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RESILIENCE AND ITS DETERMINANT FACTORS AMONG CANCER PATIENTS IN TIKUR ANBESSA SPECIALIZED HOSPITAL ONCOLOGY UNIT

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Resilience and its Determinant Factors among Cancer Patients in Tikur Anbessa Specialized Hospital Oncology Unit

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Declaration

I, the undersigned, hereby declare that the thesis entitled, ***Resilience and its Determinant Factors among Cancer Patients in Tikur Anbessa Specialized Hospital Oncology Unit***, is my original work under the guidance of Dr. Assefa Berihun and the thesis contains no material previously published by any other person except where proper citation and acknowledgment has been made. I do further confirm that this thesis has not been presented or being submitted as part of the requirements of any other academic degree.

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This thesis has been submitted for examination with my approval as a supervisor

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Approval Page

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Acronyms and Abbreviations

AAU CHS	Addis Ababa University College of Health Sciences
ANOVA	Analysis of Variance
CD-RISC	Connor–Davidson Resilience Scale 10-Item Version
DSM	Diagnostic and Statistical Manual of Mental Disorders
EDHS	Ethiopian Demographic Health Statistics
ERQ	Emotion Regulation Questionnaire
HHI	Herth Hope index
I/E R	Intrinsic/Extrinsic Religious Orientation Scale
MSPSS	Multidimensional Scale of Perceived Social Support
QOL	Quality of Life
SD	Standard Deviation
SPSS	Statistical Package for Social Science
WHO	World Health Organization
TASH	Tikur Anbessa Specialized Hospital
VIF	Variance Inflation Factor

Abstract

Resilience is defined as the individual's ability to bounce back from trauma. This study aimed to evaluate the level of resilience and its predictors among cancer patients undergoing cancer treatments in Tikur Anbessa Specialized Hospital. Explanatory quantitative study design was conducted with 284 cancer patients who took at least one chemo and/or radiation therapy between August 15 to September 15, 2019. Stratified and simple random sampling methods were used to select the study participants. Respondents were assessed using the Connor-Davidson Resilience Scale (CD-RISC) 10 item version, revised intrinsic/extrinsic religious orientation Scale, the multidimensional scale of perceived social support, self-efficacy for managing chronic diseases 6-item Scale, Herth Hope Index (HHI), Emotional Regulation Questionnaire (ERQ) and demographic and disease-related information. Descriptive statistics, bivariate analyses (independent samples t-test, one way ANOVA and Pearson correlation) and multiple hierarchical regression were conducted to explore predictors for resilience. The mean score on the CD-RISC-10 was 31.84 (SD=5.92). Among the tested variables, the study found that gender, educational level, employment status, treatment cycle, family support, intrinsic religious orientation, external social religious orientation, cognitive reappraisal, and hope had a significant positive relationship with resilience and tumor stage had a negative relationship. Multiple hierarchical regression analysis indicated that hope (β = 0.36, P<0.001), family support (β = 0.26, P<0.001), educational level of above secondary school (β = 0.23, P<0.001), gender (β = 0.21, P<0.001), intrinsic religious orientation (β = 0.18, P<0.001), cognitive reappraisal (β = 0.16, P = 0.001), employment status (β = -0.12, P<0.001), external social religious orientation (β = 0.11, P = 0.026), tumor stage (β = 0.11, P< 0.01) and treatment cycle (β = 0.09, P<0.01) were significant predictors of resilience in the sample and explained 72.9% of the total variance in resilience. Cancer patients in Tikur Anbessa Hospital demonstrated particularly high resilience level. The findings of this study have offered insights into several baseline characteristics that influence resilience. To provide holistic care for cancer patients, it was recommended that the management and services providers in the hospital should integrated demographic, clinical, psychological and social background based interventions.

Keywords: *cancer, patients, resilience, hope, religious orientation, self-efficacy, emotional regulation, social support, Tikur Anbessa Specialized Hospital*

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

A diagnosis of cancer can be very hard to understand and accept for most people (Canadian Cancer Society, 2013). In fact, the usual reactions of people during the cancer diagnosis are often shocked, paralyzed and frozen with fear and disbelief (Waring, 2006). According to Macmillan (2015), a person faces numerous physical, emotional, social, spiritual and financial issues at the time of diagnosis, during treatment, and throughout the remaining years of his or her life.

The cancer diagnoses can lead to heterogeneous outcomes, but are often accompanied by prolonged illness. Although some benefit from post-traumatic growth, many individuals experience negative psychosocial outcomes such as poorer emotional health, anxiety, depression, and maladaptive health behaviors (Andrykowski et al. 2008; Lelorain et al. 2010; Singer, Das-Munshi, and Brahler, 2010).

According to Fincannon (2013), such initial reactions are normal and are natural given that people are living normally and will suddenly be confronting a difficult circumstance brought by their illness. Even though such reactions are normal, it is still hard to make a transition and face the adverse situation (National Cancer Institute, 2014). Aside from experiencing fear, shock, and disbelief during cancer diagnosis, a cancer experience also includes changes and challenges in one's life (Adler, 2008). Such emotional distress of cancer patients substantially lowers their quality of life (Kroenke, et al., 2010) as well as potentially interferes with treatment compliance (Weisman, 1979). The negative consequences of cancer due to both physical and mental illness can be reduced by certain health promoting resilience factors (Friborg et al. 2005).

Research has shown that the manner in which people approach problems or fateful events is decisive for a successful life. Whether they break in crises or become more mature and stronger depends on how resilient they are. If they are able to resolve problems which stand in their way, at the end, their personalities are more mature than if they had not encountered these problems (Gruhl, 2011 as cited in Reimann, 2013).

Resilience refers to flexibility, toughness, and resistance to stress in humans or objects, which can rapidly recover to their original state after undergoing external stresses (Aburn, Gott, & Hoare, 2016). Not only a personality trait, resilience can be viewed as a process of actively adapting to adversity. It is also a type of ability, potential, or capacity to return to original life after encountering stress, danger, or disaster (Khanlou & Wray, 2014). It endows people with the ability to overcome hardships, handle stress, recover from trauma, regain self-control, or develop healthy response behaviors (Aburn et al., 2016; Davydov, Stewart, Ritchie, & Chaudieu, 2010; Khanlou & Wray, 2014).

Resilience in cancer survivors may include a lack of psychological distress or a positive outcome such as post-traumatic growth, or finding meaning from traumatic experiences. Researchers have found that resilience can moderate the effects of medical stress and improve life satisfaction among cancer survivors (Rosenberg, 1965).

The construct of resilience therefore represents a promising candidate for intervention which implies an ability to withstand, bounce back, or even bounce forward from adversity (Ungar, 2008). More so, growing research evidence indicates that resilience helps people battle with cancer and cope up with other adverse life situations (Balk, 2014). People diagnosed with cancer therefore should manifest remarkable resilience in the face of their illness in order to bounce back or even move forward in life (Rowland, 2005). Even after surviving cancer as well as ending one's treatment, cancer survivors still require resilience since the aftermath of treatment can have a profound and lasting impact not only on their body but on their mind as well (Roger, 2008). Investigation of resilience is therefore, an important priority for research because understanding positive adaptation to stress may aid in prevention and intervention efforts focused on helping individuals recover from stressful events and stress related disorders.

For some, it's natural to develop a positive outlook on life during and after treatment, while others struggle to find any positive meaning in their difficult cancer journey (Hutchinson, 2016). According to Bhat (2013), resilient cancer survivors often say that they appreciate life more and have gained a greater acceptance of one's self. Many cancer patients can handle this extremely stressful experience with minimal to no effect on their daily functioning and may even experience positive emotional and personal growth. In addition to biological factors (e.g., gene–environment interactions), individuals' personal factors (e.g., self-efficacy, coping, optimism, and hope), and environmental factors, particularly social support,

collectively account to their resilience and psychological adaptations to the cancer experience. The identification of factors that promote resilience in cancer survivors has therefore become increasingly important (Steward and Yuen, 2011).

To provide holistic care for these patients, the management and services provided by palliative care or hospice are critical. Apart from medical services, a number of psycho-social factors are helpful for the development of patients' resilience. The concept of resilience is expected to be essential to the future delivery of end-of-life care and significant challenges cancer patients face (Monroe & Oliviere, 2007). However, a study conducted in Tikur Anbessa Specialized Hospital indicated that the rehabilitation service is not sufficient in terms of accessibility and comprehensive support provision.

Although studies have demonstrated how people manifest resilient functioning after such an adverse experience, there is a great gap in knowledge concerning the factors that promote and influence resilience and well-being among patients facing chronic and/or terminal illness. No matter how many studies conducted in different corners of the world to reveal the factors contributing for cancer patients resilience, still now there is no agreement among the investigators and the results about the measurement and internal and external factors that can promote the patient's ability to cope up from their health adversities. Moreover, the results also vary with a variety of measures of resilience and due to this; the area needed a further investigation about the level and contributing factors of resilience among cancer patients.

1.2. Statement of the Problem

For centuries, cancer has been considered as a deadly disease. However, with advancement in medical science, early intervention can help cure cancer in many cases. According to the WHO (2018), more than 30% of cancer cases can be cured if detected at an early stage. Patients with late stage disease can benefit from improved palliative care. A comprehensive cancer control plan, aiming at prevention, early detection and improved care, could alleviate the cancer burden considerably (WHO, 2018).

Nevertheless, most patients feel devastated and frustrated when their cancer is first diagnosed, and many still must fight a very difficult battle against the disease (Buckley, 2004). For many cancer survivors, the aftermath of treatment can have a profound and lasting impact not only on their body but on their mind as well. For example, studies conducted in Ethiopia, Morroco and Nigeria found that the quality of life of breast cancer is very poor

(Anissa, 2018; Bekele, 2016; et al., 2017; and Sajani, 2014). The reason for lower quality of life might be due to the different treatment side effects that most patients had been taking including surgery, radiotherapy, and chemotherapy (Anissa, 2018).

The intensive treatment required to treat cancer can be life changing and may involve painful procedures, multiple side-effects and long hospitalizations. Consequently, being diagnosed with cancer, a potentially terminal disease, is considered a traumatic and stressful experience affecting many aspects of an individual's life, including mental health (Hollingshaus & Utz, 2013).

However, diagnosis of cancer and its treatment may have not the same impact on the patients. Studies have shown that survivors who identify their stressors, manage their stress, and derive strength from their experience with cancer have more resilience and, therefore, a better overall quality of life (Rosenberg, 1965). High resilience scores have been shown to be associated with less anxiety and depression in samples of cancer survivors (Cuhadar et al, 2014; Scali et al, 2012). Previous studies have found that patients with good resilience can effectively increase their adaptability and quality of life (Kool, Geenen, Egberts, Wanders, & Van Loey, 2017).

As resilience plays a vital role among cancer survivors, it is deemed that there are factors affecting resilience that is considered to be the source of strength which enables them to be stronger (Mandleco, 2013). Brown (2011) added that identifying the sources of resilience is important in developing resilience for the sources can help on maintaining a good quality of life. Researching resilience is, therefore, important because it enables practitioners to understand why and how some cancer patients a life trajectory characterized by relatively stable and healthy levels of psychological and social functioning while others cannot. Moreover, the literature emphasizes on both the internal (personal) and external (environmental) factors that may contribute to resilience.

However, there is no clear consensus on the factors determining resilience of cancer patients receiving treatment. Besides biological factors (e.g. gene-environment interactions) and personal factors (e.g. self efficacy, flexibility, optimism), environmental factors -most notably social support -contribute to an individual's resilience and consequently to favorable mental and physical patient outcomes (Herrman et al, 2011). Empirically, many factors affecting resilience were found by different researchers, such as gender, subjective well-being, self-concept, self-esteem, and family resources (He, Cao, Feng, Guan, & Peng, 2013;

Jang, Park, Chong, & Sok, 2017; Khanlou & Wray, 2014; Masood, Masud, & Mazahir, 2016; Wu, Chang, Tsai, & Liang, 2018).

Therefore, developing strategies to improve cancer care in poor countries requires considerable imagination and effort. Identifying these factors in the local setting is a way paving commission for the cancer treatment effort. It is not just about donating drugs, but more about creating local knowledge, capacity and structure for policy, prevention, early detection, effective treatment and follow up (Reeler et al., 2007).

Although studies have demonstrated how people manifest resilient functioning after such an adverse experience, there is a great gap in knowledge concerning the factors that promote and influence resilience and well-being among patients facing chronic and/or terminal illness. That is the main cause for being resilience a subject of increasing research over the past decade due to its potential to impact on health outcome.

Especially in Ethiopia, little is known about the resilience of cancer patients during and after cancer treatment in Ethiopia. Only one qualitative study was found on factors promoting resilience among cancer patients living with HIV in Ethiopia (Sophia, et al, 2014). The psychosocial aspect of the cancer treatment seems ignored. The cancer profile from the population based cancer registry dataset indicates that cancer is an emerging health problem in Addis Ababa. These findings should guide cancer prevention and control planning in the country and serve as baseline for evaluation of interventions (Mathewos et al, 2015).

Therefore, this study intended to examine whether cancer survivors show resilience responses to cancer treatment and to explore the relevant internal and external factors affecting resilience. The study can contribute filling the gap that has not been filled yet in providing possible approaches for improving the resilience of patients and assist patients in adapting to adversity, so that they can return to society.

1.3. Research Questions

1. What is the level of resilience among cancer patients admitted and receiving cancer treatment in Tikur Anbessa Specialized Hospital?
2. Does resilience differ among groups of socio-demographic characteristics of cancer patients who are receiving cancer treatment?
3. Is there a significant mean resilience difference among groups of clinical factors?

4. Do internal (individual) factors significantly predict resilience among cancer patients who are receiving cancer treatment?
5. Do external factors (social) significantly predict resilience of cancer patients who are receiving cancer treatment?

1.4. Objective of the Study

1.4.1. General Objective

The general objective of the study is to examine whether cancer survivors show resilience responses to cancer treatment and to explore the relevant internal and external factors determining resilience among cancer patients receiving treatment at Tikur Anbessa Specialized Hospital.

1.4.2. Specific Objectives

- To assess resilience level of cancer patients admitted and receiving cancer treatment in Tikur Anbessa Specialized Hospital
- To determine whether resilience differ among groups of socio-demographic characteristics of cancer patients who are receiving cancer treatment
- To determine whether clinical factors relate with resilience among cancer patients who are receiving cancer treatment
- To measure the impact of internal (individual) factors on resilience level of cancer patients who are receiving cancer treatment
- To analyze the impact of external (social) factors on resilience level of cancer patients

1.5. Significance of the Study

The researcher hoped that the result of the study was significant for cancer patients, health care professionals, mental health professionals, policy makers and researchers.

The result is important to give evidences on the level of resilience among cancer patients and its determinant factors. Resources, traits and mechanisms all participants used to foster their resilience were identified and suggested to maintain or improve resilience of cancer patients. This information from participants' experiences will be an important resource that can contribute helpful recommendations for cancer patients to better facilitate their resilience. Family members, friends and other significant people around the patients will learn about the role of social support for cancer patient's resilience.

It gives insights for mental health professionals to plan on different programs to increase cancer patient's resilience level. Apart from medical services, a number of psycho-social factors are helpful for the development of patients' resilience.

The finding of this study is believed to provide for health care professionals a foundation for multi-dimensional interventions to improve cancer patient's resilience. Health institutions and professionals certainly can play roles in providing useful information to help add to resilience buffering factors.

The study can also help policy makers by providing inputs when they formulate health policies, specifically cancer care programs. Besides it is believed to be a base line data for future studies.

1.6. Scope of the Study

This study delimited to resilience and its determinant factors among cancer patients diagnosed with any type of cancer, who are above eighteen years old, and receiving chemo, radiation and/or both of the cancer treatments. In terms of its conceptual scope, level of resilience and impacts of demographic, clinical/medical, internal (self-efficacy, emotional regulation, hope and religious orientation) and external factors (social support) on resilience of cancer patients. Regarding the study time, patients who were receiving treatment in Tikur Anbessa specialized hospital oncology unit in the time from August 15 to September 15, 2019.

1.7. Limitation of the Study

As it is expected, the study has some limitations that have to be considered when interpreting the findings. First, the study is conducted based on a cross-sectional nature; this limits the progress of the causal relationship between resilience and other variables in cancer patients. Further prospective and longitudinal studies are necessary to validate the present findings. Second, this study just explored the influence of social support from the external factors and on resilience. Future studies can be conducted to investigate the effect of other community level factors on resilience for patients. Third, this study was a quantitative research, which can provide limited information about resilience, and further qualitative research is necessary to explore the meaning of resilience and identify contributors and inhibitors of resilience among cancer patients other community members from a culturally specific perspective.

Finally the information was obtained through interviewer administered questionnaire so that response was prone to social desirability bias.

1.8. Operational Definitions

Cancer Patients: Refer to individuals who are clinically diagnosed for any cancer and suffering with cancer and receiving treatment.

Emotional regulation: The ability of cancer patients to manage/control regulate their positive and/or negative emotions measured by "emotional regulation questionnaire"

Religious Orientation: patient's attitude towards religion and religious practices as measured by revised intrinsic/extrinsic religious orientation scale

Resilience: the ability to bounce back from negative emotional experiences and to adapt to stressful experiences following cancer diagnosis and treatment measured the 10 items version Connor-Davidson resilience scale.

Self Efficacy: How well cancer patients can execute courses of action required to deal with cancer measured by "self efficacy for managing chronic diseases 6-item scale"

Social support: individual's perception of support from family, friends and a significant others measured by "the multidimensional scale of perceived social support".

Significant others: people that can provide social support for cancer patients like health care professionals, priests, neighbors and colleagues

Treatment: administration of chemotherapy and/or radiotherapy to reduce cancer cells and to reduce the risk of local recurrence.

CHAPTER TWO

REVIEW OF RELATED LITERATURES

This chapter presents an overview of the issues related to cancer and resilience through reviewing different research findings done by individual scholars. While reviewing the literatures, an effort is made to relate the contents of the part of the paper regarding the objectives and the research questions of this particular study.

Therefore, this section focuses on the following points: the physical, psychological and social impact of cancer on patients, concept of resilience, features of resilience, source of resilience, factors affecting resilience and conceptual framework.

2.1. Impact of cancer

Being diagnosed with cancer is a life-threatening situation that prompts multidimensional challenges (Wenzel et al., 2002). For many cancer survivors, the aftermath of treatment can have a profound and lasting impact not only on their body but on their mind as well. There were four sub-themes that survivors in previous studies identified as impacts associated with the burden of having being diagnosed and treated with cancer. These included the physical, psychological, and social impact, including unexpected loss.

2.1.1. Physical Impact

Physical stressors: Cancer patients report a number of changes to their body including hair loss, nausea, color changes, disturbed sleep, redness, lack of appetite and neuropathy, tumor growths as well as more specific symptoms and expression of the disease depending on the specific type of cancer. These physical impacts are represented through health impairment, disability, fatigue, and pain (Adler & Page, 2008). Number of ongoing physical complaints such as: bone, joint and nerve pain; memory loss; digestive, heart, lung and hormonal problems; lymphoedema; early menopause; infertility and sexual dysfunction are also the physical impact of cancer.

Impairment and disability: A number of studies revealed that cancer patients reported having fair or poor health (30%), other chronic medical conditions (42%), at least one limitation in ability to perform daily living activities (11%), other functional disabilities (58%), and limited ability to perform their career (in patients under age 65) due to health

condition (17%; Hewitt, Rowland, & Yancik, 2003). Adler and Page (2008) reported that "one-third of those with a history of cancer who report limitations in activities of daily living or other functional areas identify cancer as the cause of their limitation". In addition, cognitive impairment is reported by a significant number of cancer patients (both children and adults), resulting in a limitation in performing responsibilities, daily activities, or careers (Adler & Page, 2008). These impacts cause stressors and exhaustion in many other areas of life.

Fatigue: Fatigue is by far the most common side effect in individuals with cancer (Gallager, 2016). In fact, fatigue is found in approximately 70% of Stage III and Stage IV cancer patients. Fatigue largely stems from cancer-related symptoms and from the cancer treatment itself; it is not relieved by rest or sleep (Sangkaew, 2006; Van Duursen, 2002). Although fatigue might be found in healthy people, it plays a larger role for cancer patients in affecting their quality of life as well as impacting family members and caretakers. The level of fatigue varies by the type of cancer. For example, while fatigue is commonly found (50%) in patients with lung cancer, it is less common in patients with prostate and breast cancers.

Not only the pain itself, cancer treatments, are also responsible for fatigue. Fatigue due to chemotherapy is called chemotherapy-associated fatigue. Patients usually report feeling this type of fatigue at the beginning of their treatment. Radiation associated fatigue is usually present during the course of therapy and does not subside until the end of treatment. Fatigue from cancer surgery and bone marrow transplantation is caused by medications such as interferon that actively change the body's chemical balance. Fatigue might also originate from other causes including insufficient sleep, depression, worry, anemia, medication, infection, neurological problems, heart and lung diseases, and malnutrition (Hateerat, 2006).

Pain: Fifty percent of patients undergoing cancer treatment reported pain regarding the cancer itself, side effect of treatment, and other illnesses; it can co-occur during the course of treatment (Adler & Page, 2008).

These symptoms and resulting functional impairment can cause distress, reduce health-related quality of life (HRQOL) (Kroenke et al, 2013) and may limit treatment options (Walker et al, 2014). As physical recovery progressed, the unexpected psychological effects took many participants by surprise. Further, increases in the number and/or intensity of cancer symptoms are associated with reduced overall survival time (Aktas et al, 2013). Clinically, the cumulative severity and impact of symptoms reported by a significant

proportion of patients with a given tumor entity or treatment has been defined as «symptom burden» (Cleeland, 2007). This might help explain why cancer patients with similar diagnoses and treatment status have significantly different levels of symptom distress, a fact that may also be attributed to the concept of resilience (Eicher et al, 2015). Resilience influences symptom appraisal and the experience of patients with cancer (Cuhadar et al, 2014; Tian and Hong, 2014).

2.1.2. Psychological Impact

Psychosocial stressors: Cancer patients experience a wide range of feelings including anger; depression, hopelessness, and a sense of helplessness that often require significant adjustment (Livneh, 2000). When individuals are diagnosed with cancer, they are also impacted by a number of psychosocial needs including information about illness, treatments, health, and services. Many cancer patients need help coping with emotions associated with illness and treatment, while many need help in managing their illness (Adler & Page, 2008).

In the literature exploring the impact of cancer (Greef & Theil, 2012), stress was one of the most often mentioned responses that impacted the quality of life of patients and their loved ones. Cancer requires major adjustments for patients and family members (Greeff & Theil, 2012). Hardships cancer patients face during diagnosis and treatment present themselves in many forms. For example, relationship strain is one factor reported by many patients (Benzies & Mychasiuk, 2008; Greeff & Theil, 2012). In addition, patients with children reported stress related to the challenges of parenting. Most cancer patients encountered financial hardships either due to their inability to work or because of the costs of cancer treatment (Greeff & Theil, 2012).

Quality of life: Quality of life (QOL) is among the areas most impacted by the diagnosis of cancer. The United Nations (2013) defined quality of life as "notion of human welfare (well-being) measured by social indicators rather than by quantitative measures of income and production". Researchers described a person who has a good quality of life as having the ability to enjoy normal life activities (Calman, 1984; Meifan, 1997; Yang et al., 2008). "The term 'quality of life' extends not only to the impact of treatment and side effects, but to the recognition of the patient as an individual, and as a whole person; body, mind, and spirit" (Calman, 1984). Getting life back to normal with its predictability and control was reassuring for those who completed treatment. Yet, many participants worry about their future health,

with the ‘fear of recurrence’ being the most commonly discussed concern. According to Anissa (2018) and Bekele (2016), the quality of life of breast cancer in Ethiopia is very poor.

2.1.3. Social impact

The third sub-theme associated with the burden of a cancer diagnosis was the social impact. Family, peers, co-workers, and others in the survivor’s social setting impacted patient’s cancer experience. Degree of insecurity, lack of intimacy and social isolation within their interpersonal relationships are the common social impacts of cancer diagnosis (McGrath & Clarke, 2003). A number of cancer survivors also felt guilty about the impact of their cancer on their loved ones. As a result, several survivors put on a brave face at the expense of sharing their true feelings in order to protect others close to them. Those diagnosed with cancer often try to shelter significant people in their lives (Kelly & Dowling, 2011).

2.2. Definition of Resilience

The term resilience has been conceptualized in various different but related ways across a range of disciplines, including engineering, ecology, economics and psychology. As a result, the term has been operationalized in a range of ways in practice.

Currently, there are multiple efforts across these communities of practice to find convergence in ways of thinking about resilience. But nonetheless, as a consequence of the concept’s diverse origins and complexity, there is still little agreement over how resilience should be defined and measured, not least because of the different theoretical and practical contexts in which it is being applied. Despite its complex and vast nature, by compiling the existing literature, the following definitions are the very common definitions related to resilience.

The word resilience originates from the Latin verb resilire, or “to leap back”, and is defined in the Oxford Dictionary of English as “being able to withstand or recover quickly from difficult conditions” (Soanes & Stevenson, 2006). Fletcher and Sarker (2012) also defined resilience as “bounce back”; it typically refers to the ability to recover or rebound after a setback.

Resilience is defined as the resistance, recovery, or rebounding of psychological and physical health after a challenging life event (Szanton & Gill, 2010). It is considered an important trait or ability of individuals that sustains well-being in the face of the many stresses that individuals encounter in their lives (Luthar, Cicchetti, & Becker, 2007; Masten, 2001, 2014).

Grotberg (1995) also defines resilience as "the human capacity to face, overcome, and even be strengthened by or transformed by the adversities of life". Painful experiences can help release one from unrealistic expectations and find new pathways.

Resilience is explained with words such as "elasticity" (Gruhl, 2011, as cited in Reimann, 2013), "endurance" or "ability to resist" (Schmitz, 2011, as cited in Reimann, 2013). Resilience describes the ability to continually adapt to stresses, adversity and trauma and to recover from them (Scharnhorst, 2010, as cited in Reimann, 2013). The concept of resilience is used in psychology to indicate the ability to be resilient in situations of external stresses and crises and to assert them without prolonged impairments.

Although resilience has a variety of definitions, there is consensus in assuming that it means competence or positive and effective adaptation in response to significant threats to an individual's life or function (Luthar, Crossman, and Small, 2015). It is a healthy, adaptive, or integrated positive functioning over the passage of time in the aftermath of adversity (Steven, et al, 2014).

Zautra, Hall, and Murray (2010) point to two dominant themes that are central to the meaning of this concept. First, as a response to stressful events, resilience focuses on recovery, the ability to rebound from stress, and a capacity to regain equilibrium quickly and return to an initial state of health. A second definition involves continuing to pursue the positive, which implies staying on the recovery path and even experiencing growth and enhanced functioning as a result of healthy reactions to the stressful experience.

Al Siebert (2008) summarizes the positive developmental result of resilience building as follows:

- "Sustaining good physical and emotional health when under constant pressure
- Bouncing back easily from setbacks
- Overcoming adversity
- Changing to a new way of working and living when an old way is no longer possible
- Doing all the above without acting in a dysfunctional and harmful manner"

2.3. Features of Resilience

Despite increased interest in resilience, there remains definitional debate regarding what exactly it means to be a resilient individual. More specifically, it is yet unclear whether

resilient individuals thrive (i.e., grow beyond baseline functioning) or more simply adapt and return to baseline functioning after facing a setback. In line with the latter idea, Masten et al. (1990) define resilience as "The process of, capacity for, or outcome of adaptation despite challenging or threatening circumstances". Similarly, Lee and Cranford (2008) define resilience as "The capacity of individuals to cope successfully with significant change, adversity, or risk".

However, other authors purport that resilience goes beyond adaptation to adversity. For example, Leipold and Greve (2009) define resilience as "An individual's stability or quick recovery (or even growth) under significant adverse conditions". Moreover, Connor and Davidson (2003) suggest that resilience is "The personal qualities that helps one to prosper in the face of hardship". Regarding the second underlying concept, positive adaptation "may be likened to a springboard that propels the survivor to a higher level of functioning than that which they held previously" (Linley and Joseph, 2004). In line with this definition, positive adaptation therefore represents a gain following the adverse event, as opposed to recovery from the loss or homeostatic return to baseline.

Despite this uncertainty, Fletcher and Sarkar (2013) pointed out that definitions of resilience are typically founded upon two fundamental notions: adversity and positive adaptation. In fact, researchers generally agree that positive adaption to adversity must be evident in order for resilience to be demonstrated. Luthar and Cicchetti (2000) asserted further that adversity "typically encompasses negative circumstances that are known to be statistically associated with adjustment difficulties". In addition, according to Davydov et al. (2010), the mechanisms underlying resilience vary, ranging from mild adversity (e.g., stress at work) to strong adversity (e.g., bereavement).

Others (e.g., Luthar et al., 2000) suggest that positive adaptation simply refers to the ability to meet the demands faced during adversity. Furthermore, others assert that positive adaptation may be a combination of the previous definitions; Leipold and Greve (2009) suggest that positive adaptation refers to "An individual's stability or quick recovery (or even growth) under significant adverse conditions". Thus, the definitional debate in the resilience literature seems to surround the second core process of adaptation. Luthar and colleagues (Luthar et al., 2000; Luthar, 2006) suggest that positive adaptation may be a function of the severity of the adverse event, and what constitutes positive adaptation might be context specific.

2.4. Resilience and Cancer Patients

Resilience is a significant psychological factor that promotes strength and recovery in trauma, child development, and cancer survivors (Werner & Smith, 1982). Studies indicated that resilience is an important psychological predictor of quality of life and coping in cancer patients (LeMarier, 2011; Strauss et al., 2007). Previous studies have found that patients with good resilience can effectively increase their adaptability and quality of life (Kool, Geenen, Egberts, Wanders, & Van Loey, 2017).

Strauss et al. (2007) studied the effect of resilience on fatigue in cancer patients receiving radio therapy and showed that fatigue is a significant problem among patients who receive radiation therapy. The results of this study revealed that resilience is a powerful predictor of a patient's level of fatigue, at least early in radiation therapy, and supported other studies showing that resilience is an important psychological predictor of quality of life and coping in cancer patients.

As a result of this adaptive flexibility, people with high levels of resilience are more likely to experience positive emotions in their life and they have higher self-esteem than those who have low levels of resiliency and better psychological welfare (Kiani, 2010). As a result of the process of resiliency, adverse effects are modified or adjusted or even disappeared and mental health is preserved (Fredrickson & Tugade, Inzalicht, Friborg et al. 2006).

2.5. Source of resilience

The vast literature regarding the source of resilience shows that there is no a simplistic "either/or" dichotomy, because what we have seen about resilience, like all human traits and capacities, is that it is a truly multi determined and complex phenomenon. Some refer to resilience as something intrinsic to the individual, while others refer to it in a more holistic sense. Some refer to resilience as the competencies or capacities of people, while others refer to it as positive functioning in the face of adversity. These multitudes of meanings for the same term have led to severe criticisms about the validity of resilience theory (Fletcher & Sarkar, 2013; Kolar, 2011).

Conner & Davidson (2003) aligned to the side that categorizes resilience as intrapersonal variables. Resilience is the ability of the individual's bio-psycho balance in a dangerous situation. To support this idea Luther, Cicchetti and Becker summarized that some

individuals are better able to adapt to stress and hardship, whilst others are less able to cope (Luthar, Cicchetti, & Becker, 2000; Tedeschi & Calhoun, 2004). One of the simplest definitions of resilience is provided by Berk (2000) as "the ability to adapt effectively in the face of adversity". As this definition suggests, resilience could hold the key to explaining how individuals 'bounce back' and deal with various challenges, such as ill health throughout life. So, resilience is internal (personal) issue, according to this definition.

Prospective studies have indicated that there are indeed consistent enhancing personal characteristics (Erikson, 1993, 1994) which contribute to one's resiliency quotient. These are cumulative and exponential in nature, positively enhancing each other, with a resultant strengthening effect on the individual's inner resolve. These positive personal attributes are correlated with personal resilience. None of the attributes by themselves are uniquely necessary or sufficient to determine success or failure.

The other side support the argument states that the combination of internal and external resources is accountable for resilience. According to Kaplan, resilience has theoretically been described as an aggregation of individual attributes that determines the ability to cope with demanding life circumstances (Kaplan, 1999). Therefore, it involves a complex interaction of multiple mechanisms ranging from the individual-level to the structural.

Greeff and Theil (2012) resilience is facilitated by internal and external resources. Internal resources referred to factors residing within the individual and family, whereas external resources referred to those factors outside of the immediate family. External resilience resources included social support (extended family and friends), religion, and professional support and knowledge (psychologists, doctors).

Kumpfer (1999) has developed a model of resilience that includes the internal aspects of the Five Part Model and some of the external factors of our model. Lahad (1993) developed a model entitled BASIC-Ph that is intended to help understand how communities cope with adversity.

The contemporary view of sources of resilience is the balance of risk factors and protective factors. The most salient, crucial finding, shown repeatedly in studies, is that we can all meet our Waterloo. Meaning, of course, even the most resilient soul can be downtrodden, degraded, and ultimately defeated if there are a sufficient confluence of risk factors and a concomitant absence of personally enhancing factors (Richters & Martinez, 1993, Werner &

Smith, 1982, Werner, 1989, Rolf, et al, 1990, Rutter & Rutter, 1998). The early risk factors correlate with later problems; in concert with each other, cumulative risk can eventuate, and the chances of symptomatology or dysfunction are thus exponentially increased.

A health problem is sometimes the catalyst that provokes an enhanced resilience (Keltner & Walker, 2003). The ability to encounter and be strengthened by adversity suggests a robust constitution (Monroe & Oliviere, 2006). Resilience is a significant psychological factor that promotes strength and recovery in trauma, child development, and cancer survivors (Werner & Smith, 1982). The care and living arrangements at Kampr among Monastery are unique in showing the potential benefit of creating resilience in cancer patients.

The research data that consistently finds the same risk factors as potentially detrimental to one's development and self-actualization clearly indicate that there are, conversely, ideal circumstances contributing to better chances for personal growth and fulfillment (Dugan, & Coles, 1989, Levine, 2002). It is important that we strive to approximate these factors in the lives of individuals.

2.6. Factors Contributing to Resilience of Cancer Patients

Alongside definitional confusion, there has been considerable debate about the factors of resilience. Although all people possess some degree of resilience, not everyone is equal in this regard. While some people have difficulty overcoming commonplace hassles, others react positively in the face of even the most challenging situations (Bonanno, 2004). Therefore, there is a need of determining how resilience is affected by different factors.

The vast literature in the area shows that combination of factors contributes to resilience. Beside the study finding's inconsistency on the concept of resilience, there is no clear consensus on the factors contributing to resilience among patients. That is one of the main reasons for conducting this study. The variation comes from age, gender, culture and theoretical foundations.

Previous studies have suggested that individual resilience is determined by different factors such as biological (Charney, 2004), psychological (Campbell-Sills, Cohan, & Stein, 2006), genetic (Tannenbaum & Anisman, 2003), and environmental (Haskett, Nears, Ward, & McPherson, 2006). Others said that resilience is determined by wide variety of factors, with existing research suggesting that genetic, biological, psychological and environmental factors all play significant roles.

These factors for might be roughly divided into internal (e.g., personal attribute) and external (e.g., environmental) factors. Although there exist only a limited number of researches, several internal factors including adaptive coping strategies, optimism, positive emotion, self-coherence, and spirituality have also been sporadically reported to play a role in developing resilience in cancer patients. However, it remains inconclusive which internal factors would be most influential for modifying the emotional distress and boosting resilience in cancer patients.

2.6.1. Socio demographic Factors

I. Gender

Gender has been differentially identified as a risk factor across various contexts. The ways in which gender proves protective are highly contextual to (1) culture and (2) the specific risk under consideration. Links between culture, socialization and biology can be difficult to unpick. Being female can be protective in the face of abuse and neglect, health risks, low socioeconomic status (SES), psychological risks associated with aging and certain conflict contexts (Gallo et al., 2009; Graber et al., 2015; Jordans et al., 2010; Netuveli et al., 2008).

Some research has suggested that girls and women are less resilient than boys and men following exposure to disaster and climate hazards, while cultural ideals may incentivize men to maintain good health and provide for the family (Bonanno et al., 2007; Hobfoll et al., 2011; Punamaki et al., 2001; Rodriguez-Llanes et al., 2013).

Many researches indicated that both no group differences in gender, and that female have higher resilience (Connor & Davidson, 2003; Masten et al. 1999). Using the same resilience scale, CDRISC, Connor and Davidson (2003) observed no group differences across age, racial group, or gender. Conversely, Masten et al. (1999) found females to be more resilient. Masten and colleagues identified participants in their study as resilient, maladaptive, or competent, using measures of competence and adversity.

II. Education

Education sits at a nexus of process and outcome. Some evidence suggests that education provides accumulated financial and social resources, facilitating long-term resilience during disasters (Frankenberg et al, 2013). Related to this, some researchers found educational level as a direct predictor of resilience (Segerstrom, 2006; Ye et al., 2015; Bonanno et al., 2006).

Similarly, the evidence of a previous study (Ye, et al., 2015), which also found educational level was the other direct predictor of resilience. Patients with higher education level might have more access to information about cancer by various mediums, such as communication with other patients, medical staff and books or searching the internet (Wu, et al., 2016; Cohen et al., 2014). Thus, they have a better understanding of the disease, and gain more feeling management during the course of treatment (Wu et al., 2016; Hung-Fu & Shu-Yuan, 2018).

On the other hand, some previous studies indicated that level of education did not relate to resilience (Manne et al., 2015; Matzka, et al., 2016). Patients with higher education may be better enabled to acquire disease-related information and other useful resources that may bolster resilience (Wagnild, 2009).

III. Ethnicity and culture

Ethnicity and culture can be protective, as multi-faceted cross-cultural research demonstrates (Ungar, 2011). Cultural values and strong relationships supported by common ties provide both tangible and intangible resources across interpersonal, intrapersonal and community domains. Culture may support spiritual responses to challenges, catalyzing practical support and supporting meaning-making (Wadsworth et al., 2009). Hispanic cultures are associated with better health outcomes, strong family relationships and performance of health behaviors for the good of the family (Gallo et al., 2009). Culture may foster values of service to family and morality that strengthen social relationships and help make meaning to ongoing conflict (Eggerman and Panter-Brick, 2010).

2.6.2. Medical/Clinical Factors

For patients with cancer, the effect of changes over time after diagnosis on resilience should be examined in prospective studies. There is no consensus on the effect of time span since diagnosis on patient'sresilience. Manne, et al. (2015) found women newly diagnosed with gynecological cancers who experienced a longer period of time from diagnosis reported less resilience. However, Schumacher, et al. (2014) found that the group of patients with 3±4 years after diagnosis reported a lower degree of resilience than the group of patients who had been 1±2 years or 5 and more years after diagnosis. Furthermore, some scholars have concluded that time alone is sometimes sufficient to promote growth (Tedeschi & Calhoun, 1996).

On the other hand, time span after diagnosis was not found to be predictor of resilience for cancer patients. Time since diagnosis, were not found to be related to cancer patients' resilience during various literatures reviewed by the researcher. For instance, Lelorain, et al. (2010) postulated that time since diagnosis and treatment status is not linked to benefit finding.

Treatment modality is also one of the clinical factors that affect resilience level of cancer patients. Patients who are undergoing through surgery have higher resilience level compared to those who are taking combinations of surgery, chemo and radiation therapies (Lee & Liang, 2018). However, Lelorain et al. (2010) finds that treatment modality does not affect resilience level of cancer patients.

According to many researchers, it is also important to recognize that psychological distress levels reported in long-term cancer survivors vary as rates may be influenced by the cancer type and the associated physical complications (Krebber et al., 2014; Mitchell et al., 2013; Walker et al., 2013). This therapeutic approach pertains to all cancer patients at any stage, as this research has identified that the characteristics and outcomes of resilience, are relatively similar across all cancer types throughout all phases of the cancer trajectory.

Additionally, patients are commonly worried about tumor recurrence. However, several participants may have experienced tumor recurrence and accepted surgery plus chemotherapy and radiotherapy. Thus, the experience of tumors as a life-threatening disease may cause a significant difference in patient resilience.

The current results reveal that participants who had experienced tumor recurrence had significantly lower resilience and acceptance of self and life compared to their non-recurrent peers (Lee & Liang, 2018). Contrarily, Dubey et al. suggested that patients with tumor recurrence exhibited relatively high resilience (Dubey et al., 2015). This result contradicts a study that indicated no relationship between resilience and tumor recurrence (Matzka et al., 2016). This inconsistency among findings may reflect different tumor pathologies among the different sample groups in terms of tumor sites, tumor stage, and metastatic status.

2.6.3. Internal (Individual) Resilience Factors

Resilience exists both within individuals and in relationships between and among people, as a result of internal factors and external processes that enhance rather than inhibit adaptive

ability. Some researchers (Pianta & Walsh, 1998; Smokowski, Reynolds, & Bezruczko, 1999; Westfall & Pisapia, 1994) embrace a viewpoint that locates resilience in the individual.

I. Optimism

Optimism is a cognitive trait that involves positive expectancies for the future. This trait is conceptually, empirically and theoretically should uniquely contribute to resilience (Scheier et al. 1994). Optimism is defined as the dispositional tendency to expect more positive outcomes in the future than negative outcomes (Scheier and Carver 1992). Decades of research have demonstrated that higher levels of optimism are associated with positive outcomes in many domains, including physical health (Carver et al. 2010; Rasmussen et al. 2017). Optimism is conceptualized as protective factor that promote emotional well-being, lower levels of anxiety, higher levels of adaptive health behaviors and improved physical health outcomes (Hart et al. 2008; Spencer and Patrick 2009). There is extensive research demonstrating that these positive expectancies do, in fact, promote positive outcomes across many contexts, including in cancer survivors (Carver et al. 2010).

Optimistic individuals with resilience may be more positive in adjusting to mental distress derived from their cancer diagnosis and relevant treatment (Mancini & Bonanno, 2009; Molina et al., 2014; Rosenberg et al., 2015). Optimism has been found to promote resilience and well-being in many populations, including in cancer survivors (Steward and Yuen 2011).

II. Coping skills

Coping skills are a core component of resilience and a central protective mechanism supporting resilience across a variety of risks, ages and cultures (Agaibi and Wilson, 2005; Ahern, 2006; Bernstein et al., 2011; Frijborg et al., 2006; Graber et al., 2015; Hart, Blincow and Thomas, 2007; Rutter, 2006; Stanton-Salazar, 2005; Ungar, 2011; Vanderbilt-Adriance and Shaw, 2008). Specific coping mechanisms known to facilitate resilience include reappraising a situation more positively, regulating emotions, utilizing social support, accessing tangible resources and planning. Ungar (2011) notes that forms of atypical coping – such as dropping out of school – may actually be effective given a person's context, choices and values.

Coping strategies like positive cognitive appraisal, spirituality, active coping, and mastery were also related with resilience. Resilience factors are most important to physical illness

such as self-care, adherence to treatment, health related quality of life, illness perception, pain perception, exercise adherence, and physical outcomes were also found (Moadel et al, 1999).

III. Self-Efficacy

Self-efficacy is defined as one's belief and confidence to carry out a task and is a significant cognitive mediator of action (Bandura, 1997). It is believed that a lower level of self-efficacy is associated with higher levels of helplessness and depression (Williams and Schreier, 2004). In the treatment of cancer, patients suffered a lot from bio-psychosocial burdens induced by breast cancer and were required to learn self-care skills to combat the disease (Wu et al., 2016). Also, higher levels of self-efficacy were found to be significantly linked to resilience (Wu et al., 2016; Ye et al., 2015).

A person's sense of self-efficacy has been linked to critical understandings of resilience to poverty (Canvin et al., 2009; Martin and Marsh, 2008). Self-efficacy is sometimes considered a component of resilience itself (Yi et al., 2008).

IV. Hope

Hope is often considered an important factor in patients' personal adjustments during times of loss, uncertainty, and suffering (Ebright and Lyon, 2002). However, the concept of hope has been challenging to research because of its ambiguous nature, its blend of intangibility and reality, and various individual interpretations of its meaning. Because of fear about an uncertain future, patients often begin looking to additional sources for support in handling the stress of their disease. Hope is considered an effective coping strategy for patients with cancer, providing adaptive power to help them get through the difficult situation and achieve desired goals (Lutgendorf et al, 2011).

In a longitudinal study conducted, both the cancer patient and the family member found that hope and resilience for the person with cancer and the family member do change. These two concepts correlated for the person with cancer and the family member (Herth and Cutcliffe, 2002).

Hope has been inconsistently associated with resilience in the limited contexts of health and organizational psychology (Yi et al., 2008; Youssef and Luthans, 2007). A community's sense of social hope may facilitate individual resilience, although evidence is in its infancy (Eggerman and Panter-Brick, 2010).

Researchers investigated the relationship between hope and coping among 120 adult patients undergoing chemotherapy in hospital, outpatient, and home settings. A significant relationship existed between the level of hope and the level of coping among participants in all three settings (Herth, 1989).

V. Spirituality and Religiosity

Religion or religiosity is a concept which often overlaps with the concept of spirituality. Spirituality may, but does not necessarily, have a connection with a specific religious belief, whereas religiosity is the behavioral expression of spirituality through different activities and practices which are intertwined with a particular religious denomination (Campesino and Schwartz 2006). Religion is linked to a formal or collective context, while spirituality involves self and the inner state of being (George et al. 2000). Religion can provide social support, coping resources, and a sense of self-esteem or self-worth. Religious traditions and rituals offer metaphors to understand and face the possibility of death, (Dyer 2011) and these metaphors can help people find balance during the cancer experience.

Spirituality is a resource that supports adaptation and resilience to improve quality of life in patients with cancer or other chronic illnesses (Harris et al. 2010). Dyer (2011) suggests that the diagnosis of cancer can precipitate spiritual reflection when faced with the possibility of death. The initial reaction to a cancer diagnosis may evolve and the person, as a survivor, can find meaning in his/her illness, which can then lead to a deep sense of spirituality (Vachon 2008). Other studies have also found that people experience greater spirituality following a cancer diagnosis (Costanzo et al. 2009).

Both religious and spiritual practices have been found to prompt positive emotions such as love, hope, faith, and forgiveness that, in turn, lead to stress reduction (Mueller et al. 2001). Meraviglia (2006) conducted a study to examine the influence of spirituality, particularly the sense or meaning of life and the use of prayer, on the well-being of women who have been diagnosed with breast cancer. Seventy-one percentage of women with breast cancer believed they had a close relationship with God, and 51 % reported praying three to four times a day. Those women who reported high levels of psychological well-being also reported being diagnosed at an earlier stage, had higher functioning, and had closer relationships with God (Meraviglia, 2006).

2.6.4. External (Environmental) Resilience Factors

Shifting to a focus on relationships, Norman (2000) contends that resilience "is not a fixed attribute of individuals. Rather, a resilient or adaptive outcome is a process of interaction between environmental and personal factors". As a metaphor for resilience, he provides an image of a hammer hitting a tire in contrast to a hammer hitting a pane of glass and contends that the interactions between the hammer and the tire are indicative of resiliency, while the hammer and the glass are not.

I. Social support

One of the most influential resources available to cancer survivors is social support, which has been documented across several studies to have a major influence on an individual's resilience and psychological well-being (Hjemdal, et al., 2006; McCabe & Cronin, 2011; Ozbay et al., 2007).

Definitions of social support would range from, actual supportive acts which are exchanged by individuals to a Personality-like factor which is based in early interpersonal experiences that will influences into how an person views the likelihood of someone is supportive (McCubbin, et al, 2002).

Katz and Bander's (1976) and Atchley's (200) aforementioned definitions of social support are broad. Some other academic theoretic definitions further suggest that the recipient should have a perception of someone caring for them and a resultant sense of well-being (Hupcey, 1998).

On the other hand, structural characteristics of social support refer to the composition of a social network or sources of support while functional characteristics refer to the provision of particular resources or types of support (Stewart 1989). Also, four different functions of social support have been described: emotional support, instrumental support, appraisal support, and informational support. For example, family members offer emotional support like esteem, trust, concern, and listening. Instrumental support consists of aid in kind, money, labor, and time. Peers offer appraisal support that enhances the individual's self-esteem. Finally, informational support consists of advice, suggestions for problem solving, directives, and information (Gotay and Wilson, 1998).

There is a distinction between existence of social relationships and the functions provided by these. The structure would be “how many friends, colleagues, family relationships” you have (Stewart 1989). The functional aspect would refer to what support do they provide. The social support of a person consists of the network of social relationship and the support from this social network. Social support provides emotional and psychological support that could enhance the hope and resilience in tackling adversity. A systematic review of resilience of seriously ill patients showed that social support was highly predictive of, and associated with, resilience (Gotay and Wilson, 1998).

Emotional and social support can help patients learn to cope with psychological stress. Such support can reduce levels of depression, anxiety, and disease- and treatment-related symptoms among patients (Lutgendorf et al, 2002). In a systematic review involving with physical illness, including cancer, Stewart and Yuen (2011) highlighted that social support was predictive of various aspects of resilience in several studies.

Family and friends are viewed as also a major source of support for cancer patients in other age cohorts (Gatchel et al., 2007; Hjemdal, et al., 2006; McCabe & Cronin, 2011). The support from family and friends has been recognized as being crucial in: enabling individuals to cope with the challenges of illness (McCabe & Cronin, 2011; Yu et al., 2008); improving self-care (Park et al., 2008); encouraging treatment adherence (Magai, Consedine, Neugut, & Hershman, 2007; McCabe & Cronin, 2011); enhancing emotional expression, self-control and confidence (Wills & O’Carroll Bantum, 2012); and, boosting self-efficacy (Monsivais, 2005).

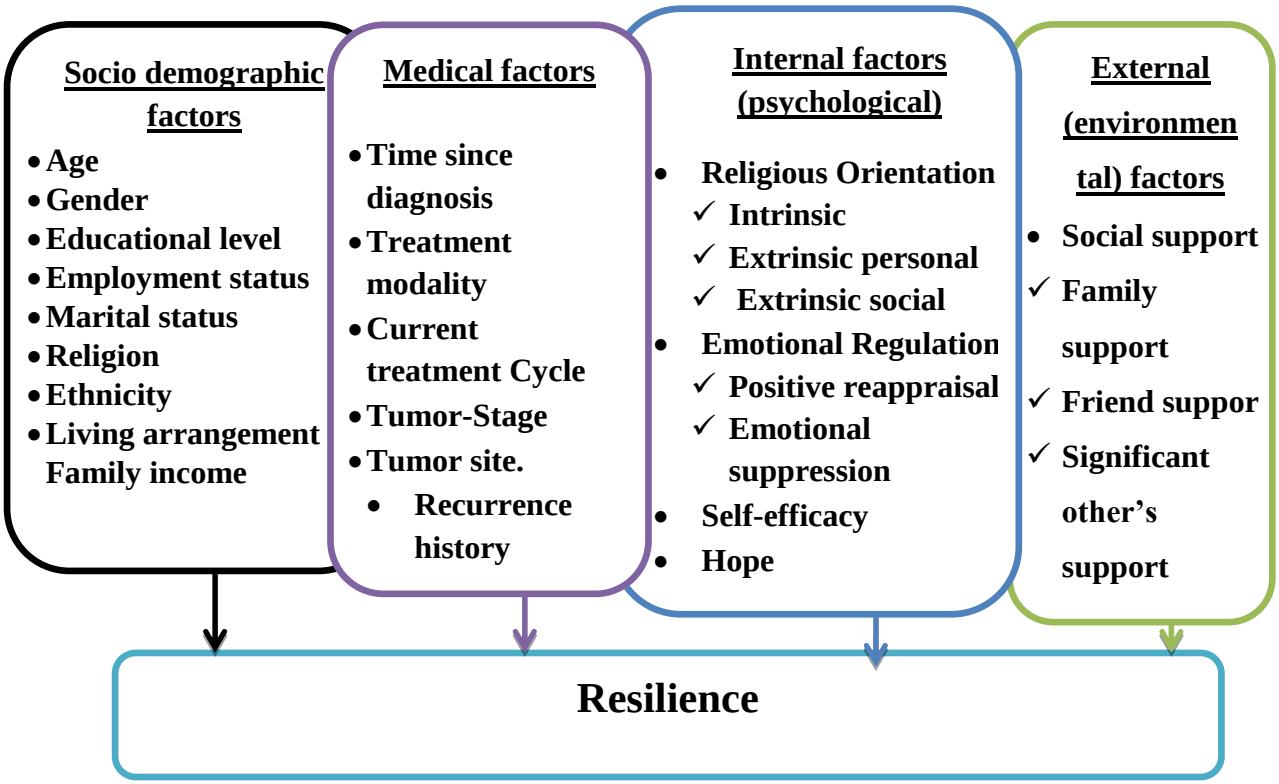
Conversely, a lack of social support has been widely recognized as a risk factor for psychological illness (Korszun et al., 2014; Parker et al., 2003) and increased mortality (Kroenke et al., 2012). In addition, a recent systematic review reported that a lack of social support affected QOL in HC patients (Allart et al., 2013). This is supported by previous research highlighting that ineffective social support within interpersonal relationships can lead to negative outcomes, such as increasing a survivor’s feeling of isolation (Landmark, Strandmark & Wahl, 2002).

2.7. Conceptual Framework

A preliminary conceptual model of resilience among cancer patients (Figure 1) is presented below, which outlines the predicting factors identified in the literature, to resilience. Socio demographic factors (age, gender, educational level, employment status, marital status, religion, living arrangement and family income) and clinical factors (such as time since diagnosis, tumor stage, treatment modality, recurrence history and treatment cycle) were identified as a significant predictors of resilience among cancer patients.

The following modifiable variables have been identified as having a direct relationship with positive outcomes in cancer survivors. Within the individual: Hope, religious orientation, emotional regulation and self-efficacy are four factors that are reliably correlated with resilience in numerous studies. Within external environment, social support (family, friend and significant others support) is consistently referred to as important factors. Therefore, these are the factors that were included in this model.

Figure 1: Conceptual model of factors that influence resilience in cancer patients



Source: Compiled by the researcher

CHAPTER THREE

METHODS

3.1. Research Methodology

As mentioned earlier, the overarching question in this research was to identify the key factors that contribute to resilience in cancer patients. The aim of the framework was to test the developed model on a sample of cancer patients in Tikur Anbessa specialized hospital. In order to achieve the aim and answer the research questions, it was necessary to adopt a quantitative approach.

This framework also enabled deductive reasoning to be applied, resulting in a more thorough understanding of the research problem (Johnstone, 2004). Deductive reasoning (top-down approach) functions working from the more general observations to be more specific. Thus, a theory is first formulated, which is then narrowed down into more specific hypotheses that can be tested. The data are then collected that ultimately result in a confirmation (or not) of the initial theory (Trochim, 2000).

When developing and implementing the questionnaire, a post-positivist paradigm was employed. The methodology included survey sampling that was interpreted through statistical analyses. The research paradigms, methodology, data collection methods, and analyses, relating to each phase, are discussed following an outline of the research approach.

3.2. Research Design

Once the methodology for the study was selected, the next stage involved formulating the research design. Research design refers to the plan of action that links philosophical assumptions to specific methods (Creswell, 2003; Crotty, 1998).

The exploratory design is based on the idea that exploration of a phenomenon is required as there is either little theory that has been developed that can guide the research; important variables relating to the phenomenon are widely recognized. A quantitative approach, involving a larger sample, where the issues identified were tested and confirmed using a survey. It was expected that this would result in a more complete picture of influential resilience factors that could be generalized in cancer survivors in TASH. Such data would

help enhance our understanding of the phenomena involved and strengthen any recommendations proposed at the completion of the study (Newman & Benz, 1998).

Patients diagnosed with cancer, who were/are hospitalized for their scheduled treatment postoperatively and took at least one treatment cycle, were recruited to participate in the study.

3.3. Study Site

The study was conducted at the adult oncology unit and of Tikur Anbessa specialized hospital (TASH). TASH is a large referral teaching Hospital, under the administration of Addis Ababa University, located in Addis Ababa, Ethiopia. During the study time, the oncology unit of TASH is the only oncology unit for the country giving service for over 60,000 patients annually and has both an outpatient and inpatient departments.

3.4. Population of the Study

All cancer patients who took at least one cycle of chemo and/or radiation therapy at TASH daycare Centre from August 15 to September 15, 2019, that fulfills the inclusion criteria were the study population. Participants for this study include patients who were detected with cancer and who are undergoing therapy. Patients who have been taking medicinal treatment at least once were considered for this study. In a day, 50 patients for chemotherapy and 41 patients for radiation therapy were receiving cancer treatment during the study period. Chemotherapy is scheduled for Monday, Tuesday, Wednesday, and Thursday in a week. On the other hand, radiotherapy is provided from Monday to Friday. Therefore, the hospital can provide cancer treatment for 91 patients per day and 405 per week.

In one month patients enrolled in chemotherapy and radiation therapy accounts for 1620 in number. Considering the data collection period of this study is one month, the total population of this study is found to be 1620.

3.5. Sample Size

The approach that was used to determine the sample size from the targeted population was adopted from (Krejcie & Morgan, 1970) as illustrated below;

$$s = \frac{\mathrm{X}^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)}$$

s = required sample size.

*X*2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).
N = the population size.
P = the population proportion (assumed to be .50 since this would provide the maximum sample size).
d = the degree of accuracy expressed as a proportion (.05).

Therefore, using the formula the calculated sample size is 310.

3.6. Sampling method and Procedure

Stratified and simple random sampling techniques were used for the data collection and lottery method was used to select patients. As stated in the study population section above, 91 (50 for chemo and 41 for radiation therapy) patients were receiving cancer treatment per day. As per the treatment schedule, chemotherapy was given 16 days and radiation 20 days per month. The proportion of sample size per day and per month was calculated using a proportional sampling method. Using this method, in the study period, 153 from chemotherapy and 157 from radiation therapy were selected (Table 1). On a daily basis, 9 or 10 patients from chemotherapy and 7 or 8 patients from radiation therapy have participated in the study.

Table 1: The number of population and samples selected based on treatment modality*

	Chemo therapy	**Radiation therapy**	**Total**
Population size			
Per day	50	41	91
Per month	800	820	1620
Sample size			
Per day	9/10	7/8	16/18
Per month	153	157	310

*Calculated by the researcher

Each patient visiting the oncology unit each day were assigned a unique number. Using the appointment form, the numbers assigned for that day were packed in a bowl and thoroughly mixed. From the daily appointed patients, 9 or 10 from chemotherapy and 7 or 8 from radiation therapy were selected using lottery method.

In addition to the study participant's criteria defined earlier, patients were expected to meet/unmeet the following inclusion and exclusion criteria:

- Diagnosed with cancer
- Outpatients
- Patients who are greater than eighteen years old visiting the oncology clinic during the study period for cancer treatment.

Patients who meet the following exclusion criteria were excluded from the study:

- Unwilling to be enrolled in the study
- Patients who were severely ill and unable to communicate during the study time.

3.7. Study Variables and Data Collection Instruments

3.7.1. Socio-demographic and medical related Questionnaire

Demographic and clinical variables were gathered using questionnaire and patient follow up card. The demographic variables of patients included age, gender, educational status, employment status, marital status, religion, ethnicity, living arrangement and family monthly income. Clinical/medical information included time since diagnosis, treatment modality, current treatment Cycle, Tumor-Stage, tumor site, and recurrence history were gathered from participants supporting the follow up card.

3.7.2. Connor–Davidson Resilience Scale 10-Item Version

The scale was originally prepared as a self-administered scale consists of 25 items categorized into 5 dimensions following exploratory factor analysis by the authors of the scale (Connor & Davidson, 2003). The scale was constructed such that is applicable to different clinical and nonclinical sample populations and also to measure the level to which resilience can be altered and quantitatively assessed in response to treatment (Connor & Davidson, 2003). The shorter 10-item CD-RISC (Campbell-Sills & Stein, 2007) was developed in response to different studies across different populations with diverse socio-

demographic and cultural differences reporting lack of consensus regarding the factor structure of the 25-item version (Jorgensen & Seedat, 2008; Karairmak, 2010; Yu, Lau, Mak, Zhang, & Lui, 2011). Satisfactory psychometric qualities in terms of reliability and validity and a one-dimensional factorial model structure of the 10-item CD-RISC has been described in different studies conducted in developed countries (Notario-Pacheco et al., 2011; Wang, Shi, Zhang, & Zhang, 2010).

The scale consists of 10 items and is structured as a 5-point Likert-type cumulative instrument (0 = never to 4 = almost always). A summation of the response to each scale's item yields a score that ranges from a minimum of 0 to a maximum of 40 that signifies the highest level of resilience.

3.7.3. Revised Intrinsic/Extrinsic Religious Orientation Scale

The revised I/E-R Scale contains 14 questions (Tiliopoulos et al., 2007). These questions are answered on a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree). Their individual scores are summed up and result into two scores based on which the participants are divided into categories according to their external or internal spirituality (Gorsuch & McPherson, 1989). There are three inversely-worded questions that measure the intrinsic dimension (Tiliopoulos et al., 2007). Eight questions measure intrinsic religiousness and three questions measure each one of the extrinsic wings of religiousness (Gorsuch & McPherson, 1989). Reliability of intrinsic dimension has Cronbach's $\alpha = 0.83$, extrinsic personal has Cronbach's $\alpha = 0.57$, extrinsic social Cronbach's $\alpha = 0.58$, and overall extrinsic dimension has Cronbach's $\alpha = 0.65$. The Scale's validity is well supported in a variety of studies, with intrinsic orientation defined as approximately a religion and as the main motivation, and extrinsic as a neutral stance towards religion (Gorsuch & McPherson, 1989; Judd, 2009; Tiliopoulos et al., 2007). Validity is reported to be up to 0.07 about intrinsic against extrinsic personal, 0.12 about intrinsic against extrinsic social, and 0.41 about the two extrinsic subscales (Gorsuch & McPherson, 1989; Tiliopoulos et al., 2007).

Scoring procedure: The scale items were rated on a nine-point scale or stanine scale (1-9). The scores were made up as follows:

1. For the intrinsic religious orientation, the responses for items 1, 4, 5, 6, 7, 9 (intrinsic items) were added up and their mean was determined by dividing the sum by 6.

2. For the Extrinsic - personal orientation, responses for items, 3, 8, 10, 14 (extrinsic-personal items) were added up and their mean was determined by dividing the sum by 4.

3. For the Extrinsic - social orientation, items, 2, 11, 12, 13 (extrinsic-social items) were added up and their mean was determined by dividing the sum by 4. These means were used to determine whether the individual was intrinsic oriented or extrinsic-personal or extrinsic social. Scores range between 6 and 30 for the intrinsic scale and between 4 and 20 for each one of the extrinsic scales. Higher scores indicate higher levels of a specific religious orientation.

3.7.4. The Multidimensional Scale of Perceived Social Support

The Multidimensional Scale of Perceived Social Support ("MSPSS") is an instrument designed to measure an individual's perception of support from three sources; family, friends and significant others. This instrument is 12 questions widely used and validated scale rated on Likert-type scale with a seven point scores ranging from 'very strongly disagree' (1) to 'very strongly agree' (7). The MSPSS has confirmed to be psychometrically valid in diverse samples and to have good internal and test-retest reliability. Some research has identified high levels of perceived social support as being associated with low levels of depression and anxiety symptomatology.

To calculate total score: Sum across all 12 items. This total score can also be calculated as a mean score (divide by 12).

To calculate the mean subscale scores:

- Significant Other Subscale: Sum across items 1, 2, 5, & 10, and then divide by 4.
- Family Subscale: Sum across items 3, 4, 8, & 11, and then divide by 4.
- Friends Subscale: Sum across items 6, 7, 9, & 12, and then divide by 4.

There are no established population norms on the MSPSS. Also, norms would likely vary on the basis of culture and nationality, as well as age and gender.

To divide respondents into groups on the basis of MSPSS scores, there are at least two ways the scale response the descriptors established as a guide. In this approach any mean scale score ranging from 1 to 2.9 could be considered low support; a score of 3 to 5 could be considered moderate support; a score from 5.1 to 7 could be considered high support. This

approach would seem to have more validity, but if the study has very few respondents in any of the groups, it could be problematic.

In order to use the total sum of the scale (not dividing the total score by 12 questions), the total score ranging from 12 to 84 (as opposed to 1 to 7) is used to calculate the total social support status of the subject, with higher scores indicating better support.

Table 2: Scoring criteria of the Multidimensional Scale of Perceived Social Support for low, medium and high level

Level of perceived social support	**Score for sub scales**	**Score for total scale**
Low perceived support	4-12	12-35
Medium perceived support	13-20	36-60
High perceived support	21-28	61-84

3.7.5. Self-Efficacy for Managing Chronic Diseases 6-item Scale

The Self-Efficacy to Manage Chronic Disease Scale is made up of 6-items on a visual analog scale, ranging from 1 (not at all confident) to 10 (totally confident). Ritter and Lorig (2014) conducted two new studies and reviewed eight independent studies to investigate the psychometric properties of the scale. Cronbach's alpha was a minimum of .88 across all studies, minimal floor and ceiling effects were observed, the measure was sensitive to change, and moderate and significant correlations provide convergent validity evidence when measured against selected health indicators.

The score for each item is the number circled. If two consecutive numbers are circled, the lower number (less self-efficacy) will be coded. If the numbers are not consecutive, the item will not be scored. The score for the scale is the mean of the six items. If more than two items are missing, the scale will not be scored. A higher number indicates higher self-efficacy. The scale was tested on 605 subjects with chronic disease. The result was found that Mean= 5.17, SD= 2.22, and internal consistency reliability 0.91.

3.7.6. Herth Hope Index (HHI)

The HHI has 12 items that aims to measure various dimensions of hope using a 4-point Likert scale that ranging between 1 (strongly disagree) and 4 (strongly agree) with items #3 and #6 reverse-coded. The scale has one global score that ranges from 12 to 48, as well as single-item scores that range from 1 to 4 (Herth, 1992). A higher score denotes higher levels of hope. In addition to the evidence of its validity, its reliability has also been evaluated and found to be satisfactory. Both internal consistency (Hunsaker, et al, 2016, Wahl, et al, 2004, Herth, 1992) and test-retest correlations (Herth, 1992, Chan, et al, 2012, Ripamonti, et al, 2012) were reported to be satisfactory in different samples. HHI items #2 and #4 were re-worded in 1999 to make the meaning clearer.

3.7.7. Emotional Regulation Questionnaire

The Emotion Regulation Questionnaire (ERQ) is a 10-item self-report measure of two emotion regulation strategies; cognitive reappraisal and expressive suppression. It is a widely used measure of emotion regulation (Gross & John, 2003). A study was conducted to examine the psychometric properties of the ERQ (original English version) in three Australian general community samples (Ns = 300, 400, 348). Confirmatory factor analyses in each sample demonstrated that the traditional 2-factor model (comprised of cognitive reappraisal and expressive suppression factors) was replicable and an excellent fit to the data (Preece, et al, 2018). In all samples, ERQ cognitive reappraisal (α = .89-.90) and expressive suppression (α = .76-.80) scores had acceptable to excellent levels of internal consistency reliability. According to the study finding, the ERQ has strong psychometric properties in general community samples and can, therefore, be used confidently regardless of participants' student status.

Scoring (no reversals)

Reappraisal Items: 1, 3, 5, 7, 8, 10

Suppression Items: 2, 4, 6, 9.

3.8. Data Collection Procedure

Data collection took place over the period from August 15 to September 15, 2019. Before the data collection, the instruments were translated into Amharic language by language professionals. The details of study participation were explained fully in Amharic.

Data was collected using structured and interviewer-administered standardized questionnaires that are adopted from the sources and translated to Amharic language. The data was collected by 5 trained oncology nurses and one pharmacy technician who is not the staff member of TASH. The data collectors were oriented prior to the actual data collection about the purpose of the study, sampling procedure, methods of data collection, ethical issues and ways of addressing contingency management skills. The data collectors are very experienced in data collection because the hospital is a research setting.

The participants were informed that they have the option to participate or not in the study. Initial orientation was provided to assistant data collectors on how to handle questions that may be raised from respondents. The researcher and the data collectors were discussed each item and agreed on how to explain it if the participants did not understand. Written informed consent was obtained from each of the participants before the data collection. For participants, the data collectors read the questions and answer options verbatim and recorded participants' responses. The questionnaires were collected immediately after completion, and missing item responses were verified.

3.9. Data quality management

3.9.1. Instrument Validation

The face validity of the adapted instruments were evaluated by graduate students from different disciplines of psychology (social, and developmental psychology) and language department at Addis Ababa University. Then, both the Amharic and English version of 79 items were assigned to three master's degree students (one biostatics masters, one developmental psychology masters, and one social psychology student) to compare the translation compatibility with the original language and sort them out in terms of how proper the descriptions. The judges were asked to give their comments regarding items to be included, irrelevant, and over emphasized items. The research advisor has also done some modifications and approved because of their compatible language translation and relevance.

Therefore, the researcher used the entire items with little modification on the translated version.

3.9.2. Pilot Study

Before the actual data collection from respondents, a pilot test was conducted to test the reliability and consistency of the scales. Accordingly, the Amharic version of questionnaires was tried out for two days among 30 (10%) randomly selected cancer patients in Tikur Anbessa specialized hospital. The pilot test should have been conducted in other but similar settings practically could go together with the study area. But, because of TASH oncology center is the only cancer treatment center in Ethiopia, the researcher has been forced to select different respondents from the study area. Two BSc nurses have participated in the data collection process.

The data was entered cleaned and coded into Statistical Package for the Social Science (SPSS Version 20) for analysis. The performance of the Amharic version of the selected scales was evaluated by examining feasibility and reliability. The internal consistency of the scales was assessed using the most common test, Cronbach's alpha, the value of the multi-item scales based on the recommendation of ($\alpha > 0.7$).

The questionnaires were reviewed and checked for completeness, accuracy, and consistency based on the pilot study. Necessary and timely corrective measures were taken. After all, the reliability of the instruments was checked in order to test the compatibility of the instruments in the Ethiopian context for the actual data collection.

The results of the alpha reliability coefficient to determine the consistency of the total and subscales of the instruments is presented (Table 3). From the table, the alpha reliability coefficients of all (except emotional suppression ($\alpha= 0.696$) and the total religious orientation scale ($\alpha= 0.685$) are above the acceptable score ($\alpha> 0.7$).

In addition, assumption tests were conducted for each test in order to evaluate the applicability of the data for the required statistics (see chapter four).

Table 3: Reliability Test of Variable's within the Pilot Questionnaire Using Cronbach's Alpha

Scale	Number of Items	Reliability (Cronbach's Alpha)
Resilience	**10**	**.857**
Cognitive reappraisal	6	.893
Emotional suppression	4	.696
Emotional Regulation total	**10**	**.906**
Intrinsic religious orientation	6	.792
Extrinsic personal orientation	4	.797
Extrinsic social orientation	4	.743
Religious orientation total	**14**	**.685**
Hope	**12**	**.814**
Self-efficacy	**6**	**.847**
Family support	4	.783
Friend support	4	.957
Support from others	4	.755
Social support total	**12**	**.899**

3.9.3. Data Analysis Assumption Tests

Prior to the statistical testing of relationships among variables in the data set the data were evaluated to determine if the data met assumptions of the testes used in the study. The test results are presented as follows.

3.9.3.1. Independent samples t-tests and one way ANOVA Analyses Assumptions

Analyses were used to identify what influences resilience in this sample of respondents. Independent t-tests and one-way ANOVAs analyses were conducted to measure the variance of resilience scores among groups of selected demographics (gender, age, education, employment, marital status, ethnicity, religion and living arrangement) and clinical variables (time since diagnosis, treatment modality, tumor stage, tumor site, treatment cycle, and recurrence history).

Analysis of the statistical tests of normality (Kolmogorov-Smirnov and Shapiro-Wilks) indicated that the data were not normally distributed ($p < .05$) regarding some variables. As would be expected with a large sample size, when even a small deviation from normality will be shown to be statistically significant. However, in regard to these statistical tests, Tabachnick and Fidell (2007) state that "they are very sensitive and often signal departures from normality that does not really matter".

As normality was not consistently found, both parametric (i.e., t-test, ANOVA), and the equivalent non-parametric tests (MannWhitney U, welch ANOVA by ranks) were also performed to ensure accuracy. Tukey and Games-Howell multiple comparison tests were used after parametric and non-parametric tests to measure the difference between the comparison groups. Parametric tests were reported unless the results of the parametric and non-parametric tests differed for comparisons between tests.

3.9.3.2. Multiple Regression Assumption Test

Prior to conducting hierarchical multiple regression analysis, the researcher performed a test of five assumptions of multiple regression and the data was proven against those assumptions.

Assumption 1 - Normality Distribution Regression Analysis

Multiple regressions require the independent variables to be normally distributed. In order to test the first assumptions of normality of distribution, skewness, and kurtosis and P-P plot were calculated using SPSS. In the present study except some violations, the values of skewness and kurtosis for the majority of variables are within an acceptable range (-1 to 1), the data is said to be normally distributed (Table 6). The graphical test of the normal P-P plot indicated that the majority of variables data were approximately normally distributed (Appendix C1).

Table 4: Normality Distribution Measures through Skewness and Kurtosis

Measure	**N**	**Skewness**	**Kurtosis**
Family support	284	-1.50	2.29
Friend support	284	-.13	-1.23
Support from others	284	-.95	1.11
Social support (total)	**284**	**-.58**	**.30**
Intrinsic	284	-0.75	1.73
External personal	284	-.66	1.48
External social	284	.14	-1.10
Religiosity (total)	**284**	**-1.19**	**0.93**
Cognitive reappraisal	284	-.65	-.38
Emotional suppression	284	-.17	-1.26
Emotional regulation (total)	**284**	**-.42**	**-.77**
Self-efficacy	**284**	**.06**	**-.90**
Hope	**284**	**-1.28**	**1.23**

Assumption 2 - Linearity Relationship

The second assumption for computing multiple regressions is testing of the linear relationships between dependent and the independent variables. As depicted in the scatter plot (Appendix C2), the visual inspections of the scatter plot shows there exists a linear relationship between the predictors and the predicted variable. This means that a unit increase of the one or all predictors causes respective increments for the resilience level.

Assumption 3 - Homoscedasticity (Equal Variance)

The homogeneity of the variance (equal variance) is the third assumption for computing multiple regressions in which the model errors are generally assumed to have an unknown but finite variance that is constant across all levels of the predictor variables. This assumption can be checked by a visual examination of a plot of the standardized residuals (the errors) by the regressions standardized predicted value. From the scatter plot (Appendix C3) the visual inspection of the average results of the dependent variable resilience and its determinants is constructed. As shown in the scatter plot, the variance of resilience for each value of IV is

constant in the population and hence homoscedasticity is not really a pressing problem of this particular study.

Assumption 4 - Multicollinearity of the Regressor Variables

The fourth assumption is related to the multicollinearity of the independent variables. It is used to identify the correlation between explanatory variables and to avoid the double effect of independent variables from the model (Brooks, 2008). Multicollinearity can be measured either by correlation matrix or VIF (variance inflation factor) and degree of tolerance.

Multicollinearity means the existence of a "perfect" or exact, linear relationship between some or all explanatory variables (Gujarati, 2004). As noted in Gujarati (2004) if multicollinearity is perfect, the regression coefficients of the explanatory variables are indeterminate and their standard errors are infinite. If multicollinearity is less than perfect, the regression coefficients, although determinate, possess large standard errors (in relation to the coefficients themselves), which means the coefficients cannot be estimated with great precision or accuracy.

Therefore, in this study variance inflation factor for nine of the independent variables shown in appendix C4 had been estimated. Variance inflation factor (VIF) is a measure of the amount of multicollinearity in the set of multiple regression variables. The VIF value used to diagnose whether there exists any multicollinearity problem. If the result of VIF shows that all independent variables values are less than 10 diagnostic indicates that a multicollinearity assumption is not violated. As shown in appendix C4, multicollinearity was not the concern for this particular study since the VIF score of all variables are less than 10.

Assumption 5 - Independence of Residuals

The last assumption for multiple regression is the independence of residuals. The independence of the residuals can be measured by Durbin-Watson statistics. The value of the Durbin-Watson statistic ranges from 0 to 4. As a general rule, the residuals are independent (not correlated form one observation to the other one) if the Durbin-Watson statistic is approximately 2, and an acceptable range is 1.50 - 2.50 (Muluadam, 2015). For this study Table 7, the output value of Durbin-Watson is 1.84; approximate to 2, indicating that there is no correlation among the residuals. In summary, it can be presumed from the preliminary assumption analyses discussed, that the data are a good enough fit to be used to answer the research questions.

As it is clearly stated in the above, the five step-by-step pre-model fitting assumption tests were found to be satisfactory. Since those five assumptions of multiple regressions were met, conducting multiple regression analysis is acceptable.

Table 5: Independent of Residual assumption test using Durbin Watson

Model Summary[d]

Model	R	R^2	Adjusted R Square	Std. Error of the Estimate	Change Statistics					**Durbin-Watson**
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.410[a]	.168	.153	5.45056	.168	11.253	5	278	.000	
2	.544[b]	.296	.275	5.04379	.127	16.549	3	275	.000	
3	.864[c]	.747	.729	3.08181	.451	47.161	10	265	.000	**1.84**

a. Predictors: (Constant), religion, age, gender, employment, education

b. Predictors: (Constant), religion, age, gender, employment, education, treatment modality, treatment cycle, tumor stage

c. Predictors: (Constant), religion, age, gender, employment, education, treatment modality, treatment cycle, tumor stage, Externalpersonal, Hope, support fromothers, Selfefficacy, intrinsic religiosity, Emotional suppression, External social, Friend support, Family support, cognitive reappraisal

d. Dependent Variable: resilience

3.10. Data Analysis Methods

Data were entered, cleaned and analyzed utilizing the Statistical Package for Social Sciences (SPSS), version 20. Prior to analysis, data were first examined for accuracy of data entry and missing values. There were no missing values and all participant data entry was complete. Before proceeding with the actual statistical analysis, assumptions associated with the use of each of the analyses were checked. In addition, an alpha value of 0.05 was determined for all significance tests.

To summarize the data, descriptive analyses included measures of frequency, percentage, range, skewness, kurtosis, mean and standard deviations for demographic information and the resilience and other explanatory variables scores were computed.

In order to identify the significant factors affecting resilience, two levels of analysis were undertaken; bivariate and multivariate analyses. To measure the relationship between the independent and dependent variables, a bivariate analysis such as Pearson product moment correlation, independent samples t- test and one way ANOVA were used. Independent

samples t-test and one-way analysis of variance (ANOVA) were used to see if there was a significant mean difference in resilience among different groups of socio-demographic and clinical variables. Analyses of dichotomous variables were conducted using independent samples t-test; those of categorical and ordinal variables with more than two levels were conducted using one-way analyses of variance (ANOVA).

For non-parametric tests, Mann Whitney U and welch ANOVA by ranks were also performed to ensure accuracy. When the ANOVA F tests were significant, post-hoc pairwise comparisons were conducted using Tukey and Games-Howell multiple comparison tests for parametric and non-parametric tests. Pearson correlation coefficients were calculated to evaluate the relationship between CD-RISC scores and explanatory variables subscales.

Hierarchical multiple regression analysis was used to identify the predictors of resilience level scores and the standardized contribution of each predictor to the explained variance. During the regression analysis, dummy variables were created for the demographic and clinical variables; age (35-54), gender (female), religion (Muslim), education level (above secondary school), employment status (employed), tumor stage (non-invasive), treatment modality (chemotherapy) and treatment cycle (later treatment cycle). The categories stated in the bracket were taken as reference groups. The significance level of 0.05 was used to determine significance for all inferential statistical analyses in this study.

3.11. Ethical Considerations

A letter of support was obtained from Addis Ababa University School of Psychology and submitted to Tikur Anbessa Hospital College of Health Science. The ethical clearance committee of Tikur Anbessa Hospital under Addis Ababa University College of Health Sciences (AAU CHS) had received the letter of support and referred to the Oncology Center. The head of the oncology center also approved the letter and referred for oncology nurses.

Informed written consent was obtained from the study participants after clearly introducing the purpose, the benefits, and risks of the study. Moreover, the participants were assured that no harm will occur to them by not participating in the study. Confidentiality was secured by avoiding writing the identification of the participant's name. They were also assured that the responses provided were confidential and any information would be removed from the school site after completed the questionnaire.

CHAPTER FOUR

RESULTS

Among the total determined sample size that was intended to collect the data, 289 of them were volunteer to participate in the study. Among them, 284 had completed the questionnaires fully. Five patients had pain at the moment of the data collection so that they have terminated the interview. Therefore the response rate for this study is 91.6%. This part presents the major findings of the study in line with the stated objectives.

4.1. Socio-Demographic and Clinical Characteristics of Respondents

4.1.1. Socio-Demographic Characteristics of Respondents

As part of the socio-demographic variables, (gender, age, religion, marital status, ethnicity, and living arrangement) and socioeconomic status (income level, educational status, and employment status) were collected and below is a tabular presentation of these socio-demographic characteristics of study participants.

As shown in table 4, the majority of participants 151 (53.2%) were females followed by 133 (46.8%) males. When we look at participants in terms of their age, the majority of the respondents, 166 (58.5%) were within the age range of 35-54 years, followed by participants in the age category of 18-34 years 65 (22.9%). Respondents within the age range of 55-75 were 53 (18.7%) of the participants in the current study. The age of interviewees varied from 18 to 75 years (M = 43.02, SD = 13.36).

On their educational level, 92 (32.4%) of them attended secondary school, 66 (23.2%) completed primary education, 16.5% completed TVET, 28 (9.9%) cannot read and write, 26 (9.2%) college diploma and the rest 25 (8.8%) have had bachelor's degree and above. Regarding their employment status, 194 (68.3%) of them were employed and the rest 90 (31.7%) were unemployed. In relation to their family monthly income, respondents whose family monthly income is between 501 and 2000 Ethiopian birr are 120 (42.3%) followed by 2001-5000 birr 113 (39.8%). Those have a monthly income of above 5000 and 500 Ethiopian birr and below shared 29 (10.2%) and 22 (7.7%).

Table 6: Frequency of Socio Demographic Characteristics of respondents (n= 284)

Variable		Frequency	Percent
Gender	Male	133	46.8
	Female	151	53.2
Age	18-34	65	22.9
	35-54	166	58.5
	55-75	53	18.7
Educational Level	Can't read and write	28	9.9
	Primary school	66	23.2
	Secondary school	92	32.4
	TVET	47	16.5
	Diploma	26	9.2
	Bachelor Degree and above	25	8.8
Employment Status	Employed	194	68.3
	Unemployed	90	31.7
Religion	Orthodox	189	66.5
	Muslim	48	16.9
	Protestant	47	16.5
Ethnicity	Amhara	105	37.0
	Guraghe	45	15.8
	Oromo	96	33.8
	Tigre	8	2.8
	Others*	30	10.6
Marital Status	Single	55	19.4
	Married	188	66.2
	Divorced	12	4.2
	Widowed	29	10.2
Living arrangement	Alone	22	7.7
	With husband/wife	46	16.2
	With husband/wife and children	142	50.0
	With my parents	42	14.8
	With others**	32	11.3
Family monthly income	0-500	22	7.7
	501-2000	120	42.3
	2001-5000	113	39.8
	5001 and above	29	10.2

* Others= Gammo, Hadiya, Dawuro, Wollayita, and Silte

** With others= Relative, friends, and brother/ sister

Majority of the respondents 189 (66.5%) were Orthodox Christians and the rest respondents were Muslims 48 (16.9%) and protestant 47 (16.5%). In terms of ethnicity, Amhara 105 (37%) and Oromo 96 (33.8%) have covered the majority of the respondents followed by Guraghe accounting 45 (15.8%) of them. Others (Gammo, Hadiya, Dawuro, Wollayita, and Silte) covered 30 (10.6%) and 8 (2.8%) were Tegaru.

About two-third 188 (66.2%) of the respondents were married, and 55 (19.5%) were single at the time of the study. Widowed and divorced respondents were accounted for 29 (10.2%) and 12 (4.2%) respectively. Regarding their living arrangement, half (n= 142, 50%) of the respondents were living with both their partner and children and 46 (16.2%) with their husband/wife. Respondents living with their parents were 42 (14.8%), 32 (11.3%) with others (relatives, friends and brother/ sister), and 22 (7.7%) alone (Table 4).

Based on the analysis of the demographic data, in general, this population is representative of the cancer patients required to answer the research questions. It would have been ideal to capture a more diverse representation in terms of those demographic characteristics, which is one of the limitations of this research.

4.1.2. Clinical Characteristics of Respondents

The clinical characteristics of participants were shown in Table 5. As shown in the table, the mean time span after diagnosis was 11.5 months (SD= 12.1 and (range: 1-72 months). Approximately half (n= 130, 45.8%) of the respondents has been 6 months and below since they have been aware of their diagnosis, 92 (32.4%) 6-12 months and the rest 62 (21.8%) above 12 months (1 year).

All of the respondents were currently undergoing some form of treatment. The majority of cancer patients reported undergoing chemotherapy (n =133; 46.8%), radiotherapy (n= 111, 39.1%) and the rest 40 (14.1%) receiving a combination of treatments including both chemo and radiotherapy.

Major groups of participants included having a breast (27.5%), colorectal (19.4%), brain (10%), cervix (10%), connective and soft tissue (7.7%), and prostate (7%) cancer. Regarding the current treatment cycle, 131 (46.1%) were in their mid-treatment cycle (received 4-6 cycles treatment), 102 (35.9%) early treatment (1-3 cycles), and 51 (18%) later treatment (7 and above cycles). In terms of tumor stage, 191 (67.3%) said that their tumor is non-invasive

and 93 (32.7%) said that it is invasive. The majority of the respondents 248 (87.3%) had no tumor recurrence history (relapse).

Table 7: Clinical characteristics of respondents (n= 284)

		Frequency	Percent
Time since diagnosis	6 month and below	130	45.8
	7-12 months	92	32.4
	Above one year	62	21.8
Treatment modality	Chemotherapy	133	46.8
	Radiotherapy	111	39.1
	Chemo and Radio Therapy	40	14.1
Current treatment cycle	Early treatment (1-3 cycles)	102	35.9
	Mid treatment (4-6 cycles)	131	46.1
	Later treatment (7 and above cycles)	51	18.0
Tumor stage	Invasive	93	32.7
	Non-invasive	191	67.3
Tumor site (type of cancer)	Breast	78	27.5
	Bladder	8	2.8
	connective and soft tissue	22	7.7
	Stomach	13	4.6
	trachea, bronchus, and lung	14	4.9
	Prostate	20	7.0
	Skin	8	2.8
	Colorectum	55	19.4
	Head	31	10.9
	Cervix	30	10.6
	Bone	5	1.8
Recurrence history	Yes	36	12.7
	No	248	87.3
	Total	284	100.0

4.3. Descriptive analyses

4.3.1. Properties of the CD-RISC-10 in the sample

The mean score on the CD-RISC-10 was 31.84 (SD= 5.92; range= 18-40). The distribution of CD-RISC-10 scores is shown in fig. 2. Scores were negatively skewed, with more individuals

rating themselves on the upper extreme than the lower extreme of resilience. Despite this overall pattern, skewness (-.425) and kurtosis (-.663) statistics fell within the range typical of normally distributed traits.

The CD-RISC-10 does not classify specific levels of resilience (i.e., low, moderate, high, etc.). However, an inspection of the mean scores and standard deviations revealed that, overall, respondents scored above average (M = 20), of a maximum possible score of 40, when compared to normative populations on measures of resilience.

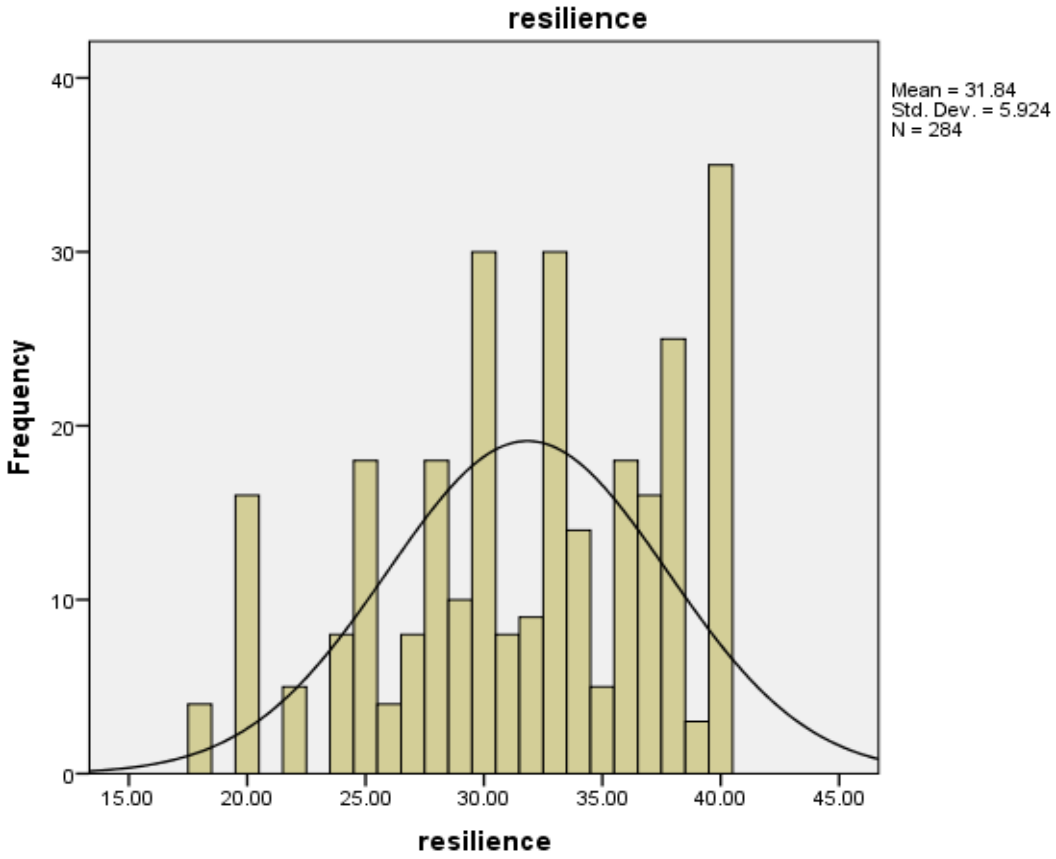


Figure 2: Resilience level among cancer patients

4.3.2. Descriptive statistics for predictor measures

Table 8 provided the level of social support, self-efficacy, religious orientation, emotional regulation, and hope among participants. As noted in the table, an inspection of the mean scores indicated that respondents scored high relative to total possible scores, across several measures.

Social support (friends, family, and significant others): using the scoring criteria of the scale (Zimet, et al., 1988), the total social support score (M= 63.87± 14.32) is laid on high perceived social support level. The subscale scores of family support (23.68± 4.86), is labeled as high, friend support (18.25± 6.94), as medium, and support from significant others (21.93± 4.98) as high. That means family support, support from others and friends' support were the reported social support dimensions from high to low order.

Hope: The 12 HHI items scores of ranged from 17 to 48, (M= 39.23±4.65). This means score is similar to the score of the study conducted in Italy among patients with solid and hematological malignancies on active cancer treatment (Carla et al., 2012). According to this study, the average scores of the 12 HHI items ranged from 32.4 to 40.8, with standard deviations ranging from 6 to 9.6.

Table 8: Descriptive characteristics of internal and external predictor variables of resilience

Measure	Range		Mean	SD
	Scale	Actual (score)		
Family support	4-28	5-28	23.68	4.86
Friend support	4-28	4-28	18.25	6.94
Support from others	4-28	4-28	21.93	4.98
Social support (total)	**12-84**	**16-84**	**63.87**	**14.32**
Intrinsic	6-30	8-30	27.60	3.62
External personal	4-20	6-20	15.21	2.67
External social	4-20	4-20	13.55	4.45
Religiosity (total)	**14-70**	**18-70**	**56.38**	**8.96**
Cognitive reappraisal	6-42	9-42	30.33	8.43
Emotional suppression	4-28	7-28	19.11	6.24
Emotional regulation (total)	**10-70**	**16-70**	**49.45**	**13.93**
Self-efficacy	**6-60**	**12-60**	**37.58**	**11.31**
Hope	**12-48**	**17-48**	**39.23**	**4.65**

Emotional regulation: as shown in the table below, the mean score of cognitive reappraisal and expressive suppression were (30.33± 8.43) and (19.11± 6.24). In condensed form, 5.05

(30.33/6) and 4.77 (19.11/4) were the average scores respectively. This result is higher in reference to the average scores for each strategy found by Gross & John (2003) as follows:

- Cognitive Reappraisal: Men – 4.6, Women – 4.61, Total- 4.605
- Expressive Suppression: Men – 3.64, Women – 3.14, Total- 3.39

It is also higher than the ideal mean score of the scale (M=4). The higher the score, the greater the use of emotion regulation strategies, conversely lower scores represent less frequent use of such strategies.

Religious orientation: among the subscales of religious orientation, intrinsic religious orientation had the highest score having 27.6 (4.6 at individual level) compared to other subscales. External personal (15.21, 3.80 of individual level) and external social (13.55, 3.38 individual level) took the second and the third order.

Self-efficacy: the average score of self-efficacy was 37.58±11.37. This score is above the ideal mean score (27) (Table 8).

4.4. Relationship between Independent Variables and Resilience

Independent-sample t-tests or ANOVAs were conducted to compare differences in resilience among different socio-demographic and medical subgroups. Pearson Product Moment Correlation was also used to test the relationship of the internal and external variables with resilience.

4.4.1. Effects of Socio-Demographic Variables on Resilience

Before the test was conducted, in order to have meaningful classification, educational level (below and above secondary education) and employment status (employed and unemployed) were recoded into two groups. The variable ‘ethnicity’ was dropped due to incomplete information.

As shown in the t-test table below (Table 9), resilience scores according to socio-demographic characteristics. Gender, educational level, and employment status showed statistically significant differences in the level of resilience. There was found a statistically significant mean difference between male and female cancer patients ($t(282) = -2.56$, $p < .05$). That means the resilience level of male (30.89± 5.38) patients is significantly lower than that of female patients (32.66± 6.26).

The mean resilience score for respondents completed secondary education or below was 30.75 (SD, 6.17), which was lower than the score for respondents with education level of above secondary school (33.89± 4.81). Regarding employment status, there was a statistically significant resilience mean difference among employed and unemployed cancer patients ($t = 4.14$, $p < .05$). The mean resilience score of employed patients (32.8 ± 5.72) is significantly higher than the score of their unemployed counterparts (29.75± 5.82).

Table 9: Independent sample t-test group statistics for resilience score by demographic variables (n= 284)

Groups	N	Mean	Std. Deviation	Mean difference	Df	T	Sig (2-tailed)
Gender							
Male	133	30.89	5.381	-1.774	281.83	-2.567	.011
Female	151	32.66	6.263				
Employment status							
Employed	194	32.80	5.729	3.048	282	4.149	.000
Unemployed	90	29.75	5.827				
Educational level							
Secondary and below	186	30.75	6.171	-3.145	242.38	-4.734	.000
Above secondary school	98	33.89	4.815				

Age group and religion has a significant relationship with resilience score. As presented in Table 10 below, patients who are in the age range of 35-54 (M= 32.69 ± 6.24) has a statistically significant plurality in their resilience level compared to their younger (M= 30.61±5.41) and older (M= 30.66± 5.05) counterparts (F= 4.49, P<0.01). A significant mean difference also found among religious groups ($F (282) = 9.42$, $p<0.01$). Muslim participants (M= 28.60± 6.33) were reported to have a statistically significantly lower resilience level compared to those orthodox (M= 32.34± 5.73) and protestant (M= 33.08± 5.17) religion followers. On the other hand, there was no found resilience mean difference among groups of marital status, living arrangement, and the monthly family income.

Table 10: A Summary Table of One-way ANOVA to Differences in resilience score by the Levels of age, religion, marital status, living arrangement and family monthly income

		N	Mean	Std. Dev	F	Sig.
Age	18-34	65	30.61	5.41		
	35-54	166	32.69	6.24	4.493	.013
	55-75	53	30.66	5.05		
Religion	Orthodox	189	32.34	5.73		
	Muslim	48	28.60	6.33	9.428	.000
	Protestant	47	33.08	5.17		
Marital status	Single	55	32.16	5.89		
	Married	188	31.96	5.85	2.086	.102
	Divorced	12	33.91	3.57		
	Widowed	29	29.51	6.77		
Living Arrangement	Alone	22	32.27	6.10		
	With husband/wife	46	32.13	5.75		
	With husband/wife and children	142	31.92	5.85	.756	.554
	With my parents	42	30.45	5.68		
	with others	32	32.56	6.71		
Family monthly income	0-500	22	30.45	6.38		
	501-2000	120	31.24	5.77		
	2001-5000	113	32.53	5.83	1.513	.211
	5001 and above	29	32.65	6.37		
	Total	284	31.83	5.92		

4.4.2. Effects of Clinical/medical variables on resilience

As done for the demographic variables, the resilience mean differences between dichotomous groups of clinical/medical variables were tested using independent samples t-test. As shown in Table 11, there is significant mean difference between invasive and non-invasive tumour stages ($t(282) = -3.754$, $p<0.01$). Respondents who have invasive cancer stage ($M= 29.98, \pm 5.33$) have shown a statistically lower resilience score compared to those who have a non-invasive cancer stage ($M= 32.73\pm 5.99$). This may be because of the stress and worry about the growing nature of the invasive cancer tumor. On the other hand, there was no significant mean difference in resilience score between respondents who have and have not cancer recurrence history ($t(282) = -0.276$, $p >0.05$).

Table 11: Independent sample t-test group statistics for resilience score by clinical variables

	N	Mean	SD	Mean difference	Df	T	Sig (2-tailed)
Tumor stage							
Invasive	93	29.98	5.33	-2.74	282	-3.754	.000
Non-invasive	191	32.73	5.99				
Recurrence history							
Yes	36	31.58	6.34	-.29	282	-.276	.783
No	248	31.87	5.87				

As shown in table 12, a statistically significant mean difference in resilience levels was found between levels of treatment modality and treatment cycle. Treatment modality was found to be one of the sources of difference in the resilience score of patients ($F= 5.98$, $p<0.01$). Respondents who are receiving chemotherapy ($M= 33.18\pm 4.98$) were found to have significantly higher resilience score compared to respondents who were receiving radiation therapy ($M=31.15\pm 6.10$) and both chemo and radiation therapies ($M= 29.27\pm 7.15$).

Table 12: A Summary Table of One-way ANOVA to Differences in resilience score by the Levels of clinical variables (time since diagnosis, treatment modality, and treatment cycle)

		N	Mean	SD	F	Sig (2-tailed)
Time since diagnosis	6 month and below	130	31.30	6.03	1.14	.319
	7-12 months	92	32.51	5.88		
	13 and above months	62	31.96	5.72		
Treatment modality	Chemo therapy	133	33.18	4.98	5.98	.000
	Radio therapy	111	31.15	6.10		
	Chemo-Radio Therapy	40	29.27	7.15		
Treatment cycle	Early treatment (1-3 cycles)	102	30.32	5.64	12.60	.000
	Mid treatment (4-6 cycles)	131	31.99	6.31		
	Later treatment (7 and above cycles)	51	34.47	4.34		

Similarly, there was a statistically significant mean difference in the resilience score among respondents in different treatment cycles (F= 12.60, p<0.01). Respondents who are in the later treatment cycle (received 7 and/or above cycles) reported significantly high resilience level (*M* = 34.47± 4.34) than respondents who were in mid and early treatment cycles (*M* = 31.99± 6.31 and *M* = 30.32± 5.64) respectively. However, respondents who were indifferent time span since their diagnosis of cancer did not show a significant difference in their resilience level.

4.4.3. Relationship between internal and external variables and resilience level

Bivariate analyses were conducted to examine the associations between internal and external predictors and resilience. Results of correlation analysis among family support, friends support, significant other's support, self-efficacy, hope, intrinsic religiosity, external personal religious orientation, external social religious orientation, cognitive reappraisal, and emotional suppression and resilience were presented in Table 13. Resilience was positively correlated with all of the explanatory variables (p<0.01). Cognitive reappraisal (r= .662, p< 0.01, hope (r= .657, p< 0.01), self-efficacy (r= .594, p< 0.01) and family support (r= .543, p< 0.01) were the variables with high relationship with resilience score.

Table 13: Pearson product-moment correlation between explanatory variables and with resilience

		1	2	3	4	5	6	7	8	9	10	11
1.	Resilience	1										
2.	Family support	.543**	1									
3.	Friend support	.438**	.449**	1								
4.	Support from others	.437**	.809**	.559**	1							
5.	Self-efficacy	.594**	.332**	.411**	.319**	1						
6.	Hope	.657**	.298**	.188**	.257**	.499**	1					
7.	Intrinsic religiousity	.434**	.115	.171**	.111	.370**	.362**	1				
8.	External personal	.236**	.064	.034	-.025	.161**	.188**	.503**	1			
9.	External social	.240**	-.046	.284**	-.059	.269**	.038	.558**	.537**	1		
10.	Cognitive reappraisal	.662**	.395**	.428**	.333**	.605**	.650**	.321**	.223**	.143*	1	
11.	Emotional suppression	.528**	.255**	.475**	.265**	.591**	.508**	.342**	.241**	.209**	.798**	1

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

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

4.5. The Predictive Power of Socio-Demographic, Medical and Other Internal and External Factors on Resilience

Many potential factors that can affect resilience were considered in this study. However, some of the demographic and clinical variables such as marital status, living arrangement, family income, time since diagnosis, recurrence history were not correlated with resilience in the bivariate analyses, so these variables were not computed in the following hierarchical linear regression analyses. Additionally, variables such as ethnicity and tumor site were dropped due to incompleteness and smallness of some of the categories in number.

Three hierarchical multiple regression analyses were performed to establish how much variance in resilience may be accounted for by the variables of demographics, clinical/medical, internal (psychological) and external (social) variables. Those variables that were initially discrete or nominal were dummy coded. Next, all of these variables were entered into the hierarchical multiple regression analysis to predict the resilience of the participants. Demographic variables were entered in stage one, clinical variables in stage two and other predictor variables (social support subscales, self-efficacy, hope, religious orientation subscales, and emotional regulation subscales) in stage three. These variables were selected based on their revealing significant associations with resilience in the results of ANOVA, t-test, and Pearson product-moment correlation.

As presented in table 14, the final model result showed that the model was significant ($F= 43.36$, $p< .001$). The predictor factors in combination explained 72.9% of the variance in resilience of cancer patients receiving treatments.

Finally, as shown in the table, the variables included into regression model were hope ($\beta = 0.36$, $P<0.001$), family support ($\beta = 0.26$, $P<0.001$), educational level ($\beta = 0.23$, $P<0.001$), gender ($\beta = 0.21$, $P<0.001$), intrinsic religious orientation ($\beta = 0.18$, $P<0.001$), cognitive reappraisal ($\beta = 0.16$, $P = 0.001$), employment status ($\beta = -0.12$, $P<0.001$), extrinsic social religious orientation ($\beta = 0.11$, $P = 0.026$), tumor stage ($\beta = 0.11$, $P< 0.01$) and treatment cycle ($\beta = 0.09$, $P<0.01$) were significant predictors of resilience in the sample.

Table 14: Hierarchical linear regression analysis on results of resilience among cancer patients (n = 284)

	Stage 1				Stage 2				Stage 3			
	B	Std. Error	Beta	Sig.	B	Std. Error	Beta	Sig.	B	Std. Error	Beta	Sig.
(Constant)	28.57	.78		.000	24.77	.91		.000	-5.15	1.97		.010
Gender	2.61	.67	.22	.000	3.11	.63	.26	.000	2.56	.40	.21	.000
Educational level	2.86	.82	.23	.001	3.47	.76	.28	.000	2.96	.52	.23	.000
Employment status	.64	.83	.05	.439	.72	.78	.05	.361	-1.56	.51	-.12	.003
Age	1.54	.71	.12	.030	.66	.68	.05	.331	.76	.46	.06	.102
Religion	-2.74	.93	-.17	.004	-1.94	.88	-.12	.029	-.15	.63	-.01	.809
Tumor stage					3.18	.67	.25	.000	1.47	.44	.11	.001
Treatment modality					2.15	.61	.18	.000	.12	.39	.01	.742
Treatment cycle					2.81	.81	.18	.001	1.51	.52	.09	.004
Family support									.32	.07	.26	.000
Friend support									.03	.04	.04	.403
Support from others									-.01	.07	-.01	.866
Self-efficacy									.03	.02	.05	.219
Hope									.38	.04	.36	.000
Intrinsic religiosity									.26	.06	.18	.000
External personal									-.14	.09	-.06	.124
External social									.14	.06	.11	.026
Cognitive reappraisal									.11	.04	.16	.009
Emotional suppression									-.02	.05	-.02	.679

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Df 1	Df2	Df 3	F	**Sig.**
1	.410[a]	.168	.153	5.45056	5	8	18	11.253	000
2	.544[b]	.296	.275	5.04379	278	275	265	14.419	000
3	.864[c]	.747	.729	3.08181	283	283	283	43.366	000

a. Predictors: (Constant), religion, age, gender, employment, education
b. Predictors: (Constant), religion, age, gender, employment, education, treatment modality, treatment cycle, tumor stage
c. Predictors: (Constant), religion, age, gender, employment, education, treatment modality, treatment cycle, tumor stage, External personal, Hope, support from others, Self efficacy, intrinsic religiosity, Emotional suppression, External social, Friend support, Family support, cognitive reappraisal
d. Dependent Variable: resilience

CHAPTER FIVE

DISCUSSION

The purpose of the present study was to assess the level of resilience and to evaluate how much of the variance in resilience among cancer patients is accounted for by socio-demographic, medical, internal (psychological) and external (social) variables. In this part of the study, the findings indicated at the result section has been discussed with the available literature and presented as follows.

5.1. Level of Resilience among Cancer patients

The study revealed that the mean score on the CD-RISC-10 was 31.84 (SD=5.92). The resilience level appears to be distributed approximately normally in the general population, though more individuals rate themselves as high resilient than as low resilient. The mean score of approximately 32 on the CD-RISC-10 suggests that the average individual drawn from a community sample views themselves as displaying resilient characteristics ‘‘often”. This finding shows relatively higher resilience score compared with the previous normative resilience scores conducted among cancer patients such as Matzka et al. (2016), Scali et al. (2012), Seib et al. (2018) and Walsh et al. (2018) ranged from 27 to 30. This data is congruent with the literature showing that resilience to stress is the norm rather than the exception in the general population (Bonanno, 2004; Bonanno et al., 2002, 2005; Kessler et al., 1995). The finding is also similar to a study conducted in a community sample with a mean score of 31.78±5.41 (Laura, David & Murray, 2012).

It may be surprising to found such a result that community sample and a sample from patients have the same resilience level. But the literature in the area uncovered that diagnosing with cancer may have dual outcomes towards resilience. The first possibility is that cancer may degrade the patient’s resilience level, and the second possibility is the inverse. Studies have shown that survivors who identify their stressors, manage their stress, and derive strength from their experience with cancer have more resilience and, therefore, a better overall quality of life (Rosenberg, 1965). In the case of this study, the finding supports the claim that health problem is sometimes the catalyst that provokes an enhanced resilience (Keltner & Walker, 2003). The ability to encounter and be strengthened by adversity suggests a robust constitution (Monroe & Oliviere, 2006).

Similarly, Strauss et al., which focused on patients with various solid tumors who had received radiotherapy, found that patients reported an average high level of resilience. Manne et al. (2015), which focused on patients with gynecological cancers, found that patients had a high average level of resilience.

Researchers are beginning to recognize that many survivors may experience positive adjustment outcomes (Jefford et al., 2008; Llewellyn et al., 2011). For example, a growing body of literature suggests that cancer survivors may be highly resilient (Gouzman et al., 2015; Pieters, 2015; Schumancher et al., 2014). Resilience is believed to facilitate ways of coping in order to cultivate positive emotions and has consequently become a major focus of clinical interventions in Psychology over the past two decades (Manne et al., 2015).

On the other hand, the result is also higher than the findings of a study conducted by Hung-Fu and Shu-Yuan (2018) and Ferreira Filho et al. (2009) showed that participants had on average middle-level resilience with a low trend score of resilience. These studies also found that around one-third of the participants reported having a low level of resilience.

Moreover, Dubey et al. (2015) found that patients with pancreas, head and neck, and gastrointestinal cancers reported the lowest resilience scores. These resilience level variations may be because of different cancer diagnoses and may have effects on patient coping styles that vary with their cancer experience. Additionally, using different resilience scales among cancer patients may be the sources of the variation. Therefore, more researches are needed to clarify this issue.

5.2. Factors Affecting Resilience among Cancer patients

Among demographic variables, the study found that gender, age, educational level, employment status, and religion had significant relationship with resilience. Tumor stage, treatment modality and treatment cycle were the clinical/medical variables that have significant relationship with resilience. In terms of the internal and external variables, hope, self-efficacy, cognitive reappraisal, expressive suppression, family support, friends support and support of significant others had positive and significant relationship with resilience.

Hierarchical multiple regression analysis was demonstrated to identify the predictor variables and to measure the predictive power of the predictors to resilience. Based on the bivariate analysis results, statistically significant variables were entered into the model using alpha value of 0.05. The test demonstrated that, in combination, these 10 factors (gender,

educational level, employment status, tumor stage, treatment cycle, hope, intrinsic religious orientation, extrinsic social religious orientation, cognitive reappraisal and family support) explained 72.9% of the variance in resilience of patients with cancer and hope, family support and educational level making the largest predictive contribution. The contribution of the predictors for resilience is discussed separately as follows in line with the research objectives.

5.2.1. Socio-demographic Factors Affecting Resilience

In this study, the impact of demographic variables with resilience were investigated and it was found that gender, education and employment status were the significant predictors of resilience.

I. Gender

The result revealed that gender is one of the significant factors affecting resilience among cancer patients ($\beta = 0.21$, $p < 0.01$). Female patients were found to be more resilient than male patients. The result is consistent with the studies indicated that female have higher resilience (Connor & Davidson, 2003; Masten et al., 1999).

On the other hand, some research has suggested that girls and women are less resilient than boys and men following exposure to disaster and climate hazards, while cultural ideals may incentivize men to maintain good health and provide for the family (Bonanno et al., 2007; Hobfoll et al., 2011; Punamaki et al., 2001; Rodriguez-Llanes et al., 2013).

Women reported lower levels of resilience on average than men, a finding which also emerged in a study that used completely different methodology to assess resilience (Bonanno et al., 2007). Using the same resilience scale, CDRISC, Connor and Davidson (2003) observed no group differences across age, racial group, or gender.

Finally, the gender difference on the resilience may be partly due to a reporting bias, whereby men are more concerned with appearing strong in the face of stress than women and therefore report higher scores on the resilience scales.

II. Educational Level

In this study, it also found out that education level made a moderate predictive contribution as with resilience ($\beta = 0.23$, $p < 0.01$). Scores on the CD-RISC-10 increased with higher levels of education. Patients who had attended above secondary school have found to have higher

level of resilience than patients who were attended secondary and/or below grade levels. This finding matches with previous reports that rates of resilient outcomes increase with increasing education level (Bonanno et al., 2006).

Congruently, the influence of education on patients' ability to bounce back from adversities had been confirmed in many studies. Segerstrom (2006) and Ye et al. (2015) found that educational level have a direct impact on resilience. This should be easy to understand as higher level of education endows a person stronger ability to acquire knowledge on health and the awareness of methods to combat illness. In addition, people with higher level of education may obtain a better status that would make him or her feel better.

It is also consistent with the findings of a previous study (Ye, et al., 2015), which found educational level was another direct predictor of resilience. As stated in the literature review section, patients with higher education level might have more access to information about cancer by various channels, such as communication with other patients or medical staff, books and internet. Therefore, patients with higher education may be better enabled to acquire disease-related information and other useful resources that may bolster resilience (Wagnild, 2009). Thus, they have a better understanding of the disease, and gain more feeling of control during the course of treatment (Wu, et al., 2016). This implies that medical professionals should provide enough information related to cancer and establish various channels of communication between patients with cancer and medical personnel and among patients with similar situations.

This finding is also consistent with researches that have suggested that higher levels of education contribute to higher resilience (Cohen et al., 2014; Wu et al., 2016; Hung-Fu & Shu-Yuan, 2018). However, it is partially contradicted with that of a previous study that indicated that level of education did not relate to resilience (Manne et al., 2015; Matzka, et al., 2016).

III. Employment Status

With respect to the relationship between employment status and resilience, the results of the present study show that patients who were employed had significantly higher resilience score than their unemployed counterparts ($\beta = -0.12$, $p < 0.01$). This finding is consistent with the suggestions of Dong et al. (2017) and Rosenberg et al. (2015), which indicated that patients who worked outside of the home reported higher resilience scores than those who were

unemployed. It is thus likely that employment helps cancer patients build external resources such as social support and positive adjustment.

5.2.2. Clinical/Medical Factors Affecting Resilience

Tumor stage was found to be one of the factors affecting resilience of cancer patients. Respondents who have a non-invasive cancer had higher resilience level compared to patients whose cancer is invasive ($\beta = 0.11$, $P=0.001$). It implies that invasive nature of cancer cells from they began contribute to decreasing patient's resilience. This may be because of the kind of the cancer that is it has a nature of spreading outside the tissue in which it began. The development of the cancer cells could frustrate the patients and the uncertainty of what will happen may increase the anxiety and stress of patients, on the other side, it will degrade their resilience.

The other clinical/medical factor that affects resilience is found to be treatment cycle ($\beta = 0.09$, $p < 0.01$). Participants who took 7 and above treatment cycles had higher resilience compared to those were in the early treatment cycle (1-3 cycles) and mid (4-6 cycles). That means, when the treatment cycle increase, the adaptability and resilience for the treatment and other symptoms will also increase. Acquiring experiences and learning from the situations may help the patients to learn how to cope with the psychological and physical difficulties, thereby, increase their resilience.

Furthermore, time span after diagnosis was not found to be predictor of resilience for cancer patients. This study is consistent with the result that found that time since diagnosis and treatment status are not linked to benefit finding (Lelorain, et al., 2010). There is no consensus on the effect of time span since diagnosis on patient's resilience. Manne, et al. (2015) found women newly diagnosed with gynecological cancers who experienced a longer period of time from diagnosis reported less resilience. However, Schumacher, et al. (2014) found that the group of patients with 3±4 years after diagnosis reported a lower degree of resilience than the group of patients who had been 1±2 years or 5 and more years after diagnosis. For patients with cancer, the effect of changes over time after diagnosis on resilience should be examined in prospective studies.

5.2.3. Internal Factors Affecting Resilience

Among the internal factors of resilience, hope, religious orientation, self-efficacy and cognitive reappraisal positively correlated with resilience. Further study with hierarchical linear regression analysis showed that hope, intrinsic religious orientation, external social religious orientation, and cognitive reappraisal were internal predicative factors for resilience. The detailed discussion is presented below.

I. Religious orientation

Among the religious orientation dimensions, intrinsic religious orientation is found to be the prominent predictor of resilience among cancer patients ($\beta = 0.18$, $p < 0.01$). This may be because of the relationship between internal locus of control and internal religiousness. In the correlations conducted by Darvyri et al. (2014), it was found that significant associations between the factors of religiousness and the health locus of control, as confirmed by the relation between spirituality and religiousness mentioned above. More particularly, individuals who felt more responsible for their own health (high internal health locus of control) portrayed greater "intrinsic religiousness", implicitly indicating high level of self-control and introspection. This intern may bring psychological adjustment and resilience among patients.

Religiousness constitutes an especially significant variable in terms of health, a strong prediction and improvement factor in mental and physical health (Peacock & Poloma, 1989). Several studies correlate it positively with the sense of well-being and positive emotions (Koenig, McCullough, & Larson, 2001) and it also seems to contribute to self-rated welfare and positive perception of life (Frankl, 1984).

Tapping into spirituality can enhance coping mechanisms in negative life events (Vahia et al. 2011) and can promote recovery by providing faith and hope in being able to surpass the experience of chronic illness and regain health. Fatone and collaborators (2007) found that after a breast cancer diagnosis, Latina women viewed faith as an important aspect of coping with their illness.

Religion and spirituality are consistently described as a central part of life in Ethiopia (Olsen, Jensen, Tesfaye, & Holm, 2013). A qualitative study conducted in Ethiopia among persons living with HIV found that spirituality and faith-based practices to manage the psychological

difficulties associated with living with HIV (Sophia et al., 2014). The Ethiopian Orthodox Christians endorsed religion as an important component of their lives and worldviews. Prayer, personal faith in God, and relationships with spiritual leaders and fellow worshippers were cited as sources of hope and comfort, aiding psychological adjustment. Although participants cited religion as important in their lives more generally, religion appeared much more prominent in their life narratives after cancer diagnosis than before.

One of the most frequently cited religious experiences was the pilgrimage to certain large Ethiopian Orthodox churches for *tsabel* (holy water) treatments. The experience of going to the church and taking the tsabel contributed to participants' lives by providing a sense of inner calm and hope for the future. Some of this hopefulness was derived from a belief that the tsabel experience led to physical cure. Prayer and reflection that accompanied the tsabel were also described as being therapeutic and helping participants to feel more at peace. Additionally, social bonds formed with other patients at the churches provided critical emotional support.

The case is true for protestant worshipers in Ethiopia. The experience of frequent worshiping and prayed in churches and individual's residence in group may develop the patient's sense of blessings and support. The supportive culture of the church community may have also a social bond and belongingness that can provide a psychological wellbeing among the patients of protestant Christian worshipers. These religious activities could bring significant difference in resilience levels for Orthodox and protestant follower cancer patients compared to Muslim patients found in this study.

Integrating the patient's spiritual and religious beliefs and needs into clinical practice should be explored during the initial encounter to develop an understanding of how particular beliefs play a role in how the person adapts to the illness, treatment, and life after diagnoses. Implementing a spiritual history or spiritual/religious assessment (formal or informal) can be beneficial as it can identify the importance of spiritual matters to the patient, help address concerns that the person may have regarding spiritual issues, can guide targeted interventions, an can uncover other sources of support (e.g., congregations) (Mueller et al. 2001; Post and Wade 2009).

II. Hope

Besides the burden of physical stress caused by cancer and its treatment, many patients experience mental stress such as fears about the prognosis of treatments, interruption of ordinary life functions and the length of survival time (McGregor & Antoni, 2009). Cancer diagnosis and its consequent treatment impede patients' hope level and increase psychological distress (Lin et al., 2003). Therefore, increasing hope among cancer patients can increase their resilience level.

The finding of the current study found that hope was the greatest predictor for resilience ($\beta = 0.36$, $p < 0.01$). Hope is an inner power energized in the face of hardship, which could help patients to establish optimistic and realistic goals, and mobilize resources to positively manage the physical and psychological challenges. Hope can be considered as a protective factor that can shield the adverse effects of having cancer. In this sense, the current finding revealed that hope is the strongest predictor for resilience in cancer patients is important, because hope is a positive psychological resource that can boost their ambition to see tomorrow. It was evidenced that hope could give cancer patients reasons for survival (Saleh & Brockopp, 2001).

This finding is similar to the results in previous studies among other cancer patients. For example, hopefulness was found capable of predicting resilience among cancer patients in a longitudinal study conducted by Ho et al. (2010). Hope was also found to be a positive predictor for resilience among patients with breast cancer, metastatic colorectal cancer among adolescent or young adults with cancer in cross-sectional studies (Wu, et al., 2016; Haase et al., 2014).

In another longitudinal study conducted, both the cancer patient and the family member were administered the test on hope at two time intervals; within 30 days of a cancer diagnosis and 30 days later. Results of this study indicated that hope and resilience for the person with cancer and the family member do change. Therefore, these two concepts correlated for the person with cancer and the family member. This study identified the need for intervention (s) addressed at hope and resilience (Herth and Cutcliffe, 2002). Therefore, enhancing the level of hope may become one of the essential strategies to boost the level of resilience among cancer patients.

III. Emotional Regulation

As mentioned above in the background of the study, diagnosing with cancer is a traumatic life experience. The cancer diagnoses can lead to heterogeneous outcomes, but are often accompanied by prolonged illness. Even though such reactions are normal, it is still hard to make a transition and face the adverse situation (National Cancer Institute, 2014). According to Kateri and Iris (2015), positive reappraisal may be useful to some people because it allows them to completely *self-generate* positive emotion rather than relying on positive experiences. Thus, it may be particularly useful to people experiencing high levels of adversity, while other types of positive emotion interventions might be most useful at lowers levels of adversity.

Considering these theoretical and empirical knowledge in the literatures, emotional regulation was one of the identified variables that can predict the resilience of cancer patients. As can see from the result part of the study, the mean score of cognitive reappraisal and expressive suppression is high compared to the ideal mean score. The higher the score, the greater the use of emotion regulation strategies, conversely lower scores represent less frequent use of such strategies. Certain assumptions can then be made from the results. For instance, using cognitive reappraisal to regulate emotions has been shown to result in more affective, cognitive, and social consequences when compared to expressive suppression.

The hierarchical multiple regression result shows that, among the two subscales of emotional regulation (cognitive reappraisal and emotional suppression), cognitive reappraisal were found the significant predictors of resilience ($\beta = 0.16$, $p = 0.009$). Cognitive reappraisal and resilience had positive relationship among cancer patients.

Cutuli (2014) found that individuals who utilize the cognitive reappraisal strategy are more likely to exhibit interpersonal behavior that is appropriately focused on social interaction. Conversely, those scoring higher for expressive suppression modify the behavioral aspect of emotional responses without reducing the subjective and physiological experience of negative emotion.

According to (Kateri and Iris, 2015), one particularly powerful way to generate positive emotion is to transform the very meaning of the stressful situation one finds oneself in ("positive reappraisal,"). Emerging research supports the idea that PR makes an important contribution, and that it does so over that of negative reappraisal. This is evident in its short-

term emotional consequences as well as its long-term effects on resilience. Thus, PR may be uniquely poised to not merely side-step negative emotion, but use emotional engagement as fuel for growth and resilience.

5.2.4. External Factors Affecting Resilience

I. Social support

Social support refers to the real or perceived resources received through social interactions with others that enable an individual to feel valued and respected (Galvan, Buki, & Garces, 2009). The level of total social support score in the current study was high (63.87±14.32). Similarly, the family (23.68±4.86) and significant others (21.93±4.98) support were found to be high based on the scoring criteria. On the other hand friends support was found to be labeled as medium (18.25±6.94) (Table 8). This finding is consistent with the study conducted to measure internal consistency among community sample (Augustine et al., 2014).

Social support is one of the most influential resources available to cancer survivors, which has been documented across several studies to have a major influence on an individual's resilience (Hjemdal, et al., 2006; McCabe & Cronin, 2011; Ozbay et al., 2007). Confirming previous research, social support was found to contribute positively to resilience. More specifically, family support was the most influential variable within the model ($\beta = .26$, $p<0.00$). Zebrack (2011) similarly identified family support and cohesiveness as the most central contributors to positive adjustment among adolescents and young adults. Family and friends are viewed as also a major source of support for cancer patients in other age cohorts (Gatchel et al., 2007; Hjemdal, et al., 2006; McCabe & Cronin, 2011). But friends and significant others support were not found to be significant predictors of resilience.

Conversely, a lack of social support has been widely recognized as a risk factor for psychological illness (Korszun et al., 2014; Parker et al., 2003) and increased mortality (Kroenke et al., 2012). In addition, a recent systematic review reported that a lack of social support affected QOL in HC patients (Allart et al., 2013). This is supported by previous research highlighting that ineffective social support within interpersonal relationships can lead to negative outcomes, such as increasing a survivor's feeling of isolation (Landmark, Strandmark, & Wahl, 2002). As mentioned previously, research by Parker et al. (2003) recommend that assessing patients' levels of social support is possibly the most accurate way

to identify those patients most prone to anxiety, depression or distress following the diagnosis and treatment of cancer.

Generally speaking, resilience level of cancer patients was measured using a well-validated instrument that assesses individuals' perceptions of their abilities to recover effectively from their illness. Results suggested that approximately 73% of the variance in resilience was explained by the demonstrated variables. More specifically, demographic characteristics contributed 16.8% of the variance in resilience; clinical variables contributed 12.8% and the other (social support, religious orientation, hope, emotional regulation and self-efficacy) have contributed 45.1% of the variance. The rest 27% of the variance in resilience is explained by other variables that are not measured in this study. This implies that majority of the possible contributors to resilience were measured in this study.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1. Summary

The main purpose of this study was to assess the level of resilience and its socio demographic, clinical, internal and external factors among cancer patients in Tikur Anbessa Specialized Hospital. In order to achieve the stated purpose of the study, cancer patients who have received at least one cancer treatment at Tikur Anbessa Specialized Hospital, oncology center were selected as the population of the study.

From the total population of the study, 284 samples of cancer patients were selected by using stratified and simple random sampling techniques. Data was collected from the samples by using structured and interviewer administered standardized instruments. The structured questionnaire was used to gather socio demographic and clinical information. Regarding the standardized instruments interviewer based questionnaire, Connor–Davidson Resilience Scale 10-Item Version, revised intrinsic/extrinsic religious orientation Scale, the multidimensional scale of perceived social support, self-Efficacy for managing chronic diseases 6-item Scale, Herth Hope index (HHI), Emotional Regulation Questionnaire (ERQ) were used.

The collected data from the samples was organized and analyzed by using SPSS version 20. Descriptive statistics, independent samples t-test, one way ANOVA, Pearson correlations and hierarchical multiple regression analysis were used to analyze the data.

The mean score on the CD-RISC-10 was 31.84 (SD=5.92). The resilience level appears to be distributed approximately normally in the general population, though more individuals rate themselves as high resilient than as low resilient. The mean score of approximately 32 on the CD-RISC-10 suggests that the average individual drawn from a community sample views themselves as displaying resilient characteristics ‘‘often”.

Among demographic variables, the study found that gender, age, educational level, employment status, and religion had significant relationship with resilience. Tumor stage, treatment modality and treatment cycle were the clinical/medical variables that have significant relationship with resilience. In terms of the internal and external variables, hope, self-efficacy, cognitive reappraisal, expressive suppression, family support, friends support and support of significant others had positive and significant relationship with resilience.

These statistically significant variables were entered into the regression model using alpha value of 0.05. The test demonstrated that, in combination, these 10 factors (gender, educational level, employment status, tumor stage, treatment cycle, hope, intrinsic religious orientation, extrinsic social religious orientation, cognitive reappraisal and family support) explained 72.9% of the variance in resilience of patients with cancer. Among the predictors, hope, family support and educational level were found to be the major contributors making the largest predictive contribution.

The result revealed that gender is one of the significant factors affecting resilience among cancer patients. Female patients were found to be more resilient than male patients. It was also found that education level made a moderate predictive contribution for resilience ($\beta = 0.23$, $p < 0.01$). Patients who had attended above secondary school have found to have higher level of resilience than patients who attended secondary and/or below grade levels. The relationship between employment status and resilience was also found to be positive and significant. The results of the present study show that patients who were employed had significantly higher resilience score than their unemployed counterparts.

Tumor stage was found to be one of the factors affecting resilience of cancer patients. Respondents who have a non-invasive cancer had higher resilience level compared to patients whose cancer is invasive ($\beta = 0.11$, $P=0.001$). The other clinical/medical factor that affects resilience is found to be treatment cycle. Participants who took 7 and above treatment cycles had higher resilience compared to those who were in the early treatment cycle (1-3 cycles) and mid (4-6 cycles).

Among the internal factors of resilience, hope, religious orientation, self-efficacy and cognitive reappraisal positively correlated with resilience. Further study with hierarchical linear regression analysis showed that hope, intrinsic religious orientation, external social religious orientation, and cognitive reappraisal were internal predicative factors for resilience.

The finding of the current study found that hope was the greatest predictor for resilience ($\beta = 0.36$, $p < 0.01$). Among the religious orientation dimensions, intrinsic religious orientation is found to be the prominent predictor of resilience among cancer patients ($\beta = 0.18$, $p < 0.01$). Regarding the two subscales of emotional regulation (cognitive reappraisal and emotional suppression), cognitive reappraisal were found the significant predictors of resilience ($\beta= 0.16$, $p= 0.009$). Cognitive reappraisal and resilience had positive relationship among cancer patients.

The level of total social support score in the current study was high (63.87±14.32). Similarly, the family (23.68±4.86) and significant others (21.93±4.98) support were found to be high based on the scoring criteria. On the other hand friends support was found to be labeled as medium (18.25±6.94). More specifically, family support was the most influential variable within the model ($\beta = .26$, $p<0.00$).

6.2. Conclusion

From the result of this study the researcher concludes that the patients diagnosed with cancer and receiving chemo and radiation therapies in Tikur Anbessa Specialized Hospital has often high resilience level. As a growing number of individuals surviving cancer, it is becoming increasingly clear that the cancer treatment by itself is not the means to bounce back from the adversity. For many patients, enduring the treatment by itself is just one step of a hard journey, in which their life can change dramatically. For example, many cancer survivors experience diverse late or long-lasting physical and/or psychosocial effects, which may impact on their mental health. Therefore, cancer survivorship is considered a potentially traumatic, yet, unique journey for every individual, who has to find their own way of navigating the challenges that occur as a result of living with cancer. Therefore, it was very important to measure the resilience level and determinant factors that can influence it among cancer patients.

Encouragingly, resilience is reported to be high among cancer patients receiving treatment in Tikur Anbessa Specialized Hospital. However, based on the findings, it is important to focus on patients who have low level of resilience to boost their ability to bounce back from their hardship. The findings of this study have offered insights into several baseline characteristics that influence resilience. Among the socio demographic characteristics of patients, gender, educational level and employment status shows a significant relationship with cancer patient's resilience.

The study also revealed that tumor stage and treatment cycle are the significant factors contributing for resilience level. Therefore, it is concluded that invasive nature of cancer cells from they began contribute to decreasing patient's resilience. On the other hand, frequency of cancer treatments has a positive relationship with resilience.

Regarding the internal factors affecting resilience, hope, intrinsic religious orientation, cognitive reappraisal, and external social religious orientation were found to be the predictors

of resilience. Among the external factors, social support shows a positive relationship with resilience. More specifically, family support is very essential for development of cancer patient's resilience.

Therefore, the present study has several implications for clinical and socio-psychological practices. The identification of demographic, clinical and other internal and external factors affecting resilience suggests that considering these baseline characteristics in practice settings may help healthcare providers to increase resilience level of their patients.

The contemporary health approach argues that mere medication is not enough to overcome health adversities rather a multidiscipline interventions are needed. Now days, some literatures suggested that psychological care should be incorporated into the routine cancer care of patients (Jacobson & Wanger, 2012; Fann, Ell & Sharpe, 2012). Studies have found that cancer patients can get advantage from positive psychological-based interventions in order to improve their resilience in the face of adversity. Promoting resilience mechanisms may support better adaptation and other positive psychological outcome during and after treatment.

6.3. Recommendations

Based on the findings obtained from this study, the following recommendations are forwarded:

- Apart from medical services, a number of psycho-social factors are helpful for the development of patients' resilience. To provide holistic care for cancer patients, the management and services provided by the hospital should integrated demographic, clinical, psychological and social background based interventions.
- In this study having high family support has been connected with increased level of resilience. So, family based intervention programs are advised for enhancing the awareness of the patient's families about cancer and how to support their patient family members. Mental health professional and social workers in hospitals also have to keep in mind that psychosocial intervention programs should be implemented.
- Religious orientation was also found to be the significant predictors of resilience. There should be, therefore, found ways to reconcile biomedical and faith-based attitudes towards patients. Faith and religious orientation could be used to find optimism and hope in life, but it should not be perceived as being in opposition to the biomedical treatments

that they counseled others about and took themselves. Building on patients success in integrating faith and medical approaches, future interventions in the Ethiopian setting should continue to include faith leaders and contexts in ways that highlight the compatibility of these seemingly disparate worldviews.

- It is very essential for healthcare providers to recognize that hope plays a considerable role in the adjustment to cancer and improvement of patient's resilience. It may be appropriate to encourage patients to direct hope and expectation towards achievable goals that are meaningful for the individual tolerant. Showing uunconditional positive regard and providing supportive information may improve patient's resilience.
- Health professionals should assess existing resilience-related factors and involve strategies that reinforce patient resilience in their regular care of cancer patients. Additionally, further study is necessary to establish causality between resilience and its subsequent health outcomes in Ethiopian context.
- Psychologists should conduct further studies on the clinical use of the psychological resource scales or other scales to screen patients for lower social and psychological capitals so that interventions may be taken to improved care patients with low level of resilience.
- The finding of this study revealed that higher level of education endows a person stronger ability to acquire knowledge on health and the awareness of methods to combat illness. Therefore, medical professionals should provide enough information related to cancer and establish various channels of communication between patients with cancer and medical personnel and among patients with similar situations.
- Integrating the patient's spiritual and religious beliefs and needs into clinical practice can be beneficial as it can identify the importance of spiritual matters to the patient, help address concerns that the person may have regarding spiritual issues, can guide targeted interventions, and can uncover other sources of support.

Recommendations for researchers

- First, this study was conducted on a cross sectional basis, which limits the development of the causal relationship between resilience and other variables in cancer patients. Further prospective and longitudinal studies are necessary to validate the current findings.

- This study just used quantitative method to measure individuals' resilience level and its predictors. As mentioned in the methodology section, this method lacks a deep investigation and exploration towards the reason behind the factors why and how they affect resilience. Therefore, future qualitative researches are needed to discover the experience and lifestyles of patients to justify the relationship between resilience and its contributing factors among cancer patients.
- Future studies can be conducted to investigate the effect of other personal and community level factors on resilience for cancer patients.

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APPENDICES

Appendix A: Informed Consent

Appendix A1: Informed consent form (Amharic version)

የመጠይቅ መለያ ቁጥር_____

ጤና ይስጥልኝ ስሜ_____ ይባላል፡፡ በዚህ ሆስፒታል በካንሰር ህክምና ክሊኒክ ውስጥ የምሠራ የጤና ባለሙያ ስሆን በዚህ ጥናት ውስጥ በመረጃ ሰብሳቢነት እየሰራሁ ነው፡፡

ይህ ጥናት በኢ.አ.ዩ. የስነ-ልቦና ትምህርት ቤት የማስተርስ ፕሮግራም መመረቂያ ፅሁፍ ነዉ፡፡ የዚህ ጥናት አላማ በጥቁር አንበሳ ስፔሻላይዝድ ሆስፒታል የካንሰር ህመም ላለባቸውና በኬሞቴራፒና ራዲዮቴራፒ ህክምና ላይ ላሉ ህመምተኞች የማገገም አቅም/ብርታት እና ተያያዥ ምክንያቶች ላይ የሚያተኩር ነው፡፡ ይህን መሰረት በማድረግ ህሙማን የጸረ-ካንሰር ህክምና በሚወስዱበት ወቅት የሚኖረውን የህሙማንን ከበሽታ የማገገም አቅም/ብርታት የሚያነለብቱ ምክንያቶችንና ህመሙን ለመቋቋምና በፍጥነት ለማገገም የሚያግዙ ነገሮችን በመረዳት ለዚህም አጋዥ የሆኑ ስልቶችን/አሰራሮችን ለመቀየስ የሚጠቅም መረጃ ለማግኘት ነዉ፡፡

እርሶም በዚህ ጥናት ላይ እንዲሳተፉ ተጋብዘዋል፡፡ መጠይቁ ከጊዜዎ ቢበዛ 20 ደቂቃ የሚወስድ ሲሆን በዚህ ጥናት ውስጥ የርስዎ ተሳታፊነት ሙሉ በሙሉ በርስዎ ፈቃደኝነት ላይ የተመሰረተ ነዉ:: በዚህ ጥናት ውስጥ መሳተፍዎም ሆነ ላለመሳተፍ መወሰንዎ በሆስፒታሉ ውስጥ በሚያገኙት አገልግሎት ላይ ምንም አይነት ተጽእኖ የማይኖረው ሲሆን ቃለመጠይቁን በማንኛውም ሰአት ማቋረጥ ወይም ጥያቄዎችን አለመመለስ ይችላሉ፡፡ በጥናቱ ውስጥ ለተነሱት ጥያቄዎች የሚሰጧቸው መልሶች ሙሉ በሙሉ በምስጢር የሚጠበቁ ሲሆን የርስዎም ስም በማንኛዉም መልኩ በጥናቱ ውስጥ አይገለጽም፣ እንዲሁም የሚሰጡት ምላሽ ከርስዎ ማንነት ጋር በማንኛውም መልኩ አይያያዝም፡፡

በጥናቱ ላይ ለመሳተፍ ፍቃደኛ ነዎት?

1. **አዎ** 2. **አይደለውም አመሰግናለው!!**

ፊርማ……..ቀን……

የመረጃ ሰብሳቢ ስም ……ፊርማ …….

ታደሰ አራጌ (የጥናቱ ባለቤት)
ስልክ ቁጥር፡ 0913 09 63 29

Appendix A2: Informed consent form (English version)

ADDIS ABABA UNIVERSITY

COLLEGE OF EDUCATION AND BEHAVIORAL STUDIES

SCHOOL OF PSYCHOLOGY

Consent form

I am_____who is part of this research project entitled with the Resilience and its associated factors among cancer patients receiving cancer treatment at Oncology Unit of Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia. The general objective of the study is to examine whether cancer survivors show resilience responses to cancer treatment and to explore the relevant internal and external factors determining resilience among cancer patients receiving treatment at Tikur Anbessa Specialized Hospital.

This is the reason that you and other could be candidate for the study. It is only through chance that you became part of the study like other: otherwise, if you don't want to be part of the study, you can refuse to participate. In doing so, you will not going to lose any service that you are getting from the Hospital. Once after you decided to be part of the study and in case you don't want to continue, you still have the right to get out from the study at any time you want.

I will be very grateful if you are going to be participating in this study and hence we, together can do something positive towards resilience. Finally, it's my great pleasure to forward you deepest gratitude in advance for your kind cooperation you are going to have during the interview by giving your time with genuine information to me. Once again, I am assuring by any means, your confidentiality will not break and be kept secret and the data generated will be used for the purpose of this research only.

Are u agree

Yes ☐ no ☐

Signatures of respondent_____ Interview date_____

Appendix B: Questionnaires

Appendix B1: Questionnaire (English version)

I. Section one: Socio- Demographic Characteristics

1. **Age**_____
2. **Gender** A. Male ☐ B. Female ☐
3. **Educational status** A. Illiterate ☐ B. secondary and below ☐
   C. certificate ☐ D. Diploma ☐ E. Degree ☐ F. Masters ☐
   G. PHD and above ☐
4. **Occupation** A. Trade ☐ B. service ☐ C. government ☐
   D. NGO ☐ E. Other ☐ F. No Job ☐
5. **Religion** A. Orthodox ☐ B. Muslim ☐ C. Protestant ☐
   D. Catholic ☐ Others ☐ (Specify) _____
6. Ethnicity A. Afar ☐ B. Amhara ☐ C. Guraghe ☐
   D. Oromo ☐ E. Tigre ☐ F. Somali ☐ G. Others ☐
   If "others", specify
7. Marital status A. Single B. Married C. Divorced D. Widowed
8. With whom are you living? A. Alone ☐ B. with my wife/husband ☐
   C. with wife/husband and children ☐ D. with parents ☐ With Others ☐
9. Family monthly income_____

II. Medical conditions

1. Time since Diagnosis (In days)_____
2. Treatment Modality
   A. Chemo therapy ☐ B. Radio therapy ☐ C. Chemo-radio therapy ☐
   D. Other ☐
3. Current Treatment Cycle
   A. Early treatment (1-3 cycles) ☐
   B. Mid treatment (4-6 cycles) ☐
   C. Later treatment (≥7 cycles) ☐
4. Tumor-Stage A. Invasive ☐ B. Non- invasive ☐
5. Tumor site_____
6. Recurrence A. yes ☐ B. no ☐

III. Resilience scale

Items	Almost always true	Often true	Sometimes true	Rarely true	Not at all true
1. Able to adapt to change.					
2. Can deal with whatever comes.					
3. Tries to see humorous side of problems.					
4. Coping with stress can strengthen me.					
5. Tend to bounce back after illness or hardship.					
6. Can achieve goals despite obstacles.					
7. Can stay focused under pressure.					
8. Not easily discouraged by failure.					
9. Thinks of self as strong person.					
10. Can handle unpleasant feelings					

IV. Emotional Regulation Questionnaire (ERQ)

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

1----------2----------3----------4----------5----------6----------7

Strongly disagree **neutral** **strongly agree**

1. ____ When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.
2. ____ I keep my emotions to myself.
3. ____ When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.

4. ____ When I am feeling positive emotions, I am careful not to express them.

5. ____ When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.

6. ____ I control my emotions by not expressing them.

7. ____ When I want to feel more positive emotion, I change the way I'm thinking about the situation.

8. ____ I control my emotions by changing the way I think about the situation I'm in.

9. ____ When I am feeling negative emotions, I make sure not to express them.

10. ____ When I want to feel less negative emotion, I change the way I'm thinking about the situation.

V. Religious Orientation test

He following statements are designed to measure your religiosity level. Please respond for each questions by putting (√) on the space provided parallel to your agreement level.

1= strongly disagree, 2= disagree, 3= Neural, 4= agree, 5, strongly agree

No	Items	1	2	3	4	5
1	I enjoy reading about my religion.					
2	I go to church because it helps me to make friends.					
3	It doesn't much matter what I believe so long as I am good.					
4	It is important to me to spend time in private thought and prayer.					
5	I have often had a strong sense of God's presence.					
6	I pray mainly to gain relief and protection.					
7	I try hard to live all my life according to my religious beliefs.					
8	What religion offers me most is comfort in times of trouble and sorrow					
9	Prayer is for peace and happiness.					
10	Although I am religious, I don't let it affect my daily life.					
11	I go to church mostly to spend time with my friends.					
12	My whole approach to life is based on my religion.					
13	I go to church mainly because I enjoy seeing people I know there.					
14	Although I believe in my religion, many other things are more important in life.					

VI. Herth Hope Index

Listed below are a number of statements. Read each statement and place an [X] in the box that describes how much you agree with that statement right now.

No	Items	Strongly Disagree	Disagree	Agree	Strongly Agree
1	I have a positive outlook toward life.				
2	I have short and/or long range goals.				
3	I feel all alone.				
4	I can see possibilities in the midst of difficulties.				
5	I have a faith that gives me comfort.				
6	I feel scared about my future.				
7	I can recall happy/joyful times.				
8	I have deep inner strength.				
9	I am able to give and receive caring/love.				
10	I have a sense of direction.				
11	I believe that each day has potential.				
12	I feel my life has value and worth.				

VII. Self-Efficacy for Managing Chronic Diseases 6-item Scale

I would like to know how confident you are in doing certain activities. For each of the following questions, please choose the number that corresponds to your confidence that you can do the tasks regularly at the present time.

1. How confident are you that you can keep the fatigue caused by your disease from interfering with the things you want to do?

Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

2. How confident are you that you can keep the physical discomfort or pain of your disease from interfering with the things you want to do?

Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

3. How confident are you that you can keep the emotional distress caused by your disease from interfering with the things you want to do?

Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

4. How confident are you that you can keep any other symptoms or health problems you have from interfering with the things you want to do?

Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

5. How confident are you that you can do the different tasks and activities needed to manage your health condition so as to reduce your need to see a doctor?

Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

6. How confident are you that you can do things other than just taking medication to reduce how much your illness affects your everyday life?

Not at all confident 1 2 3 4 5 6 7 8 9 10 Totally confident

VIII. Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988)

I am interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the "1" if you Very Strongly Disagree

Circle the "2" if you Strongly Disagree

Circle the "3" if you Mildly Disagree

Circle the "4" if you are Neutral

Circle the "5" if you Mildly Agree

Circle the "6" if you Strongly Agree

Circle the "7" if you Very Strongly Agree

No	Statements	1	2	3	4	5	6	7	Cat
1	There is a special person who is around when I am in need								SO
2	There is a special person with whom I can share my joys and sorrows								SO
3	My family really tries to help me								Fam
4	I get the emotional help and support I need from my family								Fam
5	I have a special person who is a real source of comfort to me								SO
6	My friends really try to help me								Fri
7	I can count on my friends when things go wrong								Fri
8	I can talk about my problems with my family								Fam
9	I have friends with whom I can share my joys and sorrows								Fri
10	There is a special person in my life who cares about my feelings								SO
11	My family is willing to help me make decisions								Fam
12	I can talk about my problems with my friends								Fri

The items tended to divide into factor groups relating to the social support, namely family (Fam), friends (Fri) or significant other (SO).

Appendix B2: Questionnaire (Amharic version)

ክፍል 1፡ የግል መረጃ				
1.	እድሜ_____			
2.	ፆታ	ሀ. ወንድ	ለ. ሴት	
3.	የትምህርት ደረጃ	ሀ. ማንበብና መፃፍ አልችልም ለ. የመጀመሪያ ደረጃ ሐ. ሁለተኛ ደረጃ	መ. የቴክኒክና ሙያ ሠ. ዲፕሎማ ረ. ዲግሪ	ሰ. ማስተርስ ዲግሪ ሸ. ፒኤችዲ
4.	የስራ ሁኔታ	ሀ. ንግድ ለ. አገልግሎት	ሐ. መንግስት ሠራተኛ መ. መያድ (ቅጥር)	ሠ. ሌላ ረ. ስራ የለኝም
5.	ሐይማኖት	ሀ. ኦርቶዶክስ ለ. ሙስሊም	ሐ. ፕሮቴስታንት መ. ካቶሊክ	ሠ. ሌላ (ይጥቀሱ)_____
6.	ብሔር	ሀ. አፋር ለ. አማራ ሐ. ጉራጌ	መ. ኦሮሞ ሠ. ትግሬ ረ. ሶማሌ	ሰ. ሌላ (ይጥቀሱ)_____
7.	የጋብቻ ሁኔታ	ሀ. ያላገባ ለ. ያገባ	ሐ. የፈታ መ. የሞተበት	
8.	ከማን ጋር እንደሚኖሩ ቢነግሩኝ	ሀ. ለብቻዬ ለ. ከባለቤቴ ጋር	ሐ. ከባለቤቴና ከልጆቼ ጋር መ. ከእናትና አባቴ ጋር	ሠ. ከሌሎች ጋር
9.	የቤተሰብዎ ወርሃዊ ገቢ	_____		
ክፍል 2፡ የህክምና መረጃዎች				
1.	የካንሰር ህመም እንዳለብዎ ካወቁ ስንት ጊዜ ሆነዎ?_____			
2.	የህክምና ዓይነት	ሀ. ኬሞ ቴራፒ	ለ. ራዲዮ ቴራፒ	ሐ. ሁለቱንም
3.	አሁን ያለብት የህክምና ደረጃ/ዑደት (Treatment cycle)	ሀ. እየጀመርኩ ነው (early treatment, 1-3 cycles)	ለ. አጋማሽ ላይ ነኝ (Mid treatment, 4-6 cycles)	ሐ. እየጨረስኩ ነው (Later treatment, ≥7 cycles)
4.	እጢው ያለበት ደረጃ (tumor stage)	ሀ. የሚሰራጭ (Invasive)	ለ. የማይሰራጭ (non-invasive)	
5.	የዕጢው አይነት	_____		
6.	ህመሙ በድጋሚ የተከሰተ ነው?	ሀ. አዎ	ለ. አይደለም	

ክፍል 3፡ ችግሮችን የመቋቋም አቅም/ብርታት ደረጃ መመዘኛ መጠይቅ

ጥያቄዎችን ካነበቡላቸው በኋላ ለቀረቡት ጥያቄዎች የመላሹን የስምምነት ደረጃ ይበልጥ የሚገልፀውን አማራጭ የ√ ምልክት በማድረግ ይግለፁ፡፡

0. በፍፁም እውነት አይደለም
1. በጥቂቱ እውነት ነው
2. አንዳንዴ እውነት ነው
3. ብዙጊዜ እውነት ነው
4. ሁልጊዜ እውነት ነው

		ፈፅሞ (0)	በጥቂቱ (1)	አንዳንድ ጊዜ (2)	ብዙ ጊዜ (3)	ሁልጊዜ (4)
1	ህይወቴ ውስጥ ከሚመጡ ለውጦች ጋር እራሴን ማስተካከል እችላለሁ					
2	ምንም ነገር ቢመጣ መጋፈጥ እችላለሁ					
3	የችግሮችን በጎ ጎን ለማየት እሞክራለሁ					
4	ችግሮችን መቋቋም መቻሌ ወደፊት ያጠነክረኛል					
5	ከህመም ወይም ከገጠመኝ ችግሮች ብዙ ጊዜ ቶሎ አገግማለሁ፡፡					
6	ምንም እንኳን መሰናክሎች ቢኖሩ ዓላማዬን ማሳካት እችላለሁ					
7	በጭንቀት ውስጥ ሆኜም ሃሳቤን ማሰባሰብ እችላለሁ					
8	በችግሮች በቀላሉ ተስፋ አልቆርጥም					
9	ራሴን እንደጠንካራ ግለሰብ አስባለሁ					
10	የሚረብሹኝን ስሜቶች መቆጣጠር እችላለሁ					

ክፍል 4፡ የስሜት መለኪያ

ሁሉንም ጥያቄዎች የሚከተለውን መስፈርት (መለኪያ) በመጠቀም በተሰጡት ባዶ ቦታዎች ላይ ቁጥሮቹን በመጻፍ ይመልሱ፡፡ (ከተራ ቁጥር 1፣2፣3፣ በምላሹ አልስማማም፣ 4 መልስ የለኝም፣ 5፣6፣7፣ እስማማለሁ)

1----------2----------3----------4----------5----------6----------7

በጭራሽ አልስማማም ገለልተኛ ነኝ በጣም እስማማለሁ

1. _____በጎ ነገሮችን ማሰብ ስፈልግ ለምሳሌ ደስታ፣ መዝናናትን የማስበውን ነገር እቀይራለሁ፡፡
2. _____ስሜቶቼን መቆጣጠር እችላለሁ፡፡
3. _____በጎ ያልሆኑ ነገሮች (ለምሳሌ ሀዘን ወይም ንዴት) ሲሰሙኝ የማስበውን ነገር እቀይራለሁ፡፡
4. _____በጎ ስሜቶች ሲሰሙኝ ላለመናገር እጠነቀቃለሁ፡፡
5. _____አስጨናቂ ሁኔታዎች ሲገጥሙኝ ራሴን እንዴት ማረጋጋት እንዳለብኝ አስባለሁ፡፡
6. _____ስሜቶቼን ባለመናገር እቆጣጠራቸዋለሁ

7. _____በጎስሜት እንዲሰማኝ ስፈልግ ስለሁኔታው የማስብበትን መንገድ እቀይራለሁ።።
8. _____ስላለሁበት ሁኔታ የማስብበትን መንገድ በመቀየር ስሜቶቼን እቆጣጠራለሁ
9. _____በጎ ያልሆኑ ስሜቶች ሲሰሙኝ መናገር እንደሌለብኝ እርግጠኛ እሆናለሁ።።
10. _____የሚሰማኝን መጥፎ ስሜት ለመቀነስ ስፈልግ ስለሁኔታው የማስብበትን መንገድ እቀይራለሁ።።

ክፍል 5፡ የሐይማኖት ዝንባሌ መመዘኛ መጠይቅ

የሚከተሉት ጥያቄዎች የተሳታፊዎቹን የሓይማኖተኛነት መጠን (ዝንባሌ) ለመለካት የቀረቡ ናቸው።። እያንዳንዳቸው ጥያቄዎች አምስት የመልስ አማራጮች ያሉት ሲሆን እነሱም፡

1= በፍፁም አልስማማም 2= አልስማማም 3= መወሰን አልችልም

4= እስማማለሁ 5= በጣምእስማማለሁ

በተሰጡት ቁጥሮች አቅጣጫ የ (√) ምልክት በማድረግ ይመልሱ።።

		1	2	3	4	5
1	ስለ ሃይማኖቴ ማንበብ ያስደስተኛል።።					
2	ወደ ቤተክርስቲያን (መስጊድ) እሔዳለሁ፣ ምክንያቱም ጓደኞችን እንዳፈራ ይረዳኛል።።					
3	ጥሩ እስከሆንኩ ድረስ በምንም ባምን ችግር የለውም።።					
4	በግሌ በማሰብና በመጸለይ ጊዜ ማሳለፍ ለኔ ይጠቅመኛል።።					
5	ፈጣሪ ስለመኖሩ ጠንካራ እምነት ነበረኝ።። አሁንም አለኝ።።					
6	እኔ በዋናነት የምጸልየው እርጋታንና ጥበቃን ለማግኘት ነው።።					
7	ኑሮዬን በሐይማኖቴ መርህ መሰረት ለመኖር እጅጉን እሞክራለሁ።።					
8	ሀይማኖት ለኔ የሰጠኝ ትልቁ ነገር በሀዘንና በችግሮች ጊዜ ሰላም እንዳገኝ ስለሚያደርገኝ ነው።።					
9	ጸሎት ለደስታና ለሰላም ነው።።					
10	ምንም እንኳን ሀይማኖተኛ ብሆንም ሃይማኖቴ የቀን ከቀን ህይወቴ ላይ ተፅዕኖ እንዲያደርግ አልፈቅድም።።					
11	ብዙውን ጊዜ ቤተክርስቲያን የምሔደው ከጓደኞቼ ጋር ጊዜ ለማሳለፍ ነው።።					
12	አጠቃላይ የህይወቴ ሂደት በሀይማኖቴ ላይ የተመሰረተ ነው።።					
13	ብዙውን ጊዜ ቤተክርስቲያን እሔዳለሁ፣ ምክንያቱም እዛ የማውቃቸውን ሰዎች በማየት እዝናናለሁ/እደሰታለሁ።።					
14	ምንም እንኳን በሃይማኖቴ እምነት ቢኖረኝም በህይወት ውስጥ ሌሎች ብዙ ጠቃሚ ነገሮች አሉ።።					

ክፍል 6፡ የተስፋ መጠን መለኪያ

ይህ ክፍል የካንሰር ህመምተኞች ያላቸውን የተስፋ መጠን ለመለካት የተዘጋጀ ሲሆን እያንዳንዱ ጥያቄ አራት አማራጮች አሉት፡፡

1. በጣም አልስማማም 2. አልስማማም 3. እስማማለሁ 4. በጣም እስማማለሁ

		1	2	3	4
1	ለህይወት በጎ እይታ አለኝ				
2	ረጅምና አጭር ግቦች አሉኝ				
3	በጣም ብቸኝነት ይሰማኛል				
4	በችግሮች መሃል እድሎችን ማየት እችላለሁ				
5	ምኞትን የሚሰጥ እምነት አለኝ				
6	ስለወደፊቱ ሳስብ ፍርሃትይሰማኛል				
7	ያለፉ የደስታ ጊዜዎችን ማስታወስ እችላለሁ				
8	ጥልቅ ውስጣዊ ጥንካሬ አለኝ				
9	ፍቅርና እንክብካቤን መስጠትና መቀበል እችላለሁ				
10	ነገሮችን የማገናዘብ ተሰጥኦ አለኝ				
11	እያንዳንዱ ቀን አቅምና ዕድል አለው ብዬ አስባለሁ				
12	ህይወቴ ዋጋ አለው ብዬ አስባለሁ				

ክፍል 7፡ በራስ ላይ ያለን ውጤታማነት (ጠቃሚነት) ስሜት መለኪያ

ለእያንዳንዱ ጥያቄ ከቀረቡት ከ1-10 ከተዘረዘሩት ቁጥሮች የመላሾቹን ስሜት መጠን የሚለካውን ቁጥር በማክበብ ይመልሱ፡፡

1. በበሽታው ምክንያት የሚከሰትን የድካም ስሜት ሌሎች ማድረግ የሚፈልጓቸውን ነገሮች ከማድረግ እንዳይከለክሎት ለመጠበቅ መቻልዎን ምን ያህል ይተማመኑበታል?

በጭራሽ አልተማመንም 1 2 3 4 5 6 7 8 9 10 ሙሉ በሙሉ እተማመናለሁ

2. በበሽታው ምክንያት የሚከሰተው የሰውነት አለመመቸት ወይንም ህመም ሌሎች ማድረግ የሚፈልጓቸውን ነገሮች ከማድረግ እንዳይከለክሎት ማድረግ መቻልዎን ምን ያህል ይተማመኑበታል?

በጭራሽ አልተማመንም 1 2 3 4 5 6 7 8 9 10 ሙሉ በሙሉ እተማመናለሁ

3. በበሽታው ምክንያት የሚከሰተው የጭንቀት ስሜት ሌሎች ማድረግ የሚፈልጓቸውን ነገሮች ለማድረግ እንዳይከለክሎት ማድረግ መቻልዎን ምንያህል ይተማመኑበታል?

በጭራሽ አልተማመንም1 2 3 4 5 6 7 8 9 10 ሙሉ በሙሉ እተማመናለሁ

4. ያለብዎ የጤና ችግሮች ወይም ምልክቶች ሌሎች ማድረግ የምትፈልጋቸውን ነገሮች ለማድረግ ጣልቃ እንዳይገባ ለመጠበቅ መቻልዎንምን ያህል ይተማመኑበታል?

በጭራሽ አልተማመንም1 2 3 4 5 6 7 8 9 10 ሙሉ በሙሉ እተማመናለሁ

5. የጤናዎን ሁኔታ ለመከታተል እንዲሁም ሀኪም ለመታየት የሚያስፈልገውን ጊዜ ለመቀነስ የሚያስፈልጉ የተለያዩ እንቅስቃሴዎችን ማድረግ ስለመቻልዎ ምን ያህል ይተማመናሉ?

በጭራሽ አልተማመንም1 2 3 4 5 6 7 8 9 10 ሙሉ በሙሉ እተማመናለሁ

6. ህመምዎ የየዕለት ህይወትዎ ላይ የሚያደርሰውን ተጽዕኖ ለመቀነስ መድሃኒት ከመውሰድ ሌላ ሌሎች ነገሮችን ማድረግ መቻልዎን ምን ያህል ይተማመኑበታል?

በጭራሽ አልተማመንም1 2 3 4 5 6 7 8 9 10 ሙሉ በሙሉ እተማመናለሁ

ክፍል 8፡ የማህበረሰብ ድጋፍ መጠን መለኪያ

ይህ ክፍል ህመምተኞች ያላቸውን ማህበረሰባዊ ድጋፍ ለመለካት የተዘጋጀ ሲሆን ሰባት መመዘኛ ደረጃዎች አሉት፡፡ ለእያንዳንዳቸው ጥያቄዎች በተሰጡት ቁጥሮች አቅጣጫ የ(√) ምልክት በማድረግ ይመልሱ፡፡

1= እጅግ በጣም አልስማማም 2=በጣምአልስማማም 3=በመጠኑ አልስማማም

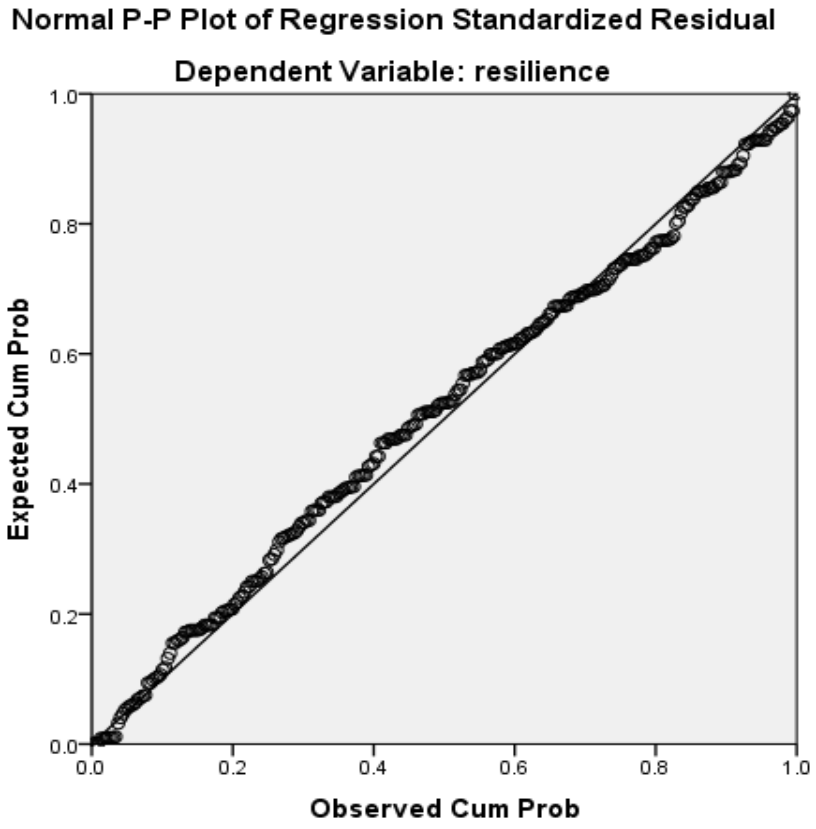
4= መልስ ለመስጠት አቸገራለሁ 5= በመጠኑ እስማማለሁ 6= በጣም እስማማለሁ

7= እጅግ በጣም እስማማለሁ

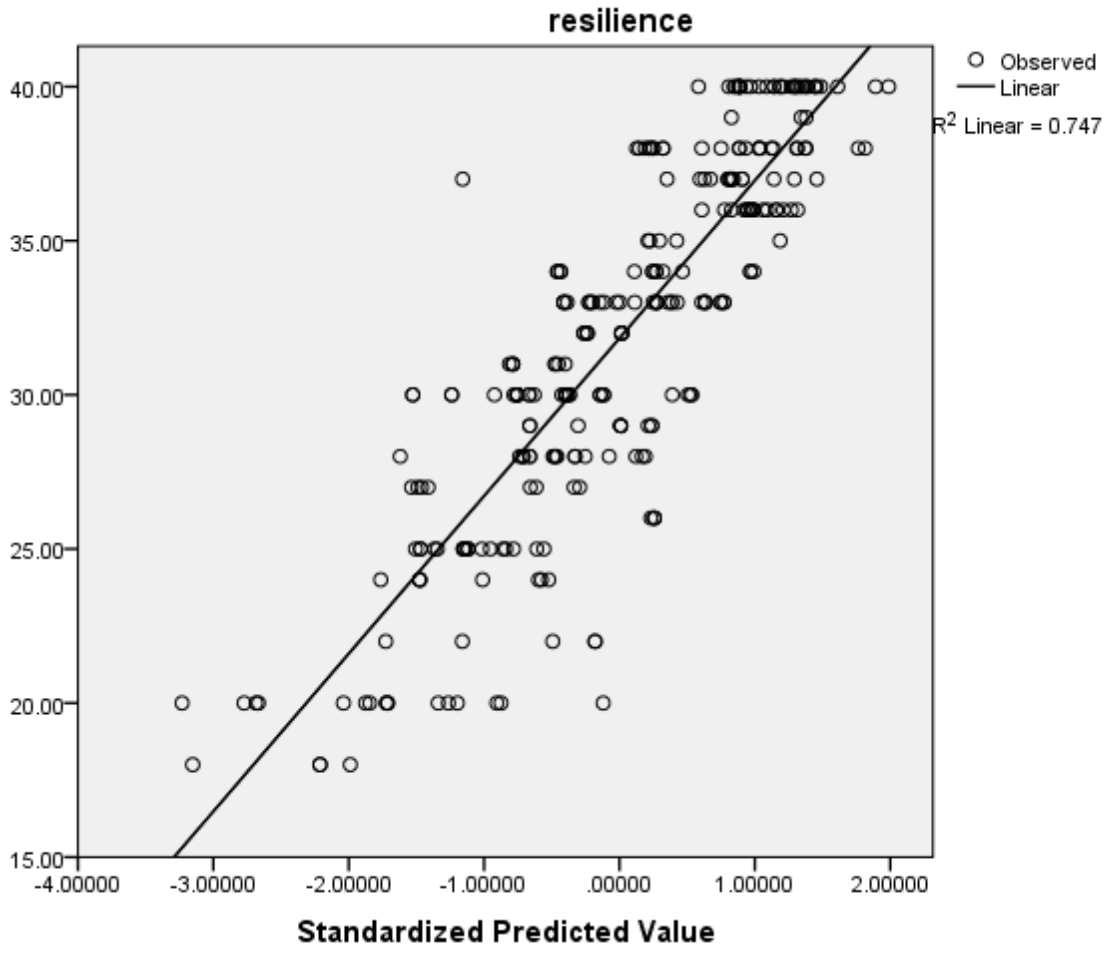
		1	2	3	4	5	6	7
1	በአካባቢዬ ስፈልገው የማገኘው ልዩ የሆነ ሰው አለ							
2	ደስታዬንና ሀዘኔን የማጋራው ልዩ ሰው አለ							
3	ቤተሰቦቼ የእውነት ሊረዱኝ ይፈልጋሉ							
4	የስሜት እና ሞራል ድጋፍና እርዳታ ስፈልግ ከቤተሰቦቼ አገኛለሁ							
5	እውነተኛ የምኞት ምንጭ የሆነ ልዩ ሰው አለኝ							
6	ጓደኞቼ የእውነት ሊረዱኝ ይሞክራሉ							
7	ሁኔታዬ ጥሩ ሳይሆን ሲቀር ጓደኞቼ እንደሚረዱኝ እተማመናለሁ							
8	ስለችግሮቼ ከቤተሰቦቼ ጋር ማውራት እችላለሁ							
9	ደስታና ሀዘኔን ላጋራቸው የምችላቸው ጓደኞች አሉኝ							
10	በህይወቴ ውስጥ ለስሜቶቼ የሚጠነቀቅ ልዩ ሰው አለኝ							
11	ቤተሰቦቼ ውሳኔዎችን እንድወስን ለመርዳት ፈቃደኛ ናቸው							
12	ከጓደኞቼ ጋር ስለችግሮቼ ማውራት እችላለሁ							

Appendix C: Assumption test results

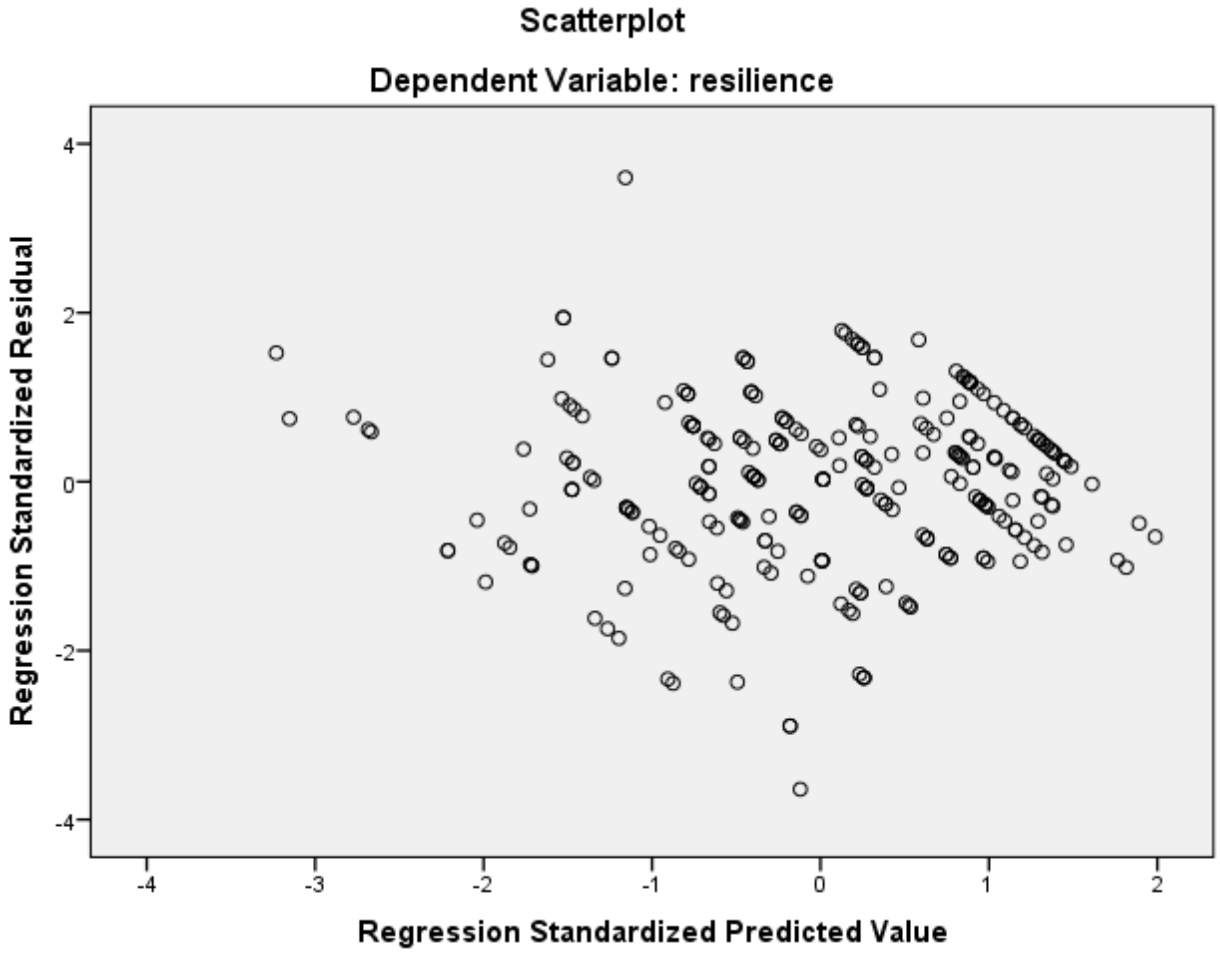
Appendix C1: Normality Distribution Measures through normal P-P plot of Regression Standardized Residuals



Appendix C2: Scatter Plot Linearity Assumption Measures



Appendix C3: Scatter Plot Homoscedasticity Measures



Appendix C4: Variance Inflation Factor test result for Assessing Multicollinearity

Model		Collinearity Statistics	
		Tolerance	**VIF**
3	(Constant)		
	Gender	**.820**	**1.219**
	Educational level	**.535**	**1.869**
	Employment status	**.581**	**1.720**
	Age category	**.641**	**1.561**
	Religion	**.591**	**1.691**
	Tumor stage	**.762**	**1.313**
	Treatment modality	**.875**	**1.143**
	Treatment cycle	**.816**	**1.225**
	Family support	**.266**	**3.766**
	Friend support	**.369**	**2.712**
	Support from others	**.249**	**4.020**
	Self-efficacy	**.459**	**2.177**
	Hope	**.478**	**2.094**
	Intrinsic religiosity	**.466**	**2.147**
	External personal	**.541**	**1.848**
	External social	**.388**	**2.576**
	Cognitive reappraisal	**.230**	**4.357**
	Emotional suppression	**.265**	**3.778**