

AMERICAN UNIVERSITY OF BEIRUT

HEALTH-RELATED QUALITY OF LIFE OF EXPATRIATE  
PATIENTS LIVING WITH CANCER IN ABU DHABI

by  
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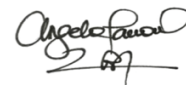
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# ABSTRACT OF THE THESIS OF

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Background: Advancements in cancer treatments have revolutionized cancer care; however, while effective in combating the disease, toxicities are often introduced that significantly impact a patient's quality of life<sup>1</sup>. The United Arab Emirates has witnessed remarkable progress in specialized oncology care services<sup>2</sup>. The diverse population, predominantly composed of expatriates from various nationalities<sup>3</sup>, presents unique challenges. An expatriate in Abu Dhabi, diagnosed with and undergoing treatment for cancer, could face an increased risk of lower health-related quality of life (HRQoL).

Purpose: To describe and explore the determinants of HRQoL of expatriate patients living with cancer in Abu Dhabi and subsequently facilitate the recognition of patients at risk for suboptimal HRQoL.

Methods: This was a quantitative study that recruited patients with hematological and oncological malignancies. Patients were assessed for HRQoL measured by the Functional Assessment of Cancer Therapy – General [FACT-G] scale, depression and anxiety measured using the Hospital Anxiety and Depression Scale [HADS], performance status using the Eastern Cooperative Oncology Group [ECOG] score, and acculturation using the Brief Acculturation Scales. Independent t-Test, ANOVA, and Pearson correlation were used for analysis. Regression analysis was used to study the associations with the determinants of HRQoL.

Results: A total of 100 cancer patients [mean age  $48.5 \pm 14.17$  years, 65% females] were included. The mean score of FACT-G scale was  $78.52 \pm 18.77$ , indicating a good overall HRQoL. Lower HRQoL was associated with increased age ( $r=0.22$ ;  $p=0.02$ ), lack of an employment visa (mean HRQoL score of  $44 \pm 15.55$  versus  $80.84 \pm 17.28$ ;  $p=0.039$  for those with employment visa), lower psychological adaptation ( $r= -0.27$ ;  $p<0.01$ ), higher anxiety ( $r= -0.56$ ;  $p<0.01$ ), higher depression ( $r= -0.75$ ;  $p<0.01$ ), and worse performance status [ $t(98)=3.9$ ;  $p<0.001$ ]. Patients who had difficulty in communicating with doctors/nurses (mean= $47.01 \pm 27$ ;  $p=0.002$ ) and in accessing their healthcare information (mean= $61.48 \pm 25.76$ ;  $p=0.014$ ) also scored lower on the FACT-G scale. Based on the stepwise multiple linear regression, worse performance status, higher depression, visa type, and difficulty accessing healthcare information predicted 63% of the variance in patients' HRQoL [ $F(4, 95) = 43.071$ ;  $p<0.001$ ].

Conclusion: Results of this study suggest that patients' functionality, psychological well-being, visa status, and their ability to effectively access their healthcare information have an independent and substantial relationship to their health-related quality of life. Understanding these patients' experiences can aid the healthcare practitioners, expatriates themselves, to tailor their treatment options and improve their quality of life.

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## ABBREVIATIONS

<b>BAOS</b>	Brief Acculturation Orientation Scale
<b>BPAS</b>	Brief Psychological Adaptation Scale
<b>BPCDS</b>	Brief Perceived Cultural Distance Scale
<b>BSAS</b>	Brief sociocultural Adaptation Scale
<b>ECOG</b>	Eastern Cooperative Oncology Group] performance status scale
<b>EWB</b>	Emotional Well Being
<b>FACIT</b>	Functional Assessment of Chronic Illness Therapy
<b>FACT</b>	Functional Assessment of Cancer Therapy
<b>FACT-G</b>	Functional Assessment of Cancer Therapy - General
<b>FWB</b>	Functional Well Being
<b>HADS</b>	Hospital Anxiety and Depression Scale
<b>HRQoL</b>	Health-Related Quality of Life
<b>NCDs</b>	Non-Communicable Diseases
<b>PRO</b>	Patient-Reported Outcome
<b>PS</b>	Performance Status
<b>PWB</b>	Physical Well Being
<b>QoL</b>	Quality of Life
<b>SSMC</b>	Sheikh Shakhbout Medical City
<b>SWB</b>	Social Well Being
<b>UAE</b>	United Arab Emirates
<b>WHO</b>	World Health Organization
<b>WHOQOL</b>	WHO Quality of Life Group

# CHAPTER I

## INTRODUCTION

Cancer is a global health concern and one of the leading causes of morbidity and mortality worldwide. In 2020, there was an estimated 19.3 million new cancer cases and almost 10 million cancer deaths worldwide (Sung et al., 2021). According to the World Health Organization [WHO], non-communicable chronic diseases [NCDs] such as cardiovascular disease, cancer, chronic respiratory disease, and diabetes cause 60% of all deaths globally (WHO, 2022). The American Cancer Society (2022) reported that there will be nearly 2 million cancer cases likely to be diagnosed in 2022, an equivalent of 5250 new cases each day. Although cancer incidence is increasing worldwide, the mortality rates have conversely decreased. The overall age-adjusted cancer death rate that had peaked during the 1990's has significantly dropped. The world has witnessed a 32% decline rate in mortality rates since then; this is mostly due to the substantial progress made against cancer in the development of antineoplastic treatments, the early detection of some cancers, and the reduction in smoking (American Cancer Society, 2022).

Reductions in mortality rates have shifted cancer from a fatal illness that occurs once in a lifetime, to a chronic disease that is incurable yet manageable. Patients are now living longer with advanced or metastatic disease (Boele et al., 2019). The diagnosis of cancer is marked by significant changes in an individual's life on multiple dimensions: physically, socially, financially, psychologically, and emotionally (Akinyemi et al., 2012). This is translated into a new sort of normal for cancer patients, meaning they must adapt to living with cancer, fitting their work and vacation schedules

around cancer treatment, changing their dietary habits, sacrificing their leisure activities, and trying to make the most out of their social support network (Shahidi et al., 2014).

### **A. Background of the Study**

Although cancer treatments have come a long way and revolutionized our view of cancer care, they do come at a price. Other than the disease manifestations, antineoplastic treatments and their toxicities play a huge role in negatively affecting a patient's quality of life (Jarrah, al Maatooq, et al., 2021). Hence, maintaining adequate health-related quality of life [HRQoL] among cancer patients has become increasingly important for guiding treatment options (Khan et al., 2005).

In the field of oncology, the evaluation of a patient's health condition is no longer focused on clinical and laboratory observations but is now concerned with a global well-being and a holistic approach to patient treatment, including physical, emotional, psychosocial, and spiritual health apart from achieving cure (H. Singh et al., 2014a). The goal of cancer therapy has always been curative, and where a cure is not achievable, the intent is shifted towards palliation and supportive management (Khan et al., 2005).

An individual's HRQoL is drastically changed from the moment s/he is informed of her/his disease, from the moment the 'cancer' word is uttered in a doctor's office, the person becomes entangled in a whirlwind of decisions. The individual becomes a patient, listening to medical jargon and forced to make treatment decisions, based on recommendations and guidelines that s/he may or may not comprehend. More often than not, patients are required to make trade-offs between HRQoL and longevity of life (Laryionava et al., 2014).

Although anticancer treatments can prolong life, they may have drastic effects on the patients' HRQoL. Some patients are willing to endure the treatment side effects and toxicities to gain extra years, while others are hesitant to add suffering to their remaining life (Stiggelbout et al., 1996). This is always a personal choice that can have many repercussions on the patients and their families (Shrestha et al., 2019). No matter what that choice may be, allowing the patients space to talk about their HRQoL and what it means to them, can give them a sense of control of their lives, in a time when their lives are chaotic.

### ***1. Country Overview***

Located in the Southern East of the Arabian Peninsula, the United Arab Emirates [UAE], a member of the Gulf Cooperation Council, is a relatively young country, established in 1971, and has since then witnessed great growth and established its distinctive presence on both the regional and international levels. It is made up of seven emirates: Abu Dhabi [the capital], Dubai, Sharjah, Ajman, Fujairah, Ras al-Khaimah, and Umm al-Quwain; each one with a separate ruler that oversees the local government. The UAE is a famous destination for employment opportunities because of its oil and natural gas reserves, booming economy, tourism and upholding great ethics and work policies. Thus, the country has a relatively young population and workforce (United Arab Emirates Population, 2022).

The UAE's healthcare system has also witnessed rapid growth and development. The UAE aspires to build a world-class healthcare system that delivers quality care and upholds a principle of 'no man left behind', and no one neglected without treatment (Koornneef et al., 2017). The UAE government strives to provide full financial

coverage for its citizens, in addition to mandating health insurance for expatriate employees and their families. Several charities are also in place to assist with expensive oncology treatments (Abu-Gheida et al., 2022). Several specialized oncology care services are available across the country that provide access to standard oncology treatments, plus novel FDA approved therapies, supported by the UAE healthcare authorities.

## ***2. Cultural Context of the UAE***

The population of the UAE has much grown over the past decades to reach an estimate of 10 million in 2022. The vibrant capital, Abu Dhabi, has over 600,000 residents. The majority of population live in urbanized areas. The UAE has very distinct demographic characteristics of which the Emirati nationals make up only 10% of the total population, and the remainder is made up of expatriates that have been employed to make up for the lack of national workforce, making the median age of the population around 30 years (GMI, 2023).

The total expatriate population of the UAE in 2022 was estimated at 8.92 million, with Indians making up the largest group (27.49%), followed by Pakistani (12.69%), Bangladesh (7.4%), Philippines (5.56%), Iran (4.76%), Egypt (4.23%), Nepal (3.17%), and others (GMI, 2022). These numbers make the UAE a melting pot of cultures, religions, languages, values, and traditions, which the UAE government supports and permits. It is important to note that subcultures can also exist between the members of one nationality, further complicating the situation. Although the official language of the country is Arabic, English is used all around the country, and Urdu is so common to hear that some Urdu words have been integrated in the country's language.

Expatriates must rely on a work visa to remain in the country. For most, the change is not permanent, and they plan on repatriation when they feel they are financially stable enough to go back to their home country. To successfully integrate into the host country's way of life, the individual must achieve a certain level of acculturation which is the process of social, psychological, and cultural change that stems from balancing of two cultures while adapting to the prevailing culture of the society. While immigrants strive to achieve this, expats are less concerned, because they know that their time in the UAE is temporary, and they eventually must repatriate (Thirlwall et al., 2021).

Despite the relatively young mean age within the UAE residents, cancer is the third leading cause of death in the country. In 2019, the UAE recorded a total of 4381 new cancer cases, of which 3440 were non-UAE citizens (MOHP, 2019). In Abu Dhabi, 2212 new cancer cases were reported in 2019, of which 72% were expatriates (Workbook: Non-Communicable Diseases, 2019).

## **B. Significance of the Study**

HRQoL is a subjective perception of one's world. According to the WHO Quality of Life (WHOQOL) Group, HRQoL is "an individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (The WHOQOL group, 1995). While HRQoL is affected in any patient living with a chronic disease, it is a major concern for patients with cancer.

The diagnosis of cancer requires multiple imaging, a set of painful procedures such as biopsies and multiple blood collection. Once a diagnosis is established, prompt



treatment is needed, usually starting with multiple cycles of chemotherapy over several months associated with multiple toxicities, adverse side effects, and long hospitalization periods. The administration of cytotoxic drugs also necessitates the insertion of a central venous access device that needs constant care and maintenance and is prone to complications, mainly infections. Hence, as the patient is dealing with the symptoms of cancer and the inevitable set of changes that accompany this life-threatening diagnosis. They also struggle with the adverse effects associated with the treatment regimen and follow up plan, with the hope of achieving a cure and returning to their normal pace of life. Consequently, in oncology, patient-reported outcomes are vital aspects that can help bring the patient's perspective to the forefront and contribute significantly to our understanding of their own experiences and struggles of living with this disease. Our understanding of their perspectives would contribute to designing interventions responsive to their needs to improve their health-related quality of life as one of the most important patient-reported outcomes.

The UAE, a relatively young country with significant developmental potential, has a unique demographic structure where nationals constitute a small fraction, and the majority are expatriates mainly from South Asia. These expatriates, seeking better opportunities, rely on work visas for temporary residency during their contracts with employers in the culturally diverse capital, Abu Dhabi. Although possible, obtaining a UAE citizenship is a far-fetched dream, so migrants are a rare entity in UAE. This translates to a decreased sense of security and need for acculturation. These expatriates are aware that their change is not permanent and that eventually they are required to repatriate, which makes them less likely to want to integrate themselves in the host culture, as opposed to immigrants. Instead, they learn just enough about the Emirati

language and culture to get by during their daily lives, all the while maintaining their own culture, religion, language, dress, food, and values, supported by the UAE government (Thirlwall et al., 2021). The process of acculturation is made more challenging by the fact that there are only limited opportunities to engage and socialize with the nationals (Maitner et al., 2016) as expatriates make up almost 95% of the country's workforce.

A major challenge facing expatriates is the need to maintain employment, not only for obtaining residence, but also for securing ongoing health insurance, as it is usually supplied by the employer. This becomes challenging when one falls sick, especially with a life-threatening, yet chronic disease such as cancer, which requires multiple expensive treatments and long periods of hospitalization, negatively affecting the HRQoL of the patient. Many studies have documented the poor HRQoL of cancer patients, and even worse results have been observed in migrants versus local patients (Ashing-Giwa et al., 2007a; Butow et al., 2013; Sze et al., 2015), but almost none have studied expatriate patients living with cancer and the role acculturation plays in influencing their health outcomes. An expatriate living in Abu Dhabi diagnosed with and being treated for cancer who may not be well integrated into the Emirati Culture, can have a severely impacted HRQoL owing to several clinical, sociodemographic, and cultural factors specific to this vulnerable population.

Hence, an expatriate living and working in Abu Dhabi, and diagnosed and being treated for cancer, is at higher risk for poor HRQoL.

Exploring the determinants of HRQoL of expatriate patients living with cancer in Abu Dhabi would inform us about the individuals or communities most at risk for poor perceived health outcomes. As a country that is mostly inhabited and served by

expatriates, it is important to take the first steps to explore acculturation in this population and how it relates to illness and health outcomes. This study, being the first in the UAE to address cancer patients' HRQoL, will help bridge the gap in the literature and open the door for further research in this population to guide healthcare policies and allocate resources to meet these patients' needs during their cancer journey. Insight into the link between acculturation among different nationalities and HRQoL can aid in providing culturally competent healthcare in an institution that caters to a culturally diverse population. Understanding these patients' experiences can support the healthcare practitioners who are expatriates themselves and may or may not be well acculturated, to tailor their treatment options to allow their patients to make a truly informed health decision. The evidence generated from this study will be used to strategize and introduce practices at the institution to address some of the issues and challenges faced by the expatriate cancer patients receiving treatment at this facility, which may ultimately improve their HRQoL.

### **C. Purpose of the Study**

The primary purpose of this study is to explore the determinants of HRQoL of expatriate patients living with cancer in Abu Dhabi. Another aim is to determine patients at risk for suboptimal HRQoL. This knowledge is essential to enable the clinician to understand patient experience in order to tailor treatment options according to the patient's perceived best interest and needs.

#### **D. Aims and Hypotheses**

Aim 1a. To describe HRQoL of expatriate patients undergoing treatments for cancer in Abu Dhabi. The associated hypothesis would be:

1. Reported HRQoL would be low in expatriates undergoing treatment for cancer in Abu Dhabi.

Aim 1b. To describe the relationships among clinical and sociodemographic characteristics, performance functioning, acculturation, and psychological status and HRQoL in a sample of expatriate patients undergoing treatments for cancer in Abu Dhabi. The associated hypotheses would be:

1. Malignancy type will be a significant predictor of HRQoL scores.
2. Type of treatment will be a significant predictor of HRQoL scores.
3. Socioeconomic status will be a significant predictor of HRQoL scores.
4. Availability of family support will be a significant predictor of HRQoL scores.
5. Expatriates undergoing treatment for cancer who have poor performance functioning (high ECOG scores) will report worse HRQoL scores.
6. Poor acculturation (low scores on Brief Acculturation Scales) will be associated with worse HRQoL scores.
7. Higher scores on anxiety and depression screening will be associated with worse HRQoL scores.

#### **E. Limitations**

This study is not without limitations. First, the sample will be taken from one medical center which can affect the generalizability of the results to the entire population of expatriate cancer patients in the emirate of Abu Dhabi. It is possible that

the participants that were recruited may have a rather decreased quality of life since they are hospitalized. Also, self-report measures are prone to response biases. Participants may be tempted to give socially desirable answers and thus a social desirability bias could result. This will be alluded to in the consent.

The cross-sectional design used in this study is considered weak in its ability to support causal inferences because it is not appropriate for studying predictors over a long period of time. No causality between the researched independent and dependent variables will be assumed, only associations since it is difficult to determine the temporal sequence of the variables when they reflect only one snapshot of time. Pre-existing differences (behaviors, attitudes, and characteristics) may be a plausible alternative explanation for differences in the outcomes.

## **F. Summary**

Expatriates, by definition, move to a new country on a temporary basis, usually to work and often without their families, whereas immigrants aspire to move to a new country to become citizens and change their nationality. To successfully adjust to the new country of residence, expatriates require a certain degree of acculturation. Acculturation is the process of social, psychological, and cultural transformation that is essential for the mover to settle and function in the new environment. While expatriates need to adapt to the new culture, they are less motivated to assimilate into the host culture because they have no expectation of remaining in the country permanently; instead, they strive to balance both cultures. Expatriates adjust enough to be efficient in the workplace and be functional in the host environment. However, they strive to maintain their original culture and traditions to repatriate back to their home country

when the time comes and re-join their families. The UAE government support the diversity of the different cultures of the expatriate and does not expect them to incorporate the Emirati lifestyle, within the acceptable religious limits. The decreased acculturation, associated with different clinical, sociodemographic, and psychological issues, could pose a risk for decreased HRQoL among expatriates in Abu Dhabi who are diagnosed with cancer and undergoing treatment.

## CHAPTER II

### LITERATURE REVIEW

This chapter examines the literature related to HRQoL, its utilization in oncology, its perception among expatriates, and the determinants influencing it. Additionally, it outlines the conceptual framework that serves as a guide for this research study.

#### **A. Health Related Quality of Life**

Before the term quality of life was developed, health was defined as the absence of disease. The conceptualization of quality of life began in the 1940s and incorporated positive and negative aspects (Power & Kuyken, 1998). Quality of life evaluates the gap between an individual's expectation of life and reality, or their actual experience of life (Bottomley, 2002). By that definition, quality of life can only be accurately described by the individual, taking into consideration various aspects of life. However, quality of life is a general term and includes many aspects of an individual's life that are beyond health, such as economic and political circumstances ("Handbook of Quality of Life in Cancer," 2022).

The term Health Related Quality of Life [HRQoL] that was introduced in the 1980s, considers only the aspects of life that affect either physical or mental health. HRQoL is an important feature for patients with chronic illnesses and represents the effect of the treatment on the physical, psychological, and social domains of a patient's life and their overall well-being. It is important to highlight that HRQoL is a dynamic

and fluid concept that is based on multiple factors and is subject to change over time and through different stages of the disease or treatment (“Handbook of Quality of Life in Cancer,” 2022).

There is no universally adopted definition for HRQoL. The WHO defines HRQoL as: “an individuals’ perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (The WHOQOL group, 1995). Another definition of HRQoL is that it is the “index of a patient’s perception of their own position in life made over the course of a particular disease and its treatment” (Sosnowski et al., 2017). In 1997, Ferrell and Dow described HRQoL in cancer survivors to include four parameters. First, physical well-being is the control of debilitating symptoms, the physical independence, and capability in performing the daily basic functions. Second, psychological well-being that they described as maintaining a sense of control in the face of the stresses caused by the illness, changing priorities, and fear of the unknown. Third, social well-being that impacts the individual’s roles and relationships. Lastly, they described the spiritual well-being that depends on the individual’s ability to live with the uncertainty and remain hopeful during the cancer journey (Ferrell & Dow, 1997). HRQoL is an important Patient-Reported Outcome (PRO). PROs are the measurement of the health status as reported directly from the patient. Regular assessment of PROs can provide early recognition of issues in vulnerable populations, such as cancer patients, and that offers a unique perspective on the effectiveness or detriment of the anti-cancer treatment trajectory. PRO measurements are routinely incorporated in clinical trials, but their use in daily clinical practice is limited (Weldring & Smith, 2013).



## **B. HRQoL in Oncology**

Cancer threatens the well-being of the individual and exerts a disruptive effect on the patient's lifestyle. Hence, cancer patients, in general, are prone to more psychological distress and an inferior HRQoL than the healthy or cancer-free population. Assessing HRQoL is a first step to improving it especially in the cancer population who suffer from the physical, emotional, and social challenges associated with the disease, providing valuable insights that can inform targeted interventions and support services tailored to enhance their overall well-being.

The Functional Assessment of Cancer Therapy (FACT), previously termed Functional Assessment of Chronic Illness, has been under development since 1988 and is constructed around two guiding principles: subjectivity and multidimensionality; it is an important HRQoL measure in cancer patients. HRQoL concerns not only symptoms of disease and side effects of treatment but a general appraisal of satisfaction with one's life at a personal level, which is best assessed through direct self-reported measures. The key domains in the scale include: (1) physical well-being, referring to signs and symptoms such as pain and vomiting, (2) functional well-being, referring to the individual's ability to perform the activities of daily living like work, sleep, or hygiene-related undertakings, (3) social/family, including social support, family intimacy, and enjoyment of leisurely activities, and (4) emotional well-being, covering both the positive and negative aspects (Cella et al., 1993a).

In studies comparing the HRQoL between cancer patients and the general public, cancer patients or survivors report significantly lower levels of overall HRQoL with a mean score of 52.4 vs. 61.5 in the general population ( $p < 0.0001$ ), in addition to

lower scores in the following domains: physical (70.3 vs. 87.4), emotional (73.4 vs. 85.3), and cognitive (77.5 vs. 86.8). Physical symptoms that affected the HRQoL of cancer patients were fatigue, nausea and vomiting, pain and dyspnea, sleep disturbances, appetite loss, diarrhea, and constipation (Lee et al., 2014; Yoo et al., 2017). These results are consistent across multiple studies evaluating HRQoL in cancer patients. Reported average HRQoL scores are 62.4 among cancer patients in India (Jacob et al., 2019), 65.7 in Jordan (Abu Sharour et al., 2020), and 66 in Spain (Oh et al., 2021), with the lowest scores reported in the physical functioning and emotional well-being domains. As the anti-cancer treatment progresses and the tumor appears to regress, the HRQoL of cancer patients tend to improve (H. Singh et al., 2014b).

In a study comparing the HRQoL of breast cancer patients on treatment, survivors, and age-matched women from the general population in Vietnam, breast cancer survivors showed higher HRQoL in several domains compared to patients on active treatment; however, they still ranked much lower than their age-matched healthy women (Ngan et al., 2022). However, this is not always the case across patients with blood cancers that suffer from worsening HRQoL as they endure cycle after cycle of chemotherapy (Nemati et al., 2003). Hence, cancer and treatment types could play a determining role in the HRQoL of cancer patients.

A similar study was conducted recently in the UAE that compared the quality of life of 250 cancer patients with 250 health adults in different domains. This cross-sectional study concluded that cancer patients had a 1.65-fold risk of having poorer quality of life than healthy adults do. The healthy subjects scored higher in the social domain, followed by physical, psychological, then the environmental domain while the

highest quality of life mean score for cancer patients was associated with the psychological domain, followed by the environmental, then the social and physical domains (Jarrah, Maatooq, et al., 2021).

### **C. HRQoL in Expatriates**

Since research surrounding expatriate HRQoL is very minimal, this literature review will be guided by studies assessing the HRQoL of immigrants in different countries and adapt it to the expatriate population. Though cancer has a detrimental effect on any individual, research has repeatedly proven that migrant patients with cancer undergoing treatment away from home are at increased risk for worse HRQoL outcomes than their nation counterparts. Sze et al. (2015) compared the HRQoL and psychological morbidity in a hospital-based sample of first-generation migrant cancer patients (Arabic, Greek, and Chinese) and Australian-born Anglo cancer patients in Australia. Migrants who developed cancer had more psychological distress and inferior HRQoL than Anglo-Australians. The estimated differences in HRQoL scores between migrants and the Australian-born participants were as follows: 7.3 for Arabic, 5.8 for Chinese, and 3.6 for Greek.

Similarly, Spanish-speaking Latinas residing in America reported poorer overall HRQoL (mean=56.3; SD=7.5) and scored lower on the functional, emotional, and social/family well-being domains than English-speaking Latinas (mean=60.5; SD=10.8), while Americans reported the most favorable HRQoL (mean= 64.7; SD=10.3) ( $p<0.001$ ) (Ashing-Giwa et al., 2009). Ethnic minority Hispanic cancer patients in the USA, report significantly worse distress, depression, and overall HRQoL

than do majority patients (Lockett et al., 2011). Multiple factors are likely to account for the differences in HRQoL outcomes between immigrants and national cancer patients.

## **D. Determinants of HRQoL**

### ***1. Acculturation***

Worldwide immigration has resulted in a growing ethnic and cultural diversity in developed countries, as is the case in the UAE. Expatriation is often associated with emotional distress resulting from entering an unfamiliar territory and coming into contact with a new strange culture; not all individuals acclimate easily. Acculturation refers to the process of cultural and psychological modifications that an immigrant or expatriate go through to adapt to the new host culture. Occasionally, these adjustments may be attained effortlessly, but at other times, a cultural conflict could arise and lead to acculturative stress (Brand et al., 2017).

Acculturation is a complex and multilayered process. Previously, acculturation had been described as a unilineal journey, during which individuals moving to a new country eventually adopt the culture of the host and shed their own as time goes by (M. Gordon, 1964). Then the acculturation model was changed to become a bilinear process that includes four categories:

- Integration: Adopting the culture of the host society while retaining some of original culture
- Assimilation: Adopting the new culture while shedding their home country culture
- Separation: Retaining the heritage culture and completely rejecting the host culture

- Marginalization: Rejecting both cultures

Integration has been associated with the least acculturative stress, while assimilation and separation have been linked to worse acculturative stress and thus poorer health outcomes, as the role of acculturation is increasingly being studied as a likely element that could potentially impact an individual's health (Berry, 2005). A recent study assessing the link between acculturation and HRQoL in Turkish immigrants in Germany reported that separation and marginalization are associated with poorer HRQoL. Separation was associated with poorer physical and mental health (RC = -2.3, 95% CI [-3.9 to -0.8] and RC = -2.4, 95% CI [-4.4 to -0.5], respectively; in reference to integration). Marginalization was associated with poorer mental health in descendants of migrants (RC = -6.4, 95% CI [-12.0 to -0.8]; in reference to integration). The preceding results indicate that a delicate balance is needed between retaining the culture of origin and accepting the host culture (Brand et al., 2017).

Similarly, in a study exploring the association between acculturation and QoL outcomes for Korean immigrant breast and gynecological cancer survivors, the findings showed that the Korean cancer immigrants who were better acculturated had lower depression levels and thus better QoL. Acculturation was found to be an indirect predictor of QoL (Lim et al., 2008).

## **2. Ethnicity**

When evaluating the impact of immigration and ethnicity on PRO in cancer survivors in Australia, though immigrants had lower HRQoL scores, no differences in ethnic subgroups were reported (Butow et al., 2013; Sze et al., 2015).

HRQoL among a multi-ethnic sample of African-American, Asian-American, Latina-American, and European-American breast cancer survivors ranged from fair to good in a study by Ashing-Giwa et al. (2007b). Ethnicity accounted for 5% of the variance in HRQoL. Though the bivariate analysis suggested that ethnic difference in HRQoL existed, the regression analyses demonstrated that both medical and socio-ecological factors were more relevant when predicting HRQoL outcomes, suggesting that ethnic identity could act as a proxy for the socio-ecological context (Ashing-Giwa et al., 2007b).

### ***3. Cancer Related Factors***

The cancer type and treatment modality are determinants in HRQoL (Ashing-Giwa et al., 2007b; Gupta et al., 2022; Sze et al., 2015), and as time elapses and the individual transitions from patient on active treatment to cancer survivor, the HRQoL is significantly improved (Ngan et al., 2022; H. Singh et al., 2014b). In contrast, if the patient does not respond to treatment and the tumor progresses, the patient is expected to have very low HRQoL scores, associated with increased disease burden, severe symptoms, and poorer prognosis. Having advanced stage cancer also means that the patient is sometimes prescribed dose dense chemotherapy, associated with higher risk for adverse effects and poor outcomes. Lower HRQoL scores were reported in patients with Stage IV cancers than patients with less advanced cancers (Gupta et al., 2022). In breast cancer patients, the use of taxanes was associated with decreased HRQoL levels, as taxanes had severe complications as compared to anthracyclines. The use of combination therapy was also found to increase the risk for poorer HRQoL (Gupta et al., 2022).

#### ***4. Psychological Well-Being***

Despite scientific breakthroughs and treatment advances in cancer care, the diagnosis of cancer produces significant psychological distress from the physical symptoms, lifestyle change, and the fear of dying that stealthily creeps up. The disease is always connected with pain, fear, and thoughts of dying. Hence, most cancer patients suffer from psychological distress at some stage of their illness trajectory (Devita et al., 1997; and Parker et al., 2003). The majority of the psychological disorders encountered are depression, anxiety, and delirium (Thapa et al., 2015).

Patients undergoing radiotherapy or palliative care treatments, terminally ill patients and those experiencing severe pain are at a higher risk for developing psychological disorders (Chochinov, 2001). Cancer-related anxiety can disrupt sleeping habits, intensify feelings of pain and nausea, and thus negatively affect the quality of life of patients (Stark & House, 2000). Higher prevalence of depression and anxiety were reported among cancer patients in comparison to matched controls of healthy patients (R. P. B. Singh et al., 2015). Depression, anxiety, and psychological stress was more prevalent in patients suffering from head and neck, breast, and genital tract cancers, with more stress observed in females than males (Nikbakhsh et al., 2014).

Depression was found to be a direct predictor of HRQoL in Korean immigrant breast and gynecological cancer survivors. Survivors that had a larger social network received greater emotional support, and in turn showed lower depression levels (Lim et al., 2008) .

In a cross-sectional study comparing PROs (psychological morbidity and HRQoL) among Australians and migrants, the Hospital Anxiety and Depression Scale

(HADS) scale was used to assess anxiety and depression, and the FACT-G questionnaire to evaluate HRQoL. The three variables: Anxiety, Depression, and HRQoL were compared between migrants of different ethnic backgrounds and Australians in unadjusted linear regression models and models that were adjusted for the following: language, age, sex, education, socioeconomic status, marital status, cancer type, and active treatment status. Logistic regression and odds ratio were used to compare anxiety and depression between the three migrant groups and the Australians, while multiple regression models were used only in the migrant sample to assess for the determinants of HRQoL. As such, migrants were found to have significantly worse HRQoL ( $R^2 = 0.08/ p < 0.0001$ ), higher anxiety ( $R^2 = 0.08/ p < 0.0001$ ) and depression levels ( $R^2 = 0.10/ p < 0.0001$ ). The Arabic participants had the highest anxiety and depression scores and the worst HRQoL among all migrant groups. As such, migrants had 4x higher risk of depression and 3x higher risk for anxiety, and both were found to be predictors of HRQoL in immigrants (Sze, et al., 2015). Psychological well-being was one of the determinants of HRQoL among African, Asian, Latina, and European American breast cancer survivors (Ashing-Giwa et al., 2007b, 2009).

##### **5. *Health Status (Performance Functioning)***

Physical symptoms and side effects of treatment are the most widely recognized factors that can hamper the HRQoL of oncology patients. Symptom burden has been associated with survival of cancer patients and the performance status of the patient is linked to the disease prognosis (Sitlinger & Zafar, 2018). In a study by Alam et al., (2020), it was reported that less than half of oncology patients have poor performance



status at a cutoff of  $PS \geq 2$ . Performance status was significantly associated with HRQoL ( $\chi^2 = 21.54$ ;  $p = 0.002$ ), indicating a significant variation (Alam et al., 2020). HRQoL was significantly impaired in patients with a high symptom burden and impaired physical functioning (Kokkonen et al., 2019). Statistically significant differences in overall HRQoL scores were noted in relation to performance functioning. As the performance functioning, measured by the Karnofsky's Performance Score, increased by 10 points, the overall HRQoL increased by 3.95 points ( $p < 0.0001$ ) (Movsas et al., 2006).

## **6. Healthcare Context**

Communication is a core aspect of oncology care. Open communication in cancer care requires the healthcare provider to have adequate knowledge about effective communication, along with excellent communication skills. However, communication goes both ways. The cancer patient on the receiving end needs to be aware of the situation, ask questions, and demand information. Studies show that patients from minority groups tend to shy away from facing doctors, ask fewer questions, and as a result are less active in their care. This passivity can perpetuate doctors to provide less information for these patients than those belonging to a non-minority group. Hence, disparities in cancer care can also be traced to poor communication (H. S. Gordon et al., 2006).

Difficulty communicating with healthcare providers, understanding the healthcare system, and language competency were studied in relation to HRQoL among migrants and Australian-born cancer patients in Australia; however, they were not included in the adjusted models as they are highly connected to the migrant status and

hypothesized to act as mediators. Understanding the healthcare system and difficulty communicating with doctors partially mediated the relationship between migrant status and anxiety, depression, and HRQoL ( $p < 0.0001$ ) (Sze et al., 2015). The quality of the doctor-patient relationship was found to be a significant predictor of HRQoL among immigrants (Ashing-Giwa et al., 2007b, 2009). Language barriers introduces challenges in communication across different cultures and can be a burden for both the patient and the healthcare provider (Al Shamsi et al., 2020).

Having an insurance plan was significantly associated with better HRQoL outcomes in cancer patients. Cancer treatment is generally very costly, with newer treatments costing up to tens of thousands of dollars. Having medical insurance can relieve some of the financial burden of cancer patients, allowing them to achieve a favorable HRQoL (Gupta et al., 2022). HRQoL is directly predicted by the financial burdens of cancer, and indirectly predicted by the availability of health insurance (Lim et al., 2008).

## ***7. Socioecological Factors***

Age, education, and employment status of the patient are determinants of HRQoL in cancer patients (Sze et al., 2015). Multivariable regression analysis predicted that age, education and occupation were associated with HRQoL of breast cancer patients; older patients had lower overall HRQoL ( $R = -0.003$ ), while a good educational level (illiterate versus literate) was associated with better HRQoL outcomes ( $R = 0.081$ ). Illiterate patients were found to be less involved in the decision-making process, negatively influencing their HRQoL. Married women with breast cancer achieved better results as compared to

single women (divorced, widow, never married), which can be related to having a partner thus better support system. Husbands of these patients tend to take care of the personal, health, and financial issues while their wives underwent the vigorous chemotherapy treatment (Gupta et al., 2022).

The role of social support networks during illness is widely studied. Most nursing models of care focus on patient and family centered care to provide the best outcomes for the individual. Having a supportive network of family and friends could decrease depressive symptoms and in turn enhance the HRQoL of cancer patients, assisting with the adaptation of healthy coping mechanisms. Applying that to immigrants, or expatriates more specifically, who have moved to a new and culturally diverse country without their families and away from their usual social network, if diagnosed with cancer, they could suddenly find themselves alone, with absolutely no support system to guide and help them through this difficult time. Expatriates can become more vulnerable to stress which could negatively affect their HRQoL. Hence, social network structures and perceived social support were found to be indirect predictors of HRQoL in immigrant cancer patients (Lim et al., 2008).

## **8. *Health Efficacy***

On the individual level, the literature has identified several factors that can predict the HRQoL of cancer patients. These include age, educational level, marital status, socioeconomic stage, cancer-related factors, and medical condition. None of these factors, however, are modifiable, and might be very difficult to alter to achieve better HRQoL results. Health efficacy, or in this population, cancer-relevant self-

efficacy could be one of the determinants of HRQoL that can be improved, thus improving HRQoL (Baik et al., 2020).

Self-efficacy, as a concept, refers to “an individual’s confidence in their ability to successfully execute a specific behavior to produce an expected outcome” (Stanton et al., 2007) and is a key element of the social cognitive theory regulating human behavior (Bandura, 2007). Self-efficacy in individuals is important for them to overcome difficulties, persist in the face of adversity, and remain committed to their goals even when faced with challenges. In the healthcare context, self-efficacy is a very important construct that allows the individual to positively cope with the challenges imposed by a cancer diagnosis, tolerate cancer-related symptoms, manage emotional reactions, and communicate with the healthcare providers (Young & Klinge, 1996). Research has shown that when it comes to cancer, greater self-efficacy allowed patients to adequately manage their symptoms which in turn improved functional, emotional, and social well-being and lower psychological distress. Healthcare related self-efficacy improved communication among patient and healthcare providers, enhanced stress management and improved symptom burden and HRQoL (H. S. Gordon et al., 2006).

## **E. Conceptual Framework**

Karimi and Brazier (2016) identify four definitions of HRQoL in the literature. The first definition refers to the balance between the way an individual operates in predefined activities and their subjective feeling of well-being (Hays & Reeve, 2008). However, unlike QoL, HRQoL specifically considers factors related to an individual's health, excluding non-health-related aspects such as economic or political

circumstances (Torrance, 1987). HRQoL is concerned only with those factors that influence a patient's health that may be affected by the disease, more specifically the chronic illness they suffer from, such as cancer (Ebrahim, 1995). Lastly, it centers on the value assigned to health, specifically addressing the values attributed to different health conditions, including those like cancer. HRQoL is a multidimensional construct that measures the impact of an individual's disease on multiple facets: physical, functional, psychological, social, spiritual and sexual well-being. In short, HRQoL is the umbrella definition for an extensive array of patient reported outcomes (P. Kassianos, 2022).

HRQoL is an important concern for all healthcare providers in the multidisciplinary team, and as such it has become an imperative part of oncology research. Multiple HRQoL frameworks have been developed over the years that align with different health conditions, stages of life, and communities. The conceptual framework guiding this study is an adapted form from the Ashing-Giwa Contextual Model of HRQoL ( Ashing-Giwa, 2005).

The Ashing-Giwa contextual model of HRQoL (Figure 1), developed in 2005, is a framework that has expanded the traditional HRQoL framework to enable cultural and socioecological research. The Model suggests that HRQoL is molded by individual-level factors including (1) cancer-related medical factors, (2) general health status, and (3) psychological well-being. This framework goes one step further beyond the individual factors affecting HRQoL that have been identified earlier, to include four contextual domains: (1) Demographic context, (2) Socio-ecological context, (3) Cultural context, and (4) Healthcare system context. Each of these contains multiple

subdomains. This shifts the HRQoL paradigm to a construct that is not only centered around individual patient factors, but also includes factors that could influence the HRQoL on a macro level (Ashing-Giwa, 2005).

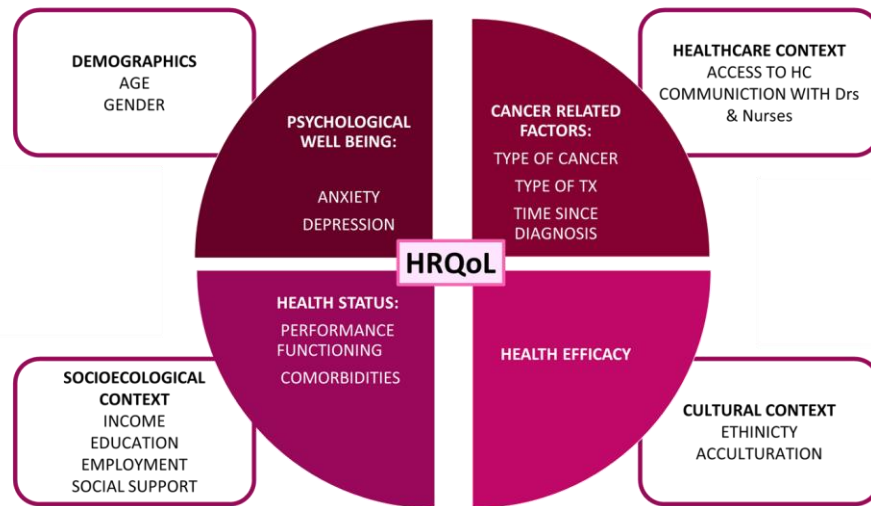


Figure 1. Ashing-Giwa Contextual Model of HRQoL

The Ashing-Giwa contextual model was used to examine HRQoL among African, Asian, Latina, and European American breast cancer survivors. Individual-level factors, cancer-related medical factors (age at diagnosis, cancer stage, radiation therapy), health status (number of comorbidities, role limitations), and psychological context (emotional wellbeing) accounted for 60% of the variance in HRQoL. On the other hand, 45% of the variance in HRQoL was accounted for by macro and systemic-level factors that included the health care system (quality of doctor–patient relationship) and socio-ecological factors (social support, life stress, and SES). All regression models were found to be significant ( $p < 0.001$ ). Next, hierarchical stepwise multiple regression

models were conducted to determine the predictors of HRQoL in a multiethnic sample of women with breast cancer in California. Model 1 suggested that ethnicity (cultural context) by itself explains a significant portion of the variance ( $R^2 = 0.05$ ;  $p < 0.001$ ). Model 2 added cancer-related medical factors, health status, and psychological predictors that improved the results ( $R^2$  change = 0.56;  $p < 0.001$ ); this explained 62% of the variability. In the final model 3, socio-ecological and health care system-level factors were added which again significantly improved the results ( $R^2$  change = 0.08;  $p < 0.001$ ), making this model the best fit as it explained 70% of the variability in HRQoL scores. The authors concluded that significant predictors of HRQoL were years since diagnosis, number of comorbidities, role limitations, emotional/ psychological wellbeing, quality of doctor–patient relationship, social support, and life stress (Ashing-Giwa et al., 2007b).

A latter similar study adopting the Ashing-Giwa contextual model examined health-related quality of life and its salient predictors among a population-based sample of cervical cancer survivors (English-speaking Latinas, Spanish-speaking Latina, and European Americans). Using a stepwise multivariate regression analysis, the study concluded that radiation, comorbidity, role limitations, perceived health status, psychological wellbeing, body image, sexual impact, doctor-patient relationship, and social support were significant determinants of HRQoL. This model accounted for 58% of the variance in the scores of the HRQoL. Ethnicity and language were not a predictor of HRQoL (Ashing-Giwa et al., 2009).

## **F. Summary**

This chapter provides an overview of HRQoL, exploring its definitions and applications in the realms of oncology and expatriate populations. It investigates various determinants influencing HRQoL, with a particular focus on the challenges faced by cancer patients, emphasizing the significance of the FACT as a key measure. The comprehensive exploration of determinants encompasses acculturation, ethnicity, cancer-related factors, psychological well-being, health status, healthcare context, socioecological factors, and health efficacy. The intricate interplay of these determinants in shaping HRQoL is highlighted, drawing from the Ashing-Giwa Contextual Model.

The lack of research on the HRQoL of expatriate cancer patients was found to be a gap that lays the foundation for the current study.



## CHAPTER III

### METHODS

This chapter contains a detailed description of the design, setting, data sources, sample, variables and measures, and procedures to be used in this study, as guided by the Ashing-Giwa Conceptual Model.

#### **A. Purpose**

The primary purpose of this study is to describe the determinants of health-related quality of life [HRQoL] of expatriate patients living with cancer in Abu Dhabi and subsequently facilitate the recognition of patients at risk for suboptimal HRQoL. This knowledge is essential to enable the clinician to understand the patient experience in order to tailor treatment options according to the patient's own best interest, and what is important to them.

#### **B. Aims**

Aim 1a. To assess HRQoL of expatriate patients undergoing treatments for cancer in Abu Dhabi.

Aim 1b. To determine the relationships among clinical and sociodemographic characteristics, performance functioning, acculturation, and psychological status and HRQoL in a sample of expatriate patients undergoing treatments for cancer in Abu Dhabi.

### **C. Research Design**

This study is cross-sectional descriptive with the primary purpose of studying the HRQoL of cancer patients in Abu Dhabi and subsequently facilitate the recognition of patients at risk for suboptimal HRQoL.

### **D. Population, Sample, and Setting**

The sample was a convenience one that included 100 patients with hematological and oncological malignancies admitted to the inpatient hematology and oncology ward and the infusion center at the Sheikh Shakhbout Medical City in Abu Dhabi [SSMC] for cancer treatment or therapy-related side effects. Established in 2019, SSMC has made its footprint in the nation and the region as one of the largest hospitals providing world-class complex healthcare. SSMC is comprised of 732 beds, and expected to serve 20,000 inpatients, 250,000 outpatients, and 70,000 emergency patients per year. SSMC strives to set new international benchmarks in the region, further establishing Abu Dhabi as a destination for world-class healthcare and transforming SSMC into a destination medical center.

Sample size calculation was made based on primary purpose and aim of this study. Assuming a medium anticipated effect size of 0.15, a desired statistical power level of 0.8, a significance level of 0.05 for a multiple regression with 6 predictors, a minimum sample size of 97 subjects is needed. Given the risk for attrition; some patients may decide not to continue the interview or may be unable to be interviewed due to medical reasons, the sample size was planned at 100 (Soper, 2022).

The hematology and Oncology Ward at SSMC offers multidisciplinary care for cancer and a wide range of hematological malignancies and admits about 35 cancer patients a month that fit the inclusion criteria of this study while the infusion center admits at least 20 patients per day for chemotherapy and/or blood products infusion. Considering a 30% refusal to participate rate, it is deemed feasible to recruit a sample of 100 participants in a period of two months.

Potential candidates were invited to participate if they were expatriates residing in or around Abu Dhabi, 18 years and above, spoke or were able to understand English, diagnosed with a solid tumor or hematological malignancy, on active antineoplastic treatment (chemotherapy, immunotherapy, targeted therapy, or radiotherapy), admitted in the hematology and oncology ward for treatment or management of treatment related side effects, and agreed to sign an informed consent.

Participants excluded were those who did not agree to sign the informed consent or suffered from a cognitive dysfunction that hindered them from understanding the informed consent. In addition, patients who were clinically unstable, or those having a concomitant psychological illness (excluding depression and anxiety) or are unaware of their diagnosis were excluded.

#### **E. Procedures and Protection of Human Participants**

The study proposal was approved by the Institutional Review Board [IRB] at the American University of Beirut and the Research Ethics Committee at Sheikh Shakhbout Medical City before the start of the data collection. Informed consent was signed by the patients before data collection. The consent described the study and clearly stated the

risks and benefits involved. Confidentiality of the participants was maintained all throughout the study. Direct personal identifiers such as names and date of birth were not collected.

All participants were given a study code. Health protected information, particularly medical record numbers and associated study codes were kept on a log sheet separate from the data file that will be discarded after the end of the study. Filled questionnaires were stored in the PI's locked cabinet at the department, and any electronic files were stored in the PI's password and ID protected computer.

Attending physicians, both hematologists and oncologists, were briefed on the study design and participant inclusion and exclusion criteria by the study coordinator. Identified physicians were expected to help recruit potential study participants. The patients who were eligible for inclusion in the study were identified and recruited by the study coordinator. Participants received information about the study and its purpose. A written informed consent (Appendix I) was provided to the patient with ample time to read and understand it or was read aloud and explained by the study coordinator. When the participant consented, two documents were signed; one copy was given to the participant and the other was kept in the patient records.

After the consent was signed, for the patients recruited from the inpatient unit, a short 20-minute interview was scheduled at a convenient time for the patient when they were well rested and pain-free, away from any procedures that would have made them uncomfortable, and after visiting hours so not to interrupt time with family. This was coordinated with the primary nurse taking care of the patient in order not to interfere with any treatment. The interview took place in the patient's private room during which

the questionnaire was administered and filled in by the patient. For patients recruited from the infusion center, the interview took place in a private, well-ventilated room in the infusion center.

The study coordinator answered questions and offered clarifications to the participants. Considering that these expats may have a limited or only a working knowledge of the English language, the online translator available at the ward was used to assist with translation to their mother tongue.

## **F. Methods of Measurement**

The following instruments were used for data collection:

### ***1. Research Instruments***

#### **a. Sociodemographic and Clinical Characteristics Questionnaire**

A researcher developed questionnaire that addresses sociodemographic characteristics [age, gender, living and marital status, educational level, socioeconomical level...] as well as information about the disease [cancer staging, type, months since diagnosis...] was used (please refer to Appendix II).

#### **b. ECOG [Eastern Cooperative Oncology Group] performance status scale**

This is a scale to measure performance functioning and general physical symptom burden (please refer to Appendix II). Performance status is a measure of the patient's level of functioning and ability to carry on their activities of daily living, in a manner similar to their pre-disease condition, such as physical activity, household work,

and self-care. The ECOG performance status score was developed by the Eastern Cooperative Oncology Group, one of the largest clinical cancer research organizations in the United States, in 1982, and has since become a key prognostic indicator that guides treatment options in patients with various malignancies (Oken et al., 1982). The ECOG performance status score is a simple 5-point tool that can be used in daily clinical practice to measure a patient's activity, and thus disease progression. The score is designed by healthcare providers by direct observation of the patient's activity or a history review. Though there is no clear consensus in the literature on inter-rater reliability of performance status assessment by different oncology health care professionals, it has been noted that the ECOG performance status scoring system is an effective tool to assess functional status and no significant variations exist between different healthcare providers when used (Azam et al., 2019; Taylor et al., 1999).

c. Functional Assessment of Cancer Therapy-General [FACT-G]

This scale was used to measure HRQoL (please refer to Appendix II). HRQoL is a multidimensional concept that includes appraisal of not just symptoms of disease and side effects of treatment, it is also a measure of one's satisfaction with life quality and value. It is subjective and uniquely personal to each individual defined by their previous experiences, current situation, and expectation. Therefore, it is best to assess HRQoL by direct report. There is a consensus that the key domains of HRQoL include physical, functional, emotional, and social well-being ("Handbook of Quality of Life in Cancer," 2022). The Functional Assessment of Chronic Illness Therapy [FACIT] Measurement System is a collection of health-related quality of life questionnaires targeted to the

management of chronic illness. The Functional Assessment of Cancer Therapy-General [FACT-G - Version 4], developed in 1993, is a 27-item compilation of general questions divided into four primary QoL domains: Physical Well-Being, Social/Family Well-Being, Emotional Well-Being, and Functional Well-Being (Cella et al., 1993b). It is appropriate for use with patients with any form of cancer. The tool has undergone extensive testing and demonstrated validity and reliability (Chronbach's alpha = 0.9) for use in patient assessment and oncology clinical trials (Brady et al., 1997; Cella et al., 1993, 1995; Ward et al., 1999).

The FACT-G tool is characterized by two essential principles: subjectivity and multidimensionality. The tool measures a 7-day recall period and the following introductory instruction: "Below is a list of statements that other people with your illness have said are important. Please circle or mark one number per line to indicate your response as it applies to the past 7 days". FACT Measures use a 5-point Likert-type response scale labelled as: 0 = Not at all; 1 = A little bit; 2 = Somewhat; 3 = Quite a bit; 4 = Very much. The wording is simple as it is written at the 4th Grade reading level and takes about 5 to 10 minutes to complete. Although disease specific scales are available, they were not used in this study, considering the targeted sample included patients diagnosed with different types of malignancies. The FACT-G includes four subscales: physical well-being (PWB; 7-items, score range 0-28), social/family well-being (SWB; 7-items, score range 0-28), emotional well-being (EWB; 6-items, score range 0-24), and functional well-being (FWB; 7-items, score range 0-28). The total score of the FACT-G is computed as a sum of the four subscales, with a maximum score of 108, provided the overall item response is at least 80%. Negatively worded

items are reverse scored prior to calculation. (Webster et al., 2003). No cutoff score was found in the literature; however, some studies used the midpoint of 54 as a reference (Al-Habsi et al., 2022).

d. The Hospital Anxiety and Depression Scale (HADS)

This scale was used to measure anxiety and depression (please refer to Appendix II). HADS is a commonly used self-rating scale, developed in 1983, to assess psychological distress in non-psychiatric patients (Zigmond & Snaith, 1983). It is a 14-item scale that measures both anxiety and depression. It is frequently used to measure emotional distress in an oncology setting (Bjelland et al., 2002; Herrmann, 1997; Vodermaier et al., 2009). It requires a 7-day recall and asks the patient to “Tick the box beside the reply that is closest to how you have been feeling in the past week. Don’t take too long over you replies: your immediate is best”. Each item is scored with a response ranging from 0 to 3. After adjusting for the six reversed score items, responses are summed up to obtain the results of the two subscales, the HADS-A for Anxiety and HADS-D for Depression. The results are interpreted as follows: 0-7 = Normal. 8-10 = Borderline abnormal (borderline case). 11-21 = Abnormal (case). Cronbach's alpha for HADS-A was found to be 0.83 and 0.82 for HADS-D. The sensitivity and specificity for both subscales was found to be approximately 0.80 (Bjelland et al., 2002).

e. Brief Acculturation Scales

This was used to measure sociocultural adaptation, psychological adaptation, perceived cultural distance, and acculturation orientation (please refer to Appendix II). The brief



acculturation scales measuring sociocultural adaptation [BSAS], psychological adaptation [BPAS], perceived cultural distance [BPCDS], and acculturation orientation [BAOS] were developed in 2014 to measure a series of key acculturation concepts. These scales were designed to be brief, concise, and generalizable across different populations, thus fitting for use in this study that handles different nationalities in the UAE.

For BSAS, participants were asked to “Think about living in [host country]. How easy or difficult is it for you to adapt to...” and then rate the following 12 items on a 7-point Likert-type scale from 1 = very difficult to 7 = very easy. For the BPCDS, participants are asked to “Think about [home country] and [host country]. In your opinion, how different or similar are these two countries in terms of...” and then rate the items on a scale from 1 = very similar to 7 = very different. For the BPAS, participants were asked to “Think about living in [host country]. In the last 2 weeks, how often have you felt...” Participants respond on a scale from 1 = never to 7 = always, to such items as “Frustrated by difficulties adapting to [host country]”.

For the BAOS, participants were asked to rate their agreement with four statements such as “Hold on to my [home country] characteristics” on a 7-point Likert-type scale, from 1 = strongly disagree to 7 = strongly agree. These four items were presented twice, once for the home country and again for the host country, making this a bidimensional scale that is used to independently measure the participants’ orientation towards their home country, and their orientation towards the UAE in terms of the value of cultural friendships, traditions, characteristics, and actions.

The scales were tested and showed good reliability. Cronbach's alpha was as follows:  $\alpha_{\text{BPCDS}} = .79$ ,  $\alpha_{\text{BSAS}} = .85$ ,  $\alpha_{\text{BPAS}} = .72$ ,  $\alpha_{\text{BAOS-Home}} = .79$ ,  $\alpha_{\text{BAOS-Host}} = .80$ ) (Demes & Geeraert, 2014).

## **G. Data Analysis Plan**

Data analysis is described by aim in the following:

For Aim 1a: The characteristics of the study sample were described using frequencies and percentages for categorical variables, and means, standard deviations, medians and interquartile ranges for continuous variable as appropriate. Descriptive statistics were performed using IBM SPSS Statistics version 25.0 for Windows.

For Aim 1b: HRQoL scores were compared across demographic characteristics, performance status, psychological status, and acculturation using independent sample t test, ANOVA, Kruskal Wallis, Pearson's or Spearman's r as appropriate for the level of measurement of the variables. The level of significance for statistical tests was set at  $p < 0.05$ .

Multivariate regression analysis was used to study the associations with the determinants of HRQoL in the previously mentioned sample. Variables that had a p-value  $< 0.05$  at the univariate level were entered in the multivariable regression models.

Block 1 tested the association between the cultural context (ethnicity and acculturation) and HRQoL.

Block 2 had cancer-related factors (type of cancer, type of treatment, and time since diagnosis), psychological well-being (anxiety and depression), health status (performance functioning) added.

Block 3 incorporated the healthcare context (access to healthcare/insurance and difficulty communicating with the doctors and nurse) and socioecological factors (Income, education, employment, family in the UAE) to the previous models.

The order in which the variables were studied was guided by the Ashing-Giwa Contextual Model that starts from individual factors and branches out to macro/systemic factors.

Regression diagnostics were inspected for multicollinearity and linearity and normality of the residuals.

## CHAPTER IV

### RESULTS

This chapter contains a detailed description of the results by aims and research questions. The specific aims and related hypotheses of this study are as follows:

- Aim 1a. To describe Health Related Quality of Life [HRQoL] of expatriate patients undergoing treatments for cancer in Abu Dhabi.
- Aim 1b. To describe the relationships among clinical and sociodemographic characteristics, performance functioning, acculturation, and psychological status and HRQoL in a sample of expatriate patients undergoing treatments for cancer in Abu Dhabi.

#### **A. Results**

##### ***1. Demographic Characteristics***

Data collection took place over a 5-month period from April through September 2023. The sample included 100 participants recruited from the infusion center during their regularly scheduled appointments for cancer treatment or the inpatient department during their hospital stay for cancer treatment or treatment-related side effects. Only four patients refused to participate; 3 out of 4 of those who refused to participate were females and claimed to have a high quality of life and had no issues to convey.

About 65% of the sample were females and lived in the capital Abu Dhabi (96%). Participants had a mean age of 48.5 years with 66% of them being married and only 19% living alone. Thirty-two percent of the sample did not have any family in the

UAE. Eighty-three percent had at least a secondary/technical school education [please refer to Table 1 for a detailed overview of the sample demographic characteristics]. This was a heterogeneous sample which included participants from all over the world, a total of 24 nationalities included. The majority were from the Philippines (24%), India (12%), Syria (11%), Egypt (11%), and Palestine (6%). Other nationalities encountered were: Sudani (5%), Jordanian (4%), Moroccan (3%), Bangladesh (3%), Lebanese (3%), among others. The majority (76%) had been living in the UAE for more than 5 years. Sixty-three percent of these expatriates were holders of an employment visa, while 30% were sponsored by family members. Forty-five percent were employed, while the rest were unemployed (12%), retired (19 %) or on medical leave (24%). Incomes ranged among the participants, with only 19% receiving a salary of more than 9000 AED per month. Thirty-two percent of the participants, the majority, had a relatively low income, between 1000 and 3000 AED per month, and 15% claimed to have no income at all, instead depending on family members or friends for the cost of living. Though most of the patients had active health insurance, 26% did not, and relied on government mandates for treatment.

Table 1. Participant Sociodemographic Characteristics (N=100)

<b>Demographics</b>	<b>Min:Max; Mean <math>\pm</math> SD</b>
Age in years	22:80; 48.5 $\pm$ 14.17
<b>Demographics</b>	<b>N (%)</b>
Gender [ <b>Females</b> ]	65 (65)
<b>Marital Status</b>	
Married	66 (66)
Single	24 (24)
Widowed	8 (8)
Divorced	2 (2)
<b>Nationality</b>	
Philippines	24 (24)
India	12 (12)
Syria	11 (11)
Egypt	11 (11)
Palestine	6 (6)
Others	36 (36)
<b>Religion</b>	
Muslim	60 (60)
Christian	34 (34)
Hindu	5 (5)
Rather not disclose	1 (1)
<b>Occupational Status</b>	
Currently Employed	45 (45)
On Medical Leave	24 (24)
Retired	19 (19)
Unemployed	12 (12)
<b>Residence</b>	
Abu Dhabi	96 (96)
<b>Visa Type</b>	
Employment Visa	63 (63)
Sponsored by Family Member	30 (30)
Visit Visa	5 (5)
No Visa	2 (2)
<b>Time in the UAE</b>	
More than 5 years	76 (76)
3 to 5 years	7 (7)
1 to 3 years	9 (9)
Less than 1 year	8 (8)
<b>Level of Education</b>	
Graduate School	6 (6)
University	47 (47)
Secondary / Technical school	30 (30)

Intermediate School	9 (9)
Can Read and Write	7 (7)
Illiterate	1 (1)
Living Status [ <b>Living Alone</b> ]	19 (19)
Presence of <b>Family</b> in the UAE	68 (68)
Availability of <b>Health Insurance</b>	74 (74)
<b>Income</b> per Month in AED	
1000 to 3000	32 (32)
3000 to 6000	16 (16)
6000 to 9000	18 (18)
More than 9000	19 (19)
No income	15 (15)

## 2. *Clinical Characteristics*

Most of the patients had been diagnosed with digestive system cancers (26%), including but not limited to: gastrointestinal carcinoma, colon cancer, hepatocellular carcinoma, cholangiocarcinoma, and pancreatic cancer. Equally, 26% of patients had been diagnosed with breast cancer. This is followed by leukemias (17%), including, both acute and chronic leukemias (AML, ALL, and CML). Eight patients were being treated for different kinds of lymphomas, and eight suffered from different gynecological cancers (ovarian, uterine, and cervical). The rest were distributed as follows: myelomas (4%), sarcomas (3%), urinary cancers (3%), melanomas (2%), lung cancer and brain cancer (1%). This heterogeneity alludes to better understanding of the differences in the outcome variables between types of cancer. Hence, 72% percent of the sample suffer from solid tumors, whereas the rest have hematological malignancies [please refer to Table 2 for detailed clinical characteristics].

Most of the patients had recently been diagnosed with a median of 1 year, and as such they have been on active treatment. The majority have received chemotherapy as part of their treatment (88%), followed by surgery (43%), then targeted therapy and

immunotherapy equally at 30%. Only five percent of the sample have undergone HSCT, which is explained by the fact that this treatment modality is offered only to patients with hematological malignancies. It is important to note that the treatments are usually given as a combination therapy, so one patient could have received a multitude of treatments concurrently or at different stages in their disease trajectory. Participants in this sample appear to have a healthy weight range, with an average BMI of  $25.80 \pm 5.61$ . The majority seemed to have never smoked (79%), and only 5 participants claimed to consume alcohol on an occasional basis.

Table 2. Participant Clinical Characteristics (N=100)

<b>Anthropometric Measures</b>	<b>Min:Max; Mean <math>\pm</math> SD</b>
Height	139:192; $161.88 \pm 10.41$
Weight	41.5:118; $68.87 \pm 16.37$
Body Mass Index	16.7:38.5; $25.80 \pm 5.61$
<b>Clinical Characteristics</b>	<b>Median (IQR)</b>
Time Since Diagnosis in years	1 (1.4)
<b>Clinical Characteristics</b>	<b>N (%)</b>
<b>Smoking History</b>	
Never Smoked	79 (79)
Former Smoker	16 (16)
Current Smoker	5 (5)
<b>Alcohol Consumption</b>	5 (5)
<b>Exercise</b>	36 (36)
<b>Type of Malignancy</b>	
Hematology	28 (28)
Oncology	72 (72)
<b>Cancer Type</b>	
Leukemia	17 (17)
Digestive System Cancer	26 (26)
Breast Cancer	26 (26)
Lymphoma	8 (8)
Gynecologic Cancer	8 (8)
Multiple Myeloma	4 (4)
Soft Tissue Sarcoma	3 (3)



Lung Cancer	1 (1)
Melanoma	2 (2)
Brain Cancer	1 (1)
Urinary Cancer	3 (3)
Seminoma	1 (1)
<b>Treatment Received</b>	
Chemotherapy	88 (88)
Immunotherapy	30 (30)
Targeted Therapy	30 (30)
Surgery	43 (43)
HSCT	5 (5)
<b>Comorbidities</b>	
Diabetes	75 (75)
Kidney Injury	14 (14)
Chronic Obstructive Pulmonary Disease	1 (1)
Peripheral Vascular Disease	5 (5)
Peptic Ulcer Disease	2 (2)
Liver Disease	3 (3)
<b>Anxiety and Depression</b>	<b>Min:Max; Mean <math>\pm</math>SD or N (%)</b>
<b>Anxiety Subscales</b>	0:21; 5.26 $\pm$ 4.37
Normal	76 (76)
Borderline Abnormal	13 (13)
Abnormal	11 (11)
<b>Depression Subscales</b>	0:18; 5.55 $\pm$ 4.22
Normal	72 (72)
Borderline Abnormal	15 (15)
Abnormal	13 (13)
<b>ECOG Performance Status Score</b>	<b>N (%)</b>
ECOG 0 [Fully active; no performance restrictions]	66 (66)
ECOG 1 [Fully ambulatory and able to carry out light work]	20 (20)
ECOG 2 [Up and about >50% of waking hours]	5 (5)
ECOG 3 [Confined to bed or chair > 50% of waking hours]	8 (8)
ECOG 4 [Completely disabled]	1 (1)

The psychological status of the participants was assessed using the Hospital Anxiety and Depression scale. Cronbach's alpha indicated that the internal consistency was acceptable for the depression subscale (0.735), and the anxiety subscale (0.769).

The results are as found in Table 2. Scores of 11 or more on either subscale are

considered a significant case of psychological morbidity, while scores of 8–10 represent 'borderline' and 0–7 'normal'. Taking that into consideration, there seems to be a good psychological status among the participants represented by the below the cutoff average on both subscales. The mean of the anxiety subscale was  $5.26 \pm 4.37$ , whereas that of depression was  $5.55 \pm 4.22$ . Even though most of the sample displayed low anxiety and depression levels, there were, nonetheless, some participants that displayed elevated anxiety and depression scores: 11 participants had high anxiety, and 13 had borderline scores, whereas 13 and 15 participants scored high and borderline respectively on the depression subscale.

Functional performance of this sample was measured using the ECOG score. A score of three or higher concludes a high symptom burden that affects the patient's functionality and requires assistance with most of the daily chores. In this sample, 86% of the participants reported a good performance status of score zero to one meaning they were fully ambulatory and able to carry out light work and as such had no performance restrictions. Only one participant was completely disabled and require around the clock care [please refer to Table 2 for details on predictor variables].

### ***3. Aim 1a. Health Related Quality of Life***

Aim 1a was to describe HRQoL of expatriate patients undergoing treatments for cancer in Abu Dhabi. HRQoL in this study was assessed using the FACT-G scale. The higher a patient scored, the better their quality of life was.

Table 3 presents scores of our sample on each subscale as well as the total FACT-G score. Cronbach's alpha indicated that the internal consistency of the overall

scale was acceptable (0.728). Patients in this sample scored highest on the social well-being domain with an average of  $23.01 \pm 5.54$ , followed by functional well-being with an average of  $20.18 \pm 6.67$ . Patients scored almost equally low on both the physical and emotional well-being domains, with an average of  $17.88 \pm 7.52$  and  $17.44 \pm 5.31$  respectively. The average total score of FACT-G was  $78.52 \pm 18.77$  with a range of 91.6.

Table 3. Functional Assessment of Cancer Therapy – General

Functional Assessment	Min:Max; Mean $\pm$ SD
FACT-G Total Score	14:106; $78.52 \pm 18.77$
Physical Well Being	0:28; $17.88 \pm 7.52$
Social Well Being	0:28; $23.01 \pm 5.54$
Emotional Well Being	3:24; $17.44 \pm 5.31$
Functional Well Being	3:28; $20.18 \pm 6.67$

#### 4. *Aim 1b. Association among Health-Related Quality of Life and Possible Predictors*

Aim 1b was to describe the relationships among clinical and sociodemographic characteristics, performance functioning, acculturation, and psychological status and HRQoL in a sample of expatriate patients undergoing treatments for cancer in Abu Dhabi.

##### a. Sociodemographic Factors and HRQoL

Sociodemographic characteristics were examined in relation to HRQoL. Using a Pearson  $r$ , there was a significant and positive correlation between age and FACT-G total score as well as the social and functional wellbeing domains ( $r= 0.22$ ,  $r= 0.25$ , and  $r= 0.22$

respectively). There was no significant association between time since diagnosis and any of the HRQoL subscales [please refer to Table 4].

Using an independent sample t test, there was no significant difference between the following variables across FACT-G scores: gender [t(98)=0.086; p= 0.932], living status [t(98)= 0.75; p= 0.45], access to health insurance [t(98)= 1.47; p=0.14], and the presence of family in the UAE [t(98)= 0.82; p= 0.41]. The rest of the sociodemographic factors were analysed using a one-way ANOVA or a Kruskal Wallis test. Twenty-four different nationalities included in this sample were further classified into 8 ethnicities and had no relationship to HRQoL (p=0.715) . The following variables had no nonsignificant relationship with HRQoL: time in the UAE (p=0.088) marital status (p=0.216) , occupational status [F(3,96)= 1.38; p=0.25], religion (p=0.821) , education (p=0.563), and [F(4,95)= 1.34; p=0.25]. Although no significant difference was found between participants with different types of visas., a trend was shown in the means of the FACT-G scores . Participants with employment visa had a higher mean HRQoL score (80.84 ± 17.28) than participants with sponsored visa (76.25 ± 19.93) and participants that had visit /or no visa (67.38 ± 24.04).

Table 4. Relationship between HRQoL and Sociodemographic Factors

Variables	FACT-G Total Score	Wellbeing			
		Physical	Social	Emotional	Functional
Age	0.22**	0.81	0.25*	0.14	0.22*

\*: Correlation is significant at the 0.05 level (2-tailed) and \*\*: Correlation is significant at the 0.01 level (2-tailed)

b. Clinical Factors and HRQoL

Using Kruskal Wallis, comparison between cancer type and FACT-G scores was done. Twenty-eight different diagnoses were further classified into 13 sub-types for easier analysis. No significant difference was found between these 13 groups ( $p=0.315$ ). These were further divided into two types of malignancies: hematology versus oncology and tested using an independent sample t test. The mean difference was 6.9, with oncology patients having higher FACT-G scores than those with hematologic malignancies [ $80.4 \pm 16.9$  versus  $73.5 \pm 22.3$ ;  $t(98)= 1.6$ ;  $p= 0.9$ ]. As for type of treatment, no analysis was done since most patients had received some combination of different therapies, and it would be difficult to discern the effect of one over the other.

c. Performance Status and HRQoL

The performance functioning status was assessed in the participants using the ECOG performance status score. The ECOG scores were divided into 2 categories, as only 2 patients were completely disabled who could not carry out any self care activities: high performance functioning [ECOG scores 0, 1, and 2] and low performance functioning [ECOG scores 3 and 4]. Comparisons, using independent sample t test, were significant [ $t(98)=3.9$ ;  $p< 0.001$ ]. Patients with high performance functioning [ECOG 0, 1, and 2] had higher total FACT-G (mean=  $80.68 \pm 17.10$ ) compared to those with low performance functioning [ECOG 3 and 4] (mean=  $56.72 \pm 21.95$ ) with a mean difference of 23.95 [ $p< 0.001$ ]. Patients with high performance functioning also scored significantly higher on both the physical [ $t(98)=4.2$ ;  $p< 0.001$ ; mean difference = 10.25]

and functional well-being subscales [ $t(98)=3.8$ ;  $p < 0.001$ ; mean difference = 8.35]

[please refer to table 5].

Table 5. Relationship between HRQoL and Performance Status

Variables	FACT-G	Wellbeing			
		Physical	Social	Emotional	Functional
High [ECOG 0, 1, and 2]	80.68*	18.80*	23.21	17.73	20.93*
Low [ECOG 3 and 4]	56.72	8.55	21.04	14.55	12.57

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

d. Communication and HRQoL

In order to assess the effectiveness of communication between healthcare providers and expatriate patients, participants were asked to rate 3 items on a scale from 0 to 4 (0: Not At All, 1: A Little bit, 2: Somewhat, 3: Quite a Bit, and 4: Very Much). The items were as follows: *difficulty in communication with doctors/ nurses*, *difficulty accessing healthcare information*, and *difficulty understanding their medical condition*. For analysis purposes, the scores of these items were grouped into 2: low (includes ‘not at all’ and ‘a little bit’) and high (includes ‘somewhat’, ‘quite a bit’, and ‘very much’) difficulty.

Using a t test, comparison between FACT-G scores and difficulty communicating with doctors/ nurses categorized as low and high was done. No significant difference was found [ $t(98)=1.893$ ;  $p=0.061$ ]. Patients who had low difficulty communicating with doctors and nurses scored higher ( $79.56 \pm 17.50$ ) than those who faced higher difficulty ( $66.62 \pm 28.75$ ). [please refer to table 6].

A t test was done to assess the relationship between difficulty accessing healthcare information and FACT-G scores [t(98)=3.064; p=0.003]. Patients who had low difficulty in accessing healthcare information had higher FACT-G scores (80.75 ± 17.02) than those who had high difficulty (64.83 ± 23.56).

As for difficulty in understanding medical condition, there were no significant differences across FACT-G scores [t(98)= 0.831; p=0.408].

Table 6. Relationship between Communication and HRQoL

Variable	FACT-G	
	n	Mean ± SD
<b>Difficulty Communicating with Doctors/ Nurses</b>		
Low	92	79.56 ± 17.50
High	8	66.62 ± 28.75
<b>Difficulty Accessing Healthcare Information</b>		
Low	86	80.77 ± 17.02
High	14	64.83 ± 23.56
<b>Difficulty Understanding Medical Condition</b>		
Low	87	79.12 ± 18.84
High	13	74.48 ± 18.47

e. Acculturation and HRQoL

Acculturation is a complex journey that an expatriate goes through to adapt to life in the UAE; it requires significant cultural and psychological adjustment. This was measured using the Brief Acculturation Scales. In this sample of expatriates, acculturation was assessed with four short acculturation scales:

- Brief Acculturation Orientation Scale [BAOS] measure the participants' orientation towards their home country, and their orientation towards the UAE: The BAOS-Home and the BAOS-Host had almost similar results with a mean of

22.65 ± 5.26 and 22.37 ± 5.58 respectively [please refer to Table 7]. The two scales were also positively correlated ( $r = 0.43$ ,  $p < 0.01$ ). Cronbach's alpha for BAOS-home was acceptable (0.747), while that of BAOS-host was 0.857. [Please refer to Table 7].

- Brief Psychological Adaptation Scale [BPAS] measures the magnitude of the expatriates' psychological adjustment to life in the UAE. The lower the score on the BPAS, the better the psychological adaptation. Hence, with a mean of 23.98 ± 10.15, the participants in this sample could be well adjusted to life in the UAE, psychologically.
- Brief Sociocultural Adaptation Scale [BSAS] asks the participants to measure how easy it was for them to adapt to the society and culture of the UAE, in terms of climate, social environment, food, language, values and beliefs, practicalities of daily life, among others. A high average of 69.89 ± 12.91 on this scale could indicate a relatively easy adjustment process to life in the UAE. Cronbach's alpha was for this subscale was 0.905. The BSAS was positively correlated with the BAOS-Host ( $r = 0.33$ ;  $p < 0.01$ ), indicating that an easier sociocultural adaptation could lead to more integration into the host country; in this case, the UAE. There was also a significantly negative correlation between the BSAS and the BPAS ( $r = -0.32$ ;  $p < 0.01$ ).
- Brief Perceived Cultural Distance Scale [BPCDS] measures the difference between the home country and the UAE. The participants in this sample recorded a higher-than-average score on this scale with a mean of 53.12 ± 15.73, translating to some differences in culture between the two countries. Cronbach's alpha for



this subscale was 0.850. The BPCDS was found to be negatively correlated with both the BAOS-Home ( $r = -0.25$ ;  $p < 0.01$ ) and BAOS-Host ( $r = -0.29$ ;  $p < 0.01$ ) [please refer to Table 7].

Table 7. Correlations between the Brief Acculturation Scales

<b>Brief Acculturation Orientation Scale</b>		<b>Range; Mean <math>\pm</math> SD</b>		
<b>Brief Acculturation Orientation Scale</b>				
Brief Acculturation Orientation Scale-Home		24; 22.65 $\pm$ 5.26		
Brief Acculturation Orientation Scale -Host		24; 22.37 $\pm$ 5.58		
Brief <b>Psychological</b> Adaptation Scale		45; 23.98 $\pm$ 10.15		
Brief <b>Sociocultural</b> Adaptation Scale		50; 69.89 $\pm$ 12.91		
Brief <b>Perceived Cultural Distance</b> Scale		72; 53.12 $\pm$ 15.73		
<b>Correlations</b>	<b>BAOS-Home</b>	<b>BAOS-Host</b>	<b>BPAS</b>	<b>BSAS</b>
BAOS-Home	---			
BAOS-Host	0.43**	---		
BPAS	-0.11	-0.15	---	
BSAS	-0.04	0.33**	-0.32**	---
BPCDS	-0.25**	-0.29**	0.28**	-0.16

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

Note: BAOS= Brief Acculturation Orientation Scale; BSAS = Brief Sociocultural Adaptation Scale; BPAS = Brief Psychological Adaptation Scale; BPCDS = Brief Perceived Cultural Distance Scale.

As for acculturation and HRQoL, a weak negative correlation was found between the total HRQoL and the Brief Psychological Adaptation Scale (BPAS) ( $r = -0.27$ ;  $p < 0.01$ ). This negative correlation was found for the two subscales: emotional ( $r = -0.34$ ,  $p < 0.01$ ) and functional ( $r = -0.23$ ,  $p < 0.01$ ) well being. This means that patients with better psychological adaptation [i.e. lower BPAS score] tend to have higher HRQoL and emotional as well as functional wellbeing. There was a positive correlation between the social wellbeing subscale and sociocultural adaptation ( $r = 0.21$ ;  $p < 0.01$ ) in such a way that patients with better sociocultural adaptation [i.e. higher BSAS score]

tend to have higher social wellbeing. Likewise, a significant and weak correlation was found between the social wellbeing and the BAOS-Home scale ( $r= 0.28$ ;  $p< 0.01$ ) and the BAOS-Host ( $r= 0.32$ ;  $p< 0.01$ ) [please refer to Table 8].

Table 8. Relationship between Acculturation and HRQoL Scales

Variables	FACT-G	Wellbeing			
		Physical	Social	Emotional	Functional
BAOS-Home	0.15	0.10	0.28*	0.08	0.009
BAOS-Host	0.1	0.03	0.32*	0.004	0.06
BPAS	-0.27*	-0.10	-0.19	-0.34*	-0.23*
BSAS	0.15	-0.03	0.21*	0.12	0.17
BPCDS	-0.12	-0.06	-0.12	-0.15	-0.05

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

#### f. Psychological Status and HRQoL

Pearson correlation coefficients were computed to assess the relationships between HRQoL and the psychological status of the participants. A significant, moderate, and negative correlation was found between anxiety and FACT-G scores ( $r= -0.56$ ). This relationship was found across all domains of the FACT-G subscales. The highest correlation found was between anxiety and the Emotional Well Being ( $r= -0.62$ ;  $p< 0.01$ ) [please refer to Table 8].

As for depression, a significant, strong, and negative correlation was found between depression and HRQoL ( $r= -0.75$ ;  $p<0.01$ ). This was also found across all the domains of the FACT-G scale, with the strongest relationship between depression and Functional well-being ( $r= -0.66$ ;  $p< 0.001$ ) [please refer to Table 9].

Table 9. Relationship between Anxiety, Depression and HRQoL Scales

Variables	FACT-G	Wellbeing			
		Physical	Social	Emotional	Functional
Anxiety	-0.56*	-0.39*	-0.29*	-0.62*	-0.39*
Depression	-0.75*	-0.49*	-0.53*	-0.57*	-0.66*

\*Correlations were significant at the 0.01 level (2-tailed)

### 5. *Determinants of Health-Related Quality of Life*

A multiple linear regression was conducted to identify the best determinants of health-related quality of life (HRQoL) in expatriate cancer patients in Abu Dhabi. Total scores of the FACT-G scale were used as an outcome variable to create a regression analysis using the significant variables from the previous analysis: age, performance functioning, psychological adaptation, depression, anxiety, and access to healthcare information.

Based on the multiple linear regression analysis, the model included three independent variables as statistically significant predictors of health-related quality of life: performance status score, depression, and access to healthcare information, while we observed a trend towards significance for anxiety. The regression model was statistically significant [ $F(6, 93) = 29.641$ ;  $p < 0.001$ ], with  $R^2$  at 0.657. The adjusted  $R^2$  value of 0.634 indicates that about 63% of the variability in the FACT-G scores is predicted by performance status score, depression, and access to healthcare information. Hence, lower HRQoL is explained by poor performance functioning (i.e., higher ECOG scores) [ $B = -14.67$ ;  $p < 0.01$ ], elevated levels of depression [ $B = -2.449$ ;  $p < 0.01$ ], and difficulty accessing healthcare information [ $B = -8.165$ ;  $p < 0.05$ ]. [Please refer to table 10].

Table 10. Final Health-related Quality of Life Regression Model

Model	Unstandardized		Standardized	95% Confidence Intervals			
	B	SE	Beta	T	Sig.	Lower Bound	Upper Bound
<b>ECOG score</b>	-14.67	4.171	-0.225	-3.517	0.001	-22.95	-6.387
<b>Depression</b>	-2.449	0.374	-0.552	-6.541	0.000	-3.193	-1.706
<b>Access to Information</b>	-8.165	3.333	-0.152	-2.450	0.016	-14.784	-1.546
<b>Age</b>	0.075	0.087	0.057	0.869	0.387	-0.097	0.248
<b>Anxiety</b>	-0.607	0.342	-0.142	-1.772	0.080	-1.287	0.073
<b>Psychological Adaptation</b>	-0.127	0.120	-0.069	-1.058	0.293	-0.365	0.111
<b>Regression</b>	<b>Model Summary</b>						
	<b>F</b>		<b>df</b>		<b>Sig</b>		<b>Adjusted R Square</b>
	29.641		6		0.000		0.634

Key assumptions related to regression were examined. A visual examination of a plot of the standardized residuals by the regression standardized predicted value showed that the data met the assumptions of linearity and homoscedasticity. An analysis of standard residuals was done, which showed that except for one subject with a residual value of -3.64, the minimum standard residual was -2.28 and the maximum standard residual was 2.31. There was no multicollinearity between the variables (please refer to table 11).

Table 11. Collinearity Statistics of the Regression Significant Variables

Variable	Collinearity Statistics	
	Tolerance	VIF
<b>Depression</b>	0.519	1.927
<b>Access to Healthcare Info</b>	0.963	1.038
<b>Performance Status</b>	0.904	1.106

Except for the subject with high residual value (-3.64), the residuals were normally distributed (please refer to figure 2).

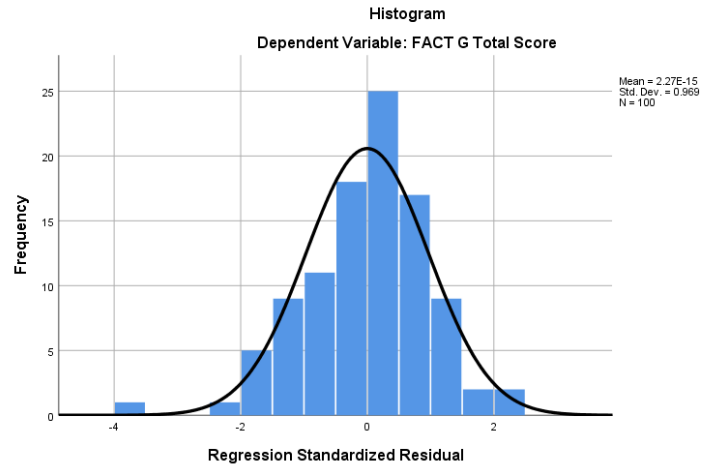


Figure 2. Histogram of the Regression Standardized Residual by the FACT-G Total Score

## CHAPTER V

### DISCUSSION

The primary aim of this study is to investigate the factors influencing the health-related quality of life (HRQoL) of expatriate patients living with cancer in Abu Dhabi. The overall goal is to facilitate the identification of patients who may be susceptible to suboptimal HRQoL. This knowledge is crucial for clinicians to gain a comprehensive understanding of the patients' experiences, allowing them to tailor treatment options based on individual preferences and priorities. While numerous studies have highlighted the diminished HRQoL in cancer patients, particularly among migrants compared to local populations (Ashing-Giwa et al., 2007a; Butow et al., 2013; Sze et al., 2015), limited attention has been directed towards expatriate cancer patients residing in Abu Dhabi and the impact of acculturation on their health outcomes. Without a comprehensive understanding of the multifaceted factors influencing the cancer journeys of these individuals, encompassing clinical, cultural, functional, and psychological perspectives, there is a risk of diminished HRQoL among these patients. This study is anticipated to fill a significant gap in the existing literature by providing insights into the correlation between acculturation among diverse nationalities and HRQoL. Such knowledge is crucial for offering culturally competent care in a cross-cultural setting. The evidence generated from this study can inform strategic practices at the institution, aiming to address challenges faced by expatriate cancer patients and potentially enhancing their overall HRQoL.

This section provides an overview of the study findings, an analysis of the results concerning existing research and the theoretical framework, discussion of study limitations, considerations for generalizing the results, implications for the field of nursing, and recommendations for future research.

### **A. Summary of Findings**

This was a sample of 100 participants with hematological malignancies and solid tumors (65% female, 66% married, 96% Abu Dhabi residents, mean age= 48.5 years  $\pm$  14.17), recruited from the infusion center and inpatient hematology and oncology department at one of the largest medical centers in Abu Dhabi [SSMC]. The demographic characteristics revealed a diverse sample with participants from 24 nationalities, the majority from Philippines (24%) and India (12%), among others. Although the majority of participants had at least a secondary/technical school education (83%), only 45% were currently employed with only 19% receiving a relatively high income, while others claimed to have absolutely no income. Twenty six percent relied heavily on the government for providing treatment.

A diverse spectrum of cancer diagnoses was found, with digestive system cancers (26%) and breast cancer (26%) equally being the most prevalent. This heterogeneity, with 72% of participants having solid tumors and the rest having hematological malignancies, emphasizes the need for a deeper understanding of outcome variables across different cancer types. The majority of participants were recently diagnosed and actively undergoing treatment. Chemotherapy was the most

common treatment modality. Notably, the treatment approach involved combinations, reflecting the complex nature of cancer care.

Generally, low anxiety and depression levels were recorded, though some participants exhibited elevated scores. The functional performance, measured by the ECOG score, revealed that 86% had a good performance status. This score denotes full ambulation and the ability to engage in light work, signifying an absence of performance limitations. This observation can be directly attributed to the use of convenience sampling in this study and the exclusion criteria, which specifically eliminated individuals deemed clinically unstable.

The total FACT-G score in this sample averaged  $78.52 \pm 18.77$ , well above the midpoint of 54, indicating a relatively good HRQoL. The participants scored highest on social well-being ( $23.01 \pm 5.54$ ) and functional well-being ( $20.18 \pm 6.67$ ), while the scores of the physical and emotional well-being domains were almost equally low.

The examination of sociodemographic characteristics in relation to HRQoL uncovered various insights. Age demonstrated a significant, albeit weak, positive correlation with the overall FACT-G score and the social and functional well-being domains. On the contrary, no such correlation was found between time since diagnosis and HRQoL subscales. Gender, living status, access to health insurance, visa status and family presence in the UAE did not yield significant differences in HRQoL scores. Further exploration of sociodemographic factors, including nationality, time in the UAE, marital and occupational status, religion, and education, generally revealed no substantial relationships with HRQoL.



When comparing different cancer types, no significant difference was found among the 13 sub-types, suggesting that the specific diagnosis within cancer types did not significantly impact HRQoL. However, when dividing participants into hematologic and oncologic malignancies, oncology patients exhibited higher FACT-G scores compared to those with hematologic malignancies. Regarding the type of treatment, no specific analysis was conducted due to the combination of different therapies received by most participants. The performance functioning status showed a significant statistical difference in HRQoL across different ECOG scores. The comparison revealed that patients with high performance functioning had significantly higher total FACT-G scores, indicating better HRQoL, compared to those with low performance functioning. This difference extended to both the physical and functional well-being subscales, emphasizing the impact of performance status on various aspects of HRQoL.

Three communication aspects were explored in relation to HRQoL: difficulty in communication with healthcare providers, accessing healthcare information, and understanding medical conditions. Participants facing high difficulty in accessing healthcare information had lower HRQoL scores compared to those with low difficulty, emphasizing the pivotal role of accessible health information in patient well-being. However, no significant differences were observed in HRQoL scores based on the difficulty in communicating with doctors/nurses and in understanding the medical condition.

The study delved into the relationship between acculturation and HRQoL: participants' orientation toward their home country and the UAE, psychological adaptation, sociocultural adaptation, and perceived cultural distance were assessed.

Notably, expatriates demonstrated positive adaptation to life in the UAE, with favorable scores on the psychological and sociocultural adaptation scales. A weak negative correlation was observed between HRQoL and psychological adaptation, indicating that better psychological adaptation is associated with higher HRQoL. Moreover, positive correlations were found between sociocultural adaptation and social well-being, as well as between orientation toward the home country and social well-being. These findings underscore the interplay between acculturation and various dimensions of HRQoL among expatriate cancer patients, highlighting the importance of targeted support to enhance overall well-being during the acculturation process when combined with a life-threatening disease.

Finally, the analysis focused on the psychological status of participants: the findings revealed a significant, moderate, and negative correlation between anxiety and FACT-G scores, extending across all domains of the FACT-G subscales. The strongest correlation was identified between anxiety and emotional well-being. Similarly, a strong, negative correlation emerged between depression and HRQoL, evident across all domains of the FACT-G scale, with the most robust association observed in functional well-being.

Approximately 63% of the variability in FACT-G scores could be attributed to three main factors: performance status score, depression, and access to healthcare information. Depression emerged as a prominent predictor, emphasizing its strong association with lower HRQoL. Understanding and addressing these factors are crucial for enhancing the overall well-being of expatriate cancer patients during their healthcare journey in Abu Dhabi.

## **B. Discussion of the results**

### ***1. Sample Explained***

The average age of our sample, at  $48.5 \pm 14.17$ , aligns with the demographic profile of the UAE, characterized by a predominantly young population. This youthfulness is a remarkable feature of the country, given its status as a hub for employment opportunities, attracting expatriates seeking work; 64% of the UAE's population falls within the 25 to 54 age range (GMI, 2023). This is further reflected in our study's sample composition. At SSMC, it was observed that 44% of the participants admitted to the infusion center and inpatient department during the months of data collection were younger than 50, indicating a prevalence of a young population. The youthful composition of our sample is not unique to the UAE; a parallel trend is observed in the Philippines (Manalo et al., 2023), where the mean age was 56.40 (SD = 14.46) years, suggesting a consistent pattern in the age dynamics of expatriate populations. Moreover, comparing our findings with studies in different Arab countries reveals a striking similarity. In a study exploring HRQoL of breast cancer patients in Lebanon (Akel et al., 2017), the mean age was 53.5, while in Palestine (El Jabari et al., 2022), 48.3% of patients were between 40 and 59 years old. Similarly, Jordan reported an average age of 50.7 years (Abu-Helalah et al., 2014), and in Iran (Abdollahzadeh et al., 2012), the mean age was  $43.9 \pm 16.3$  years. This consistent age distribution across different Arab countries and the MENA region, along with the Philippines, may have implications for various aspects, such as healthcare needs, employment structures, and social dynamics.

The gender distribution in our sample revealed a notable disproportion, with 65% of the participants being females. This pattern mirrors the demographics observed in the patients admitted to the infusion center and inpatient department at SSMC during the months of data collection, where, out of a total of 4387 patients, 65% were female. This aligns with the national cancer registry data (MOHP, 2019), indicating an overall higher incidence of cancer among women (56.2%) compared to men (43.8%). The gender imbalance in our study is consistent with findings from other regions, such as Palestine (El Jabari et al., 2022), where 68% of cancer patients were females, and the Philippines (Manalo et al., 2023), reporting 62% females. This consistent prevalence of females in cancer-related studies may suggest a higher likelihood of women participating in HRQoL surveys compared to men. It implies that females might be more inclined to engage in discussions about their well-being, while males might exhibit hesitancy in disclosing certain aspects of vulnerability during such surveys.

The diversity observed in our sample, comprising individuals from 24 different nationalities, resonates with the expansive expatriate population in the UAE. The majority of expatriates in the UAE hail from India, followed by Pakistan, Bangladesh, and the Philippines (GMI, 2023). This diversity aligns with the admissions at SSMC during the recruitment period, where expatriates constituted nearly 63% of admissions. Specifically, 14% were Filipinos, 8% were Indians, and the majority comprised Arabs at 47%, consistent with our sample where Arabs represent the majority, followed by Filipinos and Indians. It's essential to acknowledge that, according to country demographics, there are more nationalities in the UAE; however, our study's focus on English speakers could have contributed to this limitation, suggesting a need for further

exploration to capture a more comprehensive representation of the diverse expatriate landscape in the country.

Ninety-six participants in the sample reside in Abu Dhabi, a pattern in line with the overall demographics of the UAE, where the majority of the population resides in Abu Dhabi, the capital, and Dubai (GMI, 2023). Although specific data about the residence of patients admitted to SSMC is unavailable, the hematology/oncology ward caters to individuals from across the UAE. This is primarily due to the scarcity of this specialty in other emirates. While concrete statistics are lacking, it is observed that a significant proportion of patients, particularly from Abu Dhabi and Al Ain, seek care at the SSMC hematology/oncology ward, likely driven by proximity considerations.

## ***2. Clinical Characteristics***

Seventy-two participants suffered from solid tumors, aligning with the prevalence of solid tumors in the UAE. Breast and digestive system cancers were prominent in this sample, consistent with national rates. Breast, thyroid, colorectal, skin, and leukemia have been ranked as the top prevalent cancers in both genders in the UAE (MOHP, 2019). This local pattern aligns with international trends (American Cancer Society, 2022). Internationally, breast and lung cancers were the most commonly diagnosed in women, contributing 31% and 13% of new cases in 2022, while colorectal cancer ranked third for both males and females. Therefore, this study's cancer type distribution reflects not only local patterns but also aligns with global trends, emphasizing the significance of the findings in both national and international contexts.

### ***3. Psychological assessment***

Participants generally demonstrated a positive psychological status; however, the elevated anxiety and depression levels among some individuals underscores the heterogeneity of psychological experiences within the cancer survivor population. This diversity may arise from a myriad of factors such as individual coping mechanisms, social support networks, and personal resilience.

Comparing these outcomes with different studies. A higher prevalence of abnormal anxiety and depression scores in Lebanon (Akel et al., 2017) and Jordan (Abu-Helalah et al., 2014) could be influenced by cultural perceptions of mental health, societal expectations, or disparities in healthcare infrastructure. For instance, the reported high rates of severe anxiety and depression in the Jordanian breast cancer study may reflect unique challenges faced by this demographic. However, a different study exploring the quality of life of patients with colorectal cancer, also based in Jordan (Sharour et al., 2020), indicating milder depression and anxiety, adds another layer of complexity, suggesting potential differences in psychological experiences among various cancer types within the same cultural context. These distinctions highlight the importance of tailoring psychological support interventions not only across different cultural contexts but also considering the specificities of cancer types, emphasizing a personalized and holistic approach to address the diverse psychological needs of cancer survivors.

#### ***4. Health-Related Quality of Life***

Participants in this sample conveyed a relatively good HRQoL, as assessed by the FACT-G questionnaire; the mean total FACT-G score was found to be  $78.52 \pm 18.77$ , well above the midpoint of 54. The emotional and physical well-being domains scored the lowest, signifying that these specific facets of HRQoL were challenged in this particular patient group, while the social/family scored the highest, which could be explained by the fact that 66% of the participants were married and had a constant partner that could provide persistent support and 68% had family available in the UAE, while only 19% claimed to live alone. When we draw comparisons between our findings and those from various countries, it is evident that there are recurring patterns regarding HRQoL among cancer patients worldwide. The mean FACT-G score in this study is relatively higher compared to studies done in other countries such as Palestine (63.57) (El Jabari et al., 2022), China (73.4) (Yu et al., 2000), and Hong Kong (71.6) (Ng et al., 2021), yet lower than in Lebanon (84.74) (Akel et al., 2017) and Austria (86.5) (Holzner, Kemmler, Cella, et al., 2004). This discrepancy could potentially be attributed to diverse factors such as disease stages in the samples or the longer duration since diagnosis, indicating that the detrimental effects of cancer treatment might have subsided over time, leading to improved physical well-being.

The results of this study closely mirror those of a study done in Oman, in which the FACT-G total score was 73, with the patients scoring highest on the social and family well-being (mean = 21.1 as compared to 23 in this study) and lowest on the physical well-being (mean = 15.6 as compared to 17.8 in this study) (Al-Habsi et al., 2022). Similarly, in other studies, emotional well-being scored the lowest, while social

functioning scored the highest, closely mirroring our study's results despite employing a distinct measurement scale (Abu-Helalah et al., 2014; Liao et al., 2023; Yu et al., 2000). Even though the average total FACT-G score was relatively higher at 84.74 (Akel et al., 2017) and 86.5 (Holzner, Kemmler, Cella, et al., 2004), the emotional domain still registered as the lowest score, echoing the emotional challenges seen in this setting. Finally, the Philippines presented notably lower HRQoL scores compared to our study, particularly in physical, emotional, and functional well-being (Manalo et al., 2023). This disparity might be linked to the composition of their sample, which primarily consisted of individuals with advanced solid tumors.

When compared to results from different countries, it becomes clear that HRQoL can vary significantly across regions, likely influenced by factors such as cultural differences, disease burden, and time since diagnosis. Several recurring patterns surface upon comparison: consistently, emotional well-being emerges as a significant area of concern, recording the lowest scores across various regions. Despite using different assessment tools and methodologies, the universal struggle with emotional well-being among cancer patients stands out as a common theme. In contrast, social support, as measured by the social well-being domain on the FACT-G, seems to be a common strength across various countries (Abu-Helalah et al., 2014; El Jabari et al., 2022). This suggests that a strong social support system may contribute positively to the overall well-being of cancer patients, transcending geographical boundaries.

In conclusion, while emotional well-being consistently presents a challenge among cancer patients across different countries, social/family support remains a potential strength. Understanding these variations in HRQoL among cancer patients in



different regions can inform the development of more targeted interventions to address emotional well-being while leveraging the supportive aspects present across diverse cultural contexts.

### ***5. Sociodemographic Factors and HRQoL***

When considering the effect of sociodemographic factors, in the examination of the results, age was found to be moderately positively correlated with HRQoL, signifying that older participants enjoy a better HRQoL. This is consistent with data from other countries. Where patients diagnosed before the age of 50 had significantly lower FACT-B total scores (Akel et al., 2017; Al-Habsi et al., 2022; Hamer et al., 2017). Similarly in the Philippines, participants aged 35 to 49, reported better quality of life than their younger counterparts (Manalo et al., 2023). This implies that younger patients might be more susceptible to both the physical and psychological repercussions of cancer, exhibiting particular concerns related to factors such as weight changes, hair loss, and body changes as side effects of cancer treatments. Delving deeper into this notion, the heightened vulnerability in younger patients could stem from a variety of factors, including societal expectations, self-image concerns, and the potential disruption of life plans due to the diagnosis. As such, there is a greater need for supportive care services provided to this younger group. Other studies that did not show an association between age and quality of life scores may have had different age groupings and utilized different questionnaires. These results, however, are not consistent across all studies, in which some found no correlation between the two factors (Redhwan et al., 2011) or that elderly patients have worse quality of life (Ahmed

et al., 2018; Fischer et al., 2022) which could be related to the sample including older patients with poor functional scores.

The results also showed nonsignificant association with type of visa. However, the descriptives showed that those participants with employment visas, as such, currently working, had high HRQoL than those with other types of visas. Although no formal conclusions were drawn, this difference in means may be allude to the understanding that patients who were still able to work might be more satisfied with their quality of life as they are still fulfilling the purpose that they have left their country and come to UAE to serve and were able to independently provide for themselves and/or their families. Similarly, in KSA, a gulf country with almost similar demographics to the UAE and compromised of expatriates from diverse nationalities, patients who were unemployed scored less on the physical domain (Ahmed et al., 2018). This association was not portrayed in other studies in different countries and could be unique to the Gulf countries that are primarily constituted of a working society, with expatriates instead of immigrants.

Although the literature found significant correlations between time since diagnosis and HRQoL (Redhwan et al., 2011; Sharour et al., 2020; Hamer et al., 2017), the results of this study did not portray this association. Studies showed that patients in their first year after diagnosis portrayed the worst quality of life and as time lapsed, patients seemed to adjust and generally start doing better, unless they suffered from disease progression or significant treatment side effects (Ahmed et al., 2018). The lack of association in this study may stem from the predominantly newly diagnosed

participants recruited while on active treatment, owing to the inclusion criteria, apart from a couple of participants who were relapsed, limiting effective comparisons.

No association was found between FACT-G scores and other sociodemographic factors including gender, living status, access to health insurance, and presence of family in the UAE, nationality, ethnicity, time in the UAE, marital status, occupational status, religion, and education. Results varied across studies, lacking a consistent theme and preventing definitive conclusions (Al-Habsi et al., 2022; Akhtari-Zavare et al., 2018; El Jabari et al., 2022; Liao et al., 2023).

#### ***6. Clinical Factors and HRQoL***

Participants with superior performance functioning exhibited elevated total FACT-G scores in contrast to their counterparts with poorer performance functioning (ECOG 3 and 4). It follows logically that participants with enhanced functionality experienced a better HRQoL, a trend observed consistently in various studies.

The study showed no difference in HRQoL between participants with hematological malignancies or those with solid tumors, although hematology patients tend to have longer hospitalizations and prolonged length of stay with significant immunosuppression, risk for infection, pancytopenia, sepsis, and ICU admissions. No significant correlation was found between the type of cancer and HRQoL. This result contradicts most studies that conclude that HRQoL varied significantly by type of cancer, stage of cancer, chemotherapy status, and anemia status (Al-Habsi et al., 2022) and that patients with leukemia tend to have worse quality of life (Ahmed et al., 2018; Holzner, Kemmler, Kopp, et al., 2004; Oliva et al., 2011; Shanafelt et al., 2007);

however, this could be attributed to the sample size and distribution that contained a low number of participants with leukemia. This is mostly due to more availability and turnover of oncology patients in the infusion center where most of the data was collected, and thus a low number of hematology patients was accrued. This may also be due to the restrictions of inclusion of only clinically stable participants, which may have caused the omission of some hematology patients if they were sick at the time of data collection.

### ***7. Communication and HRQoL***

When evaluating the communication dynamics between patients and their healthcare providers, although no significance was noted, participants who reported minimal communication challenges, or in other words, those who experienced more effective communication with their doctors and nurses, demonstrated higher HRQoL scores compared to those encountering some difficulties. This finding aligns with the outcomes of a meta-analysis involving 19 articles conducted in Qatar, affirming a noteworthy association between communication and the quality of life of cancer patients, regardless of cancer type, age group, cultural background, gender, prognosis, or study year (Saadani et al., 2022). These findings have a global and transcultural implication, underscoring the crucial importance of effective communication with cancer patients and its substantial impact on enhancing both their HRQoL and medical services.

## **8. *Acculturation***

Expatriates embarking on a journey in the UAE delve into a multifaceted process that extends beyond initial orientation. Beyond learning about local customs and traditions, adapting to the workplace culture is a pivotal aspect. This involves comprehending hierarchical structures, communication tactics, and professional expectations that may differ from one's home country. Language acquisition, particularly understanding basic Arabic phrases, proves beneficial for effective communication and relationship-building with both colleagues and the broader community. Social integration becomes a key element as expatriates engage in local events, gatherings, and community activities to foster connections. Navigating the multicultural environment is equally essential, as the UAE hosts a diverse expatriate population. Additionally, expatriates need to exhibit respect for local laws, adhere to Islamic principles, and remain adaptable to changes in the cultural and professional landscape. The process of acculturation is ongoing, requiring a continual commitment to learning, psychological adjustment and social adaptation.

In assessing the participants' alignment with their home country and the UAE, the BAOS-Home and BAOS-Host yielded nearly identical results and displayed a positive correlation, indicating a nearly balanced orientation toward both cultures. This finding holds importance for expatriates who aim to uphold their connection to both countries, embracing the UAE's culture while preserving their original cultural identity, particularly considering the potential need for eventual repatriation.

The participants in this study demonstrated favorable psychological adjustment to life in the UAE, as assessed by the Brief Psychological Adaptation Scale. A high

average on the Brief Sociocultural Adaptation Scale also may suggest a relatively smooth adaptation process to various aspects of life in the UAE, encompassing its society and culture, including climate, social environment, food, language, values, beliefs, and practicalities of daily life, among other factors. The positive correlation between BSAS and BAOS-Host implies that an easier sociocultural adaptation might contribute to increased integration into the UAE. Additionally, a negative correlation between BSAS and BPAS, considering the reverse coding of BPAS, indicates a consistent pattern in the results of both scales in this sample. Despite psychological and sociocultural being distinct constructs, they appear interconnected in this context, suggesting that improved psychological adaptation may contribute to enhanced social integration.

The Brief Perceived Cultural Distance Scale (BPCDS) evaluates the disparities between the home country and the UAE. Participants in this study registered an above-average score on this scale, signifying cultural distinctions between the two countries. The BPCDS exhibited a negative correlation with both BAOS-Home and BAOS-Host, suggesting that the greater the cultural disparity, the more challenging it becomes to assimilate into either culture.

A significant correlation was also identified between the BPCDS and the BPAS, indicating that the greater the disparity between the two cultures, the more effortlessly expatriates adapted psychologically to life in the UAE. This interpretation suggests that expatriates might find life in the UAE more accommodating than in their home country, particularly considering that many expatriates relocate due to subpar living conditions, challenging work environments, or difficulties in providing for their families. The UAE

government strives to offer optimal living conditions for both locals and expatriates, fostering a lifestyle that could be relatively easy to acclimate to. This is additionally supported by the association observed between HRQoL and the BPAS, indicating that enhanced psychological adaptation correlates with better HRQoL among expatriate cancer patients. However, due to the scarcity of literature on the subject, further investigation is necessary to comprehensively grasp the intricacies of the relationship portrayed in this study.

### ***9. Psychological status and HRQoL***

The final phase of the bivariate analysis focused on examining the psychological well-being of participants in connection to their HRQoL. The results indicated a significant, moderate, and adverse correlation between depression and anxiety levels and FACT-G scores, extending across all HRQoL domains. This finding is supported by existing literature on the detrimental effects of anxiety and depression on overall and specific domains of quality of life (Akel et al., 2017; Cahit & Jill, 2021;Khue et al., 2019; So et al., 2010).

The most robust correlation was identified between anxiety and emotional well-being, aligning logically with literature supporting this association. A study from Iran further corroborated these findings, revealing a statistically significant correlation between HADS scores and global health scores along with emotional functioning (Montazeri et al., 2003)

Similarly, a strong, negative correlation surfaced between depression and HRQoL, evident across all FACT-G scale domains, with functional well-being showing

the most vigorous association due to the profound impact of depression on one's functionality. This observation is consistent with literature, as patients with higher HADS scores for anxiety and depression reported more symptoms and demonstrated lower functional capacity (Alawadi & Ohaeri, 2009). These outcomes underscore the substantial influence of psychological factors, particularly anxiety and depression, on the overall health-related quality of life among the participants in the study.

### **C. Determinants of HRQoL**

About 63% of the variability in the FACT-G scores is predicted by performance status score, depression, and access to healthcare information. Higher HRQoL was associated with better performance status, lower levels of depression, and easier access to healthcare information.

Depression emerged as the most influential factor in determining HRQoL in this study, consistent with similar findings in other studies (Abu-Helalah et al., 2014; Faller et al., 2015; Sharour et al., 2020). Results from Iran also supported this, indicating a statistically significant correlation between HADS scores, global health scores, and emotional functioning (Montazeri et al., 2003).

Performance status or ECOG score also significantly predicted HRQoL, aligning with another study (Faller et al., 2015). Access to healthcare information, though not widely explored in the literature, emerged as a determinant of HRQoL in this study.

While numerous predictors from the literature, such as age, sleep quality, cancer-related fatigue, time since diagnosis, comorbidities, symptom burden, and severity, were not specifically explored in this study, the identified factors collectively



underscore the complex interplay of various elements influencing HRQoL in cancer patients.

#### **D. Theoretical Framework**

The findings of this study align with the theoretical framework of the Ashing-Giwa contextual model, explored in detail in Chapter 2, which conceptualizes HRQoL not only as a construct centered around individual patient factors but one that is also influenced by broader, macro-level factors. The model posits that HRQoL is shaped by individual-level factors such as cancer-related medical aspects, general health status, and psychological well-being. This study validates the model, as performance functioning, reflecting general health status, and anxiety and depression, indicative of psychological well-being, emerged as significant predictors of HRQoL in the examined sample. The Ashing-Giwa contextual model broadens its scope beyond individual factors to include four contextual domains identified in this study: demographic context, illustrated by age; cultural context, as seen in psychological acculturation; and healthcare system context, evident in factors such as communication with healthcare providers and access to healthcare information. In conclusion, these study findings affirm that the HRQoL of expatriate cancer patients is a complex and multifaceted phenomenon that extends beyond individual characteristics to encompass multiple external domains (Ashing-Giwa, 2005; Ashing-Giwa et al., 2007b, 2009).

## **E. Study Limitations**

This study is subject to several limitations that warrant consideration. First, the reliance on a convenience sampling method introduced constraints on participant recruitment from the inpatient department. While the infusion center offered more accessibility for data collection due to higher patient turnover, this inadvertently led to a limited representation of hematology patients, potentially overlooking those with prolonged hospitalization and possibly experiencing a worse quality of life.

Another noteworthy limitation was the exclusion of clinically unstable patients, which may have resulted in an incomplete portrayal of the full scope and intricacies of HRQoL.

Language barriers posed a more substantial challenge than anticipated. The utilization of an English-only questionnaire rendered many expatriates, particularly those from non-English-speaking backgrounds like Pakistani or Bengali patients with limited proficiency, unable to participate. This limitation may have resulted in a less diverse and representative sample of the expatriate population, potentially impacting the generalizability of the study's findings.

The extended length of the questionnaire emerged as an additional concern, with participants expressing fatigue during its completion. Furthermore, the use of a generalized HRQoL questionnaire, specifically the FACT-G, may have limitations in capturing the nuanced and culturally specific aspects of the expatriate population under investigation. Despite these limitations, the study provides valuable insights into the HRQoL of expatriate cancer patients, underscoring the need for future research to

address these constraints for a more comprehensive understanding of this population's experiences.

#### **F. Generalizability of the Results**

While this study was conducted in the UAE, its findings may have broader application to other Gulf countries. The potential generalizability is grounded in the similarity of demographics across many Gulf nations, where expatriates constitute a significant portion of the population. The Gulf region, including countries beyond the UAE, attracts individuals from diverse nationalities seeking temporary residence primarily for employment opportunities and an enhanced quality of life. These countries, characterized by active economic development, share a commonality in having a young population for whom employment status is crucial and significantly correlates with HRQoL. Therefore, the study's insights, particularly those pertaining to the influence of employment status on HRQoL, may offer valuable implications for understanding the experiences of expatriate cancer patients in other Gulf nations.

#### **G. Implications for Practice**

The implications of this study on the HRQoL among expatriate cancer patients are substantial, particularly within the realm of nursing practice. This pioneering research in the UAE, where cancer care has experienced significant growth in the last few years, underscores the need for healthcare providers, particularly nurses, to be well-informed about the determinants of HRQoL in this unique population, which has not been previously explored.

Emotional well-being emerges as a consistent challenge not only in the UAE but also across various countries, emphasizing the pivotal role of nurses in providing crucial emotional support. Recognizing the unique aspects of this age demographic, where patients may be simultaneously raising children and engaged in full-time employment, is essential. Younger patients may face heightened vulnerability to the emotional burden and psychological impact of cancer. Consequently, it is recommended that supportive care services be tailored to meet the distinctive needs of this younger demographic, offering guidance on managing work, social, and family aspects of quality of life.

In the multicultural context of the UAE, cultural sensitivity is paramount for members of the healthcare team, as patients' experiences and perceptions of care are influenced by diverse backgrounds. Interdisciplinary collaboration, involving interpreters, social workers, and various healthcare professionals, becomes indispensable for effective communication and support services, particularly in overcoming language and cultural barriers.

A holistic approach to cancer care is emphasized, with nurses extending their focus beyond physical aspects to include emotional and psychosocial dimensions. This can only be accomplished through implementing a routine assessment of HRQoL for cancer patients. Following that, patient education assumes a pivotal role, with nurses playing a key role in educating patients about their condition, treatment options, and strategies for managing emotional distress.

Although this study did not explore the effects of the duration since diagnosis on HRQoL, nurses must recognize the evolving needs of cancer patients as they progress through their cancer journey. The role of a clinical nurse specialist in this setting is

paramount, involving the identification of changing needs and the provision of ongoing support.

The main strength of this study lies in its unique nature within the UAE, being among the initial investigations delving into the factors influencing HRQoL in expatriate cancer patients. The UAE currently faces a scarcity of published research on cancer, leaving the characteristics of cancer patients largely undisclosed and unexplored. To our knowledge, this study represents the first attempt to scrutinize HRQoL and its determinants among a diverse group of expatriate cancer patients in the country.

In conclusion, the findings underscore the significance of adopting a patient-centered and culturally sensitive approach to cancer care in the UAE, with nurses serving as instrumental agents in enhancing the emotional well-being and overall quality of life for cancer patients.

#### **H. Recommendation for future research**

Building upon the findings of this research study, there are several crucial recommendations for future investigations. First, a deeper exploration of the factors affecting HRQoL among cancer patients is warranted. Further qualitative research is imperative to delve deeper into the multifaceted impact of cancer on patients' lives and to unravel the intricate dimensions of their experiences. Conducting follow-up interviews with patients can provide a detailed exploration of the various facets affected by their condition. This inquiry includes a comprehensive examination of the physical ramifications, the emotional toll, the social adjustments, and the financial implications.

Additionally, the interviews seek to unravel the unique challenges faced by expatriate cancer patients in adapting to life in the UAE, especially in the context of their diagnosis. Understanding their coping mechanisms and symptom management strategies is crucial for tailoring support. Furthermore, exploring the perceived benefits and challenges of undergoing cancer treatment in Abu Dhabi versus their home country can offer valuable insights into the expatriate healthcare experience. Lastly, soliciting patients' perspectives on strategies to enhance their quality of life during cancer treatment adds a qualitative layer to inform holistic and patient-centered care approaches.

Furthermore, the positive correlation between age and HRQoL suggests the need for age-specific interventions. Subsequent studies could delve into how different age groups of cancer patients respond to and benefit from tailored support structures.

Improving doctor-patient and nurse-patient communication is identified as crucial, emphasizing the need for future research to assess the effectiveness of communication interventions in enhancing HRQoL for cancer patients. Given the diverse linguistic backgrounds of expatriate populations in the UAE, utilizing translated scales and assessments for non-English speakers can provide more accurate and comprehensive data, contributing to a better understanding of HRQoL among these populations.

Moreover, considering the substantial growth of cancer care in the UAE, it is now more imperative than ever for nurses to actively engage in cancer research. Their involvement in research endeavors can bring valuable perspectives and insights to the evolving landscape of cancer care.

In summary, future research endeavors in this domain should encompass qualitative approaches, age-specific interventions, enhanced communication strategies, and the implementation of translated scales for non-English speaking expatriates. These steps can further enrich our comprehension of the determinants of HRQoL and inform the development of more effective and culturally sensitive interventions in the field of cancer care.

## **I. Conclusion**

In conclusion, this research study on HRQoL among expatriate cancer patients in the UAE represents a pioneering effort and, to our knowledge, the first of its kind in this region. The unique and diverse expatriate population in the UAE, coupled with the multitude of nationalities and cancer diagnoses included in this study, provides a comprehensive insight into the HRQoL challenges faced by this community. This innovative research is not only valuable for its academic contributions but also holds significant potential to benefit the community and enhance cancer care in the UAE. By identifying key determinants of HRQoL, such as emotional distress, performance functioning, and communication, this study lays the foundation for more targeted and culturally sensitive interventions. It serves as a crucial resource to guide healthcare providers, policymakers, and support organizations in developing strategies that improve the well-being of expatriate cancer patients, ultimately fostering a more holistic and patient-centered approach to cancer care in the UAE.

# APPENDIX I

## CONSENT FORM

**American University of Beirut Hariri School of Nursing and Sheikh Shakhbout  
Medical City  
Consent to Participate in a Study**

**Title:** Health-Related Quality of Life of Expatriate Patients Living with Cancer in Abu Dhabi: A Mixed Methods Study

**Principle Investigators:** **Dr. Angela Massouh** [American University of Beirut] and **Dr. Shahrukh Hashmi** [Sheikh Shakhbout Medical City]

You are being asked to participate in a research study conducted at the Sheikh Shakhbout Medical City. This study has been approved by the Institutional Review Board at the American University of Beirut and the Research Ethics Committee at Sheikh Shakhbout Medical City.

Please read the following information carefully before you decide whether you want to take part in this research study or not. Feel free to ask your doctor if you need more information or any clarification about what is stated in this form or the study as a whole.

### **What is this research study about?**

The primary purpose of this study is to describe the factors that influence the quality of life of non-local patients living with cancer in Abu Dhabi and subsequently facilitate the recognition of patients at risk for suboptimal quality of life.

This research is being conducted in partial fulfillment of the requirements for the Master of Science in Nursing for Mrs. Farah Farroukh at the American University of Beirut in Lebanon.

You will be recruited by your Charge Nurse because you are an expatriate, diagnosed with cancer, and are undergoing treatment in Abu Dhabi. If you wish to participate, you will be among 100 other participants who will be recruited for this study. You will be asked to answer a set of questions about how you deal with disease and treatment on multiple levels. The interview will be done in your hospital room and is expected to last a maximum of 30 minutes.



## **What are the risks and benefits of participating in the study?**

Your participation in this study does not involve any physical risk to you. You have the right to refuse to participate, withdraw your consent, or discontinue participation at any time during or after the interview and for any reason. Your decision to withdraw will not involve any penalty or loss of benefits to which you are entitled. Discontinuing participation in no way affects your relationship with the Sheikh Shakhbout Medical City. You receive no direct benefits from participating in this research study; however, your participation might help researchers better understand quality of life of non-local cancer patients and build strategies to improve it.

The questionnaire explores some aspects of your well-being and might emotionally upset you. You are free to skip any questions that might disturb you. In case of any emotional discomfort during the interview, you can always opt to stop, and your primary physician will be notified immediately. In case you screen positive for anxiety or depression, your primary physician would be notified to check with you whether a follow up intervention is required.

## **Confidentiality**

Confidentiality will be strictly maintained at all times. For that reason, your name and other identifying information will never be attached to your answers. The research team will access your medical records for information about your past medical history including height, weight, and BMI; smoking history; alcohol consumption; exercise; time since diagnosis; malignancy type; treatments received; and comorbidities. All codes and data are kept in a locked drawer or in a password protected computer that is kept secure. Data access is limited to the Principal Investigator and researchers working directly on this project. Records may be audited by the Institutional Review Board at the American University of Beirut and the Research Ethics Committee at Sheikh Shakhbout Medical City, maintaining confidentiality at all times. All data will be destroyed responsibly after seven years. Your privacy will be maintained in all published and written data resulting from this study. Your name or other identifying information will not be used in our reports or published papers.

## **Contact Information**

If you have any questions or concerns about the research, you may contact Dr. Angela Massouh at the below information: Telephone number: 0135000 extension 5959. Office: American University of Beirut, Hariri School of Nursing, Room 411C. Email: [am50@aub.edu.lb](mailto:am50@aub.edu.lb)

Dr. Shahrukh Hashmi at the below information: Telephone number: +97123142222 extension 1136. Office: Sheikh Shakhbout Medical City, Annex Building, 3<sup>rd</sup> floor. Email: [shhashmi@ssmc.ae](mailto:shhashmi@ssmc.ae)

If you have any questions, concerns, or complains about your rights as a participant in this research, you can contact the Social & Behavioral Sciences Institutional Review Board office at AUB: Telephone number: 0135000 extension 5445. Office: AUBMC-ACC Building 3<sup>rd</sup> floor. Email: [irb@aub.edu.lb](mailto:irb@aub.edu.lb) or the Research Ethics Committee at Sheikh Shakhbout Medical City. Email: [SSMCresearch@ssmc.ae](mailto:SSMCresearch@ssmc.ae).

### **Participant Rights**

Participation in this study is voluntary. You are free to leave the study at any time without penalty. Your decision not to participate will not influence your relationship with SSMC. Your participation might be terminated by the investigator if deemed necessary. A copy of this consent form will be left with you

### **Patient's Participation**

I have read and understand the above information. I agree to participate in the research study.

_____ Participant Name	_____ Signature	_____ Date and Time
_____ Witness Name	_____ Signature	_____ Date and Time
_____ Investigator/ Designee Name	_____ Signature	_____ Date and Time

By ticking the below box, I give the research team permission to contact me in the future for a qualitative interview.

Yes

No

APPENDIX II  
DATA COLLECTION TOOL

**Sociodemographic Characteristics**

<b>Study Code</b>			<b>Interview Date</b>		
<b>Gender</b>			<b>Age in years</b>		
<b>Nationality</b>			<b>Residence</b>		
<b>Visa Type</b>	Visit Visa	Employment Visa	<b>Time in UAE</b>	Less than 1 year	1 to 3 years
	Sponsored by Family Member			3 to 5 years	More than 5 years
<b>Marital Status</b>	Single	Married	<b>Occupational Status</b>	Currently Employed	Retired
	Divorced	Widowed		On Medical Leave	
<b>Religion</b>	Muslim	Christian	<b>Education</b>	Illiterate	Can Read and Write
	Hindu	Won't Disclose		Intermediate School	Secondary/Technical
	Other:			University	Graduate School
<b>Living Status</b>	Living alone		<b>Family in the UAE</b>	Yes, who:	
	Living with someone:			No	
<b>Health Insurance</b>	Yes:		<b>Income per Month</b>	1000-3000 AED	3000-6000 AED
	No:			6000-9000 AED	More than 9000 AED

**Clinical Characteristics**

<b>Height, Weight, and BMI</b>	Height:	<b>Smoking History</b>		Current: -----pack/ day
	Weight:			Never Smoked
	BMI:			Former-smoker quit since:
<b>Alcohol Consumption</b>	Yes, # of alcoholic drinks per week:	<b>Exercise</b>		Yes, # of hours per week:
	No			No
<b>Time Since Diagnosis</b>		<b>Malignancy Type:</b>		
<b>Treatments Received</b>	Surgery		Chemotherapy	Immunotherapy
	Targeted Therapy		Radiotherapy	Hematopoietic Stem Cell Transplantation

<b>Comorbidities</b>	Heart Failure		Diabetes	Peripheral Vascular Disease
	Dementia		COPD	Peptic Ulcer Disease
	Liver Disease		Kidney Injury	

### Communication

<b>Difficulty Communicating with Doctors/ Nurses</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	Not At All	A Little Bit	Somewhat	Quite a Bit	Very Much
<b>Difficulty Accessing Healthcare Information</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	Not At All	A Little Bit	Somewhat	Quite a Bit	Very Much
<b>Difficulty Understanding Medical Condition</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	Not At All	A Little Bit	Somewhat	Quite a Bit	Very Much

### Eastern Cooperative Oncology Group [ECOG] Performance Status Score

<b>Performance</b>	<b>Definition</b>
0	Fully active; no performance restrictions
1	Strenuous physical activity restricted; fully ambulatory and able to carry out light work
2	Capable of all self-care but unable to carry out any work activities. Up and about >50% of waking hours
3	Capable of only limited self-care; confined to bed or chair > 50% of waking hours
4	Completely disabled; cannot carry out any self-care; totally confined to bed or chair

### FACT – G

Below is a list of statements that other people with your illness have said are important. Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

<b>Physical Well Being</b>		<b>Not At All</b>	<b>A Little Bit</b>	<b>Somewhat</b>	<b>Quite A Bit</b>	<b>Very Much</b>
GP1	I have a lack of energy	0	1	2	3	4
GP2	I have nausea	0	1	2	3	4
GP3	Because of my physical condition, I have trouble meeting the needs of my family	0	1	2	3	4
GP4	I have pain	0	1	2	3	4
GP5	I am bothered by side effects of treatment	0	1	2	3	4
GP6	I feel ill	0	1	2	3	4

GP7	I am forced to spend time in bed	0	1	2	3	4
<b>Social / Family Well Being</b>		<b>Not At All</b>	<b>A Little Bit</b>	<b>Somewhat</b>	<b>Quite A Bit</b>	<b>Very Much</b>
GS1	I feel close to my friends	0	1	2	3	4
GS2	I get emotional support from my family	0	1	2	3	4
GS3	I get support from my friends	0	1	2	3	4
GS4	My family has accepted my illness	0	1	2	3	4
GS5	I am satisfied with family communication about my illness	0	1	2	3	4
GS6	I feel close to my partner (or the person who is my main support)	0	1	2	3	4
GS7	Regardless of your current sexual activity, please answer the following question. If you prefer not to answer it, please mark this box <input type="checkbox"/> , and go to the next section:  I am satisfied with my sex life	0	1	2	3	4
<b>Emotional Well Being</b>		<b>Not At All</b>	<b>A Little Bit</b>	<b>Somewhat</b>	<b>Quite A Bit</b>	<b>Very Much</b>
GE1	I feel sad	0	1	2	3	4
GE2	I am satisfied with how I am coping with my illness	0	1	2	3	4
GE3	I am losing hope in the fight against my illness	0	1	2	3	4
GE4	I feel nervous	0	1	2	3	4
GE5	I worry about dying	0	1	2	3	4
GE6	I worry that my condition will get worse	0	1	2	3	4
<b>Functional Well-Being</b>		<b>Not At All</b>	<b>A Little Bit</b>	<b>Somewhat</b>	<b>Quite A Bit</b>	<b>Very Much</b>
GF1	I am able to work (include work at home)	0	1	2	3	4
GF2	My work (include work at home) is fulfilling	0	1	2	3	4
GF3	I am able to enjoy life	0	1	2	3	4
GF4	I have accepted my illness	0	1	2	3	4
GF5	I am sleeping well	0	1	2	3	4
GF6	I am enjoying the things I usually do for fun	0	1	2	3	4
GF7	I am content with the quality of my life right now	0	1	2	3	4

### Hospital anxiety and depression scale (HADS)

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

**Brief Acculturation Scales: Brief Acculturation Orientation Scale [BAOS]**

Please rate your agreement with the following statements: “It is important for me to...”  
 1: Strongly Disagree; 2: Somewhat Disagree; 3: Disagree; 4: Neutral; 5: Somewhat Agree; 6: Agree; and 7: Strongly Agree

1. Have [home country] friends	1	2	3	4	5	6	7
2. Take part in [home country] traditions	1	2	3	4	5	6	7
3. Hold on to my [home country] characteristics	1	2	3	4	5	6	7
4. Do things the way [home country] people do	1	2	3	4	5	6	7
5. Have [host country] friends	1	2	3	4	5	6	7
6. Take part in [host country] traditions	1	2	3	4	5	6	7
7. Develop my [host country] characteristics	1	2	3	4	5	6	7
8. Do things the way [host country] people do	1	2	3	4	5	6	7

**Brief Acculturation Scales: Brief Psychological Adaptation Scale [BPAS]**

Think about living in [host country]. In the last two weeks, how often have you felt ...  
 1: Always; 2: Very Frequently; 3: Frequently; 4: Neutral; 5: Rarely; 6: Very Rarely; and 7: Never

1. Excited about being in [host country]	1	2	3	4	5	6	7
2. Out of place, like you don't fit into [host country] culture	1	2	3	4	5	6	7
3. A sense of freedom being away from [home country]	1	2	3	4	5	6	7
4. Sad to be away from [home country]	1	2	3	4	5	6	7
5. Nervous about how to behave in certain situations	1	2	3	4	5	6	7
6. Lonely without your [home country] family and friends around you	1	2	3	4	5	6	7
7. Curious about things that are different in [host country]	1	2	3	4	5	6	7
8. Homesick when you think about [home country]	1	2	3	4	5	6	7
9. Frustrated by difficulties adapting to [host country]	1	2	3	4	5	6	7
10. Happy with your daily-to-day life in [host country]	1	2	3	4	5	6	7

**Brief Acculturation Scales: Brief Sociocultural Adaptation Scale [BSAS]**

Think about living in [host country]. How easy is it for you to adapt to the following:  
 1: Very Difficult; 2: Somewhat Difficult; 3: Difficult; 4: Neutral; 5: Easy; 6: Somewhat Easy; and 7: Very Easy

1. Climate (temperature, rainfall, humidity)	1	2	3	4	5	6	7
2. Natural Environment (plants and animals, pollution, Scenery)	1	2	3	4	5	6	7



3. Social environment (size of the community, pace of life, noise)	1	2	3	4	5	6	7
4. Living (hygiene, sleep practices, how safe you feel)	1	2	3	4	5	6	7
5. Practicalities (getting around, using public transport, shopping)	1	2	3	4	5	6	7
6. Food and eating (what food is eaten, how food is eaten, time of meals)	1	2	3	4	5	6	7
7. Family life (how close family members are, how much time family spends together)	1	2	3	4	5	6	7
8. Social norms (how to behave in public, style of clothes, what people think is funny)	1	2	3	4	5	6	7
9. Values and beliefs (what people think about religion and politics, what people think is right or wrong)	1	2	3	4	5	6	7
10. People (how friendly people are, how stressed or relaxed people are, attitudes towards foreigners)	1	2	3	4	5	6	7
11. Friends (making friend, amount of social interaction, what people do to have fun and relax)	1	2	3	4	5	6	7
12. Language (learning the language, understanding people, making yourself understood)	1	2	3	4	5	6	7

**Brief Acculturation Scales: Brief Perceived Cultural Distance Scale [BPCDS]**

Think about [home country] and [host country]. In your opinion, how different or similar are these two countries in terms of 1: Very Similar; 2: Somewhat Similar; 3: Similar; 4: Neutral; 5: Somewhat Different; 6: Different; and 7: Very Different							
1. Climate (temperature, rainfall, humidity)	1	2	3	4	5	6	7
2. Natural Environment (plants and animals, pollution, Scenery)	1	2	3	4	5	6	7
3. Social environment (size of the community, pace of life, noise)	1	2	3	4	5	6	7
4. Living (hygiene, sleep practices, how safe you feel)	1	2	3	4	5	6	7
5. Practicalities (getting around, using public transport, shopping)	1	2	3	4	5	6	7
6. Food and eating (what food is eaten, how food is eaten, time of meals)	1	2	3	4	5	6	7
7. Family life (how close family members are, how much time family spends together)	1	2	3	4	5	6	7
8. Social norms (how to behave in public, style of clothes, what people think is funny)	1	2	3	4	5	6	7

9. Values and beliefs (what people think about religion and politics, what people think is right or wrong)	1	2	3	4	5	6	7
10. People (how friendly people are, how stressed or relaxed people are, attitudes towards foreigners)	1	2	3	4	5	6	7
11. Friends (making friend, amount of social interaction, what people do to have fun and relax)	1	2	3	4	5	6	7
12. Language (learning the language, understanding people, making yourself understood)	1	2	3	4	5	6	7

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