during your sleep?	○	○	○	○	○	○
11. take naps (5 minutes or longer) during the day?	○	○	○	○	○	○
12. get the amount of sleep you needed?	○	○	○	○	○	○

Appendix F: Survey Packet in Turkish

*1. WISCONSIN ÜNİVERSİTESİ- MADISON

Araştırma Katılımcıları için Bilgi ve İzin Formu

Araştırma Konusu: Türkiye'deki Kanser Hastalarının Fonksiyonel Yapı ve Toplumsal Katılımlarının İncelenmesi

Baş Araştırmacı: Profesör Fong Chan (Tlf: 001 608 262 2137) (e mail:chan@education.wisc.edu)

Araştırmacı Öğrenci: Cahit Kaya (Tlf: 001 608 906 6363) (e-mail:ckaya@wisc.edu)

ARAŞTIRMANIN TANIMI

Kanser hastalarının fonksiyonel yapı ve yaşama katılımlarına ilişkin faktörler konusundaki araştırmaya davet edildiniz. Bu araştırmanın amacı kanser hastalarının yaşama katılımına ilişkin faktörleri uluslararası fonksiyon, sağlık ve sınıflandırma çerçevesinde incelemektir. Bu sınıflandırma üç ana kategoride açıklanabilir: (a) fiziksel yapı ve fonksiyon, (b) aktiviteler (bireysel görev ve çalışmalar) ve katılım (toplumsal aktiviteler) ve (c) bireysel özellikler ve çevresel faktörler. Kansere rağmen ve ya kanser sonrası fonksiyonel olma bireysel ve çevresel faktörlerin ortaklaşa etkisi altındadır. Eğer bir kanser hastası, 18 yaşın üzerinde ve bir Türkiye Cumhuriyeti vatandaşıysanız bu çalışmaya katılabilirsiniz.

ARAŞTIRMAYA KATILIMIM NE İÇERECEKTİR ?

Çalışmamıza katılmanızı ümit etmekle beraber, çalışmaya katılımınız tamamen gönüllülük esasına dayalıdır. Ankette sizin kişisel yanıtlarınızı belirleyecek herhangi bir bilgi istenmemekle beraber vereceğiniz bütün yanıtlar gizli kalacaktır. Dolayısıyla kimse ne sizin ankete katılıp katılmadığınızı ne de verdiğiniz yanıtları bilemeyecektir.

Eğer bu araştırmaya katılırsanız, sizden kanser hastalarının fonksiyonel yapı ve toplumsal katılımlarına ilişkin faktörler ile ilgili çeşitli anketler doldurmanız istenecektir. Çalışmaya katılmanız, 30 dakikada bir oturumun bitirilmesi durumunda, yaklaşık olarak, 1 oturum, yani toplam 30 dakikanızı alacaktır.

ARAŞTIRMAYA KATILIMIM HERHANGİ BİR RİSK İÇERİYOR MU ?

Araştırmaya katılmanız herhangi bir risk oluşturmayacaktır.

ARAŞTIRMAYA KATILIMIM NASIL GİZLİ TUTULACAK?

Bu araştırmanın sonucunda büyük bir ihtimalle bilimsel makaleler yayınlanmasına rağmen, sizin adınız kullanılmayacaktır. Sonuçlar sadece grup olarak yayınlanacaktır.

EĞER HERHANGİ BİR SORUM OLURSA KİMİNLE İRTİBATA GEÇMELİYİM? Araştırmayla ilgili istediğiniz soruyu istediğiniz zamanda sorabilirsiniz. Eğer buradan ayrıldıktan sonra araştırmayla ilgili sorunuz olursa, Cahit Kaya (001 608 906 63 63 ; ckaya@wisc.edu); ya da Fong Chan (001 608 262 2137; email: chan@education.wisc.edu) ile irtibata geçebilirsiniz. Eğer verilen cevaplardan memnun kalmazsanız, daha fazla sorusormak isterseniz, ya da araştırmaya katılma haklarınız ile ilgili biriyle konuşmak isterseniz bulunduğunuz yerdeki

Anketleri doldurduktan sonra her hangi bir rahatsızlık yaşamanız durumunda veya sağlığınız ile ilgili birine danışmak isterseniz, lütfen +90 312 444 4 444 (Danışma ve randevu için -Hacettepe Üniversitesi Tıp Fakültesi, 06100 Sıhhiye Ankara) ya da +90 312 595 80 00 (Danışma ve randevu için -Ankara Üniversitesi Tip Fakültesi, 06100 Sıhhiye Ankara) numaraları arayınız. Eğer bu hastanelere ulaşamıyorsanız, lütfen yerel bir hastaneye başvurunuz.

Anketleri doldururken herhangi bir rahatsızlık yaşamanız durumunda lütfen anket doldurmayı sonlandırıp, 112' i (Acil servis numarası) arayınız.

Çalışmaya katılmanız kesinlikle gönüllülük esasına dayalıdır. Eğer çalışmaya katılmak istemez ya da çalışmadan çekilmek isterseniz bunun tedavinize ve enstitü ile olan ilişkilerinize kesinlikle hiçbir olumsuz etkisi olmayacaktır.

☐ Çalışmaya katılmak istiyorum ☐ Çalışmaya katılmak istemiyorum

2. Cinsiyetiniz

○ Kız

○ Erkek

3. Kaç Yaşındasınız?

4. Medeni Haliniz?

○ Evli

○ Bekar

○ Diğer (lütfen belirtiniz)

○ Dul

○ Boşanmış

○ Ayrı fakat boşanmamış

5. Yaklaşık olarak ne kadar uzunlukta ve ağırlıktasınız?

Uzunluk (cm)

Ağırlık (kilogram)

6. En son mezun olduğunuz okul?

○ Hiç okula gitmemiş

○ İlkokul mezunu

○ Ortaokul mezunu

○ Lise eğitimi almış fakat mezun değil

○ Lise ve dengi okul mezunu

○ Mesleki eğitim sertifikası var

○ Ön lisans ve lisans eğitimi almış fakat mezun değil

○ Ön lisans mezunu

○ Lisans Mezunu

○ Master ya da daha üstü

7. Lütfen varolan sağlık sigortanızı belirtiniz

○ Sağlık sigortam yok

○ Yeşil Kart

○ Bağ kur

○ SSK

○ Emekli Sandığı

○ Özel sağlık sigortası

8. Aşağıdakilerden hangisi çalışma durumunuzu en iyi tanımlar?

○ Tam zamanlı (ya da tam gün) olarak bir işte çalışıyorum

○ Yarı zamanlı (ya da part-time) olarak bir işte çalışıyorum

○ İşsizim iş arıyorum

○ Evimin işleriyle uğraşıyorum

○ İşsiz, gönüllü olarak çalışıyorum

○ İşsiz, öğrenci, stajyer

○ Özür durumum ve/ya da sağlık sorunlarımdan dolayı iş aramıyorum

○ Emekliyim

9. Kiminle beraber yaşıyorsunuz?

○ Ailemle

○ Akrabalarımla

○ Ev arkadaşlarımla

○ Yalnız yaşıyorum

10. Yıllık hane halkı geliriniz nedir?

○ 0 - 8584 TL

○ 8585 - 14585 TL

○ 14586 - 20706 TL

○ 20707 - 29209 TL

○ 29210 - 59797 TL

○ 59798 TL ve üstü

11. Kanser türünüz?

12. Tedavinizin türü (birden fazla şık işaretleyebilirsiniz)?

☐ Ameliyat

☐ Kemoterapi

☐ Radyoterapi

13. Tedavi şekliniz?

○ Ayakta tedavi

○ Yatan hasta

14. Hastalığınıza ilk tanı konulduğundan beri yaklaşık olarak geçen süre?

Geçen süre (ay olarak)

15. Ne kadar süredir tedavi görüyorsunuz?

Tedavi süresi (ay olarak)

16. Kanser hastalığınız hangi evrededir?

○ Birinci evre

○ İkinci evre

○ Üçüncü evre

○ Dördüncü evre

17. Lütfen kullandığınız ilaçları yazınız?

18. Başka ikincil sağlık problemleriniz var mı? Lütfen aşağıda size uyan seçenekleri işaretleyiniz (birden fazla seçeneği işaretleyebilirsiniz).

- Alkol bağımlılığı
- El, ayak ya da parmaklar gibi uzuvların kesilmesi
- Kaygı bozukluğu
- Kireçlenme ve romatizma
- Astım ve diğer tür alerjiler
- Dikkat eksikliği ve hiperaktif bozukluk
- Otizm
- Kan hastalıkları
- Kalp ve diğer dolaşım sistemleri ile ilgili durumlar
- Beyin felci (serabral palsi)
- Kalıtımsal bozukluklar ya da doğum zedelenmeleri
- Kistik fibrosis
- Depresyon ya da diğer duygu durumu bozuklukları
- Şeker hastalığı
- Sindirimsel bozukluklar
- Uyuşturucu ve ya ilaç bağımlılığı
- Yeme bozuklukları (anoreksiya, bulimia, kompülsif aşırı yeme)
- Böbrek hastalıkları ya da idrar yolu bozuklukları
- Sara hastalığı (Epilepsi)
- HIV ve AIDS
- Bağışıklık sistemi bozuklukları (AIDS hariç)
- Akıl hastalıkları
- Zihinsel özürlülük (yetersizlik)
- Multipl Skleroz
- Müsküler distrofi (Kas hastalığı)
- Parkinson hastalığı ve diğer nörolojik bozukluklar
- Kişilik bozuklukları
- Fiziksel bozukluklar/durumlar (Yukarıda ve aşağıda belirtilenlerin dışında)
- Çocuk felci (polio)
- Solunum bozuklukları (Kistik fibrozis ve astım dışında)
- Şizofren ve diğer psikotik bozukluklar
- Spesifik öğrenme bozuklukları

○ Omurilik felci (zedelenmesi)

○ İnme

○ Travmatik beyin hasarı

Diğer (Lütfen belirtiniz)

19. EORTC QLQ-C30

Siz ve sağlığınız hakkında bazı şeylerle ilgileniyoruz. Lütfen soruların tamamını size uygun gelen seçeneği işaretleyerek yanıtlayınız. Soruların "doğru" veya "yanlış" yanıtları yoktur. Verdiğiniz yanıtlar kesinlikle gizli kalacaktır.

	Hiç	Biraz	Oldukça	Çok
1. Ağır bir alışveriş torbası veya valiz taşımak gibi zorlu hareketler yaparken güçlük çeker misiniz?	○	○	○	○
2. Uzun bir yürüyüş yaparken herhangi bir zorluk çeker misiniz?	○	○	○	○
3. Evin dışında kısa bir yürüyüş yaparken zorlanır mısınız?	○	○	○	○
4. Günün büyük bir kısmını oturarak veya yatarak geçirmeye ihtiyacınız oluyor mu?	○	○	○	○
5.Yemek yerken, giyinirken, yıkanırken ve tuvaleti kullanırken yardıma ihtiyacınız oluyor mu?	○	○	○	○

20. EORTC QLQ-C30

Geçtiğimiz hafta zarfında:

	Hiç	Biraz	Oldukça	Çok
6. İşinizi veya günlük aktivitelerinizi yapmaktan sizi alıkoyan herhangi bir engel var mıydı?	○	○	○	○
7. Boş zaman aktivitelerinizi sürdürmekten veya hobilerinizle uğraşmaktan sizi alıkoyan bir engel var mıydı?	○	○	○	○
8. Nefes darlığı çektiniz mi?	○	○	○	○
9. Ağrınız oldu mu?	○	○	○	○
10. Dinlenme ihtiyacınız oldu mu?	○	○	○	○
11. Uyumakta zorluk çektiniz mi?	○	○	○	○
12. Kendinizi güçsüz hissettiniz mi?	○	○	○	○
13. İştahınız azaldı mı?	○	○	○	○
14. Bulantınız oldu mu?	○	○	○	○
15. Kustunuz mu?	○	○	○	○
16. Kabız oldunuz mu?	○	○	○	○
17. İshal oldunuz mu?	○	○	○	○
18. Yoruldunuz mu?	○	○	○	○
19. Ağrılarınız günlük aktivitelerinizi etkiledi mi?	○	○	○	○
20. Televizyon seyretmek veya gazete okumak gibi aktiviteleri yaparken dikkatinizi toplamakta zorluk çektiniz mi?	○	○	○	○
21. Gerginlik hissettiniz mi?	○	○	○	○
22. Endişelendiniz mi?	○	○	○	○
23. Kendinizi kızgın hissettiniz mi?	○	○	○	○
24. Bunalıma girdiniz mi?	○	○	○	○
25. Bazı şeyleri hatırlamakta zorluk çektiniz mi?	○	○	○	○
26. Fiziksel durumunuz veya tıbbi tedaviniz aile yaşantınıza engel oluşturdu mu?	○	○	○	○
27. Fiziksel durumunuz veya tıbbi tedaviniz sosyal aktivitelerinize engel oluşturdu mu?	○	○	○	○
28. Fiziksel durumunuz veya tedaviniz maddi zorluğa düşmenize yol açtı mı?	○	○	○	○

21. EORTC QLQ-C30

Aşağıdaki sorular için 1 ila 7 arasındaki size en uygun rakamı işaretleyiniz.

	1 (Çok kötü)	2	3	4	5	6	7 (Mükemmel)
29. Geçen haftaki sağlığınızı genel olarak nasıl değerlendirirsiniz?	○	○	○	○	○	○	○
30. Geçen haftaki hayat kalitenizi genel	○	○	○	○	○	○	○

22. CORE

Lütfen 1' den 5' e kadar derecelendirilmiş ölçeği kullanarak aşağıdaki ifadelerden her birisine ne kadar katılıp katılmadığınızı belirtiniz.

	Kesinlikle katılmıyorum (1)	Katılmıyorum (2)	Kararsızım (3)	Katılıyorum (4)	Kesinlikle katılıyorum (5)
1. Hayatta hak ettiğim başarıyı yakaladığıma eminim.	○	○	○	○	○
2. Bazen kendimi depresyonda hissederim.	○	○	○	○	○
3. Uğraştığım zaman genelde başarırım.	○	○	○	○	○
4. Bazen başarısız olduğumda kendimi değersiz hissederim.	○	○	○	○	○
5. Işleri başarıyla tamamlarım.	○	○	○	○	○
6. Bazen kendimi işime hakim hissetmiyorum.	○	○	○	○	○
7. Genel olarak, kendimden memnunum.	○	○	○	○	○
8. Yeteneklerimle ilgili şüphe duyuyorum.	○	○	○	○	○
9. Hayatımda ne olacağını ben belirlerim.	○	○	○	○	○
10. Meslek yaşamımdaki başarımın kontrolünün elimde olmadığını hissediyorum.	○	○	○	○	○
11. Sorunlarımın çoğuyla başa çıkabilirim.	○	○	○	○	○
12. Bazı zamanlar var ki her şey bana karamsar ve ümitsiz gözükür.	○	○	○	○	○

23. MSPSS

Lütfen 1' den 7' e kadar derecelendirilmiş ölçeği kullanarak aşağıdaki ifadelerden her birisinin sizin için ne kadar doğru olup olmadığını belirtiniz. Lütfen hiçbir cümleyi cevapsız bırakmayınız. Sizce doğruya en yakın olan rakamı işaretleyiniz.

	1 (Kesinlikle hayır)	2	3	4	5	6	7 (Kesinlikle evet)
1. Ailem ve arkadaşlarım dışında olan ve ihtiyacım olduğunda yanımda olan bir insan (örneğin, flört, nişanlı, sözlü, akraba, komsu, doktor) var.	○	○	○	○	○	○	○
2. Ailem ve arkadaşlarım dışında olan ve sevinç ve kederlerimi paylaşabileceğim bir insan (örneğin, flört, nişanlı, sözlü, akraba, komsu, doktor) var.	○	○	○	○	○	○	○
3. Ailem (örneğin, annem, babam, eşim, çocuklarım, kardeşlerim) bana gerçekten yardımcı olmaya çalışır.	○	○	○	○	○	○	○
4. İhtiyacım olan duygusal yardımı ve desteği ailemden (örneğin, annemden, babamdan, eşimden, çocuklarımdan, kardeşlerimden) alırım.	○	○	○	○	○	○	○
5. Ailem ve arkadaşlarım dışında olan ve beni gerçekten rahatlatan bir insan (örneğin, flört, nişanlı, sözlü, akraba, komşu, doktor) var.	○	○	○	○	○	○	○
6. Arkadaşlarım bana gerçekten yardımcı olmaya çalışırlar.	○	○	○	○	○	○	○
7. İşler kötü gittiğinde arkadaşlarıma güvenebilirim.	○	○	○	○	○	○	○
8. Sorunlarımı ailemle (örneğin, annemle, babamla, esimle, çocuklarımla, kardeşlerimle) konuşabilirim.	○	○	○	○	○	○	○
9. Sevinç ve kederlerimi paylaşabileceğim arkadaşlarım var.	○	○	○	○	○	○	○
10. Ailem ve arkadaşlarım dışında olan ve duygularıma önem veren bir insan (örneğin, flört, nişanlı, sözlü, akraba, komsu, doktor) var.	○	○	○	○	○	○	○
11. Kararlarımı vermede ailem (örneğin, annem, babam, esim, çocuklarım, kardeşlerim) bana yardımcı olmaya isteklidir.	○	○	○	○	○	○	○
12. Sorunlarımı arkadaşlarımla konuşabilirim.	○	○	○	○	○	○	○

24. SWLS

Aşağıda katılıp katılmayabileceğiniz 5 ifade bulunmaktadır. 1' den 7' e kadar derecelendirilmiş ölçeği kullanarak aşağıdaki ifadelerden her birisine ne kadar katılıp katılmadığınızı belirtiniz. Lütfen cevap verirken açık ve dürüst olunuz.

	Kesinlikle katılmıyorum (1)	Katılmıyorum (2)	Kısmen katılmıyorum (3)	Kararsızım (4)	Kısmen Katılıyorum (5)	Katılıyorum (6)	Kesinlikle katılıyorum (7)
1. Çoğu yönüyle yaşamım ideallerime yakındır.	○	○	○	○	○	○	○
2. Yaşam koşullarım mükemmeldir.	○	○	○	○	○	○	○
3. Ben yaşamımdan memnunum.	○	○	○	○	○	○	○
4. Şuana kadar yaşamdan istediğim önemli şeyleri elde ettim.	○	○	○	○	○	○	○
5. Yaşamıma yeniden başlasaydım, hemen hemen hiçbirşeyi değiştirmezdim.	○	○	○	○	○	○	○

25. BRS

Lütfen 1' den 5' e kadar derecelendirilmiş ölçeği kullanarak aşağıdaki ifadelerden her birisine ne kadar katılıp katılmadığınızı belirtiniz.

	Kesinlikle katılmıyorum (1)	Katılmıyorum (2)	Nötr (Ne katılıyorum ne katılmıyorum) (3)	Katılıyorum (4)	Kesinlikle katılıyorum (5)
1. Zor zamanlardan sonra genelde kendimi çabucak toparlarım.	○	○	○	○	○
2. Stresli olayların üstesinden gelmekte zorlanırım.	○	○	○	○	○
3. Stresli bir olaydan sonra düzelmem uzun sürmez.	○	○	○	○	○
4. Kötü şeyler olduğunda kendime gelmek benim için zordur.	○	○	○	○	○
5. Zor zamanları az bir problemle aşarım.	○	○	○	○	○
6. Genelde yaşamımdaki yenilgilerin/gerilemelerin üstesinden gelmem uzun zaman alır.	○	○	○	○	○

26. DUREL

Aşağıdaki bölüm sizin dini inanç ve tecrübelerinizle ilgili üç ifade içermektedir. Lütfen her ifadenin sizin için ne kadar doğru olup olmadığını belirtiniz.

	Benim için kesinlikle doğru	Benim için doğru gibi	Emin değilim	Benim için doğru değil gibi	Benim için kesinlikle doğru değil
1. Yaşamımda ilahi bir gücü tecrübe ederim (örnek: Tanrı).	○	○	○	○	○
2. Dini inançlarım yaşama olan yaklaşımımı gerçekten belirler.	○	○	○	○	○
3. Dinimi hayattaki diğer bütün işlerime katmak için uğraşırım.	○	○	○	○	○

27. PIS

Hastalıklarınızdan dolayı ağrınız olabilir. Lütfen aşağıda verilen ölçeği kullaranak genelde hissettiğiniz ağrının şiddetini belirtiniz.

	0 (Hiç)	1	2	3	4	5	6	7	8	9	10 (Hayal edilebileceklerin en kötüsü)
Ortalama olarak ağrınızın şiddeti?	○	○	○	○	○	○	○	○	○	○	○

28. PSS-10

Bu ölçekteki sorular, son bir aydır düşündükleriniz ve hissettikleriniz üzerine sorulmuştur. Lütfen aşağıdaki sorulara 1' den 5' e kadar derecelendirilmiş ölçeği kullanarak size en uygun olan cevabı veriniz.

	Hiçbir zaman (1)	Hemen Hemen Hiç (2)	Bazen (3)	Sıklıkla (4)	Çok Sık (5)
1. Son bir ay içinde beklenmeyen bir şeyler olması nedeniyle ne sıklıkta altüst (hayal kırıklığına uğramak, sarsılmak, şoke olmak) oldunuz?	○	○	○	○	○
2. Son bir ay içinde kendi yaşamınızdaki en önemli şeyleri kontrol edemediğinizi hangi sıklıkta hissettiniz?	○	○	○	○	○
3. Son bir ay içinde kendinizi hangi sıklıkta sinirli ve stresli hissettiniz?	○	○	○	○	○
4. Son bir ay içinde kişisel problemlerinizi çözebilecek gücünüze ne sıklıkta güvendiniz?	○	○	○	○	○
5. Son bir ay içinde sizinle ilgili bir şeylerin yolunda gittiğini ne sıklıkta hissettiniz?	○	○	○	○	○
6. Son bir ay içinde yapmanız gereken tüm şeylerle ilgili olarak üstesinden gelemeyeceğinize ne sıklıkta inandınız?	○	○	○	○	○
7. Son bir ay içinde kendi yaşamınızla ilgili olarak öfkenizi hangi sıklıkta kontrol ettiniz?	○	○	○	○	○
8. Son bir ay içinde bir çok sorunun üstesinden geldiğinizi (pek çok şeye yetebildiğinizi) ne sıklıkta düşündünüz?	○	○	○	○	○
9. Son bir ay içinde kontrolünüzün dışında olan bir şeylerden dolayı hangi sıklıkta sinirlendiniz?	○	○	○	○	○
10. Son bir ay içinde üstesinden gelemeyeceğiniz şeylere takılıp kalmanın zorluğunu ne sıklıkta hissettiniz?	○	○	○	○	○

29. BFI

Yaşamımız boyunca çoğumuzun yorgun ve bitkin hissettiği zamanlar olmuştur.

	0 (Hiç bitkinlik yok)	1	2	3	4	5	6	7	8	9	10 (Hayal edebileceğinin en kötüsü)
1. Lütfen ŞU ANDA Kİ bitkinlik (yorgunluk, bezginlik) derecenizi en iyi tanımlayan seçeneği belirtiniz.	○	○	○	○	○	○	○	○	○	○	○
2. Lütfen son 24 saat içerisindeki GENEL bitkinlik (yorgunluk, bezginlik) derecenizi en iyi tanımlayan seçeneği belirtiniz.	○	○	○	○	○	○	○	○	○	○	○
3. Lütfen son 24 saat içerisindeki EN AĞIR bitkinlik (yorgunluk, bezginlik) derecenizi en iyi tanımlayan seçeneği belirtiniz.	○	○	○	○	○	○	○	○	○	○	○

30. PIL

Lütfen 1' den 7' e kadar derecelendirilmiş ölçeği kullanarak aşağıdaki ifadelerden her birisine ne kadar katılıp katılmadığınızı belirtiniz.

	Tamamen katılıyorum (1)	Bazen katılıyorum (2)	Biraz katılıyorum (3)	Kararsızım (4)	Biraz katılmıyorum (5)	Bazen katılmıyorum (6)	Tamamen katılmıyorum (7)
1. İçinde bulunduğum günü yaşarım ve geleceği gerçekten düşünmem.	○	○	○	○	○	○	○
2. Bazı insanlar yaşamları boyunca amaçsız gezinirler, fakat ben onlardan biri değilim.	○	○	○	○	○	○	○
3. Bazen kendimi yaşamda yapılabilecek her şeyi yapmış gibi hissederim.	○	○	○	○	○	○	○

31. SCS

Lütfen 1' den 7' e kadar derecelendirilmiş ölçeği kullanarak aşağıdaki ifadelerden her birisine ne kadar katılıp katılmadığınızı belirtiniz.

	Tamamen katılıyorum (1)	Bazen katılıyorum (2)	Biraz katılıyorum (3)	Kararsızım (4)	Biraz katılmıyorum (5)	Bazen katılmıyorum (6)	Tamamen katılmıyorum (7)
1. Benim mutluluğum etrafımdakilerin mutluluğuna bağlıdır.	○	○	○	○	○	○	○
2. Sıklıkla diğer insanlarla olan ilişkilerimin kendi başarılarımdan daha önemli olduğunu hissederim.	○	○	○	○	○	○	○
3. Diğer insanların görüşlerini dinlemek önemlidir.	○	○	○	○	○	○	○
4. Kiminle olursam olayım ayni şekilde hareket ederim.	○	○	○	○	○	○	○
5. Özgün ve birçok anlamda diğerlerinden farklı olmaktan hoşlanırım.	○ ○	○	○	○	○	○	○
6. Kendi kendime bakabilmek benim için öncellikli bir endişedir.	○ ○	○	○	○	○	○	○

32. IPA

Lütfen aşağıdaki maddelere size en çok uyan seçeneği işaretleyerek cevap veriniz.

	Çok iyi	İyi	Zayıf	Kötü	Çok kötü
1. Evimde istediğim yerlerde dolaşma şansım	○	○	○	○	○
2. Evimde istediğim zaman dolaşma şansım	○	○	○	○	○
3. İstediğim gibi yıkanma ve giyinme şansım	○	○	○	○	○
4. İstediğim zaman yıkanma ve giyinme şansım	○	○	○	○	○
5. İstediğim zaman uyuma ve uyanma şansım	○	○	○	○	○
6. İstediğim ve ya ihtiyacım olduğu zaman tuvalete gitme şansım	○	○	○	○	○
7. İstediğim zaman yeme ve içme şansım	○	○	○	○	○
8. Evin çekip çevrilmesine istediğim gibi katkıda bulunma şansım	○	○	○	○	○
9. Evdeki hafif islerin (örnek: Cay ve ya kahve yapmak) benim ya da başkaları tarafından, istediğim gibi yapılması şansım	○	○	○	○	○
10. Evdeki ağır islerin (örnek: temizlik) benim ya da başkaları tarafından istediğim gibi yapılması şansım	○	○	○	○	○
11. Ev islerinin benim tarafımdan ya da başkaları tarafından istediğim zaman yapılması şansım	○	○	○	○	○
12. Evimdeki ya da bahçemdeki hafif tamirat ya da bakim islerinin benim ya da başkaları tarafından istediğim gibi yapılması şansım	○	○	○	○	○
13. Evdeki rolümün gereklerini istediğim gibi yerine getirme şansım	○	○	○	○	○
14. Paramı nasıl harcayacağımı seçme şansım	○	○	○	○	○
15. Arkadaşlarımı ve akrabalarımı istediğim zaman ziyaret etme şansım	○	○	○	○	○
16. İstediğim birtakım tatil ve yolculuklara çıkma şansım	○	○	○	○	○
17. Bos zamanlarımı istediğim gibi değerlendirme şansım	○	○	○	○	○
18. İnsanları istediğim sıklıkla görme şansım	○	○	○	○	○
19. Yaşamı istediğim gibi yasama şansım	○	○	○	○	○
20. Bana yakın insanlarla eşit şartlarda konuşma şansım	○	○	○	○	○
21. Bana yakın insanlarla olan ilişkilerimin kalitesi	○	○	○	○	○
22. Bana yakın insanlardan gördüğüm saygı	○	○	○	○	○
23. Tanıdıklarla olan ilişkilerim	○	○	○	○	○
24. Tanıdıklardan gördüğüm saygı	○	○	○	○	○
25. Yakın bir ilişkiye sahip olma şansım	○	○	○	○	○
26. İnsanlara herhangi bir anlamda yârdim etme ve ya destek olma şansım	○	○	○	○	○
27. Yapmaktan hoşlandığım gönüllü ya da ücretli bir iş bulma ve ya işi sürdürme şansım	○	○	○	○	○
28. Gönüllü ya da ücretli işimi istediğim gibi yapma şansım	○	○	○	○	○
29. Gönüllü ya da ücretli işimde, istediğim pozisyonu elde etme ve ya devam ettirme şansım	○	○	○	○	○

31. Gönüllü ya da ücretli farklı iş bulma şansım	○	○	○	○	○
32. İstediğim eğitimi ya da deneyimi alma şansım	○	○	○	○	○

33. HCCQ

Aşağıda sağlık çalışanlarıyla ilgili ifadeler verilmiştir. Lütfen 1' den 7' e kadar derecelendirilmiş ölçeği kullanarak aşağıdaki ifadelerden her birisine ne kadar katılıp katılmadığınızı belirtiniz. Cevaplarınız gizli tutulacaktır ve hiç bir sağlık çalışanı cevaplarınızı bilemeyecektir. Lütfen ifadeleri yanıtlarken dürüst ve açık olunuz.

	Kesinlikle katılmıyorum (1)	Bazen katılmıyorum (2)	Biraz katılmıyorum (3)	Nötr (Ne katılıyorum ne katılmıyorum) (4)	Biraz katılıyorum (5)	Bazen katılıyorum (6)	Kesinlikle katılıyorum (7)
1. Sağlık çalışanlarının bana sağlığımla ilgili tercihler ve seçenekler sunuyor olduklarını hissederim.	○	○	○	○	○	○	○
2. Sağlık çalışanları, kendi sağlığımla ilgili konularda nasıl bir tavır takındığımı anlarlar.	○	○	○	○	○	○	○
3. Sağlık çalışanlarına sağlığım konusunda açık olabilmekteyim.	○	○	○	○	○	○	○
4. Sağlık çalışanları kendi sağlığımla ilgili konularda değişiklik yapabilme kabiliyetime güvenirler.	○	○	○	○	○	○	○
5. Sağlık çalışanları onların önerilerine uysam da uymasam da beni kabul ederler.	○	○	○	○	○	○	○
6. Sağlık çalışanları, sağlığımı riske atan davranışlarımı ve bu davranışları değiştirmenin bana getireceği faydaları onları yapma konusunda bana baskı yapmadan, gerçekten anlamamda bana yardımcı oluyorlar.	○	○	○	○	○	○	○
7. Sağlık çalışanları beni soru sormam konusunda cesaretlendirirler.	○	○	○	○	○	○	○
8. Sağlık çalışanlarına oldukça güvendiğimi hissederim.	○	○	○	○	○	○	○
9. Sağlık çalışanları sağlığımla ilgili sorularımı dikkatlice ve tam olarak cevaplarlar.	○	○	○	○	○	○	○
10. Sağlık çalışanları sağlığımla ilgili şeyleri nasıl yapmak istediğimi dinlerler.	○	○	○	○	○	○	○
11. Sağlık çalışanları	○	○	○	○	○	○	○

duygularımla çok iyi baş ederler.							
12. Sağlık çalışanları bana bir insan gibi bakarlar.	○	○	○	○	○	○	○
13. Sağlık çalışanlarının sağlığımla ilgili benimle konuşma tarzları konusunda çok iyi hissetmiyorum.	○	○	○	○	○	○	○
14. Sağlık çalışanları herhangi bir değişiklik önermeden önce, benim sağlığımı nasıl gördüğümü anlamaya çalışırlar.	○	○	○	○	○	○	○
15. Sağlık çalışanlarıyla duygularımı paylaşabileceğimi hissederim.	○	○	○	○	○	○	○

34. PDSS

Lütfen 1’ den 5’ e kadar derecelendirilmiş ölçeği kullanarak aşağıdaki ifadelerden her birisine ne kadar katılıp katılmadığınızı belirtiniz.

	Asla (1)	Nadiren (2)	Bazen (3)	Sıklıkla (4)	Her zaman (5)
1. Yasadığım toplumdaki insanlar kanser hastalarıyla beraber olmaktan rahatsızlık duyarlar.	○	○	○	○	○
2. Yasadığım toplumdaki insanlar kanser hastalarına karşı nezaketsizdirler.	○	○	○	○	○
3. Yasadığım toplumdaki insanlar kanser hastalarına acırlar.	○	○	○	○	○
4. Yasadığım toplumdaki insanlar kanser hastalarının tehlikeli olduklarını düşünürler.	○	○	○	○	○
5. Yasadığım toplumdaki insanlar kanser hastalarına karşı adaletsiz davranırlar.	○	○	○	○	○
6. Yasadığım toplumdaki insanlar kanser hastalarına çocuk gibi davranırlar.	○	○	○	○	○
7. Yasadığım toplumdaki insanlar kanser olmanın kanser hastası olanların hatası olduğunu düşünürler.	○	○	○	○	○
8. Yasadığım toplumdaki insanlar kanser hastalarıyla sosyalleşmekten kaçınırlar.	○	○	○	○	○
9. Yasadığım toplumdaki insanlar, kanser hastalarına diğer insanlara davrandıkları gibi davranırlar.	○	○	○	○	○
10. Yasadığım toplumdaki insanlar, kanser hastalarıyla romantik bir ilişki yasamak istemezler.	○	○	○	○	○
11. Yasadığım toplumdaki insanlar eğer is için gerekli vasıfları varsa kanser hastalarını ise alırlar.	○	○	○	○	○
12. Yasadığım toplumdaki insanlar kanser hastalarının toplum için bir yük olduğunu düşünürler.	○	○	○	○	○
13. Yasadığım toplumdaki insanlar kanser hastası olmanın günahların bir cezası olduğunu düşünürler.	○	○	○	○	○

14. Yasadığım toplumdaki insanlar kanser hastalarının kendilerine bakamayacaklarını düşünürler. ○ ○ ○ ○ ○

35. MOS

1. Son dört hafta içerisinde genelde uykuya dalman ne kadar zaman aldı?

0-15 Dakika	16-30 Dakika	31-45 Dakika	46-60 Dakika	60 dakikadan fazla
○	○	○	○	○

36. MOS

2. Son dört hafta içerisinde ortalama olarak gece kaç saat uyudunuz? (Lütfen saat olarak aşağıdaki kutuya yazınız.)

37. MOS

Son dört hafta içerisinde hangi sıklıkla...

	Her zaman	Çoğu zaman	Genellikle	Bazen	Arada bir	Hiçbir zaman
3. Son dört hafta icerisnde hangi sıklıkla rahat bir uyku (örnek: Uyurken dönüp durmak, gergin hissetmek, konuşmak gibi) uyuyamadın?	○	○	○	○	○	○
4. Son dört hafta içerisinde hangi sıklıkla yeterince uyudun öyle ki uyandıktan sonra dinlenmiş hissettin?	○	○	○	○	○	○
5. Son dört hafta içerisinde hangi sıklıkla nefes yetmezliği ya da bas ağrısıyla uyandın?	○	○	○	○	○	○
6. Son dört hafta içerisinde hangi sıklıkla gün içerisinde uyuşuk ve uykulu hissetin?	○	○	○	○	○	○
7. Son dört hafta içerisinde hangi sıklıkla uykuya dalmakta zorluk çektin?	○	○	○	○	○	○
8. Son dört hafta içerisinde hangi sıklıkla gün içeresinde uyanık kalmakta zorluk çektin?	○	○	○	○	○	○
9. Son dört hafta içerisinde hangi sıklıkla uyurken horladın?	○	○	○	○	○	○
10. Son dört hafta içerisinde hangi sıklıkla gün içerinde kestirdin (şekerleme yapmak- 5 dakika ya da daha fazla)?	○	○	○	○	○	○
11. Son dört hafta içerisinde hangi sıklıkla ihtiyacın olan uykuyu aldın?	○	○	○	○	○	○

Anketimize katıldığınız için teşekkür ederiz.

Appendix G: SPSS Output: Correlations Between the Predictor Variables

Notes

Output Created		31-JUL-2015 17:49:12
Comments		
Input	Data	C:\Users\RPSEgrad\AppData\Local\Temp\Survey186kafanclisis-1.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	186
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.

Notes

Syntax

```
CORRELATIONS
  /VARIABLES=Age Gender Edu5
Income3 Breastvsother Cancerstage
Numberoftreatmetns Surgery
Chemotherapy Radiothreapy
Patienttype Onsettimesincediagnosis
Secondary XPSS XBFI QLQ_pain
Xsleepdisturbance
QLQphysicalfunctionings
QLQrolefunctionings
QLQemotionalfunctionings
QLQcognitivefunctionings
QLQsocialfunctionings XCORE
XBRS XDUREL XPILL
XSCSinterdependence
XSCSindependence XMSPSS
XPDSS XHCCQ XIPA_participation
  /PRINT=TWOTAIL NOSIG
  /MISSING=PAIRWISE.
```

Resources	Processor Time	00:00:00.23
	Elapsed Time	00:00:00.40

Correlations

		How old are you?	Gender	Edu5	Income3
How old are you?	Pearson Correlation	1	.049	-.202**	-.080
	Sig. (2-tailed)		.510	.006	.278
	N	186	186	186	186
Gender	Pearson Correlation	.049	1	-.317**	-.138
	Sig. (2-tailed)	.510		.000	.060
	N	186	186	186	186
Edu5	Pearson Correlation	-.202**	-.317**	1	.389**
	Sig. (2-tailed)	.006	.000		.000
	N	186	186	186	186
Income3	Pearson Correlation	-.080	-.138	.389**	1
	Sig. (2-tailed)	.278	.060	.000	
	N	186	186	186	186
Breastvsother	Pearson Correlation	-.091	-.495**	.281**	.204**
	Sig. (2-tailed)	.215	.000	.000	.005
	N	186	186	186	186
Cancer stage	Pearson Correlation	-.017	.067	-.047	.009
	Sig. (2-tailed)	.815	.366	.527	.907
	N	186	186	186	186

Correlations

		Breastvsother	Cancer stage	Numberoftreatmetns
How old are you?	Pearson Correlation	-.091	-.017	-.044
	Sig. (2-tailed)	.215	.815	.548
	N	186	186	186
Gender	Pearson Correlation	-.495**	.067	-.289**
	Sig. (2-tailed)	.000	.366	.000
	N	186	186	186
Edu5	Pearson Correlation	.281**	-.047	.269**
	Sig. (2-tailed)	.000	.527	.000
	N	186	186	186
Income3	Pearson Correlation	.204**	.009	.219**
	Sig. (2-tailed)	.005	.907	.003
	N	186	186	186
Breastvsother	Pearson Correlation	1	-.201**	.469**
	Sig. (2-tailed)		.006	.000
	N	186	186	186
Cancer stage	Pearson Correlation	-.201**	1	-.005
	Sig. (2-tailed)	.006		.942
	N	186	186	186

Correlations

		Types of treatment (surgery)	Types of treatment (Chemotherapy)	Types of treatment (Radiotherapy)
How old are you?	Pearson Correlation	.019	.024	-.109
	Sig. (2-tailed)	.799	.744	.137
	N	186	186	186
Gender	Pearson Correlation	-.314**	.003	-.231**
	Sig. (2-tailed)	.000	.964	.001
	N	186	186	186
Edu5	Pearson Correlation	.320**	-.118	.286**
	Sig. (2-tailed)	.000	.109	.000
	N	186	186	186
Income3	Pearson Correlation	.179*	.074	.159*
	Sig. (2-tailed)	.014	.314	.030
	N	186	186	186
Breastvsother	Pearson Correlation	.417**	.034	.418**
	Sig. (2-tailed)	.000	.647	.000
	N	186	186	186
Cancer stage	Pearson Correlation	-.212**	.324**	-.102
	Sig. (2-tailed)	.004	.000	.164
	N	186	186	186

Correlations

		Patient type	Onset time since diagnosis	Secondary	XPSS
How old are you?	Pearson Correlation	-.121	.110	.197**	-.078
	Sig. (2-tailed)	.100	.135	.007	.290
	N	186	186	186	186
Gender	Pearson Correlation	.147*	-.015	.075	.091
	Sig. (2-tailed)	.045	.837	.307	.215
	N	186	186	186	186
Edu5	Pearson Correlation	-.116	-.066	-.245**	-.090
	Sig. (2-tailed)	.116	.369	.001	.220
	N	186	186	186	186
Income3	Pearson Correlation	-.067	.079	-.187*	-.183*
	Sig. (2-tailed)	.361	.281	.010	.012
	N	186	186	186	186
Breastvsother	Pearson Correlation	-.231**	.059	-.236**	-.148*
	Sig. (2-tailed)	.002	.428	.001	.044
	N	186	186	186	186
Cancer stage	Pearson Correlation	-.051	.064	.054	.133
	Sig. (2-tailed)	.486	.387	.463	.070
	N	186	186	186	186

Correlations

		XBFI	QLQ_pain	Xsleepdisturbance
How old are you?	Pearson Correlation	.043	.014	.013
	Sig. (2-tailed)	.558	.846	.856
	N	186	186	186
Gender	Pearson Correlation	.059	.054	.076
	Sig. (2-tailed)	.424	.464	.300
	N	186	186	186
Edu5	Pearson Correlation	-.090	-.177*	-.145*
	Sig. (2-tailed)	.223	.016	.048
	N	186	186	186
Income3	Pearson Correlation	-.112	-.218**	-.129
	Sig. (2-tailed)	.129	.003	.078
	N	186	186	186
Breastvsother	Pearson Correlation	-.137	-.191**	-.202**
	Sig. (2-tailed)	.063	.009	.006
	N	186	186	186
Cancer stage	Pearson Correlation	.193**	.206**	.167*
	Sig. (2-tailed)	.008	.005	.023
	N	186	186	186

Correlations

		QLQphysicalfunctionings	QLQrolefunctionings	QLQemotionalfunctionings
How old are you?	Pearson Correlation	-.211**	-.150*	.102
	Sig. (2-tailed)	.004	.041	.165
	N	186	186	186
Gender	Pearson Correlation	-.150*	-.119	-.058
	Sig. (2-tailed)	.041	.105	.436
	N	186	186	186
Edu5	Pearson Correlation	.313**	.161*	.139
	Sig. (2-tailed)	.000	.028	.058
	N	186	186	186
Income3	Pearson Correlation	.238**	.238**	.139
	Sig. (2-tailed)	.001	.001	.059
	N	186	186	186
Breastvsother	Pearson Correlation	.335**	.270**	.165*
	Sig. (2-tailed)	.000	.000	.024
	N	186	186	186
Cancer stage	Pearson Correlation	-.237**	-.252**	-.202**
	Sig. (2-tailed)	.001	.001	.006
	N	186	186	186

Correlations

		QLQcognitivefunctionings	QLQsocialfunctionings	XCORE	XBRS
How old are you?	Pearson Correlation	.099	-.111	.080	.007
	Sig. (2-tailed)	.180	.133	.281	.923
	N	186	186	186	186
Gender	Pearson Correlation	-.124	-.091	-.014	-.126
	Sig. (2-tailed)	.091	.217	.847	.088
	N	186	186	186	186
Edu5	Pearson Correlation	.095	.159*	.152*	.198**
	Sig. (2-tailed)	.199	.030	.038	.007
	N	186	186	186	186
Income3	Pearson Correlation	.041	.190**	.097	.048
	Sig. (2-tailed)	.574	.009	.189	.516
	N	186	186	186	186
Breastvsother	Pearson Correlation	.170*	.181*	.062	.100
	Sig. (2-tailed)	.021	.014	.401	.176
	N	186	186	186	186
Cancer stage	Pearson Correlation	-.161*	-.132	.021	-.018
	Sig. (2-tailed)	.028	.073	.773	.808
	N	186	186	186	186

Correlations

		XDUREL	XPILL	XSCSinterdependence	XSCSindependence
How old are you?	Pearson Correlation	-.117	-.063	.130	-.067
	Sig. (2-tailed)	.111	.394	.077	.366
	N	186	186	186	186
Gender	Pearson Correlation	.094	-.158*	-.071	-.136
	Sig. (2-tailed)	.201	.031	.336	.064
	N	186	186	186	186
Edu5	Pearson Correlation	-.300**	.037	-.117	-.004
	Sig. (2-tailed)	.000	.612	.112	.954
	N	186	186	186	186
Income3	Pearson Correlation	-.219**	.009	-.081	.013
	Sig. (2-tailed)	.003	.903	.273	.862
	N	186	186	186	186
Breastvsother	Pearson Correlation	-.106	.076	-.044	-.070
	Sig. (2-tailed)	.150	.301	.550	.345
	N	186	186	186	186
Cancer stage	Pearson Correlation	.000	.133	.056	.090
	Sig. (2-tailed)	.997	.071	.451	.222
	N	186	186	186	186

Correlations

		XMSPSS	XPDSS	XHCCQ	XIPA_participation
How old are you?	Pearson Correlation	.006	-.082	.091	.048
	Sig. (2-tailed)	.936	.266	.219	.516
	N	186	186	186	186
Gender	Pearson Correlation	-.009	.058	-.059	-.133
	Sig. (2-tailed)	.900	.435	.423	.069
	N	186	186	186	186
Edu5	Pearson Correlation	.046	-.192**	.083	.235**
	Sig. (2-tailed)	.530	.009	.260	.001
	N	186	186	186	186
Income3	Pearson Correlation	.009	-.116	-.009	.207**
	Sig. (2-tailed)	.898	.114	.898	.005
	N	186	186	186	186
Breastvsother	Pearson Correlation	.051	-.278**	.054	.218**
	Sig. (2-tailed)	.491	.000	.467	.003
	N	186	186	186	186
Cancer stage	Pearson Correlation	-.136	-.049	-.141	-.243**
	Sig. (2-tailed)	.065	.505	.055	.001
	N	186	186	186	186

Correlations

		How old are you?	Gender	Edu5	Income3
Numberoftreatmetns	Pearson Correlation	-.044	-.289**	.269**	.219**
	Sig. (2-tailed)	.548	.000	.000	.003
	N	186	186	186	186
Types of treatment (surgery)	Pearson Correlation	.019	-.314**	.320**	.179*
	Sig. (2-tailed)	.799	.000	.000	.014
	N	186	186	186	186
Types of treatment (Chemotherapy)	Pearson Correlation	.024	.003	-.118	.074
	Sig. (2-tailed)	.744	.964	.109	.314
	N	186	186	186	186
Types of treatment (Radiotherapy)	Pearson Correlation	-.109	-.231**	.286**	.159*
	Sig. (2-tailed)	.137	.001	.000	.030
	N	186	186	186	186
Patient type	Pearson Correlation	-.121	.147*	-.116	-.067
	Sig. (2-tailed)	.100	.045	.116	.361
	N	186	186	186	186
Onset time since diagnosis	Pearson Correlation	.110	-.015	-.066	.079
	Sig. (2-tailed)	.135	.837	.369	.281
	N	186	186	186	186
Secondary	Pearson Correlation	.197**	.075	-.245**	-.187*
	Sig. (2-tailed)	.007	.307	.001	.010
	N	186	186	186	186
XPSS	Pearson Correlation	-.078	.091	-.090	-.183*
	Sig. (2-tailed)	.290	.215	.220	.012
	N	186	186	186	186
XBFI	Pearson Correlation	.043	.059	-.090	-.112
	Sig. (2-tailed)	.558	.424	.223	.129
	N	186	186	186	186
QLQ_pain	Pearson Correlation	.014	.054	-.177*	-.218**
	Sig. (2-tailed)	.846	.464	.016	.003
	N	186	186	186	186
Xsleepdisturbance	Pearson Correlation	.013	.076	-.145*	-.129
	Sig. (2-tailed)	.856	.300	.048	.078
	N	186	186	186	186
QLQphysicalfunctionings	Pearson Correlation	-.211**	-.150*	.313**	.238**
	Sig. (2-tailed)	.004	.041	.000	.001
	N	186	186	186	186

Correlations

		Breastvsother	Cancer stage	Numberoftreatmetns
Numberoftreatmetns	Pearson Correlation	.469**	-.005	1
	Sig. (2-tailed)	.000	.942	
	N	186	186	186
Types of treatment (surgery)	Pearson Correlation	.417**	-.212**	.612**
	Sig. (2-tailed)	.000	.004	.000
	N	186	186	186
Types of treatment (Chemotherapy)	Pearson Correlation	.034	.324**	.436**
	Sig. (2-tailed)	.647	.000	.000
	N	186	186	186
Types of treatment (Radiotherapy)	Pearson Correlation	.418**	-.102	.818**
	Sig. (2-tailed)	.000	.164	.000
	N	186	186	186
Patient type	Pearson Correlation	-.231**	-.051	-.272**
	Sig. (2-tailed)	.002	.486	.000
	N	186	186	186
Onset time since diagnosis	Pearson Correlation	.059	.064	-.006
	Sig. (2-tailed)	.428	.387	.934
	N	186	186	186
Secondary	Pearson Correlation	-.236**	.054	-.281**
	Sig. (2-tailed)	.001	.463	.000
	N	186	186	186
XPSS	Pearson Correlation	-.148*	.133	-.131
	Sig. (2-tailed)	.044	.070	.075
	N	186	186	186
XBFI	Pearson Correlation	-.137	.193**	-.104
	Sig. (2-tailed)	.063	.008	.157
	N	186	186	186
QLQ_pain	Pearson Correlation	-.191**	.206**	-.070
	Sig. (2-tailed)	.009	.005	.342
	N	186	186	186
Xsleepdisturbance	Pearson Correlation	-.202**	.167*	-.110
	Sig. (2-tailed)	.006	.023	.136
	N	186	186	186
QLQphysicalfunctionings	Pearson Correlation	.335**	-.237**	.150*
	Sig. (2-tailed)	.000	.001	.041
	N	186	186	186

Correlations

		Types of treatment (surgery)	Types of treatment (Chemotherapy)	Types of treatment (Radiotherapy)
Numberoftreatmetns	Pearson Correlation	.612**	.436**	.818**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
Types of treatment (surgery)	Pearson Correlation	1	-.205**	.379**
	Sig. (2-tailed)		.005	.000
	N	186	186	186
Types of treatment (Chemotherapy)	Pearson Correlation	-.205**	1	.075
	Sig. (2-tailed)	.005		.309
	N	186	186	186
Types of treatment (Radiotherapy)	Pearson Correlation	.379**	.075	1
	Sig. (2-tailed)	.000	.309	
	N	186	186	186
Patient type	Pearson Correlation	-.029	-.292**	-.191**
	Sig. (2-tailed)	.691	.000	.009
	N	186	186	186
Onset time since diagnosis	Pearson Correlation	.040	-.010	-.034
	Sig. (2-tailed)	.592	.893	.642
	N	186	186	186
Secondary	Pearson Correlation	-.045	-.136	-.322**
	Sig. (2-tailed)	.540	.063	.000
	N	186	186	186
XPSS	Pearson Correlation	-.201**	.080	-.122
	Sig. (2-tailed)	.006	.276	.098
	N	186	186	186
XBFI	Pearson Correlation	-.180*	.145*	-.147*
	Sig. (2-tailed)	.014	.049	.046
	N	186	186	186
QLQ_pain	Pearson Correlation	-.130	.189**	-.167*
	Sig. (2-tailed)	.078	.010	.023
	N	186	186	186
Xsleepdisturbance	Pearson Correlation	-.172*	.148*	-.165*
	Sig. (2-tailed)	.019	.044	.025
	N	186	186	186
QLQphysicalfunctionings	Pearson Correlation	.228**	-.211**	.239**
	Sig. (2-tailed)	.002	.004	.001
	N	186	186	186

Correlations

		Patient type	Onset time since diagnosis	Secondary	XPSS
Numberoftreatmetns	Pearson Correlation	-.272**	-.006	-.281**	-.131
	Sig. (2-tailed)	.000	.934	.000	.075
	N	186	186	186	186
Types of treatment (surgery)	Pearson Correlation	-.029	.040	-.045	-.201**
	Sig. (2-tailed)	.691	.592	.540	.006
	N	186	186	186	186
Types of treatment (Chemotherapy)	Pearson Correlation	-.292**	-.010	-.136	.080
	Sig. (2-tailed)	.000	.893	.063	.276
	N	186	186	186	186
Types of treatment (Radiotherapy)	Pearson Correlation	-.191**	-.034	-.322**	-.122
	Sig. (2-tailed)	.009	.642	.000	.098
	N	186	186	186	186
Patient type	Pearson Correlation	1	-.059	.052	-.005
	Sig. (2-tailed)		.426	.485	.950
	N	186	186	186	186
Onset time since diagnosis	Pearson Correlation	-.059	1	.141	.014
	Sig. (2-tailed)	.426		.055	.847
	N	186	186	186	186
Secondary	Pearson Correlation	.052	.141	1	.228**
	Sig. (2-tailed)	.485	.055		.002
	N	186	186	186	186
XPSS	Pearson Correlation	-.005	.014	.228**	1
	Sig. (2-tailed)	.950	.847	.002	
	N	186	186	186	186
XBFI	Pearson Correlation	-.058	-.025	.186*	.501**
	Sig. (2-tailed)	.435	.735	.011	.000
	N	186	186	186	186
QLQ_pain	Pearson Correlation	-.047	.093	.178*	.432**
	Sig. (2-tailed)	.523	.206	.015	.000
	N	186	186	186	186
Xsleepdisturbance	Pearson Correlation	-.028	.070	.166*	.394**
	Sig. (2-tailed)	.700	.340	.023	.000
	N	186	186	186	186
QLQphysicalfunctionings	Pearson Correlation	.099	-.109	-.272**	-.411**
	Sig. (2-tailed)	.179	.140	.000	.000
	N	186	186	186	186

Correlations

		XBFI	QLQ_pain	Xsleepdisturbance
Numberoftreatmetns	Pearson Correlation	-.104	-.070	-.110
	Sig. (2-tailed)	.157	.342	.136
	N	186	186	186
Types of treatment (surgery)	Pearson Correlation	-.180*	-.130	-.172*
	Sig. (2-tailed)	.014	.078	.019
	N	186	186	186
Types of treatment (Chemotherapy)	Pearson Correlation	.145*	.189**	.148*
	Sig. (2-tailed)	.049	.010	.044
	N	186	186	186
Types of treatment (Radiotherapy)	Pearson Correlation	-.147*	-.167*	-.165*
	Sig. (2-tailed)	.046	.023	.025
	N	186	186	186
Patient type	Pearson Correlation	-.058	-.047	-.028
	Sig. (2-tailed)	.435	.523	.700
	N	186	186	186
Onset time since diagnosis	Pearson Correlation	-.025	.093	.070
	Sig. (2-tailed)	.735	.206	.340
	N	186	186	186
Secondary	Pearson Correlation	.186*	.178*	.166*
	Sig. (2-tailed)	.011	.015	.023
	N	186	186	186
XPSS	Pearson Correlation	.501**	.432**	.394**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
XBFI	Pearson Correlation	1	.516**	.432**
	Sig. (2-tailed)		.000	.000
	N	186	186	186
QLQ_pain	Pearson Correlation	.516**	1	.359**
	Sig. (2-tailed)	.000		.000
	N	186	186	186
Xsleepdisturbance	Pearson Correlation	.432**	.359**	1
	Sig. (2-tailed)	.000	.000	
	N	186	186	186
QLQphysicalfunctionings	Pearson Correlation	-.511**	-.677**	-.376**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186

Correlations

		QLQphysicalfunctionings	QLQrolefunctionings	QLQemotionalfunctionings
Numberoftreatmetns	Pearson Correlation	.150*	.142	.115
	Sig. (2-tailed)	.041	.054	.118
	N	186	186	186
Types of treatment (surgery)	Pearson Correlation	.228**	.218**	.155*
	Sig. (2-tailed)	.002	.003	.035
	N	186	186	186
Types of treatment (Chemotherapy)	Pearson Correlation	-.211**	-.138	-.132
	Sig. (2-tailed)	.004	.061	.071
	N	186	186	186
Types of treatment (Radiotherapy)	Pearson Correlation	.239**	.172*	.176*
	Sig. (2-tailed)	.001	.019	.016
	N	186	186	186
Patient type	Pearson Correlation	.099	.042	.019
	Sig. (2-tailed)	.179	.565	.802
	N	186	186	186
Onset time since diagnosis	Pearson Correlation	-.109	.043	-.042
	Sig. (2-tailed)	.140	.558	.572
	N	186	186	186
Secondary	Pearson Correlation	-.272**	-.183*	-.119
	Sig. (2-tailed)	.000	.012	.104
	N	186	186	186
XPSS	Pearson Correlation	-.411**	-.521**	-.588**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
XBFI	Pearson Correlation	-.511**	-.473**	-.501**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
QLQ_pain	Pearson Correlation	-.677**	-.641**	-.628**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
Xsleepdisturbance	Pearson Correlation	-.376**	-.374**	-.327**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
QLQphysicalfunctionings	Pearson Correlation	1	.625**	.477**
	Sig. (2-tailed)		.000	.000
	N	186	186	186

Correlations

		QLQcognitivefunctionings	QLQsocialfunctionings	XCORE	XBRS
Numberoftreatmetns	Pearson Correlation	.034	.081	.086	.094
	Sig. (2-tailed)	.644	.274	.241	.203
	N	186	186	186	186
Types of treatment (surgery)	Pearson Correlation	.121	.158*	.099	.141
	Sig. (2-tailed)	.100	.032	.181	.054
	N	186	186	186	186
Types of treatment (Chemotherapy)	Pearson Correlation	-.145*	-.203**	-.042	-.032
	Sig. (2-tailed)	.048	.005	.570	.665
	N	186	186	186	186
Types of treatment (Radiotherapy)	Pearson Correlation	.078	.174*	.099	.068
	Sig. (2-tailed)	.290	.018	.179	.355
	N	186	186	186	186
Patient type	Pearson Correlation	.028	.022	-.092	-.027
	Sig. (2-tailed)	.700	.769	.213	.717
	N	186	186	186	186
Onset time since diagnosis	Pearson Correlation	-.031	.076	.018	.007
	Sig. (2-tailed)	.672	.305	.810	.926
	N	186	186	186	186
Secondary	Pearson Correlation	-.178*	-.166*	-.144*	-.211**
	Sig. (2-tailed)	.015	.024	.050	.004
	N	186	186	186	186
XPSS	Pearson Correlation	-.511**	-.581**	-.558**	-.572**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	186	186	186	186
XBFI	Pearson Correlation	-.403**	-.490**	-.246**	-.302**
	Sig. (2-tailed)	.000	.000	.001	.000
	N	186	186	186	186
QLQ_pain	Pearson Correlation	-.480**	-.596**	-.258**	-.153*
	Sig. (2-tailed)	.000	.000	.000	.037
	N	186	186	186	186
Xsleepdisturbance	Pearson Correlation	-.320**	-.394**	-.251**	-.165*
	Sig. (2-tailed)	.000	.000	.001	.025
	N	186	186	186	186
QLQphysicalfunctionings	Pearson Correlation	.439**	.620**	.275**	.190**
	Sig. (2-tailed)	.000	.000	.000	.009
	N	186	186	186	186

Correlations

		XDUREL	XPILL	XSCSinterdependence	XSCSindependence
Numberoftreatmetns	Pearson Correlation	.012	.096	-.009	-.036
	Sig. (2-tailed)	.876	.191	.904	.621
	N	186	186	186	186
Types of treatment (surgery)	Pearson Correlation	-.066	.138	.013	-.075
	Sig. (2-tailed)	.374	.061	.860	.311
	N	186	186	186	186
Types of treatment (Chemotherapy)	Pearson Correlation	.096	.089	-.025	-.052
	Sig. (2-tailed)	.191	.228	.731	.484
	N	186	186	186	186
Types of treatment (Radiotherapy)	Pearson Correlation	-.006	-.024	-.005	.042
	Sig. (2-tailed)	.931	.746	.950	.566
	N	186	186	186	186
Patient type	Pearson Correlation	-.065	-.070	.009	-.036
	Sig. (2-tailed)	.376	.341	.901	.628
	N	186	186	186	186
Onset time since diagnosis	Pearson Correlation	-.101	-.030	.021	-.117
	Sig. (2-tailed)	.170	.688	.779	.112
	N	186	186	186	186
Secondary	Pearson Correlation	-.113	-.028	.059	.055
	Sig. (2-tailed)	.126	.704	.426	.458
	N	186	186	186	186
XPSS	Pearson Correlation	.095	.015	.086	.049
	Sig. (2-tailed)	.196	.843	.246	.509
	N	186	186	186	186
XBFI	Pearson Correlation	.086	.075	.165*	.143
	Sig. (2-tailed)	.246	.312	.024	.052
	N	186	186	186	186
QLQ_pain	Pearson Correlation	.093	.105	-.008	-.019
	Sig. (2-tailed)	.205	.152	.917	.801
	N	186	186	186	186
Xsleepdisturbance	Pearson Correlation	.010	.087	.133	.046
	Sig. (2-tailed)	.890	.239	.070	.532
	N	186	186	186	186
QLQphysicalfunctionings	Pearson Correlation	-.098	.023	-.063	-.074
	Sig. (2-tailed)	.184	.755	.393	.318
	N	186	186	186	186

Correlations

		XMSPSS	XPDSS	XHCCQ	XIPA_participation
Numberoftreatmetns	Pearson Correlation	.154*	-.203**	.020	.220**
	Sig. (2-tailed)	.036	.005	.787	.003
	N	186	186	186	186
Types of treatment (surgery)	Pearson Correlation	.084	-.242**	.062	.292**
	Sig. (2-tailed)	.252	.001	.399	.000
	N	186	186	186	186
Types of treatment (Chemotherapy)	Pearson Correlation	.036	.000	-.041	-.120
	Sig. (2-tailed)	.624	.996	.576	.104
	N	186	186	186	186
Types of treatment (Radiotherapy)	Pearson Correlation	.160*	-.143	.017	.228**
	Sig. (2-tailed)	.029	.052	.821	.002
	N	186	186	186	186
Patient type	Pearson Correlation	-.243**	.187*	-.024	-.023
	Sig. (2-tailed)	.001	.010	.749	.759
	N	186	186	186	186
Onset time since diagnosis	Pearson Correlation	.040	.021	.034	.071
	Sig. (2-tailed)	.588	.778	.649	.333
	N	186	186	186	186
Secondary	Pearson Correlation	-.102	.087	-.144	-.148*
	Sig. (2-tailed)	.165	.237	.050	.044
	N	186	186	186	186
XPSS	Pearson Correlation	-.203**	.210**	-.248**	-.410**
	Sig. (2-tailed)	.005	.004	.001	.000
	N	186	186	186	186
XBFI	Pearson Correlation	-.104	.028	-.254**	-.460**
	Sig. (2-tailed)	.159	.700	.000	.000
	N	186	186	186	186
QLQ_pain	Pearson Correlation	-.052	.068	-.145*	-.369**
	Sig. (2-tailed)	.483	.358	.049	.000
	N	186	186	186	186
Xsleepdisturbance	Pearson Correlation	-.117	.176*	-.177*	-.336**
	Sig. (2-tailed)	.113	.016	.016	.000
	N	186	186	186	186
QLQphysicalfunctionings	Pearson Correlation	.088	-.184*	.233**	.442**
	Sig. (2-tailed)	.230	.012	.001	.000
	N	186	186	186	186

Correlations

		How old are you?	Gender	Edu5	Income3
QLQrolefunctionings	Pearson Correlation	-.150*	-.119	.161*	.238**
	Sig. (2-tailed)	.041	.105	.028	.001
	N	186	186	186	186
QLQemotionalfunctionings	Pearson Correlation	.102	-.058	.139	.139
	Sig. (2-tailed)	.165	.436	.058	.059
	N	186	186	186	186
QLQcognitivefunctionings	Pearson Correlation	.099	-.124	.095	.041
	Sig. (2-tailed)	.180	.091	.199	.574
	N	186	186	186	186
QLQsocialfunctionings	Pearson Correlation	-.111	-.091	.159*	.190**
	Sig. (2-tailed)	.133	.217	.030	.009
	N	186	186	186	186
XCORE	Pearson Correlation	.080	-.014	.152*	.097
	Sig. (2-tailed)	.281	.847	.038	.189
	N	186	186	186	186
XBRS	Pearson Correlation	.007	-.126	.198**	.048
	Sig. (2-tailed)	.923	.088	.007	.516
	N	186	186	186	186
XDUREL	Pearson Correlation	-.117	.094	-.300**	-.219**
	Sig. (2-tailed)	.111	.201	.000	.003
	N	186	186	186	186
XPILL	Pearson Correlation	-.063	-.158*	.037	.009
	Sig. (2-tailed)	.394	.031	.612	.903
	N	186	186	186	186
XSCSinterdependence	Pearson Correlation	.130	-.071	-.117	-.081
	Sig. (2-tailed)	.077	.336	.112	.273
	N	186	186	186	186
XSCSindependence	Pearson Correlation	-.067	-.136	-.004	.013
	Sig. (2-tailed)	.366	.064	.954	.862
	N	186	186	186	186
XMSPSS	Pearson Correlation	.006	-.009	.046	.009
	Sig. (2-tailed)	.936	.900	.530	.898
	N	186	186	186	186
XPDSS	Pearson Correlation	-.082	.058	-.192**	-.116
	Sig. (2-tailed)	.266	.435	.009	.114
	N	186	186	186	186

Correlations

		Breastvsother	Cancer stage	Numberoftreatmetns
QLQrolefunctionings	Pearson Correlation	.270**	-.252**	.142
	Sig. (2-tailed)	.000	.001	.054
	N	186	186	186
QLQemotionalfunctionings	Pearson Correlation	.165*	-.202**	.115
	Sig. (2-tailed)	.024	.006	.118
	N	186	186	186
QLQcognitivefunctionings	Pearson Correlation	.170*	-.161*	.034
	Sig. (2-tailed)	.021	.028	.644
	N	186	186	186
QLQsocialfunctionings	Pearson Correlation	.181*	-.132	.081
	Sig. (2-tailed)	.014	.073	.274
	N	186	186	186
XCORE	Pearson Correlation	.062	.021	.086
	Sig. (2-tailed)	.401	.773	.241
	N	186	186	186
XBRS	Pearson Correlation	.100	-.018	.094
	Sig. (2-tailed)	.176	.808	.203
	N	186	186	186
XDUREL	Pearson Correlation	-.106	.000	.012
	Sig. (2-tailed)	.150	.997	.876
	N	186	186	186
XPILL	Pearson Correlation	.076	.133	.096
	Sig. (2-tailed)	.301	.071	.191
	N	186	186	186
XSCSinterdependence	Pearson Correlation	-.044	.056	-.009
	Sig. (2-tailed)	.550	.451	.904
	N	186	186	186
XSCSindependence	Pearson Correlation	-.070	.090	-.036
	Sig. (2-tailed)	.345	.222	.621
	N	186	186	186
XMSPSS	Pearson Correlation	.051	-.136	.154*
	Sig. (2-tailed)	.491	.065	.036
	N	186	186	186
XPDSS	Pearson Correlation	-.278**	-.049	-.203**
	Sig. (2-tailed)	.000	.505	.005
	N	186	186	186

Correlations

		Types of treatment (surgery)	Types of treatment (Chemotherapy)	Types of treatment (Radiotherapy)
QLQrolefunctionings	Pearson Correlation	.218**	-.138	.172*
	Sig. (2-tailed)	.003	.061	.019
	N	186	186	186
QLQemotionalfunctionings	Pearson Correlation	.155*	-.132	.176*
	Sig. (2-tailed)	.035	.071	.016
	N	186	186	186
QLQcognitivefunctionings	Pearson Correlation	.121	-.145*	.078
	Sig. (2-tailed)	.100	.048	.290
	N	186	186	186
QLQsocialfunctionings	Pearson Correlation	.158*	-.203**	.174*
	Sig. (2-tailed)	.032	.005	.018
	N	186	186	186
XCORE	Pearson Correlation	.099	-.042	.099
	Sig. (2-tailed)	.181	.570	.179
	N	186	186	186
XBRS	Pearson Correlation	.141	-.032	.068
	Sig. (2-tailed)	.054	.665	.355
	N	186	186	186
XDUREL	Pearson Correlation	-.066	.096	-.006
	Sig. (2-tailed)	.374	.191	.931
	N	186	186	186
XPILL	Pearson Correlation	.138	.089	-.024
	Sig. (2-tailed)	.061	.228	.746
	N	186	186	186
XSCSinterdependence	Pearson Correlation	.013	-.025	-.005
	Sig. (2-tailed)	.860	.731	.950
	N	186	186	186
XSCSindependence	Pearson Correlation	-.075	-.052	.042
	Sig. (2-tailed)	.311	.484	.566
	N	186	186	186
XMSPSS	Pearson Correlation	.084	.036	.160*
	Sig. (2-tailed)	.252	.624	.029
	N	186	186	186
XPDSS	Pearson Correlation	-.242**	.000	-.143
	Sig. (2-tailed)	.001	.996	.052
	N	186	186	186

Correlations

		Patient type	Onset time since diagnosis	Secondary	XPSS
QLQrolefunctionings	Pearson Correlation	.042	.043	-.183*	-.521**
	Sig. (2-tailed)	.565	.558	.012	.000
	N	186	186	186	186
QLQemotionalfunctionings	Pearson Correlation	.019	-.042	-.119	-.588**
	Sig. (2-tailed)	.802	.572	.104	.000
	N	186	186	186	186
QLQcognitivefunctionings	Pearson Correlation	.028	-.031	-.178*	-.511**
	Sig. (2-tailed)	.700	.672	.015	.000
	N	186	186	186	186
QLQsocialfunctionings	Pearson Correlation	.022	.076	-.166*	-.581**
	Sig. (2-tailed)	.769	.305	.024	.000
	N	186	186	186	186
XCORE	Pearson Correlation	-.092	.018	-.144*	-.558**
	Sig. (2-tailed)	.213	.810	.050	.000
	N	186	186	186	186
XBRS	Pearson Correlation	-.027	.007	-.211**	-.572**
	Sig. (2-tailed)	.717	.926	.004	.000
	N	186	186	186	186
XDUREL	Pearson Correlation	-.065	-.101	-.113	.095
	Sig. (2-tailed)	.376	.170	.126	.196
	N	186	186	186	186
XPILL	Pearson Correlation	-.070	-.030	-.028	.015
	Sig. (2-tailed)	.341	.688	.704	.843
	N	186	186	186	186
XSCSinterdependence	Pearson Correlation	.009	.021	.059	.086
	Sig. (2-tailed)	.901	.779	.426	.246
	N	186	186	186	186
XSCSindependence	Pearson Correlation	-.036	-.117	.055	.049
	Sig. (2-tailed)	.628	.112	.458	.509
	N	186	186	186	186
XMSPSS	Pearson Correlation	-.243**	.040	-.102	-.203**
	Sig. (2-tailed)	.001	.588	.165	.005
	N	186	186	186	186
XPDSS	Pearson Correlation	.187*	.021	.087	.210**
	Sig. (2-tailed)	.010	.778	.237	.004
	N	186	186	186	186

Correlations

		XBFI	QLQ_pain	Xsleepdisturbance
QLQrolefunctionings	Pearson Correlation	-.473**	-.641**	-.374**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
QLQemotionalfunctionings	Pearson Correlation	-.501**	-.628**	-.327**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
QLQcognitivefunctionings	Pearson Correlation	-.403**	-.480**	-.320**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
QLQsocialfunctionings	Pearson Correlation	-.490**	-.596**	-.394**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
XCORE	Pearson Correlation	-.246**	-.258**	-.251**
	Sig. (2-tailed)	.001	.000	.001
	N	186	186	186
XBRS	Pearson Correlation	-.302**	-.153*	-.165*
	Sig. (2-tailed)	.000	.037	.025
	N	186	186	186
XDUREL	Pearson Correlation	.086	.093	.010
	Sig. (2-tailed)	.246	.205	.890
	N	186	186	186
XPILL	Pearson Correlation	.075	.105	.087
	Sig. (2-tailed)	.312	.152	.239
	N	186	186	186
XSCSinterdependence	Pearson Correlation	.165*	-.008	.133
	Sig. (2-tailed)	.024	.917	.070
	N	186	186	186
XSCSindependence	Pearson Correlation	.143	-.019	.046
	Sig. (2-tailed)	.052	.801	.532
	N	186	186	186
XMSPSS	Pearson Correlation	-.104	-.052	-.117
	Sig. (2-tailed)	.159	.483	.113
	N	186	186	186
XPDSS	Pearson Correlation	.028	.068	.176*
	Sig. (2-tailed)	.700	.358	.016
	N	186	186	186

Correlations

		QLQphysicalfunctionings	QLQrolefunctionings	QLQemotionalfunctionings
QLQrolefunctionings	Pearson Correlation	.625**	1	.451**
	Sig. (2-tailed)	.000		.000
	N	186	186	186
QLQemotionalfunctionings	Pearson Correlation	.477**	.451**	1
	Sig. (2-tailed)	.000	.000	
	N	186	186	186
QLQcognitivefunctionings	Pearson Correlation	.439**	.417**	.678**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
QLQsocialfunctionings	Pearson Correlation	.620**	.669**	.565**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
XCORE	Pearson Correlation	.275**	.272**	.443**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186
XBRS	Pearson Correlation	.190**	.222**	.414**
	Sig. (2-tailed)	.009	.002	.000
	N	186	186	186
XDUREL	Pearson Correlation	-.098	-.021	-.108
	Sig. (2-tailed)	.184	.773	.141
	N	186	186	186
XPILL	Pearson Correlation	.023	.058	-.149*
	Sig. (2-tailed)	.755	.429	.043
	N	186	186	186
XSCSinterdependence	Pearson Correlation	-.063	-.108	-.046
	Sig. (2-tailed)	.393	.142	.531
	N	186	186	186
XSCSindependence	Pearson Correlation	-.074	-.143	-.086
	Sig. (2-tailed)	.318	.052	.244
	N	186	186	186
XMSPSS	Pearson Correlation	.088	.083	.221**
	Sig. (2-tailed)	.230	.260	.002
	N	186	186	186
XPDSS	Pearson Correlation	-.184*	-.125	-.099
	Sig. (2-tailed)	.012	.088	.178
	N	186	186	186

Correlations

		QLQcognitivefunctionings	QLQsocialfunctionings	XCORE	XBRS
QLQrolefunctionings	Pearson Correlation	.417**	.669**	.272**	.222**
	Sig. (2-tailed)	.000	.000	.000	.002
	N	186	186	186	186
QLQemotionalfunctionings	Pearson Correlation	.678**	.565**	.443**	.414**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	186	186	186	186
QLQcognitivefunctionings	Pearson Correlation	1	.573**	.401**	.348**
	Sig. (2-tailed)		.000	.000	.000
	N	186	186	186	186
QLQsocialfunctionings	Pearson Correlation	.573**	1	.346**	.370**
	Sig. (2-tailed)	.000		.000	.000
	N	186	186	186	186
XCORE	Pearson Correlation	.401**	.346**	1	.564**
	Sig. (2-tailed)	.000	.000		.000
	N	186	186	186	186
XBRS	Pearson Correlation	.348**	.370**	.564**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	186	186	186	186
XDUREL	Pearson Correlation	-.009	-.050	-.083	-.145*
	Sig. (2-tailed)	.904	.497	.262	.049
	N	186	186	186	186
XPILL	Pearson Correlation	.065	.001	.089	.027
	Sig. (2-tailed)	.378	.986	.229	.716
	N	186	186	186	186
XSCSinterdependence	Pearson Correlation	-.034	-.128	-.039	-.071
	Sig. (2-tailed)	.649	.082	.593	.334
	N	186	186	186	186
XSCSindependence	Pearson Correlation	-.129	-.160*	-.021	-.078
	Sig. (2-tailed)	.080	.029	.771	.292
	N	186	186	186	186
XMSPSS	Pearson Correlation	.140	.107	.307**	.230**
	Sig. (2-tailed)	.056	.146	.000	.002
	N	186	186	186	186
XPDSS	Pearson Correlation	-.162*	-.138	-.241**	-.147*
	Sig. (2-tailed)	.027	.060	.001	.046
	N	186	186	186	186

Correlations

		XDUREL	XPILL	XSCSinterdependence	XSCSindependence
QLQrolefunctionings	Pearson Correlation	-.021	.058	-.108	-.143
	Sig. (2-tailed)	.773	.429	.142	.052
	N	186	186	186	186
QLQemotionalfunctionings	Pearson Correlation	-.108	-.149*	-.046	-.086
	Sig. (2-tailed)	.141	.043	.531	.244
	N	186	186	186	186
QLQcognitivefunctionings	Pearson Correlation	-.009	.065	-.034	-.129
	Sig. (2-tailed)	.904	.378	.649	.080
	N	186	186	186	186
QLQsocialfunctionings	Pearson Correlation	-.050	.001	-.128	-.160*
	Sig. (2-tailed)	.497	.986	.082	.029
	N	186	186	186	186
XCORE	Pearson Correlation	-.083	.089	-.039	-.021
	Sig. (2-tailed)	.262	.229	.593	.771
	N	186	186	186	186
XBRS	Pearson Correlation	-.145*	.027	-.071	-.078
	Sig. (2-tailed)	.049	.716	.334	.292
	N	186	186	186	186
XDUREL	Pearson Correlation	1	.002	.132	-.011
	Sig. (2-tailed)		.980	.072	.884
	N	186	186	186	186
XPILL	Pearson Correlation	.002	1	.114	-.033
	Sig. (2-tailed)	.980		.121	.658
	N	186	186	186	186
XSCSinterdependence	Pearson Correlation	.132	.114	1	.520**
	Sig. (2-tailed)	.072	.121		.000
	N	186	186	186	186
XSCSindependence	Pearson Correlation	-.011	-.033	.520**	1
	Sig. (2-tailed)	.884	.658	.000	
	N	186	186	186	186
XMSPSS	Pearson Correlation	.025	-.002	-.099	-.081
	Sig. (2-tailed)	.731	.976	.180	.273
	N	186	186	186	186
XPDSS	Pearson Correlation	.067	-.222**	.156*	.161*
	Sig. (2-tailed)	.366	.002	.033	.028
	N	186	186	186	186

Correlations

		XMSPSS	XPDSS	XHCCQ	XIPA_participation
QLQrolefunctionings	Pearson Correlation	.083	-.125	.194**	.494**
	Sig. (2-tailed)	.260	.088	.008	.000
	N	186	186	186	186
QLQemotionalfunctionings	Pearson Correlation	.221**	-.099	.220**	.362**
	Sig. (2-tailed)	.002	.178	.003	.000
	N	186	186	186	186
QLQcognitivefunctionings	Pearson Correlation	.140	-.162*	.154*	.361**
	Sig. (2-tailed)	.056	.027	.035	.000
	N	186	186	186	186
QLQsocialfunctionings	Pearson Correlation	.107	-.138	.287**	.503**
	Sig. (2-tailed)	.146	.060	.000	.000
	N	186	186	186	186
XCORE	Pearson Correlation	.307**	-.241**	.310**	.291**
	Sig. (2-tailed)	.000	.001	.000	.000
	N	186	186	186	186
XBRS	Pearson Correlation	.230**	-.147*	.188*	.241**
	Sig. (2-tailed)	.002	.046	.010	.001
	N	186	186	186	186
XDUREL	Pearson Correlation	.025	.067	.062	-.135
	Sig. (2-tailed)	.731	.366	.398	.066
	N	186	186	186	186
XPILL	Pearson Correlation	-.002	-.222**	.144*	.022
	Sig. (2-tailed)	.976	.002	.050	.768
	N	186	186	186	186
XSCSinterdependence	Pearson Correlation	-.099	.156*	-.103	-.146*
	Sig. (2-tailed)	.180	.033	.163	.046
	N	186	186	186	186
XSCSindependence	Pearson Correlation	-.081	.161*	-.241**	-.191**
	Sig. (2-tailed)	.273	.028	.001	.009
	N	186	186	186	186
XMSPSS	Pearson Correlation	1	-.195**	.175*	.214**
	Sig. (2-tailed)		.007	.017	.003
	N	186	186	186	186
XPDSS	Pearson Correlation	-.195**	1	-.201**	-.205**
	Sig. (2-tailed)	.007		.006	.005
	N	186	186	186	186

Correlations

		How old are you?	Gender	Edu5	Income3
XHCCQ	Pearson Correlation	.091	-.059	.083	-.009
	Sig. (2-tailed)	.219	.423	.260	.898
	N	186	186	186	186
XIPA_participation	Pearson Correlation	.048	-.133	.235**	.207**
	Sig. (2-tailed)	.516	.069	.001	.005
	N	186	186	186	186

Correlations

		Breastvsother	Cancer stage	Numberoftreat metns
XHCCQ	Pearson Correlation	.054	-.141	.020
	Sig. (2-tailed)	.467	.055	.787
	N	186	186	186
XIPA_participation	Pearson Correlation	.218**	-.243**	.220**
	Sig. (2-tailed)	.003	.001	.003
	N	186	186	186

Correlations

		Types of treatment (surgery)	Types of treatment (Chemotherapy)	Types of treatment (Radiotherapy)
XHCCQ	Pearson Correlation	.062	-.041	.017
	Sig. (2-tailed)	.399	.576	.821
	N	186	186	186
XIPA_participation	Pearson Correlation	.292**	-.120	.228**
	Sig. (2-tailed)	.000	.104	.002
	N	186	186	186

Correlations

		Patient type	Onset time since diagnosis	Secondary	XPSS
XHCCQ	Pearson Correlation	-.024	.034	-.144	-.248**
	Sig. (2-tailed)	.749	.649	.050	.001
	N	186	186	186	186
XIPA_participation	Pearson Correlation	-.023	.071	-.148*	-.410**
	Sig. (2-tailed)	.759	.333	.044	.000
	N	186	186	186	186

Correlations

		XBFI	QLQ_pain	Xsleepdisturbance
XHCCQ	Pearson Correlation	-.254**	-.145*	-.177*
	Sig. (2-tailed)	.000	.049	.016
	N	186	186	186
XIPA_participation	Pearson Correlation	-.460**	-.369**	-.336**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186

Correlations

		QLQphysicalfunctionings	QLQrolefunctionings	QLQemotionalfunctionings
XHCCQ	Pearson Correlation	.233**	.194**	.220**
	Sig. (2-tailed)	.001	.008	.003
	N	186	186	186
XIPA_participation	Pearson Correlation	.442**	.494**	.362**
	Sig. (2-tailed)	.000	.000	.000
	N	186	186	186

Correlations

		QLQcognitivefunctionings	QLQsocialfunctionings	XCORE	XBRS
XHCCQ	Pearson Correlation	.154*	.287**	.310**	.188*
	Sig. (2-tailed)	.035	.000	.000	.010
	N	186	186	186	186
XIPA_participation	Pearson Correlation	.361**	.503**	.291**	.241**
	Sig. (2-tailed)	.000	.000	.000	.001
	N	186	186	186	186

Correlations

		XDUREL	XPILL	XSCSinterdependence	XSCSindependence
XHCCQ	Pearson Correlation	.062	.144*	-.103	-.241**
	Sig. (2-tailed)	.398	.050	.163	.001
	N	186	186	186	186
XIPA_participation	Pearson Correlation	-.135	.022	-.146*	-.191**
	Sig. (2-tailed)	.066	.768	.046	.009
	N	186	186	186	186

Correlations

		XMSPSS	XPDSS	XHCCQ	XIPA_participation
XHCCQ	Pearson Correlation	.175*	-.201**	1	.327**
	Sig. (2-tailed)	.017	.006		.000
	N	186	186	186	186
XIPA_participation	Pearson Correlation	.214**	-.205**	.327**	1
	Sig. (2-tailed)	.003	.005	.000	
	N	186	186	186	186

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).