THE UTILITY OF AN INTEGRATED MODEL TO EXPLORE THE MEDIATING ROLE OF RELIGIOUS COPING BETWEEN ILLNESS PERCEPTIONS AND PSYCHOSOCIAL OUTCOMES OF OMANI WOMEN NEWLY DIAGNOSED WITH BREAST CANCER

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This thesis is the result of the author’s original research. All material in this thesis, which is not the author’s own work has been acknowledged. No material from this thesis has been previously submitted and approved for the award of a degree by this university or any other institution.

Signed: Zena Al-Sharbati

Date: 22/09/2020

Abstract

Breast cancer is the most common cancer experienced by women worldwide. Whilst significant improvements in screening, diagnosis and treatment have resulted in decreased mortality, breast cancer and its treatment can have a significant impact on the well-being of these women. This mixed methods thesis includes three studies to explore the utility of a novel integrated theoretical model combining the common-sense model (Leventhal et al., 1980), and the religious coping mediator model (Pargament, 1997). The aim of this thesis was to examine how illness perceptions and religious coping impact the psychosocial outcomes of Omani women newly diagnosed with breast cancer.

To begin, a *systematic review* was conducted to evaluate the measurement of religious coping in clinical cancer research, and to determine the most suitable tool for the quantitative study. The Brief RCOPE was determined to be the most suitable tool for the quantitative arm of this thesis. The second study was a quantitative, *cross-sectional* study which examined the proposed integrated model in a sample of 103 Omani women with breast cancer. The study showed that negative religious coping explained the relationship between these women's emotional representations of breast cancer, on the one hand, and symptoms of anxiety and depression, on the other hand.

Finally, a *qualitative* study, using Interpretative Phenomenological Analysis (n=6), was conducted to expand on the quantitative findings. These interviews highlighted the changing nature of illness representations throughout the illness trajectory and the importance of religious coping in that process. The findings from this thesis highlight the importance of discussing illness perceptions with breast cancer sufferers as well as their families early in the illness trajectory. Additionally, there might be a clinical utility in assessing the coping resources for these women, which include both religious and non-religious coping skills, to help patients to cope with their illness.

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List of Abbreviations

American Joint Committee on Cancer: AJCC

BMMRS: Brief Multidimensional Measure of Religion and Spirituality.

Brain metastasis: BM

Breast Self-Examination: BSE

Brief Illness Perceptions Questionnaire: Brief-IPQ.

Day Care Unit: DCU.

Electronic Patient Record: EPR

GLOBOCAN: Global Cancer Incidence, Mortality, and Prevalence

Interpretative Phenomenological Analysis: IPA

Medical Research Council: MRC

Multi-Disciplinary Team: MDT.

Out Patient Department: OPD.

Post-Traumatic Growth: PTG.

Principle Component Analysis: PCA.

RCOPE: Religious Coping Scale

Sultan Qaboos University Hospital: SQUH.

Systematic Review: S.R.

Ways of Religious Coping Scale (WORCS)

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Dedication

To my beloved parents, Shahla and Marwan, whose endless support and prayers have sustained me throughout this whole process. Words cannot express how grateful I am to both of you. Thank you from the bottom of my heart for everything you have done to support me in every possible way to complete this project.

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Chapter 1: Introduction to Female Breast Cancer as a Public Health Problem and its Psychological Squeal

1.1 Introduction

This PhD thesis is set to examine the mediating role of religious coping between illness perceptions and psychosocial outcomes, namely symptoms of anxiety and depression, and quality of life among Omani women newly diagnosed with breast cancer. This introductory chapter will provide an overview of female breast cancer (BC), and the up-to-date treatment modalities for the disease. It will discuss, from an epidemiological point of view, the magnitude of female BC as an international public health problem. Given the population of interest of this thesis, which is Arab Omani women with breast cancer, this chapter will particularly focus on the Omani context. The psychological difficulties associated with BC will be discussed whilst highlighting the importance of theory driven research. Within this theoretical context, this chapter will highlight illness perceptions and religious coping as potential theoretical predictors of the psychosocial outcomes for Omani women with breast cancer.

1.2 Definition of breast cancer

BC is a heterogonous cluster of diseases, and could be a threat to life if diagnosed at an advanced stage of disease (Amar, Srivastav, & Prakash, 2020; Montemagno & Pagès, 2020). The disease develops when cells divide at an accelerated rate typically resulting in a malignant tumour (Ikhuoria & Bach, 2018). The cancer cells frequently originate in the milk glands (lobular glands) or the channels connecting these glands (ducts) (Ikhuoria & Bach, 2018). With the exception of the development of a small mass for early-stage disease, there are typically no symptoms associated with BC (Ramadan, 2020). One of the most common signs is the growth of a painless mass in the breast, or axilla. Less frequent symptoms include the feeling of a bulky breast, alterations in the nipple area, and/or surrounding skin (Ikhuoria & Bach, 2018; Koo et al., 2017). The diagnosis of BC occurs in three steps: clinical examination, imaging, and a biopsy (Karim et al., 2020).

1.2.1 The staging system for breast cancer

For the purposes of this thesis, the updated American Joint Committee on Cancer (AJCC) staging guidelines, which is the most commonly and universally used staging system for breast cancer, will be implemented given its clinical appropriateness and use within the Omani clinical setting (Koh & Kim, 2019). The AJCC staging system identifies the size and the magnitude of the cancer cells' invasion to other tissues within the body. It also helps clinicians in determining the best treatment modality, and its outcomes for each individual patient. The AJCC staging system describes the staging process using the TNM classification, in which T denotes to the dimensions of the tumour, N involves the spread of cancer to the lymph nodes, while M refers to the spread of cancer to other body organs (metastases). After the identification of these categories based on the TNM system, this classification are then converted into five stages which range from (0 to IV). A higher stage is typically concomitant with worse prognosis. Stage 0 refers to in-situ breast cancer, which means that cancer cells have not yet spread to the adjacent breast tissue. Stage I indicates that the cancer cells are within the breast tissue, with a size of not more than 20 mm. Stage II refers to a tumour of more than 20 mm but not greater than 50 mm. Stage III refers to locally advanced breast cancer, in which the tumour is greater than 50 mm. Stage IV refers to metastatic breast cancer, of a tumour of any size, which is attached to the chest wall and/or the skin (Amin et al., 2017; Giuliano et al., 2017). The grade of illness (from 1 to 3), on the other hand, reflects two aspects: the speed of the tumour's growth, and its similarity to the normal cell. The higher the number, the more aggressive the cancer is (Amin et al., 2017; Giuliano et al., 2017).

1.2.2 Treatment modalities for breast cancer

Numerous biological and clinical aspects influence the treatment modalities chosen for each patient with BC (Seidler & Huber, 2020). Women with invasive BC can be roughly divided into two groups: those with early-stage BC, and women with late-stage (or metastatic) BC (Amar et al., 2020; Miyashita, Hattori, Takano, Toyama, & Iwata, 2020; Seidler & Huber, 2020). Early stage invasive BC is treated with surgery, along with radiation therapy, chemotherapy, hormone therapy, targeted therapy, and/or a combination of these (Seidler & Huber, 2020). Late-stage (or metastatic) BC has four treatment options: chemotherapy, targeted therapy, hormonal therapy, immunotherapy, and/or a combinations of these treatments (Amar et al., 2020; Miyashita et al., 2020).

Surgical interventions include breast-conserving surgery and mastectomy. Breast-conserving surgery selectively removes the tumour, whereas mastectomy removes all of the breast tissue (Akbari et al., 2020). Radiotherapy involves the utilisation of radiation to destroy the cancer cells' DNA. Radiotherapy is implemented in several clinical scenarios such as after the surgical interventions, and after the use of systemic therapies (Haussmann et al., 2020). Systemic therapies aim to eradicate the cancer cells that have metastasised to other body organs. These therapies include chemotherapy, hormonal therapies, and targeted therapies (Taghian & Merajver, 2020). Chemotherapy destroys cancer cells, and is usually administered once a week, or once every three weeks. Hormonal therapies involve Tamoxifen, Trustuzumab, and Pertuzumab, and their purpose is to block or reduce estrogen receptors, which stimulates the progression of cancer cells. Targeted therapies typically attack certain biological structures of the cancer cell which fuels its progression (Taghian & Merajver, 2020).

1.3 The epidemiology of breast cancer

Globally speaking, female BC is a major public health problem, as it is the most frequently diagnosed malignancy in women which comprises almost 25 % of new female cancer cases, and is the second most commonly occurring cancer type (Bray et al., 2018; Ji et al., 2020). A recent international epidemiological study highlighted that female BC incidence rates have increased by 123.14% over the past 27 years (Ji et al., 2020). Various factors have contributed to this increase, which reflect the demographic global changes such as increasing life expectancy, and lifestyle changes associated with modernisation of societies such as physical inactivity, reduced breast feeding periods, and low number of children per woman (Bray et al., 2018). Geographic differences in the incidence of breast cancer have been highlighted, with higher rates in developed countries, and lower rates in Africa and Asia (Bray et al., 2018; Ferlay et al., 2018; Ji et al., 2020). These geographic discrepancies have been attributed to two groups of factors; the first group is linked to increased public awareness about the role of early screening and detection of breast cancer, while the second group of factors is associated with unhealthy lifestyle such as sedentary way of life, high Body Mass Index (BMI), and higher alcohol consumption (Baade, 2017; Momenimovahed & Salehiniya, 2019).

Two main comprehensive data sources have been utilised in the epidemiological studies which analyse the global burden of breast cancer: the Global Burden of Disease Study (last updated in 2017), and the GLOBOCAN (Global Cancer Incidence, Mortality, and Prevalence), by the International Agency for Research on Cancer (last updated in 2018) (Bray et al., 2018; Ferlay et al., 2018; Ji et al., 2020). Consequently, one limitation of the data reported in this section is that they do not reflect the current epidemiological data on breast cancer, rather only estimates of the incidence rates as well as mortality rates. This is because the process of data collection, analysis and distribution is labour and time intensive. Therefore, these data can be up to four years behind the current date (Siegel, Miller, & Jemal, 2020).

Worldwide, mortality rates associated with breast cancer have dramatically increased from 1990 to 2017 by 74.96% (Ji et al., 2020). Based on statistical estimations of available epidemiological data, breast cancer in 2018, continues to be the leading cause of cancer death among women (about 15% of deaths from all female malignancies) (Bray et al., 2018; Ferlay et al., 2018). Compared to the last reporting period by the GLOBOCAN, the expected number of BC related deaths on the international level increased to 627,000 in 2018 compared to 521,900 in 2012 (Ferlay et al., 2013; Ferlay et al., 2018). However, another study which compiled data from several resources found that the expected mortality rates as related to breast cancer are expected to reduce in some high income countries in North America by 10% by 2020 (Carioli et al., 2017). This decrease in mortality rates has been associated with the availability of advanced treatments of breast cancer in these countries. Consequently, socio-economically disadvantaged nations have the highest toll of deaths from female BC as it is ranked as the first cause of death (Ferlay et al., 2013; Ferlay et al., 2018).

1.3.1 Breast cancer in Arabic countries

In order to geographically contextualise this thesis, a brief description of some demographic characteristics of the Arab world, and the Sultanate of Oman will follow. The Arab world is divided into 22 states, which belong to the Arab League (Fares, Khachfe, Fares, Salhab, & Fares, 2020). The projected population of the Arab world in the year 2020 is expected to be 436.3 million (Arab Development Portal, 2019). Despite the perceived cultural resemblances within the population in this region, significant differences exist in terms of the political climates, social make-up, economic expansions, and healthcare infrastructure among the states making up the Arab region (Fares et al. 2020). The Sultanate of Oman, the country of interest in the current thesis, is located in the south-eastern part of the Arabian Peninsula. Oman has undergone major developments in its infrastructure upon the discovery of oil fields in the 1970s (Al Hinai et al., 2020; Al-Mezeini, Oukil, & Al-Ismaili, 2020). The total population of Oman is estimated to be 6,551,917 million, with 4,631,760 million of these being Omani locals, and 1,920,157 being expatriates (National Centre for Statistics and Information, 2020). The official religion in Oman is Islam, and the official spoken languages are Arabic and English. The healthcare system is free of charge for all local nationals and expatriates who work for the government section (Al Hinai et al., 2020).

It has been acknowledged that there is scarcity in the recent statistical evidence on breast cancer in Arab countries (Hashim et al., 2018). Consequently, the most recent up to date analysis of epidemiological data on Arab women with breast cancer was conducted by Hashim et al. (2018), who utilised the data from the Global Burden of Disease (2016) (the most recent updated Global Burden of Disease data was in 2017). This highlighted that the incidence rate of female BC in the Arab world has gradually increased over the last three decades (Hashim et al., 2018). Nevertheless, compared to international incidence rates of BC (46/100,000), the incidence rates in Arab countries are much lower (28/100,000). In 2016, the number of newly diagnosed breast cancer cases was 45,980, while 20,063 deaths were reported (11/100,000). As shown in Table 1.1, Arab countries have reported various incidence rates of female BC (Fares, Salhab, Khachfe, & Khachfe, 2019). For example, Lebanon had the highest incidence rates in the Arab region with an average incidence rate of 91.7 per 100,000, and the range was from 71 to 115.6 per 100,000 in the time period 2005-2015 (Fares et al., 2019). Several factors have been linked to the increase in incidence rates of female BC in the Arab world. The adoption of unhealthy lifestyles, late pregnancy age, and lower breastfeeding duration are some of the factors which are discussed in the literature (Fares et al., 2019; Hashmi et al., 2018; Jemal et al., 2011). In addition, more public awareness about breast cancer and the increase in screening campaigns could have also contributed to the detection of breast cancer cases

(Al Junaibi & Khan, 2011; Al-Lawati, Al-Bahrani, Al-Raisi, & Al-Lawati, 2019; Fares et al., 2019).

Table 01.1. Arab World Country Specific Data on Breast Cancer, 2016

Country	Incidence rate Per 100,000	Death rate Per 100,000	Total deaths Per 100,000
Global	**46**	**15**	**535,341**
Algeria	27	12	2392
Bahrain	44	13	71
Egypt	19	7	3231
Iraq	19	14	2623
Jordan	32	13	474
Kuwait	36	8	145
Lebanon	84	21	622
Libya	37	10	320
Mauritania	12	10	205
Morocco	44	18	3094
Oman	17	6	89
Palestine	14	10	250
Qatar	39	10	64
Saudi Arabia	25	6	878
Somalia	12	11	586
Sudan	18	10	1916
Syria	12	5	465
Tunisia	44	18	1014

UAE	36	10	257

Note. The table adapted from Hashim et al. (2018)

1.3.2 Breast cancer in the Sultanate of Oman

The most recent statistical evidence on breast cancer in Oman comes from the Cancer Incidence Report of 2015, which was published by the Ministry of Health in 2018 (Cancer Incidence Report in Oman 2015, 2018). The Cancer Incidence Report of 2015 covered the time period up to 2015 (Cancer incidence in Oman 2015, 2018). According to the recent available published data by the Omani Ministry of Health, there is no new updated Omani statistical data on breast cancer. Based on the Omani Cancer Incidence Report (2015), female BC is a serious health problem, as it accounted for more than half of the total registered cancer cases in the country for both sexes in 2015 (53.62%, N=866). The number of new female BC cases was 212 in 2015. It comprised 24.48% of all female malignancies in Oman. The incidence rates have substantially increased in the last twenty years (Cancer Incidence Report in Oman 2015, 2018; Mehdi et al., 2014). Remarkably, the number of new cases has *quadrupled* from 1996 (53 cases) to 2015 (217 cases) (Al Bahrani, Khalifa, Faris, & Khan, 2004; Al-Lawati et al., 2019; Al-Moundhri et al., 2004).

Historically speaking, the age-standardised incidence rates of female BC from 1998 to 2009 also witnessed a significant and continuous increase from 2004 onwards (Al-Lawati, Al-Zakwani, Fadhil, & Al-Bahrani, 2019; Cancer Incidence Report in Oman 2015, 2018). For instance, the age-standardised incidence rate for the years (1998-2004) was 21.8 per 100,000 per year. The most up to date age-standardised incidence rate is 26.9/100,000 (Cancer Incidence Report in Oman 2015, 2018).

1.4 Main findings from clinical oncological research in Oman

1.4.1 The advanced stage of the disease at presentation

It is imperative to highlight that very limited recent research has been conducted on breast cancer in Oman, which is the reason that older Omani research studies will be reviewed in this chapter. Early Omani oncology research highlighted that for the years between 1996 and 2002, the median age of breast cancer presentation was 48.5 years. Approximately half of all diagnosed women presented with advanced stages of the disease (Al-Moundhri et al., 2004). As a consequence, these women had lower survival rates compared to their counterparts in developed nations (Al-Moundhri et al., 2004; Al-Moundhri, 2013). In contrast to women with advanced disease, improved survival rates have been clinically established for women with early breast cancer (Al-Moundhri, 2013; Joshi, 2019; Kumar, Burney, Al-Ajmi, & Al-Moundhri, 2011).

To further illustrate some of the clinical implications of the late diagnosis of breast cancer, a recent Omani study conducted by Zahid and colleagues (2019) found that about 6.9% of Omani women with breast cancer during the study period (2003-2015) suffered from brain metastasis (BM). BM reflects a non-curable disease, and hence an impending death (Zahid et al., 2019). The median reported time from diagnosis with BC to BM was less than 2 years, while the median survival time from the diagnosis with BM was only 7 months (Zahid et al., 2019). These findings demonstrate the serious ramifications of the delayed diagnosis of breast cancer.

1.4.2 The relatively young age at presentation

It has been estimated that about one third of Omani women who are diagnosed with BC are below the age of 40 (Kumar et al., 2011). However, survival rates have improved (in the period from 2003 to 2008) as a result of the introduction of Trastuzumab, which is one of the hormonal therapies for breast cancer (Section 1.2.2) (Kumar et al., 2011; Tremont, Lu, & Cole, 2017). Despite this improvement, increasingly more women were presenting with advanced stages of the disease compared to the period 1996- 2002 (Al-Moundhri, 2013; Al-Moundhri et al., 2004). The young age at diagnosis in Oman can be illustrated more clearly through comparisons with data from the United Kingdom. Mehdi and collaborators (2014) highlighted that 81% of newly diagnosed British women with breast cancer were 50 years old and above. This is in contrast to 53.5% of new cases in Oman of the same age group. These statistics further show the younger age at presentation of the illness for almost half of Omani women.

1.4.3 Awareness levels about signs and symptoms of breast cancer as a potential contributing factor to the advanced stage of disease

Several studies have explored Omani women's awareness levels of the signs and symptoms of breast cancer (Al-Azri, Al-Rasbi, Al-Hinai, Davidson, & Al-Maniri, 2014; Al Junaibi & Khan, 2011; Alkhasawneh et al., 2016; Al-Moundhri, 2013; Renganathan et al., 2014). Omani women's low awareness levels of the signs and symptoms of breast cancer could potentially make them less likely to seek medical help earlier. Consequently, they seek medical care when the disease has already progressed to an advanced stage. The majority of these Omani studies utilised convenience sampling either through inviting female college students from the Capital city (Muscat) (Al Junaibi & Khan, 2011) or a more representative convenience samples of women within Oman (Al-Azri et al., 2014; Alkhasawneh et al., 2016; Renganathan et al., 2014). The main aim of these studies was to examine Omani adults' awareness about cancer (Al-Azri et al., 2014), or Omani women's awareness about breast cancer signs, risk factors, and Breast Self-Examination (BSE) (Al Junaibi & Khan, 2011; Alkhasawneh et al., 2016; Renganathan et al., 2014). The study conducted by Al-Azri and collaborators (2014) demonstrated that among 384 Omani adults whom they surveyed, low levels of awareness were exhibited on the modifiable lifestyle factors, which increase cancer risk such as low consumption of high fibre food, a high BMI, and a sedentary life (Al-Azri et al., 2014). Two other studies showed that Omani women demonstrated poor knowledge of the signs of breast cancer such as the presence of a mass in the breast, or alterations in the nipple area (Alkhasawneh et al., 2016; Renganathan et al., 2014). Interestingly, although the awareness level of the risk factors, signs of breast cancer, and BSE was adequate among female university students, the majority of them lacked knowledge on how to conduct BSE, and when to do it (Al Junaibi & Khan, 2011). This is a critical factor given that early detection of breast cancer occurs during BSE (Al Junaibi & Khan, 2011). Factors that could explain the lack of procedural knowledge of BSE are the societal and cultural patterning associated with shame and stigma in touching the breast which is needed when doing BSE (Al-Moundhri et al., 2004; Banning, Hassan, Faisal, & Hafeez , 2010; Elobaid, Aw, Lim, Hamid, & Grivna, 2016; Hashim et al., 2018; Mehdi et al., 2014). Accordingly, these reasons could, in part, explain the factors behind the late presentation of breast cancer in Oman.

1.5 Anxiety and mood dysfunctions among women with breast cancer

Women with BC have been found to exhibit significantly more symptoms of clinical anxiety and depression when compared to their healthy counterparts (İzci et al., 2018), and women with other types of cancer (Jacob, Kalder, & Kostev, 2017). Rates of anxiety among women with breast cancer ranged from 8.8% to 44% (Aly, Abd ElLateef, & Mohamed, 2017; Jacob et al., 2017; Park et al., 2018; Vahdaninia, Omidvari, & Montazeri, 2010), while 7% to one third suffered from depression (Aly et al., 2017; Beatty & Kissane, 2017; Jacob et al., 2017; Park et al., 2018; Pilevarzadeh et al., 2019; Vahdaninia et al., 2010). The influence of the stage of illness on the prevalence of anxiety and depression has yielded mixed findings (Jacob et al., 2017; Kissane et al., 2004; Montazeri et al., 2000; Reich, Lesur, & Perdrizet-Chevallier, 2008). For instance, the literature review conducted by Reich and colleagues (2008) highlighted that the stage of disease did not significantly impact the risk of depression. Similar findings were also reported by Kissane et al. (2004). On the other hand, other studies have suggested that women with metastatic breast cancer tend to suffer from significantly more anxiety and depression symptoms compared to women with early stage disease (Aly et al., 2017; Jacob et al., 2017; Montazeri et al., 2000). Other authors have proposed that the non-significant relationship between the stage of disease and symptoms of anxiety and depression could be attributed to personality factors which vary between individuals (Reich et al., 2008). Others have suggested that the mere diagnosis of cancer could impact patients' anxiety and depression more than the stage of the disease (Beatty & Kissane, 2017).

The systematic review and meta-analysis by Pilevarzadeh and colleagues (2019) which examined the prevalence of depression among women with breast cancer highlighted that almost a third of this population suffers from depression. These results reflect international prevalence rates of depression from 30 countries. The highest prevalence of depression was found in the Middle East region, and it was approximately double the prevalence of depression among socioeconomically advantaged countries (Pilevarzadeh et al., 2019). Only three studies from the previous meta-analysis were from the Arab region (Ahmed et al., 2017; Akel et al., 2017; Bener, Alsulaiman, Doodson, & Agathangelou, 2017). Therefore, the region is underrepresented not only in recent epidemiological evidence on breast cancer, but also in psychological research on the impact of breast cancer on women's levels of anxiety and depression. Therefore, it is imperative to examine the factors that could influence symptoms of anxiety and depression in this region, and in Oman in specific.

1.6 The Importance of shedding light on the Omani breast cancer context

The diagnosis of breast cancer at a relatively young age (below the age of 50 years old) in Oman warrants special clinical and psychological attention. Scientific evidence from various countries highlighted a number of adjustment difficulties women with breast cancer face (Hashemi et al., 2019; Pilevarzadeh et al., 2019). These difficulties could be linked to the patient's perceived stress of the disruption of life activities, and the side effects from cancer treatments (Yang et al., 2017). These difficulties could lead to the development of anxiety and depression (Beatty & Kissane, 2017; Hassan et al., 2015; Lim, Devi, & Ang, 2011; Park et al., 2018; Parker, Baile, Moor, & Cohen, 2003; Pilevarzadeh et al., 2019; Srivastava et al., 2016; Yang et al., 2017).

Several studies explored the relationship between young age at the time of diagnosis and symptoms of anxiety and depression (Burgess et al., 2005; Hassan et al., 2015; Lim et al., 2011; Linden, Vodermaier, MacKenzie, & Greig, 2012; Yang et al., 2017). Yang and colleagues (2017) explored the risk of developing anxiety, depression and stress-related disorders among Swedish women with breast cancer. The authors found that for women with an advanced disease, young age (20-44 years) at the time of diagnosis, was one of the factors that significantly increased the risk for both anxiety and depression. More importantly, being young at the time of diagnosis was the only variable that increased the risk of stress-related disorders among women with an advanced disease (Yang et al., 2017). Among Malaysian women with breast cancer, young age significantly predicted anxiety, but not depression (Hassan et al., 2015). More than half of women younger than 50 years suffered from some anxiety symptoms (Linden et al., 2012). In their systematic review of the magnitude of anxiety among women with breast cancer in treatment, Lim and colleagues (2011) reported that younger women diagnosed with breast cancer tend to experience a higher level of anxiety when undergoing chemotherapy compared to older women (Lim et al., 2011). Moreover, long-term anxiety and depression were more prevalent in younger women (Burgess et al., 2005; Lim et al., 2011). The authors attributed the elevated anxiety and depression symptoms among younger women to personal factors such as lack of social support, rather than disease-specific factors (Burgess et al., 2005; Lim et al., 2011).

Blank and Bellizzi (2008) analysed the psychological and developmental processes associated with the attenuated effects of cancer on older people. They argued that as a result of accumulated life experiences, their approach to health problems change. For older people, maintaining emotional well-being via the use of passive coping strategies becomes of paramount importance (Blank & Bellizzi, 2008). This is in contrast to the active coping style most likely implemented by young people (Blank & Bellizzi, 2008; Linden et al., 2012). Hence, healthcare providers may have to approach younger patients commencing breast cancer treatment differently given their different needs, and consequently initiate psychiatric/or professional psychological help earlier if necessary (Paluch-Shimon et al., 2020). These findings are more pertinent to Omani women as most of them are younger compared to other patient populations (Section 1.4.2).

1.7 Quality of life among women with breast cancer

The literature emphasises the importance of examining certain patient-reported outcomes such as symptoms of anxiety and depression, and quality of life among women with breast cancer (El Haidari, Abbas, Nerich & Anota, 2020; Parasveki, 2012). This is because of the established link between quality of life and symptoms of anxiety and depression (El Haidari et al., 2020; İzci et al., 2018; Montazeri, 2008; Reich et al., 2008; Tang et al., 2017). Additionally, quality of life among people with cancer has received a lot of clinical as well as research attention over the last few decades as it has been shown to positively impact the medical management and prognosis of the disease (Diplock et al., 2019; El Haidari et al., 2020; Hashemi et al., 2019; Parasveki, 2012; Stagl et al., 2015; Würtzen et al., 2015).

Hashemi and colleagues (2019) conducted a systematic review and meta-analysis of the studies which included samples of Middle Eastern women diagnosed with breast cancer, in order to evaluate their reported quality of life. The search covered all available research papers up to August 2018. The total number of studies included was 36 articles. Although most of these research articles did not originate from Arabic speaking countries, the review still covered all of the available empirical evidence from the Arab world. Only five studies originated from the Arab Gulf region, which is culturally comparable to the Omani culture. Three studies were from Saudi Arabia (Ahmed et al., 2017; Albabtain, Alwhaibi, Alburaikan, & Asiri, 2018; Almutairi, Mansour, & Vinluan 2016), one from Kuwait (AlAwadi & Ohaeri, 2009), and one from Qatar (Bener, Alsulaiman, Doodson, & El Ayoubi, 2017). Therefore, none of the included studies in the systematic review and meta-analysis examined the quality of life among Omani women who have breast cancer. The review highlighted that 18.9% and 59% had poor and moderate quality of life, respectively, while only 21.2% had good quality of life. Although, no specific comparisons were made between Arabic Gulf countries and other Middle Eastern countries, based on the average quality of life score, three (Albabtain et al., 2018; Almutairi et al., 2016; Bener et al., 2017) out of the four Arab Gulf countries demonstrated that these women had above average mean scores, compared to other included studies in the systematic review and meta-analysis. However, the study sample from Kuwait (AlAwadi & Ohaeri, 2009) demonstrated that these women had below average quality of life mean score. These findings reflect the need for more involvement by healthcare providers to address patients' quality of life issues.

El Haidari et al. (2020) conducted a systematic review to examine demographic, clinical, and psychosocial variables which are linked to quality of life among Middle

Eastern women with breast cancer. Their review included 33 studies, and their search was comprehensive to cover the earliest study conducted in the region up until April, 2018. Only two studies examined the relationship between quality of life and symptoms of anxiety and depression (Akel et al., 2017; Shakeri et al., 2016). Quality of life was significantly and negatively associated with symptoms of anxiety (Akel et al., 2017), and depression (Akel et al., 2017; Shakeri et al., 2016) among women with breast cancer. Other studies from Turkey and China also supported the same conclusion in terms of the inverse relationships between quality of life and symptoms of anxiety and depression (İzci et al., 2018; Tang et al., 2017). Therefore, it is important to evaluate symptoms of anxiety and depression and quality of life as they are interconnected outcomes among women with breast cancer. This clinical evaluation is relevant to intervention development which would target women with clinical levels of anxiety and depression. The use of theory can help researchers understand the mechanisms that influence the psychosocial outcomes such as symptoms of anxiety and depression, and quality of life. Therefore, the next section will discuss the importance of the implementation of theory within the context of this thesis.

1.8 Theory-Based approach to study psychological predictors of symptoms of anxiety, depression, and quality of life

The critical role of theory could be understood within the context of the Medical Research Council (MRC) (2000) guidelines of designing and appraising complex interventions (Craig et al., 2008). Complex interventions are characterised by the presence of interconnected variables which influence the outcome of the intervention. These interventions also target behaviours that are amenable for change. Another characteristic of these complex interventions is the flexibility in their delivery (Craig et al., 2008). The aim of the MRC guidelines is to equip researchers, funding agencies, and decision makers with specific strategies to help them in the development and evaluation of complex interventions. These interventions are implemented in various settings which include clinical health care setting, which is relevant for this thesis (Campbell et al., 2000).

The MRC guidelines have emphasised three essential core processes which should be implemented before the development of a complex intervention. These processes are: recognising current empirical evidence of the phenomenon under study, identifying and devising theory, and demonstrating the processes of the intervention and outcomes before the full intervention is implemented (Craig et al., 2008). Making use of the available knowledge base is the first step that helps researchers to determine the efficacy of similar interventions and evaluation techniques. The second core process in the development of complex interventions is the role of theory in providing a justification for the intervention. In order to be cost effective and time efficient, an intervention cannot be established unless there is an expected theoretical rationale which justifies its implementation and evaluation. The theory can also help researchers in understanding the relationships among the variables, and the expected underlying mechanisms leading to behavioural change. In addition, theory driven research is pivotal because it allows the accumulation of knowledge about a specific phenomenon. This will allow researchers to make comparisons among studies which utilise the same theoretical framework. The last process in the development of complex interventions emphasises its implementation in several small steps before the full implementation takes place (Craig et al., 2008). Therefore, there is a potential value in utilising theory driven research given its role in devising and evaluating complex interventions.

1.9 Illness perceptions and religious coping as theoretical constructs and predictors of psychosocial outcomes among Omani women with breast cancer

As discussed previously, the role of theory is essential as it could lead to behavioural change via the implementation of complex interventions (Craig et al., 2008; Moore et al., 2019). In order to design complex interventions to improve the well-being of these patients in the future within the Omani health care setting, it is essential that the current thesis begins with an initial exploration of relevant theoretical constructs that have been found to be associated with symptoms of anxiety and depression, and quality of life among women with breast cancer. Despite the large number of psychological and disease-specific predictors that have been identified in the literature to impact the psychosocial outcomes of women with breast cancer (El Haidari et al., 2020), this thesis will focus on two of these theoretical constructs which are illness perceptions and religious coping. These two variables were selected given the empirical evidence which supports their role in influencing the psychosocial outcomes among women with breast cancer. Additionally, these two theoretical variables are modifiable, and could therefore be addressed and changed using clinical interventions (Hosseini et al., 2016; Koenig, Pearce, Nelson, & Erkanli, 2016; Pearce et al., 2015).

Illness perceptions (or representations), one of the psychological predictors of anxiety, depression, and quality of life among women with breast cancer have been extensively examined in the literature (Fischer et al., 2013; Kus, Aktas, Ekici, Elboga, & Djamgoz, 2017; McCorry et al., 2013; Millar, Purushotham, McLatchie, George, & Murray, 2005; Silva, Moreira, & Canavarro, 2012; Rozema, Völlink, & Lechner, 2009; Tang at al., 2017). Illness perceptions are a person's mental representations about an illness (Leventhal, Meyer, & Nerenz, 1980). Some of these illness perceptions include patients' perceptions about the severity of the symptoms, the perceived timeline (i.e. course) of the illness, and the perceived consequences of the illness on their lives. Illness perceptions have been associated with various psychosocial outcomes among women with breast cancer (Fischer et al., 2013; McCorry et al., 2013; Millar et al., 2005; Rozema et al., 2009; Silva et al., 2012; Tang at al., 2017). Symptoms of anxiety and depression, and poor quality of life have been linked with high scores on illness perceptions questionnaires. High scores reflects that patients think that the illness will have severe negative consequences on their life (Fischer et al., 2013; McCorry et al., 2013; Millar et al., 2005; Rozema et al., 2009; Silva et al., 2012; Tang at al., 2017). To illustrate, it has been shown that when patients with breast cancer think/perceive that their illness will have severe consequences on their life, they will be more likely to experience high levels of anxiety and depression (Rozema et al., 2009). As a result, their quality of life will be negatively affected (Fanakidou et al., 2018; Tang at al., 2017).

In addition to the predictive role of illness perceptions' on patients' reported outcomes, coping strategies have also been theoretically hypothesised to predict patient-reported outcomes (Leventhal et al., 1980). Coping strategies are the skills that patients utilise to manage their illness. Illness perceptions and coping strategies are the main theoretical constructs within the common-sense model of self-regulation (Leventhal et al., 1980). However, a more specific mechanism of coping, religious coping, has been increasingly recognised in the literature as one of the most commonly used coping methods used by women with breast cancer (Gonzalez, Tanenbaum, & Commissariat, 2016; Johnson, & Spilka, 1991; Park et al., 2017; Watkins, Kanu, Hamilton, Kozachik, & Gaston-Johansson, 2017). Additionally, within the Omani context, religious coping has been reported as the most frequently utilised coping skill among Omani women with breast cancer (Al-Azri et al., 2014). Religious coping is also a theoretical construct and it involves the use of specific thoughts and behaviours to help the person give meaning and manage the perceived burdens within the context of what the individual perceives as *sacred* (Pargament, 1997). Pargament devised the most comprehensive theory of religious coping, and he defined the *sacred* as a comprehensive concept, which not only refers to the religious or spiritual aspects within the context of religion, but it also includes other divine-like objects and what the person perceives as significant (Pargament, 1997).

For the purposes of this thesis, Pargament's definition of religious coping will be utilised, but within the religious context. The spiritual dimension will also be considered within the context of religion, rather than being a broad concept (Selman, Harding, Gysels, Speck, & Higginson, 2011). This choice has been made given the religious context of the population of interest in this thesis. This approach to the conceptualisation of religious coping is more appropriate to the Muslim population (Utz, 2012). Islam is the religious basis for the spirituality for Muslims (Abu-Raiya & Pargament, 2010; Utz, 2012).

Therefore, it would not be appropriate for the Muslim Omani context to consider spirituality outside of the context of religion (Utz, 2012).

1.10 Summary

This chapter discussed the magnitude of female BC as a public health problem, and more so within the Omani context, given that Omani women continue to present to the medical establishment with an advanced incurable disease. From the literature reviewed, it becomes apparent that there is scarcity of psychological research which focusses on identifying predictors of psychosocial outcomes within the Omani clinical context. Given that the young age of Omani women when diagnosed with breast cancer could pose specific challenges in terms of the psychological difficulties they could face, it becomes of paramount importance to examine relevant theories. Theory driven research is crucial as it demonstrates psychological variables that are amenable for change, which could consequently positively impact psychosocial outcomes for these women. Therefore, the next chapter will provide an overview of the common-sense model of self-regulation and Pargament's theory of religious coping and attempt to provide an integrated theoretical framework which will inform the basis for the empirical studies which follow.

Chapter 2: Narrative Review of the Theoretical Significance of Exploring Psychological Predictors of Psychosocial Outcomes among Omani Women with Breast Cancer

2.1 Summary

The previous chapter described breast cancer, the epidemiological data, and the psychological difficulties women with this disease encounter. Additionally, within the context of the Medical Research Council (MRC) guidelines, the role of theory driven research in the development of complex interventions was also illuminated. This chapter will deliberate the role of psychological theories, and more specifically coping theories, in identifying and changing maladaptive illness perceptions and coping strategies within the context of chronic illness, and more specifically breast cancer. A brief overview about the historical developments of the two main camps of coping theory which are trait versus state-oriented, and micro versus macro approaches will be discussed. This chapter then goes on to propose an integrated model which combines the common-sense model of self-regulation (Leventhal et al., 1980) and the religious coping mediator model (Pargament, 1997). The rationale for the proposal of the integrated model will be discussed.

2.2 Introduction

Despite the progress made in the early detection and medical treatment of breast cancer (Section 1.2.2), relatively few studies have been conducted about the analogous psychological implications of having to live with a breast cancer diagnosis within an

Arabic setting, and more so within an Omani setting (Sections 1.3.1 and 1.4). Women with breast cancer have been found to have high levels of anxiety and depression, which is consequently linked to low quality of life (Sections 1.5 and 1.7). Given that quality of life has been shown to influence cancer-related treatment (Section 1.7), more knowledge is needed about how women cope with the disease and its treatment. Psychological theories can add to this knowledge base by highlighting the psychological mechanisms involved when reacting to an illness (Rejesky & Fanning, 2019). This is critical as these theories might help researchers and clinicians to highlight those psychological constructs which are amenable to change, and consequently can be targeted in clinical psychological interventions (Craig et al., 2008).

An abundant number of coping theories have been developed to study the coping process among people going through stressful life events (Haan; 1969; Krohne, 1993, 1996; Lazarus & Folksman, 1984; Leventhal et al., 1980; Pargament, 1997; Vaillant, 1977). Therefore, this chapter aims to provide an overview of the historical developments of coping theories and highlight why the common-sense model (Leventhal et al., 1980) is valuable for the population of interest in this thesis. In addition, because coping theories often highlight the cultural context of coping, it is only reasonable to evaluate coping within specific cultural contexts such as the Omani context (Lazarus & Folkman, 1984; Pargament, 1997). However, few studies that have tested theories of coping have done so with a view to also taking into consideration some of the cultural components such as religion (Wong, Wong, & Scott, 2006). Indeed, religious coping is not a core construct of any existing coping theories (Lazarus & Folksman, 1984; Leventhal et al., 1980;

Pargament, 1997). Therefore, this chapter proposes an integrated model of coping which combines a key theory of illness perceptions and coping which is the common-sense model (Leventhal et al., 1980), with the religious coping mediator model (Pargament, 1997) to suggest a potentially more sensitive model which also take into account the religious context of the illness experience.

2.2.1 The historical developments of coping theories

Given that a key construct of this thesis is coping, it is crucial to emphasise that coping is complex, and has been constantly evolving as more coping theories have come to light and have undergone major developments (Krohne, 1993, 1996). Theories of coping have been divided into two main categories: state-oriented versus trait-oriented theories (Duvenage, Uink, Zimmer-Gembeck, Barber, & Donovan, 2019). Coping theories and research initially began with trait-oriented theories which have stemmed from the psychodynamic tradition. These theories conceptualise coping as a personality trait, which is relatively stable and predictable across situations (Chronister & Chan, 2007). These trait-oriented coping theories have been followed by situation specific state-oriented coping theories (Billings & Moos, 1981; Carver, Scheier, & Weintraub, 1989; Endler & Parker, 1990; Lazarus & Folkman, 1984; Leventhal et al., 1997; McCrae, 1984; Pearlin, Menaghan, Lieberman, & Mullan, 1981; Pearlin & Schooler, 1978). Coping is conceptualised as a dynamic process in these situation-specific theories, and is contingent upon the cognitive evaluation of the situation by the person (Lazarus & Folksman, 1984).

In addition to the trait versus state distinction, coping theories have also been divided into macro-analytic versus micro-analytic approaches (Krohne, 1993, 1996).

Macro-analytic approach includes coping theories which are rooted in the psychodynamic theory, where coping is conceptualised as higher order dimensional formulations with two dimensions. Therefore, these theories are not situation-specific, and do not involve a vast array of coping strategies. The micro-analytic approach, on the other hand, comprises coping theories which assess specific coping skills which are activated and implemented in various stressful situations (Krohne, 1996). The main theories included within both of these coping approaches will be briefly reviewed, and the rationale behind selecting the common-sense model will be described next section.

2.2.2 Macro versus micro approaches to coping

The macro-level approach to coping resembles the initial efforts of researchers to understand coping, and it involves a large number of coping theories and models which are predominantly trait-oriented (Bruner & Postman, 1947; Byrne, 1961; Cohen & Lazarus, 1973; Freud, 1957; Horowitz, 1976; Janis, 1977; Krohne, 1993; McGlashan, Levy, & Carpenter, 1975; Mullen & Suls, 1982; Roth & Cohen, 1986; Shontz, 1975). These theories conceptualise coping on a continuum with two dimensions at each end of the continuum (Chronister & Chan, 2007). The umbrella dimensional model of the macro approach is the approach versus avoidance formulation (Roth & Cohen, 1986). According to this coping formulation, when a person is in an anxiety-provoking situation, he/she will either cope with the situation through getting exposed to the situation to manage it, or could cope through leaving/escaping it altogether (Roth & Cohen, 1986).

Other conceptualisations of coping within the macro approach follows this umbrella formulation (e.g. approach versus avoidance), despite the varied underlying aims of these other conceptualisations of coping (Chronister & Chan, 2007). Examples of these dimensional conceptualisations of coping include repression–sensitisation (Byrne, 1961), denial–intrusion (Horowitz, 1976), and avoidance–vigilance (Cohen & Lazarus, 1973; Janis, 1977). In order to explain one such formulation, the repression-sensitisation (Bryne, 1961) formulation will be highlighted. The repression-sensitisation (Bryne, 1961) reflects the approach-avoidance conceptualisation, in which people, without their conscious awareness, would avoid painful memories and thoughts. On the other hand, people falling on the sensitisation end of the continuum, cope by paying attention to the details of the situation, and overthinking.

The theories and models within the macro approach to coping represent the building blocks of coping research and theory (Chronister & Chan, 2007). Nevertheless, three main limitations of this approach exist which rationalise the exclusion of these theories as potential theoretical frameworks for this thesis (Folkman & Lazarus, 1985; Krohne, 1996; Roth & Cohen, 1986). First, the macro approach to coping does not allow for a complex contextual understanding of the coping process, which involve factors such as cognitive appraisal of the situation and the characteristics of the stressor such as its chronicity and intensity (Lazarus & Folkman, 1984). Second, the conceptual overlap which exists among the theoretical constructs within these models (e.g. repression versus trait anxiety), will not allow for a precise measurement of these constructs (Folkman & Lazarus, 1985; Krohne, 1996; Roth & Cohen, 1986; Vaillant, 2011). Third, given that these theories view coping as stable personality traits which are located along a continuum, empirical evidence suggests that these theories could only explain the psychological mechanisms employed by people who fall at the extreme end of the coping continuum. Consequently, these theories could not provide theoretical explanations for well-adjusted people falling in the middle (Folkman & Lazarus, 1985; Krohne, 1996; Roth & Cohen, 1986; Vaillant, 2011). Keeping in mind that this thesis aims to achieve a contextual and complex understanding of the factors influencing psychosocial outcomes among Omani women with breast cancer, and given the limitations outlined earlier, the theories within this approach will be excluded as potential theoretical frameworks for this thesis.

The emergence of the micro approach to coping was associated with several factors. These reasons were the limitations described earlier within the macro approach, researchers' emphasis on cognitive factors related to coping, and the emergence of the Lazarus and Folkman's (1984) transactional theory of stress and coping (Chronister & Chan, 2007). Consequently some researchers shifted their focus onto more detailed situation-specific coping strategies used by people going through various crisis situations such as the diagnosis of a life threatening disease and role strain, among others (Endler & Parker, 1990; Folkman & Moskowitz, 2004; Lazarus & Folkman, 1984; Leventhal et al., 1997). The micro-level approach to coping encompasses several prominent theories which view coping as a dynamic process that changes depending on the interactions between the person and environment. These theories offer a comprehensive evaluation of coping methods that are utilised by people in crisis situations (Billings & Moos, 1981; Carver et al., 1989; Endler & Parker, 1990; Lazarus & Folkman, 1984; Leventhal et al., 1997; McCrae, 1984; Pearlin et al., 1981; Pearlin & Schooler, 1978). As such, these theories incorporate contextual factors which are related to the stressful situation in question, including environmental factors. They also incorporate individual cognitive factors which include the person's evaluation of the meaning of the situation. Therefore, these theories place more emphasis on the contextual factors which could influence the coping process.

Four broad coping strategies have been suggested within the micro-approach. These involve problem-focused coping (Lazarus & Folksman, 1984), emotion-focused coping (Lazarus & Folksman, 1984), avoidance coping (Endler & Parker, 1990), and meaning-making coping (Park & Folkman, 1997). Problem-focused coping is typically utilised when the person perceives the stressor as within her/his control, and it involves a person's efforts to solve the situation in order to manage the stressor (Lazarus & Folkman, 1984). Emotion-focused coping, on the other hand, includes the person's attempt to achieve emotional regulation through five types of coping strategies: venting of emotions, distraction, cognitive reappraisal, wishful thinking, and self-blame (Lazarus & Folksman, 1984). Avoidance coping reflects a person's attempt to deal with the perceived stressor via escaping the painful situation through several means, be it emotional by seeking support from others, or behavioural by distracting the self and engaging in other behaviours (Endler & Parker, 1990). Lastly, in meaning-making coping, people mobilise their values and belief systems to reconstruct the meaning of the stressful situation (Folkman & Moskowitz, 2004).

The above mentioned theories take into consideration the complexity of the coping process, and some of them are sophisticated in addressing contextual factors, which involves social situations (Pearlin & Schooler, 1978), and chronic illness (Billings &

Moos, 1981). However, these theories do have several limitations which would render them not suitable to be utilised as the theoretical foundation for this thesis. First, the generic cognitive focus of some theories (Endler & Parker, 1990; Lazarus & Folkman, 1986; Pearlin & Schooler, 1978) makes them too broad to address illness related cognitions for women with breast cancer, who are the population of interest for this thesis. For example, the primary and secondary cognitive appraisal processes which are evaluated within Lazarus and Folkman's (1986) theory of stress and coping do not specifically address illness related perceptions which are activated within the context of illness. These illness specific cognitions such as patients' thoughts about the course of the illness, or the impact of the illness on the person's life, have been more specifically addressed within the common-sense model (Leventhal et al., 1980).

The second limitation is linked to the broad dimensions of coping associated with the micro approach, which makes them too general to be utilised within an illness context. Leventhal et al. (1997) suggested that coping skills have to be contextualised in order to reflect the ways patients manage their illness. Therefore, coping skills utilised by patients are distinct from coping skills that are used in other contexts. To illustrate, the use of specific medical procedures to manage the illness could be a problem-focused coping strategy, but it is illness specific. Therefore, Leventhal et al. (1997) advocated the use of "procedures" instead of coping in order to more appropriately contextualise their model to the illness context. As a consequence, they implemented the term procedures to add specificity to the mechanisms used by patients to manage the health threat (Leventhal et al., 1997).

The third reason which rationalises the implementation of the common-sense model for this thesis is related to the robust recent empirical evidence that utilised this model for multiple health conditions, including breast cancer (Hagger et al., 2017). The common-sense model has increasingly been utilised to study illness perceptions, coping procedures and other components within the model among women with breast cancer (Fanakidou et al., 2018; Fernandes & McIntyre, 2020; Gibbons, Groarke, & Sweeney, 2016; Kaptein et al., 2013; Kaptien et al., 2015; Kus et al., 2017; Lan, Zhang, Zhang, Yan, 2019; Lee, Baek, Jeon, & Im, 2019; Ma, Yan, Wu, & Huang, 2018; Tang at al., 2017). The study of illness perceptions has allowed for a more complex understanding of the mechanisms that underlie and impact the psychosocial outcomes of this population. Consequently, the main aim of the model is to understand these mechanisms, and consequently design efficacious clinical interventions (Fischer et al., 2013; Hagger & Orbell, 2020; Stagl et al., 2015). More details on the development of the common-sense model as a process model, its various components, as well as empirical evidence supporting its utility will be discussed in the following sections.

2.3 The common-sense model of self-regulation

2.3.1 Its origins and historical developments

Analogous to the theories within the micro approach to coping, the common-sense model (Leventhal et al., 1980) is a process model, and is situated within the context of illness. Initially, the model was termed as the self-regulation model, and it aimed to understand how people manage and deal with health threats. The model has undergone several developments since its inception in the 1960s (Leventhal, Phillips, & Burns, 2016;

Hagger & Orbell, 2020). It originated when society's reactions to the flu epidemic in 1957 were investigated by researchers (Leventhal et al., 1980). The initial research findings highlighted that people's experience with the illness influenced their health behaviour (e.g. taking a flu shot). To illustrate, people who had seen an ill relative, tended to have stronger beliefs about the severity of the illness, and were more likely to commit themselves to a health behaviour to prevent the illness (Leventhal et al., 1980). Initially, the model focused on the interaction between the level of fear induced through the messages conveyed to participants, and its consequent influence on their health behaviours (Leventhal et al., 1980). Surprisingly, all levels of fear messages (low and high) had the same effect on the health behaviour if they were followed by a specific action plan (Leventhal et al., 1980). Action plans are the directions given to a person to help him/her implement the health behaviour (e.g. to be provided with the name of a health center to take the flu shot). Therefore, the fear factor alone was not sufficient to motivate participants to commit to a health behaviour. Additionally, action plans by themselves, were not adequate for behavioural change. Rather, both fear and action plans had to be combined to result in behavioural change (Leventhal et al., 1980).

After laying the foundations of the self-regulation model, the next phase of the model's development explored the content of people's illness perceptions (or representations) (Leventhal et al., 1980). Qualitative studies explored the dimensions of illness perceptions, which gave rise to the common-sense model (Baumann, Cameron, Zimmerman, & Leventhal, 1989; Baumann & Leventhal, 1985; Croyle & Jemmott, 1991; Croyle & Sande, 1988; Kleinman, Eisenberg, & Good, 1978; Lau & Hartman, 1983;

Meyer, Leventhal, & Gutmann, 1985). The model is an illness threat model, which suggests that when individuals experience a health threat, their mental representations of the illness will be activated to manage the perceived illness threat. Therefore, people are considered active agents in managing their illness. Illness perceptions guide the use of "procedures", or what is now heavily examined as "coping strategies" to manage the illness (Hagger et al., 2017; Hagger & Orbell, 2020). Although, Leventhal and colleagues (1997) used the term "procedure", rather than "coping" as indicated earlier, in order to avoid the strict coping literature and to include other techniques to manage the illness (e.g. a doctor's visit), most of the empirical literature utilises the term "coping" rather than "procedure" (Hagger & Orbell, 2003; Kaptein et al., 2013, 2015). These procedures are hypothesised to impact various illness, social, as well as psychological outcomes (Leventhal et al., 1997; Hagger & orbell, 2020). The common-sense model is dynamic in that illness perceptions are expected to change across time as new knowledge about the illness is acquired (Broadbent, Ellis, Thomas, Gamble, & Petrie, 2009; Iskandarsyah et al., 2013; Knoop, van Kessel, & Moss-Morris, 2012; Moss-Morris, Humphrey, Johnson, & Petrie, 2007). Procedures and coping strategies could also change accordingly, and the whole self-regulation process to manage the illness is constantly evaluated by the person. By and large, illness perceptions are based on three different resources: social network (including the media), the individual's previous experience with the illness, and the person's somatic symptoms and sensations (Leventhal et al., 1980).

As shown in Figure 2.1, the common-sense model is a parallel-processing model in that the presence of an illness stimuli leads to the activation of two types of illness representations: emotional and cognitive (Leventhal et al., 1997; Meyer et al., 1985). The emotional representations are the fear responses or any other emotional reaction in response to the illness. The cognitive representations of an illness are the thoughts and perceptions about the illness. The emotional and cognitive representations are conceptualised as relatively independent processes within the model, despite empirical evidence highlighting the interdependence among the cognitive and emotional representations (Rozema et al., 2009). Leventhal, Brissette and Leventhal (2003) initially conceptualised the cognitive representations into five dimensions namely: causes, identity, timeline, consequences and control.

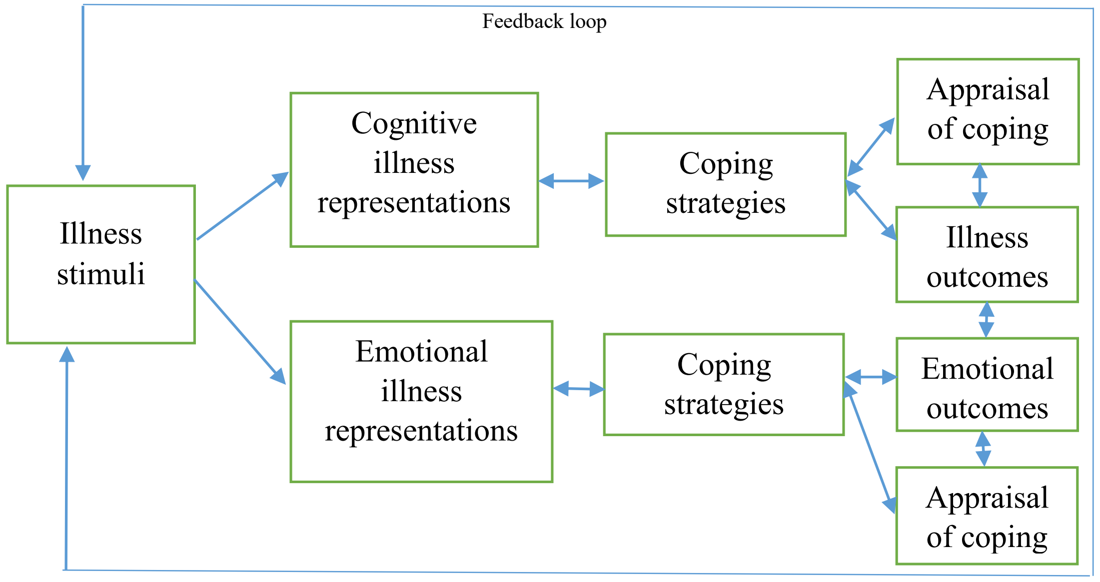


Figure 2.1 The Common-Sense Model (from Leventhal et al., 1980), adapted from Hagger and Orbell (2003)

The *cause* dimension involves the person's thoughts about the cause/s of the illness. The literature identified numerous perceived causes of the illness such as psychological factors and chance, to name a few (Moss-Morris et al., 2002). The *identity* dimension refers to the symptoms, names and labels the patient ascribes to her/his illness. The *timeline* dimension involves the patient's expectations about the time that will take him/her to recuperate from the illness. The *consequences* dimension involves patient's opinions about the impact of the illness on various aspects of their life. The *control* dimension encompasses both personal and treatment control. Personal control is the person's belief of her own ability to manage the illness. Treatment control, on the other hand, is the person's perception of the treatment's efficacy (Leventhal et al., 2003). These five illness dimensions are assessed in the Illness Perceptions Questionnaire (IPQ; Weinman, Petrie, Moss-Morris, & Horne, 1996), the Revised-IPQ (Moss-Morris et al., 2002), and the Brief-IPQ (Broadbent, Petrie, Main, & Weinman, 2006). The latter measure included a new item, illness coherence, which captures a patient's understanding of the illness.

2.3.2 Empirical evidence on the common-sense model with various illnesses

The common-sense model has been extensively utilised by researchers in the field of health psychology over the last five decades, and is considered one of the most influential models for understanding health behaviours (Broadbent et al., 2009; Hagger et al., 2017; Hagger & Orbell, 2020; Hagger & Orbell, 2003; van Puffelen, Heijmans, Schellevis, Nijpels, & Rijken, 2019). Two systematic reviews (Hagger et al., 2017; Hagger & Orbell, 2003) have highlighted an increase in the quantity of studies that utilise the common-sense model. The first meta-analytic review published in 2003 included all of the quantitative studies that utilised the common-sense model from October 1977 until October 2002 (Hagger & Orbell, 2003). Studies included in the review covered 23 illness (e.g. chronic fatigue syndrome, diabetes mellitus, multiple sclerosis, and hypertension), which reflect an extensive range of chronic and acute illnesses (Hagger & Orbell, 2003). However, none of the included studies in the meta-analysis was conducted on women with breast cancer, except for one study which was conducted with women with an increased risk of breast cancer (Rees, Fry, & Cull, 2001). Therefore, the conclusions of the meta-analysis may not be applicable to women with breast cancer.

However, the meta-analysis conducted by Hagger and Orbell (2003) supported the theoretical associations among the dimensions of illness perceptions, illness perceptions and coping, and illness perceptions and illness outcomes. More specifically, for mixed samples of medical patients, cognitive illness perceptions were reported to be correlated with each other. Patients who perceived the illness as having severe symptoms were more likely to think that it will have severe consequences on their life, and that the illness will have a long course. Additionally, patients who did not believe in their ability to control the illness were more likely to perceive it as having severe symptoms and to have a long course.

Other theoretical assumptions of the common-sense model such as the correlations between illness perceptions and coping methods were also supported (Hagger & Orbell, 2003). Patients who believed in their ability and that of the medications to control the illness, were more likely to utilise problem-focused coping. On the other hand, patients with severe perceived consequences, severe perceived symptoms, and longer perceived timeline were more likely to implement emotion-focused coping such as the expression of emotions and denial.

Additionally, the meta-analysis by Hagger and Orbell (2003) demonstrated that illness perceptions were correlated with illness outcomes which included the disease state, physical, role and social functioning domains of quality of life, psychological distress and psychological well-being. Patients who believed that they can control their illness had good quality of life, and exhibited less psychological distress. On the other hand, patients with severe perceived consequences, longer perceived illness timeline and severe perceived symptoms were more likely to have poor psychosocial outcomes and poor quality of life. Hagger and Orbell (2003) did not examine the mediating role of coping between illness perceptions and outcome measures as a result of the limited studies in the literature which examined these relationships. In general, authors in the field have continuously highlighted that studies which examine the mediating role of coping within the common-sense model are scarce (Hagger & Orbell, 2020). However, findings reflected that illness perceptions predicted more psychosocial outcomes compared to coping.

The most recent meta-analytic review which was conducted by Hagger et al. (2017), and covered the period from 1980 to December 2013, highlighted the surge in the studies which utilised the common-sense model in recent years. Compared to the 45 studies included in the first review by Hagger and Orbell (2003), this review included 254 research articles. Hagger et al. (2017) aimed to assess the correlations among the main three elements of the model, namely illness perceptions, coping, and illness outcomes.

Their findings indicated the lack of full mediation of coping between illness perceptions and illness outcomes, which is in contrast to the theoretical assumption of the model. However, some of the illness perceptions demonstrated direct effects on the outcome measures. Additionally, and via the mediating role of coping, indirect effects were also noted of some illness perceptions on the measured outcomes (Hagger et al., 2017). Of interest is that out of the 254 studies included in the meta-analysis, only five of the included articles were conducted with women with breast cancer (Corter, Findlay, Broom, Porter, & Petrie, 2013; Costanzo, Lutgendorf, & Roeder, 2011; Fischer et al., 2013; Rozema et al., 2009; Silva, Moreira, & Canavarro, 2012). The studies on women with breast cancer which examined psychosocial outcomes relevant to this thesis (e.g. symptoms of anxiety and depression, and quality of life) will be discussed in the next section. Consequently, the two meta-analyses covered in this section showed that none of these studies were conducted on Arab women with breast cancer, which further reinforces the need to explore the role of illness perceptions on the psychosocial outcomes among this population. The next section will highlight the research conducted to explore the relationships among illness perceptions, coping, and psychosocial outcomes with women with breast cancer.

2.3.3 The common-sense model as applied to samples of women with breast cancer

The previous section shed light on the empirical evidence of the utilisation of the common-sense model among people with medical illnesses. This section will review the most recent and relevant research which implemented the common-sense model among women with breast cancer. It will also discuss relevant studies from the two main comprehensive literature reviews of Kaptein et al. (2013, 2015), which covered all of the studies utilising the common-sense model among this population. The first review by Kaptein et al. (2013) covered research evidence on the utilisation of the common-sense model from the first study found in the field in 1996 to December 2011, while the second review by Kaptein and colleagues (2015) covered the period from January 2012 to March 2015. An updated literature search was also conducted by Z.A. for the purposes of this thesis to ensure the literature review was up-to-date. This additional search focused on locating additional relevant articles that utilised the common-sense model from 2015 to June, 2020. This search led to the inclusion of another seven studies (Fanakidou et al., 2018; Fernandes & McIntyre, 2020; Gibbons et al., 2016; Lan et al., 2019; Lee et al., 2019; Ma et al., 2018; Tang at al., 2017).

The studies in this section have been organised in such a way as to make theoretical sense within the common-sense model. To illustrate, the studies that examined the relationships among the cognitive and emotional illness perceptions will be discussed first (Fischer et al., 2013; Ma et al., 2018; Rozema et al., 2009), followed by the studies that examined the relationships between illness perceptions and coping (Fernandes & McIntyre, 2020; Lan et al., 2019; Rozema et al., 2009), then the studies that examined the relationship between illness perceptions and psychosocial outcomes (Charlier et al., 2012; Fanakidou et al., 2018; Fischer et al., 2013; Gibbons et al., 2016; Kus et al., 2017; McCorry et al., 2013; Millar et al., 2005; Rozema et al., 2009; Silva et al., 2012; Tang at al., 2017), the studies describing the relationships between coping and psychosocial outcomes (Millar al., 2005; Rozema et al., 2009), and finally the studies that examined the mediating role of coping between illness perceptions and psychosocial outcomes (Gibbons et al., 2016; McCorry et al., 2013; Rozema at al., 2009).

The theoretical basis of the common-sense model and empirical evidence on women with breast cancer have highlighted the correlations among the cognitive dimensions of illness perceptions (Fischer et al., 2013; Leventhal et al., 2003; Ma et al., 2018; Rozema et al., 2009). Women with breast cancer who perceive their illness as having severe symptoms were more likely to report experiencing emotional representations of illness such as fear and sadness (Rozema et al., 2009), and perceived their illness as more threatening (Fischer et al., 2013; Rozema et al., 2009), and having less control over it (Fischer et al., 2013; Rozema et al., 2009). Also, patients who perceived themselves to have less control over the illness, and with less benefit from the treatment, tend to have more threatening illness perceptions (Ma et al., 2018). In addition, patients with negative emotional representations, were more likely to have a low level of personal control (Fischer et al., 2013; Rozema et al., 2009), and treatment control (Ma et al., 2018; Rozema et al., 2009), to believe that their illness will be cyclical in nature (Fischer et al., 2013; Ma et al., 2018; Rozema et al., 2009), with severe consequences (Fischer et al., 2013; Ma et al., 2018) and more perceived symptoms (Fischer et al., 2013). This empirical evidence adds further support to the common-sense model in terms of the interdependence among the cognitive and emotional illness perceptions. However, it also showed that only a limited number of studies were conducted to explore this aspect within the model, and two of these studies originated from the Netherlands. With this mind, it is important to explore illness perceptions from other parts of the world, including the Arab world, as illness perceptions are influenced by cultural factors that are unique to each cultural context (Dein, 2004; Kleinman et al., 1978; Leventhal et al., 1997).

Few studies examined the relationships between illness perceptions and coping among women with breast cancer, to find out that there are weak associations between illness perceptions and coping strategies (Fernandes & McIntyre, 2020; Lan et al., 2019; Rozema et al., 2009). A chronic timeline was associated with cognitive and behavioural avoidance (Lan et al., 2019; Rozema et al., 2009), while lower levels of timeline and high levels of treatment control were associated with high levels of fighting spirit (Fernandes & McIntyre, 2020). Severe consequences were associated with lower use of problem-focused coping (Rozema et al., 2009), and high levels of helplessness and anxious preoccupation (Fernandes & McIntyre, 2020). Lan et al. (2019) found that several illness perceptions were associated with many coping strategies, but all of these correlations were modest. Treatment control and emotional representations were weakly and negatively associated with confrontation coping. Additionally, both timeline and consequences were negatively associated with resignation (i.e. avoidance coping) (Lan et al., 2019). The findings in Lan et al.'s (2019) study of the inverse relationship between timeline and consequences, on the one hand, and resignation coping on the other hand, might not be expected, but it may reflect the cultural differences in the way Chinese patients think and react about the diagnosis of cancer (Dein, 2004).

These weak correlations between illness perceptions and coping could be attributed to how coping was measured in these studies, and thus may not reflect the actual relationship between illness perceptions and coping. Rather, these weak relationships were attributed to the use of coping tools which assess coping in a broad manner, rather than coping tools which assess illness-specific coping strategies (Coyne & Ricioppo, 2000). Generic self-report measures may not reflect how each individual cope within the context of illness, rather, it only evaluates general coping styles (Coyne & Ricioppo, 2000). Therefore, one of the knowledge gaps in these studies is the lack of use of theoretically and context-specific coping measures which conceptualises coping as a dynamic process. The literature also clearly lacks knowledge on the use of religious coping as one of the coping methods used by women with breast cancer. Compared to all other coping strategies, religious coping is one of the most frequently utilised coping mechanisms among women with breast cancer (Al-Azri, Al-Awisi, Al-Rasbi, & Al-Moundhri, 2014; Mehrabi, Hajian, Simbar, Hoshyari, Zayeri, 2015). Therefore, this thesis will address this knowledge gap by examining the relationship between illness perceptions and religious coping using a theoretically-based measure of religious coping, as will be discussed in Section 2.4.2.

When compared to coping, illness perceptions have been shown to be the stronger predictor of psychosocial outcomes (Fischer et al., 2013; Gibbons et al., 2016; McCorry et al., 2013; Millar et al., 2005; Rozema et al., 2009; Silva et al., 2012). McCorry et al. (2013) found that illness perceptions were the strongest predictors of anxiety and depression, and they explained up to 24.6% and 36% of the variance, respectively (McCorry et al., 2013). Gibbons et al. (2016), found that identity and emotional causes predicted 40% of the variance in depression, while identity by itself predicted 32% of each of the anxiety and cancer-related distress. Additionally, Rozema et al. (2009) reported that 57% of variance in patients' physical quality of life was explained by their perceived illness identity and perceived consequences, whereas 47% of variance in patients' perceived mental health was predicted by both the emotional representation of illness and treatment control (Rozema et al., 2009). Illness perceptions were associated with symptoms of anxiety, depression and quality of life (Charlier et al., 2012; Fanakidou et al., 2018; Fischer et al., 2013; Kus et al., 2017; Millar et al., 2005; Rozema et al., 2009; Silva et al., 2012; Tang at al., 2017). Illness identity (Millar et al., 2005) as well as timeline (Fischer et al., 2013; Millar et al., 2005) were positively associated with distress. Severe perceived consequences of the illness were positively correlated with symptoms of anxiety and depression (Kus et al., 2017; Silva et al., 2012) and negatively correlated with quality of life (Silva et al., 2012).

Other illness perceptions which were examined by Kus et al. (2017) were found to be associated with symptoms of anxiety and depression, and these were: timeline, personal control, identity, concern and emotional representations of illness (Kus et al., 2017). Lee et al. (2019) further reinforced that people with threatening illness perceptions were more likely to suffer from lowers levels of quality of life. Therefore, although these studies highlighted various illness perceptions as predictors of anxiety, depression and quality of life, the identity and perceived consequences of the illness appear to be the strongest predictors compared to other illness perceptions. Generally speaking, the more severe and threatening the illness perception is, the more likely that it will be associated with worse psychosocial outcomes.

It is possible that these findings which underscores the role of illness perceptions compared to coping, are the result of recruiting patients at various stages in the illness trajectory (Gibbons et al., 2016). Millar et al. (2005) recruited their sample after surgery, while Rozema's et al. (2009) participants were within two years from their diagnosis. On the other hand, Gibbons et al. (2016) recruited women before their initiation of the cancer treatment. Consequently, these variations in the study designs may reflect that patients could be in different stages of the common-sense model.

Charlier et al. (2012) highlighted that illness perceptions along with other psychosocial variables formed illness clusters that were associated with symptoms of anxiety, depression and quality of life. The cluster which was associated with less threatening illness perceptions, and the highest perceived control and illness coherence was linked with low levels of anxiety and depression. On the other hand, the cluster which was associated with more threatening illness perceptions, lower levels of illness coherence, and lower perceived personal and treatment control was associated with higher levels of anxiety and depression (Charlier et al., 2012). These results further illustrated that threatening illness representations are linked with high levels of anxiety and depressive symptomatology.

Moreover, studies from other cultural contexts such as China and Greece also examined the associations between illness perceptions and psychosocial outcomes (Fanakidou et al., 2018; Tang at al., 2017). Tang et al. (2017) found an inverse relationship between the perceived threat of the illness and quality of life among Chinese women with breast cancer. Similar findings were corroborated in a Greek sample in which lower quality of life was associated with threatening illness perceptions (Fanakidou et al., 2018). This body of empirical evidence clearly demonstrated the associations between illness perceptions and symptoms of anxiety, depression and quality of life. These results also add more empirical evidence to the hypothesised relationship between illness perceptions and psychosocial outcomes within the common-sense model.

Another theoretical assumption of the common-sense model suggests that coping leads to and influences psychosocial outcomes. However, only three studies (Gibbons et al., 2016; Millar et al., 2005; Rozema et al., 2009) have examined this relationship. Both Millar et al. (2005) and Rozema et al. (2009) found that coping was not associated with perceived mental and physical health. Even longitudinally, coping was not associated with distress level among women with breast cancer (Millar et al., 2005). However, contrary to these findings, Gibbons et al. (2016) found that anxious preoccupation coping predicted 10% and 7% of anxiety, and cancer-related distress, respectively. Therefore, these studies displayed mixed outcomes on the relationship between coping and psychosocial outcomes. It is possible that the use of general outcome measures in these studies (Millar et al., 2005; Rozema et al., 2009) which include the General Health Questionnaire (GHQ-28), and RAND-36 (a general quality of life instrument), respectively, and not cancer-specific outcome measure could have led to these mixed findings (Gibbons et al., 2016).

The role of coping as a mediator between illness perceptions and psychosocial outcomes has been explored in only three studies in women who have breast cancer (Gibbons et al., 2016; McCorry et al., 2013; Rozema at al., 2009). Both McCorry et al. (2013) and Rozema et al. (2009) did not find support for the mediating role of coping.

However, Gibbons et al. (2016) found that only anxious preoccupation mediated the relationship between illness coherence (i.e. an illness perception) and cancer stress. Women with sound knowledge about breast cancer were less likely to display cancer stress (Gibbons et al., 2016). The mediating role of coping found in Gibbons' et al. (2016) study could be attributed to the study sample, and the cancer-specific outcome measure used. The sample was composed of women with a new diagnosis of breast cancer, and the researchers also utilised a cancer-specific measure to assess distress.

The empirical evidence reviewed earlier suggested that illness perceptions are promising variables in the prediction of psychosocial outcomes such as anxiety, depression and quality of life among women with breast cancer. However, the role of coping within the common-sense model has been limited, which could, in part, be due to the scarcity of studies in the area in the first place. Another reason is the use of generic measures to assess coping, and not context-specific coping tools. Therefore, these weak relationships could not have represented a true picture of the relationship between illness perceptions and coping. Consequently, the lack of mediation of coping could not necessarily indicate that there is no value of further exploring this model with this population. Rather, it could reflect the need to utilise context-specific coping tools, which could be then used to assess the relationship between coping, on the one hand, and both illness perceptions and psychosocial outcomes, on the other hand. Indeed, as discussed in Section (2.2.2), Leventhal et al. (1997) initially rejected the use of the concept of coping, and preferred the use of procedures within the illness context of the model. The empirical evidence on women with breast cancer clearly demonstrated the limited number of studies which have explored all elements within the common-sense model (i.e. illness perceptions and coping). Consequently, this reflects the necessity to conduct more studies from within various cultural contexts in order to obtain a thorough understanding of the role of all of the theoretical constructs within the common-sense model. With this in mind, integrating religious coping within the common-sense model makes sense as it has been found to be a valuable resource among women with breast cancer as mentioned earlier.

Despite the apparent knowledge gap on the utilisation of religious coping within the common-sense model, Hoseini et al. (2016) explored the role of spiritual well-being in predicting illness perceptions and quality of life among Iranian Muslim women with breast cancer (Hoseini, Lotfi, Akbari, Akbari, & Sarafraz, 2016). Among several other psychological predictors in the study, spiritual well-being had the strongest direct effects on the quality of life for women with breast cancer. In addition, there were direct effects of spiritual well-being on women's illness perceptions. Therefore, these findings highlighted the important role of spiritual well-being in predicting illness perceptions and quality of life among Muslim Iranian women (Hoseini et al., 2016). Although the study did not examine religious coping per se, it provided some empirical support for the potential relationships between the outcomes of positive spiritual coping (i.e. spiritual well-being) and its associations with women's perceptions of their illness. It also provided evidence that among this Muslim population, spiritual aspects are associated with the illness perceptions of these women.

2.4 Religious coping in the literature of the common-sense model

To our knowledge, the reviewed recent empirical literature, which utilised the common-sense model to understand the role of illness perceptions on coping and psychosocial outcomes in women with breast cancer, has not included religious coping as one of the coping strategies (Fernandes & McIntyre, 2020; Lan et al., 2019; McCorry et al., 2013; Millar et al., 2005; Rozema et al., 2009). This is despite the fact that several authors have highlighted that illness perceptions are shaped and influenced by the cultural backgrounds of patients, which also include religious factors (Kleinman et al., 1978; Leventhal et al., 1997). Religious coping has been reported to help women with breast cancer cope with their illness (Fearon, Hughes, & Brearley, 2020; Gall, Kristjansson, Charbonneau, & Florack, 2009; Rohani, Abedi, Omranipour, & Langius-Eklöf, 2015; Park et al., 2017; Thuné-Boyle et al., 2013; Zamanian et al., 2015). According to Pargament's theoretical literature (1997), which provides the most comprehensive conceptualisation of religious coping, life events such as the diagnosis of a life threatening illness may shake a person's perceived sense of control and meaning of life (McClain, Rosenfled, & Breitbart, 2003; Pargament, 1996; Siegel & Schrimshaw, 2002). Given that religion fulfills several functions such as providing meaning to life, sense of control, and closeness with people who hold similar religious/spiritual beliefs, it is most often used by people to help them cope with illness (Pargament & Hahn, 1986; Spilka, Spangler, & Nelson, 1983). Religious coping is distinct from other generic types of coping, therefore, it should not be confounded with other coping strategies (Pargament, 1997). Moreover, religious coping should also be distinguished from general measures of religiousness such as attending religious functions, as the latter does not necessarily imply that these religious activities are used by people to help them cope with the stressful event. Religious coping has been found to have a stronger influence on psychosocial outcomes, compared to measures of general religiousness (Pargament, 1997). A clear theoretical understanding of the construct of religious coping is significant within the context of this thesis, as it will pave the way for theoretically and empirically established clinical interventions in the future (Craig et al., 2008) (Section 2.2). Therefore, the next section will shed light on Pargament's theory of religious coping (Pargament, 1997).

2.4.1 Pargament's Theory of religious coping

Pargament's theory of religious coping (1997) is a process oriented theory based on Lazarus and Folkman's (1984) transactional theory of stress and coping which was briefly mentioned in Section 2.2.2. Similar to the common-sense model and Lazarus' theory of stress and coping, Pargament's theory emphasises that coping is a dynamic process, and he viewed it as a *transaction* between the person and the social environment (Cummings & Pargament, 2010). Religion has been defined as the "the search for significance in ways related to the sacred" (Pargament, 1997, p 32). As such, religion is attached to what is important to people, and these important aspects have to be linked to what they perceive as sacred (Pargament, 1997). The definition of religious coping, which is implemented in this thesis, and the rationale for its selection is described in Section 1.9.

Pargament (1997) described his theory in terms of a number of assumptions. First, several goals are attained via the use of religious coping and these are: meaning, feeling in control, comfort, intimacy, and life transformation (Pargament, 1997). Meaning and control can be both achieved through the use of religiously/spiritually based cognitive reappraisal and restructuring of the crisis situation. Emotional comfort can, in part, be achieved via obtaining closeness to what is perceived as *sacred* by the person. Intimacy with the religious community could be accomplished through attending religious social functions. Life transformation could occur as a consequence of developing and maintaining meaningful relationships with new objects and people (Pargament, 1997). All of these functions of religious coping are comprehensively evaluated in the RCOPE, which is the full version of the Religious Coping Scale (Pargament, Koenig, & Perez, 2000).

The second assumption of Pargament's theory is that during times of crisis, religion acts as a shield to protect what the person perceives as valuable, including relationships or feeling in control. However, in some circumstances, such as the diagnosis of a terminal illness, these previously protected objects could lose its value to the person, and as a consequence, religion could no longer be able to protect what the person perceives as valuable. Consequently, new objects of value could be gained via the use of new religious coping methods, such as converting to a new religion (Pargament, 1997).

Third, religious coping involves several dimensions, and it encompasses spiritual, behavioural, emotional, cognitive, and relational/social aspects (Pargament, 1997). The spiritual domain involves a person's relationship with God or higher power. The behavioural domain includes religious activities such as praying. The emotional domain involves the range of emotions which are the result of engaging in various domains of religious coping such as praying, utilising religiously-based thoughts, or getting spiritually closer to God. Therefore, the type of these emotions is contingent upon the religious coping method that a person has engaged in. Consequently, it could include positive as well as negative emotions (e.g. comfort, sadness). The cognitive domain includes religiously-based thoughts that a person utilises in response to crisis. Finally, the relational or social domain includes the supportive social relationships that a person's forms with people from the same religion/spiritual belief system (Pargament, 1997).

Fourth, similar to the concept of general coping (Lazarus & Folkman, 1986), Pargament conceptualised religious coping as a process contingent on various intra-personal factors (i.e. religiosity levels) as well as situational factors (i.e. the perceived significance of the event to the person) (Pargament, Feuille & Burdzy, 2011). Fifth, religious coping could be associated with both negative and positive outcomes, and therefore, it is not only linked to positive outcomes (Pargament, 1997). The psychological consequences of religious coping are contingent upon whether the individual has implemented positive or negative religious coping. Negative religious coping is often associated with negative mental health outcomes such as anxiety symptoms (Zwingmann, Müller, Körber, & Murken, 2008), depressed mood (Gall & Bilodeau, 2020; Thuné-Boyle et al., 2013) depressive symptoms (Hebert et al., 2009), and emotional distress (Gall et al., 2009).

Sixth, religious coping has a unique focus on the person's perception of the sacred, and this aspect makes it different from other general coping methods (Pargament et al., 2011). As shown in Figure 2.2, the literature has acknowledged the mediating role of religious coping between religiousness and mental health outcomes (Fabricatore, Handal, Rubi, & Gilner, 2004; Pargament, 1997; Pérez & Smith, 2015). However, general religious orientation such as religiousness has been found to be a weaker predictor of psychosocial adjustment outcomes, compared to methods of religious coping (Pargament, 1997). Religious orientation is conceptualised as a personality trait reflecting the person's relatively stable implementation of religious resources to achieve certain outcomes such as being closer to God or being socially acceptable to the religious community h/she belongs to. As a consequence, religious orientation is not a dynamic construct, and does not particularly address how people utilise these religious activities/thoughts to cope with various life stressors (Pargament, 1997). Hence, religious coping is a stronger concept compared to global measures of religiousness.

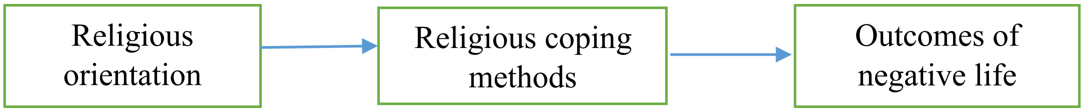


Figure 2.2 The Mediator Model of Religious Coping (copied from Pargament, 1997)

2.4.2 The Measurement of religious coping

According to Pargament (2003), religious coping has been evaluated in the literature with five methods: the indicators method, the overall method, the generic coping method, the detailed religious coping methods, and the forms of religious coping method. Each will be described in turn. The indicators method assesses religious coping by evaluating general religiousness which includes engaging in religious activities such as reading a Holy Book. As mentioned earlier, measuring religious coping using religious behaviours is problematic because it is unclear if the religious activity is used to cope with the stressor, or if it is only performed as a habitual behaviour (Pargament, 2003). The second approach in measuring religious coping is the overall method, which broadly evaluates the role of religion in coping. The 3-item Religious Coping Index (Koenig et al., 1992) is an example of this method as it evaluates religious coping with three questions about the person's general use of coping methods, the evaluator's subjective assessment of the person's use of religious coping, and the effectiveness of religious coping (Pargament, 2003). Consequently, this approach does not demonstrate the content of these religious beliefs and behaviours (Pargament, 2003). The third method in assessing religious coping involves the utilisation of generic measures of coping such as the Ways of Helping Scale (Lazarus & Folksman, 1984). Only a few items, which broadly assess religious coping, are encompassed in generic coping tools. Therefore, this method is also problematic because the religious coping items are not included within a specific religious coping scale (Pargament, 2003).

The fourth method involves assessing religious coping via several specialised religious coping tools such as the Styles of Religious Problem Solving (Pargament et al., 1988), Religious Coping Activities (Pargament et al., 1990), turning to religion subscale of the COPE (Carver, Scheier, & Weintraub, 1989), and the Religious COPE (RCOPE) (Koenig, Pargament, & Nielson, 1998; Pargament & Koenig, 1997). The Styles of Religious Problem Solving measure examines three essential ways to cope with the problem using the person's perceived relationship with God. The first style (collaborative) involves the person's working together with God to cope with the problem. The second style (deferring) involves the person complete reliance on God to solve the problem. The third style is when the person is self-reliant and does not hold God accountable in solving the problem. On the other hand, the Religious Coping Activities Scale (Pargament et al.

1990) evaluates several behavioural, cognitive as well as social dimensions of religious coping such as helping others, religious cognitive restructuring, and seeking social support from people within the same religion. The COPE (Carver et al., 1989) also assesses religious coping, but with only four general questions. The RCOPE (Religious Coping Scale, Pargament, Koenig, & Perez, 2000), measures 17 religious/spiritual coping styles which comprehensively evaluates the functions of religion discussed in Pargament's (1997) theory of religious coping (Section 2.4.2).

The last method in assessing religious coping involves examining forms of religious coping in a broad manner (Pargament, 2003). Two measures have been used in the literature to assess religious coping: Ways of Religious Coping Scale (WORCS) (Boudreaux, Catz, Ryan, Amaral-Melendez, & Brantley, 1995) and the Brief RCOPE (Pargament, Smith, Koenig, & Perez, 1998). The WORCS is composed of 40 questions, and the measure was found to have two factors: a cognitive religious coping factor, and a social/behavioural factor. The Brief RCOPE (Pargament et al., 1998), is heavily utilised in the literature, and it was initially composed of 21 items, but was later minimised to 14 items. All of the items in the Brief RCOPE were selected from the full version of the RCOPE. The Brief RCOPE has two factors: positive and negative religious coping. Positive religious coping assesses the adaptive use of religion such as the utilisation of positive religious appraisal. Negative religious coping involves several techniques such as the negative religious attributions of events including thoughts such as this illness is a punishment from God (Pargament et al., 2011).

These various methods of assessing religious coping reflect the heterogeneity in the measurement of religious coping, and the cumulative developments in the field. It also reflects that some of these methods which were utilised to assess religious coping, did not actually measure religious coping, rather it measured religious activities (i.e. the indicator's method). Even when these methods did measure religious coping (i.e. the overall and general coping methods), it did so without paying attention to the fact that religious coping is a multifaceted process. According to the systematic review by Thuné-Boyle et al. (2006), which is the most relevant in this section as it reviewed the assessment of religious coping within the psycho-oncology field, the COPE (Carver et al., 1989) tool was the most frequently utilised measure to assess religious coping, while the least utilised measure was the RCOPE. However, Pargament et al. (2011) noted a shift in the utilisation of religious coping measures in that the Brief RCOPE measure has become the most commonly utilised religious coping tool in the literature. This could be attributed to several advantages of the Brief-RCOPE which includes its conciseness, theoretically-based, and its ability to detect changes in religious coping when addressed in clinical interventions (Pargament et al., 2011). Given its relevance to this thesis, the next section will discuss the relationships between religious coping and psychosocial outcomes in women with breast cancer.

2.4.3 Religious coping and psychosocial outcomes among women with breast cancer

People with chronic illnesses most often use their religion as a method of coping (Roger & Hatala, 2018), and women diagnosed with breast cancer frequently report religious coping as the most commonly used coping method (Gonzalez, Tanenbaum, & Commissariat, 2016; Thuné-Boyle et al., 2013; Rohani et al., 2015; Watkins, Kanu, Hamilton, Kozachik, & Gaston-Johansson, 2017; Zwingmann et al., 2008). Several meta-analyses (Ano & Vasconcelles, 2005; Kvillemo & Bränström, 2014) and systematic reviews (Schreiber & Broskopp, 2012; Thuné-Boyle et al., 2006) have been conducted to explore the role of various religion/spirituality related variables, including religious coping, on the psychosocial outcomes among people with cancer, and women with breast cancer. Given the heterogeneity of the religion/spirituality variables measured, and the diverse clinical samples utilised in these studies, no clear conclusions could be drawn between religious coping and psychological outcomes in these reviews, as will be discussed next.

Ano and Vasconcelles (2005) conducted a meta-analysis to explore the utilisation of religious coping among people undergoing stressful life situations, and its potential impact on their psychological outcomes. Although the meta-analysis by Ano & Vasconcelles was not specific to women with breast cancer, it provided an initial impression of the relationships among these variables. The meta-analysis which covered the years from 1967 to 2005, highlighted the negative relationships between positive religious coping and negative psychological outcomes, while positive relationships were observed between positive religious coping and adaptive psychological outcomes. On the other hand, non-significant relationships were found between negative religious coping and adaptive psychological outcomes, but positive relationships were observed between negative religious coping and negative psychological outcomes. Cultural bias was evident in the included studies as most of the participants in those studies were from Euro-

American backgrounds. Also, only one study by Alferi et al. (1999) was conducted with women diagnosed with breast cancer (Alferi, Culver, Carver, Arena, & Antoni, 1999). Consequently, the generalisations of this meta-analysis to breast cancer population is limited.

Thuné-Boyle et al. (2006) examined the impact of religious/spiritual coping on various measures of illness adjustment (i.e. psychological well-being) among people with any type of cancer. The search criteria included studies that covered the time period from 1977 to 2003, and which made an explicit use of the phrase "religious/spiritual coping" in the study. Mixed empirical evidence was found on the role of religious coping in illness adjustment, with some studies finding a beneficial effect, while others finding harmful or no effects of religious coping on illness adjustment measures. The authors mainly focused on two aspects to explain these conclusions: the problematic design of the studies, and the heterogeneous manner in which religious/spiritual terms were conceptualised in these studies (Thuné-Boyle et al., 2006). The problematic design of these studies include having mixed cancer types with varied stages and grades of the disease. The authors recommended that study samples should be homogenous in terms of their disease characteristics, as these factors could impact on the coping processes and illness outcomes for these women (Thuné-Boyle et al., 2006). The second issue was the imprecise measurement of situation-specific religious coping. Religious activities were frequently measured in these studies, and not religious coping. Hence, the impact of religious coping in illness adjustment is inconclusive in this systematic review.

Schreiber and Brockopp (2012), on the other hand, conducted a more population specific systematic review in women with breast cancer to study the relationships between religion and/or spirituality variables, and various psychological well-being measures. The review covered the time period between January 1985 and July 2011, and found that weak associations exist between religious/spiritual variables and psychological outcome measures. This could be, in part, due to diverse religion/spirituality variables and psychological measures used in these studies (Schreiber & Brockopp, 2012). Some of the variables measured in these studies were religious coping, religious activities, religious struggle, and spiritual well-being. Because these studies measured various religion and spirituality variables, these variables could have differential impact on the psychological outcomes measured. Additionally, these studies measured various indices of psychological well-being such as absence of depressive symptoms or quality of life, which could have also influenced the strength of the relationships between religion/spirituality variables and psychological outcomes. Despite these findings, the authors recommended that religion had a positive impact on these women's mental health (Schreiber & Brockopp, 2012).

The meta-analysis conducted by Kvillemo and Branstrom (2014) which examined the relationships between coping methods and psychological outcomes in women diagnosed with breast cancer, reported that religious coping was unrelated to both positive and negative psychological states. However, the meta-analysis only included five research studies that evaluated religious coping, and these were all conducted in Western countries (Kvillemo & Branstrom, 2014). Thus again, the generalisability of these results could only be applicable to women with breast cancer who belong to similar cultures. Except for the meta-analysis conducted by Ano and Vasconcelles (2005), all of the meta-analyses and systematic reviews discussed earlier provided mixed evidence on the impact of religious coping on various mental health outcomes among people with cancer, or women with breast cancer. This could be attributed to the fact that Ano and Vasconcelles (2005) utilised Pargament's definition of religious coping, which conceptualised religious coping as situation-specific, rather than a dispositional trait, in their study selection process. Therefore, when looking at the measures used in these studies, it becomes apparent that Ano and Vasconcelles (2005) selected studies that utilised specialised religious coping measures. Thuné-Boyle et al. (2006), on the other hand, selected articles which had "religious coping" in the study, even if the tool/questions did not specifically measure religious coping, whilst Schreiber and Brockopp (2012) examined various religion/spirituality variables, and not only religious coping.

The studies which examined the relationship between religious coping and psychosocial outcomes among women diagnosed with breast cancer will be discussed next, given its relevance to this thesis. Some empirical evidence reported that negative religious coping was strongly and positively associated with anxiety (Thuné-Boyle et al., 2013; Zwingmann et al., 2008; Zwingmann, Wirtz, Müller, Körber, & Murken, 2006). More specifically, feeling punished by God was associated with anxiety symptoms (Thuné-Boyle et al., 2013). Negative religious coping was also positively correlated to symptoms of depression (Gall & Bilodeau, 2020; Hebert et al., 2009; Thuné-Boyle et al., 2013; Zwingman et al., 2006), and it predicted 4% of symptoms of depression among women with breast cancer (Thuné-Boyle et al., 2013). Similar findings were also highlighted by Gall et al. (2009) and Gall and Bilodeau (2017) where positive associations were reported between negative religious coping and both distress and reduced emotional-well-being. Therefore, this empirical evidence indicate that negative religious coping is associated with negative mental health outcomes among this population.

Contradictory evidence was found in the relationship between negative religious coping and quality of life (Rohani et al., 2015; Zamanian et al., 2015). Negative religious coping was not associated with health-related quality of life among Iranian Muslim women newly diagnosed with breast cancer (Rohani et al., 2015). Instead, other variables such as sense of coherence, predicted health-related quality of life. On the other hand, Zamanian et al. (2015) found that negative religious coping was negatively associated with several domains of quality of life among Iranian women with breast cancer. These domains were the emotional functioning and functional well-being scales (Zamanian et al., 2015). These results reflect the inconsistent relationships between negative religious coping and measures of positive outcomes such as quality of life. These findings are in agreement with the meta-analysis by Ano and Vasconcelles (2005), which pointed out that negative religious coping was only associated with negative mental outcomes, but not with positive mental health outcomes.

As opposed to the consistent relationship between negative religious coping and negative mental health outcomes, the literature has reported mixed findings on the relationships between positive religious coping and negative mental health outcomes (Hebert et al., 2009; Thuné-Boyle et al., 2013; Zwingmann 2006 and 2007). Positive religious coping was negatively associated with distress (Gall et al, 2009) and anxiety (Thuné-Boyle et al., 2013), but was not predictive of anxiety in another study (Hebert et al., 2009). Also, positive religious coping was not predictive of mood (Hebert et al., 2009; Thuné-Boyle et al., 2013). This has been in part explained as a result of the type of outcome used, given that positive religious coping could have been more likely to be associated with adaptive outcome measures of mental health including positive mood (Thuné-Boyle et al. 2013). Gall and colleagues (2009) provided some evidence for the above claim as they found that positive religious coping was positively associated with emotional well-being.

The relationship between religious faith and patients' quality of life was explored among women with breast cancer in Denmark (Pedersen, Christensen, Jensen, & Zachariae, 2013). Despite the low percentage of women with unambiguous faith, women with higher levels of religious faith reported more positive influence of their religion on their disease and health-related quality of life, compared to women with "some degree of faith" (Pedersen et al., 2013). In contrast to the research findings from Denmark, which is by and large a secular society, similar results were found in Iran, where religious as well as spiritual life is fundamental for many people (Zamanian et al., 2015). Zamanian and collaborators (2015) explored the role of religious coping on quality of life, and found that positive religious coping was associated with quality of life in women with breast cancer (Zamanian et al., 2015). Additionally, Gall and Bilodeau (2017) highlighted that positive religious coping was linked with positive emotional outcomes. Although Pargament et al. (2000) highlighted that negative religious coping is a stronger predictor of psychosocial outcomes compared to positive religious coping (Pargament et al., 2000), most of the recent reviewed evidence highlighted the positive relationship between positive religious coping and adaptive mental health outcomes such as quality of life.

2.5 The rationale for implementing the integrated model for this thesis

The literature deliberated earlier on the role of illness perceptions and religious coping on psychosocial outcomes for women with breast cancer highlighted several gaps in our understanding that this thesis will fill. First, there is a limited number of studies that have explored the mediating role of coping between illness perceptions and psychosocial outcomes (Hagger & Orbell, 2020). Second, the literature lacks cultural diversity as none of the studies measuring the theoretical constructs within the common-sense model and religious coping were carried out in the Arab world. As discussed in Section 1.9, it is well known that illness perceptions are influenced by the cultural context of the society (Kaptien et al., 2013; Kaptein et al., 2015). Several authors have emphasised the importance of exploring how culture affects people's emotional reactions in response to the diagnosis of cancer and its treatment (Dein, 2004; Kleinman et al., 1978).

Third, the theoretical and empirical evidence on religious coping highlighted the importance of examining religious coping as a unique construct to each society. Meaning, findings from one particular culture cannot be generalised to another culture, even if they share the same religious background (Cameron & Moss-Morris, 2010; Pargament, 1997; Thuné-Boyle, Stygall, Keshtgar, Davidson, & Newman, 2011). Fourth, the literature demonstrated a scarcity in the studies which have examined the mediation of general coping between illness perceptions and psychosocial outcomes (Hagger & Orbell, 2020), despite that the mediation of coping is a fundamental feature of the common-sense model (Hagger & Orbell, 2020; Leventhal et al., 1980; McCorry et al., 2013; Millar et al., 2005; Rozema et al., 2009). However, no previous study have been conducted to explore the mediating role of religious coping between illness perceptions and psychosocial outcomes among women with breast cancer. Religious coping was selected for this study given its prominent role in helping women with breast cancer cope with their illness across the world (Al-Azri et al., 2014; Mehrabi et al., 2015; Park et al., 2017). This thesis, therefore, aims to understand the psychological mechanisms influencing the psychosocial outcomes among Omani women with breast cancer. This understanding is vital to the development of more effective, and culturally appropriate interventions for this population.

The integrated model was designed as a result of the following theoretical and empirical assumptions:

1. Illness perceptions have been shown to be a strong predictor of psychosocial outcomes among women with breast cancer, but they have not been examined within an Arab context (Kaptein et al., 2015).
2. Religious coping is a robust predictor of both positive and negative psychosocial outcomes (Gall et al., 2009; Hebert et al., 2009; Pedersen et al, 2013; Thuné-Boyle et al., 2013; Zamanian et al., 2015; Zwingmann et al., 2006; Zwingmann et al., 2008).
3. Religious coping has been neglected in the literature on the common-sense model, but has been found to mediate the relationship between religiousness and outcomes of coping (Fabricatore et al., 2004; Pargament, 1997; Pérez & Smith, 2015).
4. There is a lack of empirical evidence on the role of illness perceptions and religious coping as robust predictors of psychosocial outcomes among women with breast cancer (Hagger et al., 2017; Kaptein, et al., 2015),

With that in mind, the integrated model aims to enhance our understanding of how these theoretical predictors could influence psychosocial outcomes. The suggested integrated theoretical model shown in Figure 2.3 will fill a gap in the literature by addressing how two clinically and theoretically relevant concepts could predict the psychosocial outcomes of Omani women with breast cancer.

2.6 The Integrated Model for this thesis

The utilisation of the common-sense model (Leventhal et al., 1980), and the mediator model of religious coping (Pargament, 1997) will allow for a culturally sensitive understanding of two potentially influential variables, which are amenable to change in clinical interventions. But before embarking on designing clinical interventions, it is important to understand how these two variables interact with each other, and subsequently influence psychosocial outcomes among women with breast cancer. Therefore, the integrated model displayed in Figure 2.3 combines illness perceptions and positive and negative religious coping in one model. Positive and negative religious coping are suggested to mediate the relationship between illness perceptions and psychosocial outcomes. The model hypothesises that illness perceptions and religious coping would predict the psychosocial outcomes of Omani women with breast cancer, which are symptoms of anxiety and depression, and quality of life. Consequently, the aim of the integrated model is to gain an initial understanding of the role of religious coping and illness perceptions on the psychosocial outcomes.

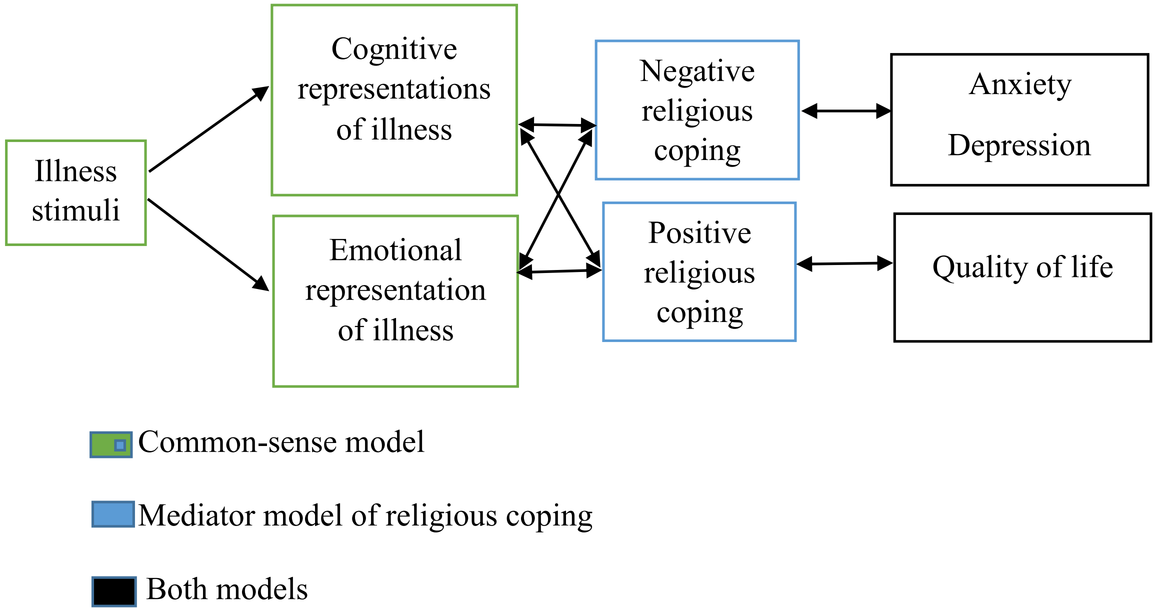


Figure 2.3 The Integrated Theoretical Model Combining the Common-Sense Model and the Mediator Model of Religious Coping

2.7 Structure, purpose and research questions for this thesis

This thesis is set within the Omani context, and it aims to examine the impact of illness perceptions and religious coping on the psychosocial outcomes among Omani women newly diagnosed with breast cancer. This thesis will answer the following research question: How do illness perceptions and religious coping impact symptoms of anxiety, depression, and quality of life among Omani women newly diagnosed with breast cancer?

To answer this question, three studies will be conducted as a part of this thesis as shown in Table 2.1. Chapter 3 will be a systematic review of the religious coping tools used in clinical cancer research. The impetus for conducting this systematic review is that religious coping is one of the main concepts in this thesis, and the way it was measured in the literature has been inconsistent. The lack of clarity is evident in the inconclusive results of the reviews and studies discussed in Section 2.4.3. Given that researchers in the field have pointed out that these findings could be as a consequence of the inconsistent measurement and conceptualisation of religious coping, it is crucial to assess how it has been measured in clinical cancer research (Carver et al., 1989; Boudreaux et al., 1995; Koenig et al., 1992; Pargament, 2003; Pargament et al., 1988; Pargament et al., 1990). The research questions for the systematic review are: 1) what are the validated religious coping tools and their psychometric properties?, 2) What is the theoretical basis of these religious coping measures within the context of cancer research?, 3) How are the items making up the religious coping measures divided into the cognitive, behavioural, emotional, relational, and spiritual domains?, and 4) What is the most appropriate religious coping measure to be utilised for the empirical study of this thesis?

Chapter 4 is the methodology chapter, and it aims to discuss the nature of mixed methods study design and the rationale for its implementation in this thesis. This mixed methods design thesis will include one quantitative arm which will be followed by the qualitative arm, which corresponds to Chapters 5 and 6, respectively. Chapters 5 and 6 aim to examine the integrated model (Section 2.6). The implementation of mixed methods design will allow for a comprehensive understanding of the integrated model by providing both qualitative and quantitative data for illness perceptions and religious coping. The research questions for Chapter 5 are: 1) What are the current levels of anxiety, depressive symptomatology and quality of life among Omani women newly diagnosed with breast cancer?, 2) What is the current use of religious coping and illness perceptions among Omani women newly diagnosed with breast cancer?, and 3) Can the integrated model predict symptoms of anxiety, depression and the quality of life among Omani women newly diagnosed with breast cancer?

Chapter 6 is the qualitative arm of this mixed methods design thesis, and it aims to understand the lived illness experience of Omani women newly diagnosed with breast cancer using Interpretative Phenomenological Analysis approach. The qualitative study aims to make sense and expand on the findings from the quantitative study. Chapter 6 will answer the following three research questions: 1) How do Omani women newly diagnosed with breast cancer understand and give meaning to their illness experience and how did their experience change over time?, 2) What were participants' coping processes and did religious coping play any role at all in their illness experience?, and 3) What were the factors that helped participants' emotional well-being in relation to the illness? Finally, the last chapter (Chapter 7) will provide a general discussion of the findings of this thesis in relation to the theoretical constructs, as well as clinical and research implications, and a final conclusion.

Table 2.1. Overview of the Series of Studies Conducted for this Thesis

Aims of each chapter/study	Research method	Research Questions	Instrument/Tool	Data Collection
To identify instruments measuring religious coping by examining the development process, psychometric properties as well as the component subscales of these measures	Systematic Review (Study One) Chapter 3	1. What are the validated religious coping tools and their psychometric properties? 2. What is the theoretical basis of religious coping measures in cancer research? 3. How are the items making up the religious coping measures divided into the cognitive, behavioural, emotional, relational, and spiritual domains? 4. What is the most appropriate religious coping measure to be utilised for the empirical study of this thesis?	Electronic databases were utilised to identify relevant papers that meet the review criteria: PubMed, EMBASE (Excerpta Medica-Ovid), MEDLINE (Ovid), PsychINFO (ESCO host), Web of Science (Core Collection), Academic Search Ultra, and CINAHL	A systematic review of the literature on religious coping tools in cancer from 1951 to February, 2020
To identify current levels of anxiety, depression, and quality of life, and the predictors of the psychosocial outcomes of Omani women newly diagnosed with breast cancer	Quantitative cross-sectional research design (Study Two) Chapter 5	1. What are the current levels of anxiety, depressive symptomatology, and quality of life among Omani women newly diagnosed with breast cancer? 2. What is the current use of religious coping and illness perceptions among Omani women newly diagnosed with breast cancer? 3. Can the integrated model predict symptoms of anxiety and depression and the quality of life among Omani women newly diagnosed with breast cancer?	Demographic questionnaire, Brief IPQ, Brief A-BRCS, EORTC-QLQ-C30, and HADS	Pen and paper survey

Aims of each study	Research method	Research Questions	Instrument/tool	Data Collection
To understand and explore the lived illness experience of Omani women newly diagnosed with breast cancer, and how they understand and give meaning to their illness experience, and to understand the dynamic role of coping in their illness adjustment	Qualitative study (Study Three) Chapter 6	1. How do Omani women newly diagnosed with breast cancer understand and give meaning to their illness experience and how did their experience change over time? 2. What were participants' coping processes and did religious coping play any role at all in their illness experience? 3. What were the factors that helped participants' emotional well-being in relation to the illness?	Interview schedule based on the integrated model and the findings from Chapter 5	Semi-structured interviews

Chapter 3: The Development and Psychometric Properties of Instruments and (Subscales) Measuring Religious Coping in Clinical Cancer Research: A Systematic Review

3.1 Summary

Chapter 2 introduced the importance of psychological theories in general, and more specifically coping theories within the context of the current thesis. The chapter focused on the common-sense model, Pargament's theory of religious coping, and the empirical evidence supporting these theories within the breast cancer literature. An integrated model was suggested to be utilised as the psychological framework for this thesis. Given the heterogeneity in the measurement of religious coping in the psycho-oncology literature, it is crucial to examine how religious coping has been measured. As a consequence, this chapter is a systematic review (SR) of the measurement tools of religious coping in clinical cancer research. It utilises Pargament's multi-dimensional conceptualisation of religious coping in the analysis of items within these religious coping measures.

3.2 The clinical relevance of examining religious coping in the field of Psycho-Oncology

The multidimensional nature of religious coping has been identified in the literature as an important factor that helps people with cancer cope with their illness at various stages throughout their illness trajectory (Sections 1.9 and 2.4.3) (Cummings & Pargament, 2010; Gall & Bilodeua, 2020; Salsman et al., 2015; Schreiber, & Brockopp, 2012; Sharif et al., 2018; Thuné-Boyle, Stygall, Keshtgar, & Newman, 2006). People diagnosed with cancer need to make sense of their illness, which can be achieved through the utilisation of religion (Gall & Bilodeua, 2020; Park, 2005; Salsman et al., 2015; Schreiber & Brockopp, 2012; Thuné-Boyle et al., 2006).

Several clinical guidelines in cancer care have emphasised the importance of addressing religious and spiritual factors as essential elements in the holistic care provided to people with cancer (Ferrell, Twaddle, Melnick, & Meier, 2018; National Comprehensive Cancer Network, 2019; Riba et al., 2019). For instance, the National Comprehensive Cancer Network (2019) highlighted that spiritual and religious variables could increase patients' emotional vulnerability, which reinforce the fact that religious coping does not only include positive dimensions, but also it could include negative dimensions (Setion 2.4.1) (Pargament, Smith, Koenig & Perez, 1998). Therefore, chaplancy counseling has been advocated to support people with cancer who exhibit negative religious coping (Riba et al., 2019). Religious counselors are professionals who belong to a religious instituion within a specific religion (i.e. religious belief system), and who utilise the religious context to help support a person going through a crisis (Worthington, 1986). Moreover, other clinical guidelines such as the National Consensus Clinical Practice guidelines for Quality Palliative Care (Ferrell et al., 2018), and the National Cancer Institute's Comprehensive Cancer Information suggest that spiritual and religious variables should be clinicaly evaluated as a core clinical domain among people with cancer.

In addition to the emphasis of clinical guidelines in evaluating religious/spiritual variables among people with cancer, research exploring the association between religious coping and mental health outcomes have significantly increased over the past three decades (Gall & Bilodeau, 2020; Gonzalez, Tanenbaum, & Commissariat, 2016; Hebert, Zdaniuk, Schulz, & Scheier, 2009; Johnson, & Spilka, 1991; Thuné-Boyle et al., 2006; Thuné-Boyle, Stygall, Keshtgar, Davidson, & Newman, 2013; Rohani, Abedi, Omranipour, & Langius-Eklöf, 2015; Schreiber & Brockopp, 2012; Watkins, Kanu, Hamilton, Kozachik, & Gaston-Johansson, 2017; Zwingmann, Müller, Körber, & Murken, 2008; Zwingmann, Wirtz, Müller, Körber, & Murken, 2006). The measurement of religious coping, as an aspect of religion, is imperative in research. Identifying people with cancer who utilise negative religious coping is crucial as those people tend to have negative mental health outcomes (Section 2.4.3) (Gall & Bilodeau, 2020; Gall, Kristjansson, Charbonneau, Florack, 2009; Hebert et al., 2009; Pargament, Feuille, & Burdzy, 2011; Thuné-Boyle et al., 2013; Zwingmann et al., 2008; Zwingmann et al., 2006). The screening and assessment of people who exhibit negative religious coping will enable clinicians and researchers to design clinical interventions, and make referrals to appropriate professional personnel (Khan, 2019; Schreiber & Brockopp, 2012).

3.3 Existing systematic reviews and meta-analysis in the Psycho-Oncology literature

Despite the crucial role of religious coping in the adaptation to cancer, its measurement has been fraught with problems (Section 2.4.1). These difficulties are linked with how spirituality and religion concepts have been defined, conceptualised, and reflected in the measurement tools (Hill & Pargament, 2003; Hill et al., 2000; Park, Sherman, Jim, & Salsman, 2015; Salsman et al., 2015; Selman et al., 2011; Thuné-Boyle et al., 2006). Two relevant meta-analyses (Salsman et al., 2015; Sherman et al., 2015) and two systematic reviews (Thuné-Boyle et al., 2006; Schreiber & Brockopp, 2012) have been conducted to examine the relationships between religion/spirituality constructs and mental as well as social health outcomes among people with cancer. Two systematic reviews and one meta-analysis will be reviewed in this section given their relevance for the current systematic review (Salsman et al., 2015; Schreiber & Brockopp, 2012; Thuné-Boyle et al., 2006).

Although the systematic literature reviews conducted by Thuné-Boyle et al. (2006) and Schreiber and Brockopp (2012) were briefly discussed in Section 2.4.1 to describe the relationships between religious coping, illness adjustment, and mental well-being, the reason for the detailed focus on them in this section is to highlight how religious coping has been measured in the included studies in these two systematic reviews (Thuné-Boyle et al., 2006; Schreiber & Brockopp, 2012). Thuné-Boyle et al. (2006) indicated that the influence of religious/spiritual coping on the measured outcomes was either absent or harmful in 10 out of the 17 included studies. The authors discussed several factors which they believed may have resulted in these mixed results, but for the purpose of this chapter, the focus will be on the tools used to measure religious coping in these studies. Several studies (Acklin et al., 1983; Alferi et al., 1999; Musick et al., 1998; Yates, Chalmer, James, Follansbee, & McKegney, 1981) measured religious coping by asking general questions about how often participants attended religious functions, or watched religiously-oriented television programmes. The authors suggested that the use of religious activities may not accurately represent the religious coping process, given that people could attend religious functions for various other reasons (Section 2.4.1).

Another problematic area that Thuné-Boyle et al. (2006) highlighted is the conceptual confusion between measures of spiritual or religious outcomes, and measures that assess the actual religious coping process. To further illustrate, Thuné-Boyle et al. (2006) initially excluded two studies from the systematic review because these studies utilised the System of Beliefs Inventory (Baider et al., 1999; Holland et al., 1998). The authors suggested that the System of Beliefs Inventory (SBI-54; Kash et al., 1995; Holland et al., 1998) does not measure the religious coping process, rather it measures the outcomes of religious coping. Two versions exist for the SBI, the longer version (SBI-54) and the short version (SBI-15). Seven studies (Ben-Zur, Gilbar, & Lev, 2001; Carver et al., 1993; Culver, Arena, Antoni, & Carver, 2002; Harcourt, 1999; Sherliker & Steptoe, 2000; Sherman, Simonton, Camp Adams, Vural, & Hanna, 2000; Stanton, Danoff-Burgh, & Huggines, 2002) used the religious coping questions included within the COPE (Carver, Scheier, & Weintraub, 1989), which is a standard measure of coping, but it does not evaluate the complexity and multi-dimensionality of religious coping. Only three studies (Gall, Miguez de Renart, & Boonstra, 2000; Nairn & Merluzzi, 2003; Sherman, Simonton, Plante, Reed Moody, & Wells, 2001) measured religious coping using tools that tap into the multi-dimensional nature of religious coping. These measures were: Religious Coping Activities Scale (Pargament et al., 1990), the Religious Problem Solving Scale (Pargament et al., 1988), and the adapted version of the Brief RCOPE (Pargament et al., 1998). The authors recommended that there is a great need to assess religious coping via specialised tools. These tools should assess the content of religious coping such as religiously-based thoughts, behaviours, and feelings that a person would utilise to cope with cancer.

The systematic literature review conducted by Schreiber and Brockopp (2012) (Section 2.4.1) did not only focus on religious coping among women with breast cancer, but it also examined heterogeneous spiritual and religion variables. In fact, the conceptualisation of religion and spirituality variables provided in the review did not differentiate between studies that measured the process of religious coping (Gall, Guirguis-Younger, Charbonneau, Florack, 2009; Hebert et al., 2009; Zwingmann et al., 2006) versus studies that measured the outcomes of religious coping (Cotton et al., 1999; Purnell, Andersen, & Wilmot, 2009). To illustrate, variables linked to religion encompassed various processes such as religious behaviours, religious coping, and perceptions of God. Spiritual concepts, on the other hand, included spiritual distress (reflecting negative religious coping), spiritual well-being (an outcome of religious coping), and spiritual reframing (a process). Consequently, the authors indicated that no clear conclusions between spirituality/religion variables and psychological well-being for women with breast cancer could be drawn. This, in part, could be illustrated as a result of the heterogeneity of variables measured in these studies, and the varied tools used to measure these concepts. These conclusions are comparable to what Thuné-Boyle et al. (2006) deliberated about the need to clarify how religious coping is conceptualised and measured in the literature.

Salsman and colleagues (2015) conducted an inclusive meta-analysis covering the psycho-oncology literature from the first study published in each of the four electronic databases they utilised till December 2013. The total number of studies was 148. The objective of their meta-analysis was to synthesise the relationships between spiritual and religion variables and mental health outcomes among people with cancer. They specifically categorised spiritual and religious measures into four main categories: affective, cognitive, behavioural, and other. The measures that cover the affective domain generally assess the emotional implications of the spirituality/religion constructs, and mostly encompassed outcome measures such as spiritual well-being. The measures which belonged to the cognitive category assess the religious-cognitive dimensions such as spiritual growth. Measures in the behavioural category evaluated religious behaviours such as prayer, but it also included religious coping process measures. The measures in the "other" domain tapped into religious affiliation or measures that combine more than one category of spiritual or religious concepts (i.e. cognitive and affective categories). The main findings of the meta-analysis highlighted that despite the associations between several spirituality and religion domains and mental health outcomes among people with cancer, these associations were "modest". Of interest, the measures in the affective category had the strongest association with mental health, compared to measures in other categories. The measures that exhibited no relationships with mental health were those which belonged to the behavioural domain of spirituality/religion. This finding is important for this chapter given that religious coping measures were categorised into this domain, raising questions about the reasons behind the lack of relationships between measures within this category and mental health outcomes (Salsman et al., 2015).

Salsman et al. (2015) argued that this could reflect the differential outcomes of religious behaviours on people, which could be contingent on people's motivation for engaging in these behaviours in the first place. However, this lack of relationship between measures within the behavioural domain and mental health outcomes could also reflect problems in the dimensions measured by these tools. For instance, these tools may not be measuring religious coping, and they have also been found to be lacking theoretical foundation. In fact, the authors highlighted that several studies designed their own spirituality/religion measures, which were lacking a theoretical foundation (Salsman et al., 2015).

Researchers in the field have also argued that in addition to the heterogeneity of the measures used in the religion and spirituality research within the psycho-oncology context, some of these tools have grave psychometric problems (Salsman et al., 2015; Selman et al., 2011). Most of the tools that assess spirituality lack psychometric information on criterion and construct validity, agreement, test-retest reliability, and responsiveness (Selman et al., 2011). Furthermore, many of the tools that measure spirituality have also demonstrated construct validity problems. These validity issues are the result of the overlap in items included in these measures and items within emotional well-being scales. More specifically, the Functional Assessment of Chronic Illness Therapy-spiritual well-being scale (FACIT-sp: Cella et al., 1993), the Spiritual Well-Being Scale (SWBS: Ellison, 1983), and the Spiritual Involvement and Beliefs Scale (SIBS: Hatch, Burg, Naberhaus, & Hellmich, 1998) have items which are similar to items in scales that measure emotional well-being (Visser, Garssen, & Vingerhoets, 2010). An example comes from the FACIT-Sp, which has several items that refer to emotional well-being: “I have a reason for living, my life has been productive, I feel a sense of purpose in my life, and I feel peaceful”.

Salsman and colleagues (2015) have categorised a priori religious coping as belonging to the behavioural domain along with religious behaviours (Salsman et al., 2015). However, this conceptualisation is problematic, as discussed earlier, because these two variables could measure two different dimensions of religion. As a consequence, assuming that religious coping to belong to the behavioural domain is in opposition to the theoretical assumption that, religious coping, is multi-dimensional (Pargament, 1997; Pargament et al., 2000) (Section 2.4.1). Meaning, it is not precise to think of religious/spiritual coping in purely behavioural terms, rather religious coping includes other dimensions such as the affective, cognitive, relational/social, and spiritual domains (Pargament, 1997, Pargament et al., 2000).

3.4 Rationale for This Systematic Review

The systematic reviews and meta-analysis described earlier echo the serious problems associated with the measurement of spiritual/religious concepts, and more specifically religious coping measures, within the psycho-oncology literature. They also reflect the overlap among some of the spiritual/religious tools and mental health outcome measures (Salsman et al., 2015; Visser et al., 2010). In other words, the literature does not clearly distinguish between “process” measures that tap into the specific illness-context religious coping mechanisms, and outcome measures of spirituality/religion (Salsman et al., 2015; Thuné-Boyle et al., 2006; Visser et al., 2010). Some of the measurement problems could be as a result of the lack of clear conceptualisation of religion and spirituality variables in the field (Victor & Treschuck, 2020).

Given these weaknesses, this systematic review will address this knowledge gap by examining the theoretical basis for religious coping measures, their psychometric properties, and how religious/spiritual coping has been measured within the psycho-oncology literature. This examination will help to raise researchers' and clinicians' knowledge about the various dimensions encompassed in these tools, and the complexity of the process of religious coping (Cummings & Pargament, 2010). Having such a sophisticated understanding will enable researchers to design appropriate interventions which would address maladaptive spiritual/religious dimensions (Cummings & Pargament, 2010; Hosseini et al., 2016). Designing spiritually sensitive psychological interventions have been shown to improve the emotional outcomes of people with medical comorbidities (Hosseini et al., 2016; Koenig, Pearce, Nelson, Erkanli, 2016; Pearce et al., 2015).

Additionally, this systematic review aims to find the most suitable measure of religious coping for the empirical quantitative study for this thesis. Consequently, the spiritual dimension will be conceptualised as a person's relationship to God, and, therefore, is considered a part of religion. This choice has been made given the religious context of the population of interest in this thesis (Section 1.9). The second rationale for this choice is to ensure the focus and homogeneity of the concepts used to define and conceptualise religious coping. Having a broad definition of spirituality could lead to instruments that are too broad. Moreover, and based on the literature discussed earlier, this approach to the definition of spirituality could reduce the possibility of including measures that assess the outcomes of spirituality, rather than the process of religious coping.

The subcomponents of religious coping measures in this review will be analysed based on the five main categories as described in Pargament's theory of religious coping (Abu-Raiya & Pargament, 2015; Pargament, 1997): cognitive, affective, behavioural, relational/social, and spiritual. Examining the dimensions that the items making up these scales belong to, would enable researchers to be aware of the complexity of the religious coping process, and to help in designing culturally sensitive interventions, which address all components of religious coping. As discussed in Section 1.8, the MRC guidelines suggests that the use of theory-driven research is central in designing complex and individually tailored clinical interventions (Craig et al., 2008). These guidelines stress the importance of theory in order to understand the likely mechanisms of change, and thus help researchers in the establishment of complex interventions (Craig et al., 2008). For instance, Religious Cognitive-Behavioural Therapy has been shown to be more effective for some medical patients (Hosseini et al., 2017; Koenig et al., 2016; Pearce et al., 2015). Part of the reason is associated with addressing the unique religiously held beliefs and behaviours of those patients, therefore, further increasing their compliance to Religiously-based Cognitive Behavioural Therapy (Koenig, 2012).

The following definitions, which will be utilised for this systematic review, have been mainly borrowed from Lazarus and Folkman's theory of stress and coping (1984), as this theory formed the basis of Pargament's theory of religious coping, and is, therefore, closely associated with it. It also provides a clear conceptualisation of the nature of cognitions and emotions. The aim of having these specific definitions is to guide the researchers of this review in categorising the items within the religious coping measures into the specific domains of religious coping. Cognition, is defined as the person's appraisal of his/her perceptions of a situation, and can include knowledge, attention, and problem solving (Lazarus & Folkman, 1984). Emotions involve the interactions between psychological and biological domains, and are the end result of multiple processes which include the event's cognitive appraisal, action instincts, and physical changes within the body (Folksman & Lazarus, 1991). Behaviour is defined as the individual's activity which encompass both verbal (i.e. talking) and physical actions (Bergner, 2011). The social domain is defined as the relationship between study participants and others in their place of worship (Abeles, Ellison, George, Idler, & Krause, 1999).

3.5 Objective

This review will answer four questions:

1. What are the validated religious coping tools and their psychometric properties?

2. What is the theoretical basis of these religious coping measures within the context of cancer research?

3. How are the items making up the religious coping measures divided into the cognitive, behavioural, emotional, relational, and spiritual domains?

4. What is the most appropriate religious coping measure to be utilised for the empirical study for this thesis?

3.6 Methods

3.6.1 Design

This review follows the recent best practice guidance by PRISMA-P (Moher et al., 2010). A review protocol was registered on the PRISMA website (registration number: CRD42015020360). The review has undergone three stages. Stage 1 included combining all search terms in the four domains to identify the religious coping tools utilised in the research papers. In stage 2, the studies were narrowed down to validation studies that explored religious coping instrumentation. Thereafter, the psychometric characteristics of the tools, and the descriptive data from the validation studies, were extracted. Stage 3 involved the content analysis of the tools, based on the religious coping definition outlined earlier in Section 1.9. Inclusion and exclusion criteria were developed according to the systematic review's objectives. The objectives of the systematic review guided the selection of relevant publications according to the PICOS guidance (Participants of interest, Intervention delivered, Control group, Outcomes measures, Study design) (Liberati et al., 2009). Given the population of interest for this thesis, and the literature's focus on adult population, studies were included in the review only if participants were adults older than 18 years of age, and have been diagnosed with cancer. The setting included patients recruited from outpatients units and inpatient wards. Given the focus of the review, the outcome measure is any tool which measured religious coping.

Inclusion/Exclusion Criteria

Research studies were included if they were: involved with the development or further validation of a measure of religious coping in cancer research; in English language;

longitudinal, cohort or cross-sectional study; and investigated the psychometric characteristics of religious coping tools in the specified clinical population. Exclusion criteria included: qualitative and case studies papers, studies with no religious coping measure; the investigated group was a non-clinical population; only general questions about religiosity were asked; or single items about religiosity or spirituality were used. Papers meeting the inclusion criteria were subjected to further examination to retrieve religious coping tools. Instruments were excluded if:

1. Spiritual coping was conceptualised as separate from religious coping.
2. No data were available on the psychometric properties in a refereed journal.

3.6.2 Data sources and searches

Comprehensive search criteria were developed and implemented to locate all relevant articles for this review. More specifically, the objective was to cover all research articles involving the development or validation of religious coping measures in clinical cancer research.

Stage 1: Identification of measures

Data Sources. Seven electronic databases were searched to identify relevant articles for this review: PubMed, EMBASE (Experta Medica- Ovid), MEDLINE (Ovid), PsychINFO (EBSCO *host*), Web of Science (Core Collection), Academic Search Ultra, and CINAHL. The dates of coverage for each database and the number of citations found in each database are displayed in Table 3.1.

Table 3.1. Electronic Search and Number of Citations from each Database

Database	**Years searched**	**Number of documents**	**Updated search**	**New documents (from 2016 to 2020)**	**Number of documents**
PubMed	1947 to January 2016	443	February 2016 to February 2020	144	587
EMBASE (Excerpta Medica-Ovid)	1947 to January 2016	3315	February 2016 to February 2020	450	3765
Medline (Ovid)	1947 to January 2016	319	February 2016 to February 2020	1977	2296
PsychINFO (EMBSCO host)	1982 to January 2016	1536	February 2016 to February 2020	1001	2537
Web of Science (Core Collection)	1900 to January 2016	58	February 2016 to February 2020	150	208
Academic Search Ultra	1888 to January 2016	400	February 2016 to February 2020	1123	1523
CINAHL	1944 to January 2016	180	February 2016 to February 2020	364	544
Total		6251		5209	11,460

Searching other sources

In addition, hand searching (n=24) was done for all reference lists of all of the included studies displayed in Tables 3.3 and 3.4. Moreover, the reference lists of ten major relevant narrative reviews and meta-analyses (Lucchetti, Bassi, & Lucchetti, 2013; Lucchetti, Lucchetti, & Vallada, 2013; Monod et al., 2011; Park et al., 2015; Salsman et al., 2015; Schreiber & Brockopp, 2012; Selman, Harding, Gysels, Speck, & Higginson, 2011; Sherman et al., 2015; Thuné-Boyle et al., 2006; Viftrup, Hvidt, & Buus, 2013) were also checked for additional validation studies.

Search strategy:

The search strategy procedure comprised keywords and Medical Subject Headings (MeSH) identified to capture the development and/or further validation of religious coping tools among people with cancer. The results of individual searches were then combined with AND as shown in Table 3.2. The lead author (Z.A.) designed the search strategy, which was approved by two co-authors (P.A. and S.R.).

Table 3.2. Search Strategy

Search terms	
1	Cancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer
2	Religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv* OR God OR Spiritual support OR Spirit*
3	cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*
4	outcome OR assess* OR scale* OR psychometric* OR questionnaire* OR test measurement* OR instrument* OR develop* OR construct* valid* OR standardi* OR reliabili* OR rating* OR Test Validity OR rating Scale* OR psychometric* OR test construction OR test Reliability
5	Combine #1 AND #2 AND #3 AND #4

All citations were exported to the reference system Endnote, and duplicates were removed based on the rigorous criteria identified by (Bramer, Giustini, Jonge, Holland, & Bekhuis, 2016). The full search strategy for each of the databases is presented in Appendix 1.

3.6.3 Data collection and analysis

The Selection of Research Studies

The process of article selection was performed according to the (PRISMA) statement (Liberati et al., 2009). Figure 3.1. displays the study selection process. In the database search, two researchers (Z.A. and S.A.) independently screened studies for eligibility by reviewing the titles and abstracts based on the pre-defined criteria. If the inclusion criteria could not be decided, full articles were retrieved and the decision about the inclusion or exclusion of the paper was made accordingly. Two people reviewed each of the full text articles to decide on which papers to be included in the review. Random assignment of papers was done and reviewed independently by Z.A. and one of the following members (P.A., S.R., S.A., and I.B). Any discrepancies were resolved by consensus. Discrepancies emerged in 8.84 % of the studies. These disagreements were all resolved by discussion.

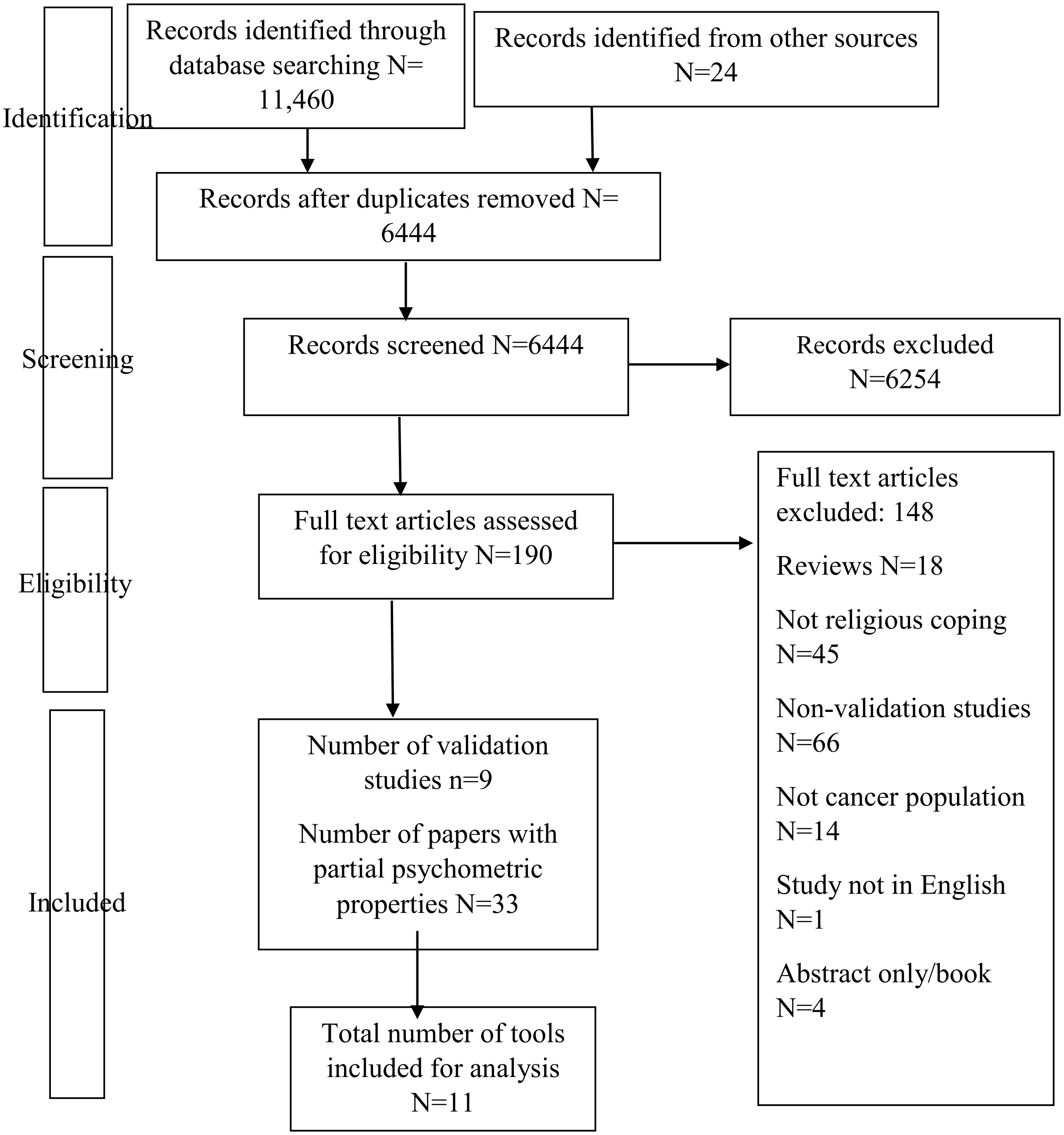


Figure 3.1. Flow Diagram of the Selection Process of Studies

3.6.4 Data extraction

3.6.4.1 Stage 1: Data extraction from the validation studies

Table 3.3. included the information which were summarised from the validation studies, which mainly aimed to develop or further validate a religious coping measure. Therefore, Table 3.3. included the following information: the authors' names, name and language of the tool, aims of the tool, number of items, and the sample size and site of cancer. The data extraction form for the validation studies is displayed in Appendix 2. Table 3.4 included a different set of studies which aimed to examine religious coping among a cancer population. Therefore, these studies did not have as its aim the validation of the religious coping measure. Rather, the studies in Table 3.4 only partially validated the religious coping measure by typically calculating the internal consistency of the measure. The purpose of including these studies in Table 3.4 was to provide a comprehensive picture about the psychometric properties of religious coping measures used in the literature. Table 3.4 included details about: the authors' names, the country of the research, the name of the tool, the psychometric property assessed, sample size, and its clinical characteristics.

3.6.4.2 Stage 2: Evaluation of the tools' psychometric properties

Psychometric data were extracted from the validation studies (in Table 3.3) according to the quality criteria developed by Terwee et al. (2007), and adapted by Selman et al. (2011) which is outlined in Table 3.5. Table 3.6 included the psychometric assessment of the religious coping measures in the validation studies. Both Z.A. and S.R. independently utilised Table 3.5 as a guide in the psychometric assessment of each religious coping tool. The following criteria were utilised in the assessment: (+) refers to adequate, (?) doubtful, (-) poor quality, or (0) unknown when the study did not include the required psychometric data on the tool (Selman et al., 2011). Any discrepancies in the ratings between Z.A. and S.R. were resolved through discussion. The discrepancy emerged in 8.64 % of the cases.

3.6.4.3 Stage 3: Assessment of the theoretical background of the religious coping measures

This stage aimed to assess the theoretical background of religious coping measures which are identified in the validation studies of Table 3.3. Table 3.7 included information about how these validation studies defined religious coping, and the theoretical foundations of these measures. The information covered in Table 3.7 includes: the authors' names, measure's name, theoretical foundations of the tool, and the definitions of religious coping.

3.6.4.4 Stage 4: The analysis of the items within the religious coping tools

Each item of the included tools in Table 3.3 were further analysed based on the multi-dimensional nature of religious coping discussed earlier in Section 3.4 (Pargament, 1997). The aim of stage 4 was to explore the integration of the multi-dimensional concept of religious coping from the cognitive, behavioural, emotional, relational/social, and spiritual perspectives into the included tools. The results of this stage is outlined in Table 3.8.

Step by step process of tools' analysis

Z.A. and S.R. individually analysed the items making up the religious coping tools. First, the items from all tools collected in stage 2 were included in the analysis except for tools whose authors could not be reached after several attempts of contacting them (Ways of Helping Questionnaire; Hamilton, Stewart, Crandell, & Lynn, 2009). Second, each item was categorised based on the dimension of religious coping it measures. Any discrepancies, which were found in 23.44 % of the items, were discussed and a consensus was reached. Table 3.8 included the results of the analysis of the items making up each religious coping tool.

3.7 Results

3.7.1 Stage 1: Identification of measures

A total of 11,460 records were identified through an electronic search of databases. After duplicates were removed, 6444 citations remained. Of those, 6254 were discarded because they did not meet the inclusion criteria of the review. The application of the inclusion/exclusion criteria to each full text article were independently screened by two reviewers, and the team was composed of five reviewers (Z.A, P.A., I.B., S.A., and S.R.). In total, 190 qualifying citations were identified. From these, 148 citations were excluded based on exclusion criteria: e.g. studies were either narrative or systematic literature reviews, the measure was not a religious coping tool, the study was not a validation study, or the language of the article was not in English (all excluded articles and the reason for exclusion are displayed in Appendix 3). A total of 9 articles are included in Table 3.3

(validation studies), while 30 articles with partial psychometric properties are shown in Table 3.4.

Q 1. What are the validated religious coping tools and their psychometric properties?

Table 3.3 displays the validation studies that aimed to primarily develop or further validate religious coping measures. Most studies have validated the religious coping measures in English (Bowman, Beitman, Palesh, Pérez, & Koopman, 2009; Hamilton et al., 2009; Hamilton, Crandell, Carter, & Lynn, 2010; Holt et al., 2009; Johnstone, Yoon, Franklin, Schopp, & Hinkebein, 2009; Rinaldis, Pakenham, Lynch, & Aitken, 2009), while Fillion, Kovacs, Gagnon, & Endler. (2002), Sharif et al. (2018), and Vespa et al. (2017) validated the scales into non-English language, French, Persian and Italian, respectively. Patients with various cancer sites were utilised in all of the included studies (Bowman et al., 2009; Hamilton et al., 2009; Hamilton et al., 2010; Holt et al., 2009; Johnstone et al., 2009; Sharif et al., 2018; Vespa et al. 2017), except for Fillion et al. (2002) and Rinaldis et al. (2009) as they included only people with breast cancer, and bowel cancer respectively.

Table 3.3. Overview of Validation Studies of Religious Coping Measures

Author/Year	Tool	Language of the tool	Aim of the measure	Number of RC items/total	Sample size and characteristics
Bowman et al., 2009	Cancer and Deity Questionnaire (Bowman et al., 2009)	English (U.S.A)	Assesses benevolent and abandoning God representations within the context of cancer	12/12	61 older patients newly diagnosed with cancer
Fillion et al., 2002	Shortened COPE (Carver et al., 1989)	Translated into French (Canada)	Assesses coping styles	2/28	132 patients undergoing radiation therapy for breast cancer
Hamilton et al., 2009	Ways of Helping Questionnaire (Hamilton et al., 2009)	English (U.S.A)	Assesses coping styles for older African American cancer survivors	4 from Help from God, 5 from Church/ family support/38	Phase 1: 28 African American cancer survivors. Phase 2: 32 of African American cancer survivors with breast cancer. Phase 3: 385 African American cancer survivors
Hamilton, Crandell, Carter, & Lynn, 2010	Perspectives of Support from God Scale (Hamilton, et al., 2010)	English (U.S.A)	Assesses the communicative exchange between individuals and God during struggles with cancer	15/15	317 African American cancer survivors

Author/Year	**Tool**	**Language of the tool**	**Aim of the measure**	**Number of RC items/total**	**Sample size and characteristics**
Holt et al., 2009	God as a Helper, God as a Healer, Faith in Healing (Holt et al., 2009)	English (U.S.A)	God as a Helper: assesses the perceived help from God in coping with cancer. God as a Healer: reflects the perception of God as a healer. Faith in healing: reflects the idea that enough faith can heal cancer	11/11, 8/8, 7/7	100 African American patients with mixed cancer sites except for skin cancer
Johnstone et al., 2009	Religious coping scale/BMMRS (Abeles, Ellison, George, Idler, & Krause, 1999)	English (U.S.A)	Assesses the multidimensional nature of religious/spiritual coping	7/25	164 patients with various health disorders (only 25 people with cancer)
Rinaldis et al., 2009	Coping with Colorectal Cancer Measure (Rinaldis et al., 2009)	English (Australia)	Assesses coping strategies used by patients with colorectal cancer	3/32	1800 patients with bowel cancer

Author/Year	Tool	Language of the tool	Aim of the measure	Number of RC items/total	Sample size and characteristics
Sharif et al., 2018	Persian Brief RCOPE (Pargament et al., 2000) (Sharif, Sharif, Goudarzian, Allen, Jamali, Heydari-Gorji, 2017)	Persian (Iran)	Assesses positive and negative religious coping	14/14	482 mixed cancer patients
Vespa et al., 2017	Religious coping scale/BMMRS (Abeles, Ellison, George, Idler, & Krause, 1999)	Italian (Italy)	Assesses positive and negative religious coping	16/38	338 mixed population of various medical diseases (cancer, cardiovascular diseases and diabetes), and a control group of healthy individuals

3.7.1.1 Studies that partially validated religious coping measures not as a main aim of the study

In order to provide a fully comprehensive review of all religious coping measures with partial psychometric properties, the objective of Table 3.4 was to provide details on the studies that validated religious coping measures, but not as a main aim of these studies. Thus, these studies provided limited psychometric properties such as internal consistency, which was often measured in those studies. In 15 out of the 30 studies, the Brief RCOPE, or a variation of it, was utilised to measure religious coping (Bizo, Opre, & Rusu, 2014; Fitchett et al., 2004; Holt et al., 2011; Manning-Walsh, 2005; Mesquita et al., 2013; Ng, Mohamed, Sulaiman, & Zainal, 2017; Pedersen et al., 2013; Phelps et al., 2009; Rand et al., 2012; Sherman, Plante, Simonton, Latif, & Anaissie., 2009; Sherman, Simonton, Latif, Spohn, & Tricot, 2005; Tarakeshwar et al., 2006; Trevino, Balboni, Zollfrank, Balboni, & Prigerson, 2014; Zwingmann et al., 2008; Zwingmann et al., 2006).

Table 3.4. Studies which Partially Validated Religious Coping Measures not as a Main Aim

Author/year	Country	Measure of RC	Psychometric Property	Sample size and site of cancer
Fitchett et al., 2004	U.S.A.	Brief RCOPE (Pargament et al., 2000)	Internal consistency (0.90, 0.77,)[a]	A mixed group of patients with medical diseases (71 patients with diabetes, 70 patients with congestive heart failure, and 97 outpatients with cancer)

Author/year	**Country**	**Measure of RC**	**Psychometric Property**	**Sample size and site of cancer**
Trevino et al., 2014	U.S.A.	Brief RCOPE (Pargament et al., 2000)	Internal consistency (0.90, 0.79)	603 advanced cancer patients
Tarakeshwar et al., 2006	U.S.A.	Brief RCOPE, MMRS (7 items from each) (Pargament et al., 2000)	Predictive validity and internal consistency (0.73, 0.97).	170 advanced cancer patients
Phelps et al., 2009	U.S.A.	Brief RCOPE (Pargament et al., 2000)	Internal consistency (0.90-0.81)	345 advanced cancer patients
Sherman et al., 2009	U.S.A.	Brief RCOPE (Pargament et al., 2000)	Internal consistency (0.93, 0.68)	94 myeloma patients
Sherman et al., 2005	U.S.A.	Brief RCOPE (Pargament et al., 2000)	Internal consistency (0.92-0.90)	213 multiple myeloma patients
Holt et al., 2011	U.S.A.	Brief RCOPE (Pargament et al., 1998)	Factorial validity, internal consistency (0.88-0.81)	100 African American patients with mixed cancer sites
Manning-Walsh, 2005	U.S.A.	Brief RCOPE (negative RC scale)(Pargament et al., 2000)	Internal consistency (0.79)	100 women with breast cancer
Rand et al., 2012	U.S.A.	Brief RCOPE (Pargament et al., 2000)	Internal consistency (0.92, 0.62)	86 men with advanced cancer
Bizo et al., 2014	Romania	Brief RCOPE (Pargament et al., 2000)	Internal consistency (0.83, 0.85)	38 patients with breast cancer
Zwingmann et al., 2006	Germany	Brief RCOPE-Adapted to German (Pargament et al., 2000)	Exploratory factor analysis, internal consistency (0.97-0.89)	156 breast cancer patients

Author/year	**Country**	**Measure of RC**	**Psychometric Property**	**Sample size and site of cancer**
Zwingmann et al., 2008	Germany	Brief RCOPE-Adapted to German German (Pargament et al., 1998, 2000)	Exploratory factor analysis, internal consistency (0.98,0.89)	167 German patients with breast cancer
Pedersen et al., 2013	Denmark	Brief RCOPE-Revised (Pargament et al., 1998)	Internal consistency (0.94,0.60)	Mixed group of patients with lung diseases (lung cancer n=37)
Ng et al., 2017	Malaysia	Brief RCOPE (Pargament et al., 2000)	Internal consistency (0.97, 0.88)	A mixed group of 200 patients with cancer
Mesquita et al., 2013	Brazil	Brief-SRCOPE (adapted from RCOPE) (Pargament et al., 2000)(Panzini & Bandeira, 2005)	Internal consistency (0.90)	101 mixed cancer patients
Gall et al., 2011	Canada	RCOPE (representative subset) (Pargament et al., 2000)	Internal consistency > 0.65 for 9 out of 10 scales used	87 women with breast cancer
Gall & Bilodeau, 2020	Canada	RCOPE (short version)(Pargament et al., 2000)	Internal consistency (0.58-0.83)	56 women with breast cancer, and 82 with benign diagnosis
Hebert et al., 2009	U.S.A.	RCOPE (two items from each scale)(Pargament et al., 2000)	Factor analysis	198 women with stage I and II, 86 stage IV breast cancer
Thuné-Boyle et al., 2011	U.K.	RCOPE (Pargament et al., 2000)	Factor analysis, internal consistency (0.72, 0.96)	160 newly diagnosed breast cancer patients
Gall et al., 2009	Canada	RCOPE (2/scale) (Pargament et al., 2000)	Internal consistency (0.51-0.89)	87 patients with breast cancer, 151 with benign tumours

Author/year	**Country**	**Measure of RC**	**Psychometric Property**	**Sample size and site of cancer**
Sabanciogullari & Yilmaz, 2019	Turkey	Religious Coping Scale (Abu Raiya, Pargament, Mahoney, & Stein, 2008)	Internal consistency (0.74)	133 mixed cancer patients
Filipp et al., 1990	Germany	Search for Meaning in Religion (4 items)	Exploratory and confirmatory analysis, internal consistency (0.84-0.83)	332 patients with cancer
Nairn & Merluzzi, 2003	U.S.A.	Religious Problem Solving Scale (Pargament et al., 1988)	Factor analysis and internal consistency (0.84-0.96)	292 patients with cancer
Polite et al., 2018	U.S.A.	Religious Problem Solving Scale (Pargament et al., 1988)	Internal consistency (0.96, 0.97)	407 patients with primary invasive colon cancer
Elumelu et al., 2015	Iran	Brief COPE (Carver, 1997)	Internal consistency (0.69)	110 patients undergoing radiotherapy for breast cancer
Park, Edmondson, & Blank, 2009	U.S.A.	Brief COPE (Carver, 1997)	Internal consistency (0.91-0.74)	172 mixed cancer patients
Carver et al., 1993	U.S.A.	COPE, 3/4 items (Carver et al., 1989)	Internal consistency (0.65-0.90)	59 patients with breast cancer
Vespa et al., 2011	U.S.A.	BMMRS (Abeles, Ellison, George, Idler, & Krause, 1999)	Factor analysis, Internal consistency (0.94)	88 patients with lung cancer, and 65 patients with large bowel cancer
Hamrick & Diefenback, 2006	U.S.A.	MRR (religious coping and spiritual coping)(Abeles, Ellison, George, Idler, & Krause, 1999)	Factor analysis, internal consistency (0.87, 0.92)	254 prostate cancer patients, and 238 normative sample

Author/year	Country	Measure of RC	Psychometric Property	Sample size and site of cancer
Park, Edmondson, Hale-Smith, Thomas, & Blank, 2009	U.S.A.	Spiritual Strain Scale(Struggle subscale)(Exline, Yali, & Sanderson, 2000)	Internal consistency (0.83)	167 mixed cancer patients

[a] Refers to internal consistency for positive and negative religious coping scales, respectively

Although studies came from various cultural contexts, the majority of these studies were conducted in the United States (Carver et al., 1993; Fitchett et al., 2004; Hamrick & Diefenback, 2006; Hebert et al., 2009; Holt et al., 2011; Tarakeshwar et al., 2006; Trevino et al., 2014; Nairn & Merluzzi, 2003; Phelps et al., 2009; Sherman et al., 2009; Sherman et al., 2005; Park et al., 2009; Park et al., 2009; Phelps et al., 2009; Manning-Walsh, 2005; Vespa et al., 2011; Polite et al., 2018; Rand et al., 2012). All of the studies included in Table 3.4 examined at least internal consistency as a psychometric property for the religious coping tool, and all found this to be acceptable. Additionally, for the Brief RCOPE, all of the studies utilising this measure provided the internal consistency for both the positive and negative scales of the measure, which ranged from 0.62 to 0.98. Although Gall and colleagues (2009) found a Cronbach's alpha of 0.51 for one of the RCOPE subscales, this was the full version of the measure and not the Brief RCOPE. The full RCOPE is not commonly utilised in the literature given its length, which makes it demanding to use in clinical settings.

Several studies have conducted factor analysis for the religious coping measures. Thuné-Boyle et al. (2011) conducted factor analysis for the scales they utilised from the

RCOPE to find out that eight factors emerged: positive religious coping, religious coping to achieve life transformation, feelings of being punished by God, looking for spiritual purity, looking for social support from religious community, passive religious deferral, re-evaluation of God's power, and bargaining with God. Hebert et al. (2009) have also conducted factor analysis for only the four items they have selected from the RCOPE, and this yielded two factors: negative and positive religious coping. Additionally, factor analyses for the Brief RCOPE was conducted by Zwingmann et al. (2006, 2008) for the German version of the Brief RCOPE, and Holt et al. (2011) for the English version of the Brief RCOPE to find out that two factors emerged: positive and negative religious coping.

Three other measures were also subjected to factor analysis (Hamrick & Diefenbach, 2006; Nairn & Merluzzi, 2003), or Principle Component Analysis (PCA) (Vespa et al., 2011). Hamrick and Diefenbach (2006) conducted a factor analysis on the selected 14 items from the spiritual coping scale from the Measure of Religiousness and Spirituality (MRR) to find out that two factors emerged: religious coping practices and spiritual coping. Additionally, Vespa et al. (2011) did factor analysis for the Brief Multidimensional Measure of Religiousness and Spirituality (BMMRS) to find out that three factors emerged from the (PCA) which were: inner spirituality, spiritual coping, and spiritual well-being. Nairn and Merluzzi (2003) also conducted factor analysis for the Religious Problem Solving Scale to find out that two factors emerged: one factor for the deferring and collaborative problem solving, while the second factor was the self-directing scale.

3.7.2 Stage 2: Evaluation of the tools' psychometric properties

Descriptive synthesis was implemented to describe the tools' psychometric properties that have been extracted from the validation studies (Table 3.3.). More specifically, the religious coping tools were assessed according to the psychometric criteria displayed in Table 3.5. The psychometric properties of the religious coping measures in the validation studies are displayed in Table 3.6.

Table 3.5. Quality Criteria for assessing the Psychometric Properties of Religious Coping Tools, adapted from Selman's et al. (2011)

Property	**Definition**	**Quality criteria** [a,b]
1.Content validity	The extent to which the domain of interest is comprehensively sampled by items in the questionnaire	+ A clear description is provided of the measurement aim, the target population, the concepts that are being measured, and the item selection AND target population and (investigators OR experts) were involved in item selection (e.g., through focus groups, surveys, etc.) AND (if translated) rigorous methods of translation and adaptation were used and described. ? A clear description of the above-mentioned aspects is lacking OR only target population involved OR doubtful design or method (e.g., no adaptation if translated). -No target population involvement. 0 No information found on target population involvement.
2.Internal consistency	The extent to which items in a (sub) scale are intercorrelated, thus measuring the same construct.	+ Factor structure tested through factor analyses performed on adequate sample size (7 × #items and ≥ 100) AND Cronbach's alpha(s) calculated per dimension AND Cronbach's alpha (s) between 0.70 and 0.95 for the total score and ≥ 50% of the dimensions reported. ? No factor analysis OR doubtful design or method. -Cronbach's alpha (s) < 0.70 or >0.95, despite adequate design and method. 0 no information found on internal consistency.

Property	**Definition**	**Quality criteria**
3.Criterion validity	The extent to which scores on a particular questionnaire relate to a gold standard.	+ Convincing argument that gold standard existed for comparison purposes (i.e. “gold” for the outcome measured) AND correlation with gold standard ≥ 0.70. ? No convincing argument that gold standard is “gold” OR doubtful design or method. -Correlation with gold standard is <0.70 despite adequate design and method. 0 No information found on criterion validity.
4. Construct validity	The extent to which scores on a particular questionnaire relate to other measures in a manner that is consistent with theoretically derived hypotheses concerning the concepts that are being measured.	+ Specific hypotheses were formulated AND at least 75% of the results are in accordance with these hypotheses. ? Doubtful design or method (e.g., no hypotheses). -Less than 75% of hypotheses were confirmed, despite adequate design and methods. 0 No information found on construct validity.
5.1Reproducibility Agreement (interrater reliability)	The extent to which the scores on repeated measures are close to each other (absolute measurement error).	+MIC < SDC OR MIC outside the LOA OR convincing arguments that agreement is acceptable. ? Doubtful design or method OR (MIC not defined AND no convincing arguments that agreement is acceptable). -MIC ≥ SDC OR MIC equals or inside LOA, despite adequate design and method. 0 No information found on agreement.
5.2 Test-retest reliability	The extent to which patients can be distinguished from each other, despite measurement errors (relative measurement error).	+ ICC or weighted Kappa ≥ 0.70 for ≥ 50% of ICCs/weighted Kappa values reported. ? Doubtful design or method (e.g., time interval not mentioned). -ICC or weighted Kappa < 0.70 for ≥ 50% of ICCs/weighted Kappa values reported, despite adequate design and method. 0 No information found on reliability.
6.Responsivenes	The ability of a questionnaire to detect clinically important changes over time.	+ In the context of an appropriate study design, SDC or SDC<MIC OR MIC outside the LOA OR responsiveness ratio of Guyatt (RR)>1.96 OR AUC ≥0.70. ? Doubtful design or method. - SDC or SDC ≥ MIC OR MIC equals or inside LOA OR RR ≤ 1.96 OR AUC< 0.70, despite adequate design and methods. 0 No information found on responsiveness.

Property	Definition	Quality criteria
7. Floor and ceiling effects	The number of respondents who achieved the lowest or highest possible score.	+ ≤ 15% of the respondents achieved the highest or lowest possible scores. ? Doubtful design or method. - >15% of the respondents achieved the highest or lowest possible scores, despite adequate design and methods. 0 No information found on floor and ceiling effects.
8.Interpretability	The degree to which one can assign qualitative meaning to quantitative scores.	+ Mean and SD scores presented of at least four relevant subgroups of patients. ? Doubtful design or method OR less than four subgroups. 0 No information found on interpretation.

Table adapted from Selman et al. (2011). SDC= smallest detectable change; LOA= limits of agreement; ICC = intraclass correlation; SD= standard deviation; AUC= area under the receiver operating characteristics curve. [a] + = positive rating; ? = indeterminate rating; - = negative rating; 0= no information available.

[b] Doubtful design or method = lacking a clear description of the design or methods of the study, sample size smaller than 50 subjects (should be at least 50 in every (subgroup) analysis, or important methodological weakness in the design or execution of the study).

Content, Criterion, and Construct Validity of the religious coping tool

Content validity. Seven tools were rated positively for content validity: the Cancer and Deity Measure (Bowman et al., 2008), the Ways of Helping Questionnaire (Hamilton et al., 2009), the Perspectives of Support from God scale (Hamilton et al., 2010), the three measures of the religious involvement in cancer (Holt et al., 2009), and the BMMRS (Johnstone et al., 2009). All of the measures which were rated positively met the content validity criteria identified in Table 3.5. The shortened COPE was rated as indeterminate (?) because there was no clear description of the adaptations made after the translation of the tool (for the shortened COPE, the translation was carried out from English to French) (Fillion et al., 2002). The quality criteria for content validity requires that rigorous methods of translation and adaptation to be carried out if a measure is translated into another language. The Coping with Colorectal Cancer measure also received an indeterminate rating (?) on content validity because lead authors in the field were not consulted when selecting the items for the measure (Rinaldis et al., 2009). To meet the criteria for content validity, it is essential that both the target population of the measure, and the experts in the field to be included when selecting the items making up the measure. The Persian RCOPE received an indeterminate rating (?) because the authors did not provide information about the translation procedures (Sharif et al., 2018). Similarly, the Italian version of the BMMRS was rated an indeterminate (?) because no information were provided in the study about methods of translation and adaptation (Vespa et al., 2017).

In terms of the internal consistency, all of the measures, except for the religious/spiritual coping scale (Vespa et al., 2017), from the validation studies displayed in Table 3.3 met the identified psychometric criteria. This is because the factor structure was tested through factor analysis, and this process was done on an appropriate sample size as determined by the quality criteria in Table 3.5. Cronbach's alpha was reported for all of the tool's dimensions, and the range for Cronbach's alpha for the total score was between 0.7 and 0.95, and 50% or more of the dimensions of the measures were reported. The religious/spiritual coping scale (Vespa et al., 2017) received an indeterminate rating (?) because no factor analysis was conducted for the measure.

Criterion validity assesses whether the scores within the measure are correlated with scores of a gold standard measure. According to Mokkink et al. (2010), a gold standard should be the long version of a specific measure. Within the context of this review, this means that the study should have correlated the short version of a measure with its long version. The correlation should be equal to or more than 0.70. None of the tools correlated the religious coping measure with the long version standard measure. As a result, none of the 11 tools met this criteria for criterion validity.

Table 3.6. The Psychometric Properties of Religious Coping Measures Reported in the Validation Studies

Measure	Co.V	IC	Cr.V	Con.V	I-R	T-R	R	F/C effects	I
Brief Persian RCOPE (Sharif et al., 2018)	?	+	0	+	+	+	+	0	?
Cancer and Deity Questionnaire (Bowman et al., 2009)	+	+	0	?	0	_	0	?	?
Coping with Colorectal Cancer Measure (Rinaldis et al., 2009)	?	+	0	0	+	+	+	0	+
God as a Helper, God as a Healer, and Faith in Healing (measures of religious involvement and the cancer experience) (Holt et al., 2009)	+	+	0	-	0	0	0	-	?
Perspectives of Support from God scale (Hamilton, Crandell, Carter, & Lynn, 2010)	+	+	0	+	0	0	0	-	?
Religious/spiritual coping scale (BMMRS) (Johnstone et al., 2009)	+	+	0	0	0	0	0	0	?
Religious/spiritual coping scale in Italian (BMMRS) (Vespa et al., 2017)	?	?	0	0	0	+	0	0	?
Shortened COPE (Fillion et al., 2002)	?	+	0	+	+	+	0	0	?
Ways of Helping Questionnaire (Hamilton et al., 2009)	+	+	0	+	0	+	0	0	?

Note. Content Validity: Co.V, Internal Consistency: I.C, Criterion Validity: Cr.V, Construct Validity: Con.V, Agreement (inter-rater reliability): I-R, Test-Retest reliability: T-R, Responsiveness: R, Floor/Ceiling effects: F/C, Interpretability: I.
+ = positive rating; ? = indeterminate rating; - = negative rating; 0= no information available.
Doubtful design or method = lacking a clear description of the design or methods of the study, sample size smaller than 50 subjects (should be at least 50 in every (subgroup) analysis), or important methodological weakness in the design or execution of the study.

Construct validity was evaluated based on the theoretical association found between the scores in the religious coping measure and other measures. In others words, specific hypotheses about the relationships between the religious coping tool and other measures should be hypothesised, and the agreement with these theoretically based hypotheses should be 75 % or more. Only the Brief Persian RCOPE, Perspectives of Support from God Scale, shortened COPE, and Ways of Helping Questionnaire met the criteria for construct validity. The Cancer and Deity Questionnaire did not meet the criterion as no hypotheses were provided on the concepts measured. The God as a Helper, God as a Healer, and Faith in Healing measures did not meet the criterion for construct validity as less than 75% of the findings met the hypotheses of the study. The remaining tools were rated as (0) because of the lack of data on construct validity in these studies.

Reproducibility. Information on agreement, which included inter-rater reliability, refers to the similarity in scores over repeated measures. Inter-rater reliability was only provided for the Brief Persian RCOPE, the Coping with Colorectal Cancer measure, and the shortened COPE. The remaining tools did not provide information on inter-rater reliability. Therefore, these measures received a rating of (0).

In terms of the test-retest reliability, which is the tools' ability to detect differences between individuals regardless of potential errors in the assessment, five tools were rated positively for meeting the criterion: Brief Persian RCOPE, Coping with Colorectal Cancer measure, Italian version of the BMMRS, the shortened COPE, and the Ways of Helping Questionnaire. The Cancer and Deity Questionnaire was rated as negative (-) for test-retest reliability. Given the lack of information for the remaining measures, they were given a rating of (0).

Responsiveness. Only two studies (Rinaldis et al., 2009; Sharif et al., 2018) provided information on the responsiveness of the measure; namely the Brief Persian RCOPE (Sharif et al., 2018), and the Coping with Colorectal Cancer measure (Rinaldis et al., 2009). Hence, these two measures were rated positively for responsiveness. The rest of the studies were given a rating of (0) because they did not provide information on responsiveness.

Interpretability. The criteria for interpretability require the descriptive statistics (means and S.D. of scores) for a minimum of four subgroups of the target population in the study. Only Coping with Colorectal Cancer measure met the criterion for interpretability because of the inclusion of four groups of patients. The rest of the measures received an indeterminate rating because of the absence of four subgroups of patients in the studies.

Q 2. What is the theoretical basis of religious coping measures in cancer research?

3.7.3 Stage 3: Assessment of the theoretical background of the religious coping measures

Table 3.7 describes the theoretical basis of the included religious coping measures. Only four measures were based on a specific psychological theory: the Cancer and Deity Measure (Bowman et al, 2008), the Perspectives of Support from God scale (Hamilton et al., 2010), the BMMRS (Johnstone et al., 2009; Vespa et al., 2017), and the Brief Persian

RCOPE (Sharif et al., 2018). As cited by Bowman et al. (2009), the Cancer and Deity Measure was based on the object relations theory (Fairbairn, 1943, 1952; Guntrip, 1956, 1969; Winnicott, 1953, 1966), which suggests that people cope with a cancer diagnosis through the activation of the specific mental representations they have about God. Although Bowman et al. (2009) described the aim of their measure (Table 3.3), they did not specifically define religious coping in the study. Additionally, Bowman et al. (2009) mentioned that they employed Pargament et al.'s (1990) 24-item measure of the Styles of Religious Coping Scale in the selection of items for their measure, but they did not specifically indicate to what extent they utilised Pargament et al.'s (1990) measure.

The Perspective of Support from God scale (Hamilton et al., 2010) was based on Reed's (1992) theoretical work on spirituality, which defined it as a meaning-making mechanism that could be achieved via the person's relationship with God or higher power. Therefore, a specific definition of religious coping was provided within the context of a person's relationship with God. The BMMRS (Johnstone et al., 2009; Vespa et al., 2017) and the Brief Persian RCOPE (Sharif et al., 2018) shared the same definition of religious coping, and theoretical foundation of Pargament's religious coping theory (Pargament, 1997) (Section 2.4.2).

As cited by Carver et al. (1989), the COPE measure was based on the stress and coping model (Folkman & Lazarus, 1980), and a behavioural model of self-regulation (Carver & Scheier, 1981, 1983, 1985; Scheier & Carver, 1988). Although several subscales of the shortened COPE (Fillion et al., 2002) were theoretically-based, the turning to religion scale (Carver et al., 1993) was based on the study conducted by McCrae and Costa (1986). Meaning, Carver et al. (1989) relied on the findings from the study by McCrae and Costa (1986) who found that coping, which stemmed from religion, was helpful for some of their participants. As a consequence of these findings, Carver et al. (1989) included a scale which measured people's use of religion as a method of coping.

Table 3.7. Theoretical Foundation and Definition of Religious Coping in the RC Tools identified in the Validation Studies

Authors	**Measure**	**Theoretical foundation of the tool**	**Definitions of religious coping**
Bowman et al., 2008	Cancer and Deity measure	The object relations theory (Fairbairn, 1943, 1952; Guntrip, 1956, 1969; Winnicott, 1953, 1966)	Not provided
Fillion et al., 2002	Shortened COPE	The coping theory (Carver & Scheier, 1981, 1983, 1985; Scheier & Carver, 1988)	Not provided
Sharif et al., 2018	Brief Persian RCOPE	Pargament's theory of religious coping (Pargament, 1997)	The specific embedded methods related to the sacred
Rinaldis et al., 2009	Coping with Colorectal Cancer measure	Not provided	Not provided
Hamilton et al., 2009	Ways of Helping Questionnaire	Not provided	Not provided
Hamilton et al., 2010	Perspective of Support from God scale	Reed's (1992) theory of spirituality (Reed, 1992)	Spirituality was defined as the rapport between a person and God
Holt et al., 2009	God as a healer God as a helper Faith in healing	Not Provided	Not provided
Johnstone et al., 2009 and Vespa et al., 2017	BMMRS	Pargament's theory of religious coping (Pargament 1997)	The specific methods related to the sacred

The measures which were not based on a specific theory of religious coping were: the Coping with Colorectal Cancer measure (Rinaldis et al., 2009), the Ways of Helping Questionnaire (Hamilton et al., 2009), God as a Helper, God as a Healer, and Faith in Healing measures (Holt et al., 2009). Items from the Coping with Colorectal Cancer Measure (Rinaldis et al., 2009) were generated through interviews and focus groups, and authors indicated that 90% of the participants' answers echoed items from existing tools in the field. Additionally, Rinaldis et al. (2009) specifically cited three main resources (Billings & Moos, 1981; Carver et al., 1989; Vitaliano, Russo, Carr, Maiuro, & Becker, 1985) in which they adapted some items from to include in their measure. Therefore, some of the items included in this measure could be based on psychological theory. However, because the cited sources (Billings & Moos, 1981; Carver et al., 1989; Vitaliano et al, 1985) do not include a religious coping theory, it is possible that the religion items in the Coping with Colorectal Cancer measure were not based on a specific theory of religious coping. The Ways of Helping Questionnaire, and Holt et al's. (2009) three measures: God as a Healer, God as a Helper and Faith in Healing were not based on a specific theory.

Q 3. How are the items making up the religious coping measures divided into the cognitive, behavioural, emotional, relational, and spiritual domains?

3.7.4 Stage 4: The analysis of the items within the religious coping tools

Cognitive religious coping

The evaluation of the components of religious coping measures is displayed in Table 3.8. Seven instruments focused on the cognitive domain of religious coping: Brief Persian RCOPE, Cancer and Deity Questionnaire, Faith in Healing, God as a Helper, God as a Healer, Perspectives of Support from God scale, and the religious coping scale from the BMMRS. Both Coping with Colorectal Cancer measure and the shortened COPE did not include any item measuring the cognitive domain of religious coping. Measures which relied more heavily on positive cognitive coping were the God as a Healer measure, Perspectives of Support from God scale, Faith in Healing measure, God as a Helper measure, followed by the Cancer and Deity Questionnaire.

Four measures included items measuring the negative cognitive domain of religious coping: the Brief Persian RCOPE, the Cancer and Deity Questionnaire, Faith in Healing measure, and Perspectives of Support from God scale. An example of positive cognitive coping comes from Faith in Healing measure: “Without God, I would not have made it through cancer”. An example of negative cognitive coping comes from the Perspectives of Support from God scale: “God allows me to suffer”.

Emotional Religious coping

The second most common domain was the emotional domain. Seven tools had items coded within this domain, namely: the Brief Persian RCOPE, the Cancer and Deity Questionnaire, the Coping with Colorectal Cancer measure, the Faith in Healing measure, God as a Helper measure, the Perspectives of Support from God scale, and the shortened COPE. An example of positive emotional coping from the shortened COPE is: “I have been trying to find comfort in my religion or spiritual beliefs”. Negative emotional coping was coded in two measures: the Brief Persian RCOPE, and the Cancer and Deity

Table 3.8 The Distribution of the Religious Coping items in the six domains proposed by Pargament (1997) (Cognitive, Emotional, Behavioural, Relational, and Spiritual)

Tool	**Cognitive**		**Emotional**		**Behavioural**		**Relational**		**Spiritual**		**Double coded**	
	P	**N**	**P**	**N**	**P**	**N**	**P**	**N**	**P**	**N**	**P**	**N**
Brief Persian RCOPE		28.57		7.14				7.14			50	7.14
Cancer and Deity Questionnaire	25	16.67	8.33	8.33					16.67	8.33		16.67
Coping with Colorectal Cancer Measure			66.67		33.33							
Faith in Healing	57.14	14.29	28.57									
God as a Helper	45.45		18.18								36.36	
God as a Healer	100											
Perspectives of Support from God scale	60	6.67	6.67		20						6.67	
Religious coping scale-BMMRS	16.67										50	33.33
Shortened COPE			50		50							

Note. The numbers are percentages which reflect the distribution of all items in the selected measures. For the shortened COPE and Coping with Colorectal Cancer measure, the percentages only refer to the religious coping items within the measure. P: Refers to positive items, N: Refers to negative items.

and Deity Questionnaire. An example on negative emotional coping from the Cancer and Deity Questionnnaire is “Before I had cancer, God felt more powerful than God does now”.

Behavioural Religious coping

The behavioural domain was utilised in only three measures: Coping with Colorectal Cancer measure, Perspectives of Support from God scale, and the shortened COPE. The shortened COPE and the Coping with Colorectal Cancer measure utilised similar items (i.e. the use of meditation or prayer as a coping method). The Perspectives of Support from God scale incorporated less items within the behavioural domain. None of the three tools that included the behavioural items contained items which belonged to the negative behavioural domain. Six measures did not include items on the behavioural domain: Brief Persian RCOPE, the Cancer and Deity Questionnaire, Faith in Healing measure, God as a Helper measure, God as a Healer measure, and religious coping scale from the BMMRS.

Relational religious coping

Only one measure, the Brief Persian RCOPE, utilised negative relational coping. An example from this domain from the latter measure is “Wondered whether my church had abandoned me”.

Spiritual aspect of religious coping

Only one measure, the Cancer and Deity Questionnaire, had items that were coded within the spiritual domain. The Cancer and Deity Questionnaire defined the spiritual dimension as the relationship between the person and God. The measure also assesses the positive as well as the negative aspects of a person's relationship with God. More emphasis have been given to the positive side of the spiritual domain. An example of negative spiritual coping from the Cancer and Deity measure is "At times I feel God has deserted me". An example on the positive spiritual coping is "I feel close to God from day to day".

Double coded items in selected measures

Five tools had items that belonged to more than one domain: the Persian Brief RCOPE, the Cancer and Deity Questionnaire, God as a Helper measure, Perspectives of Support from God scale, and the religious coping scale from the BMMRS. The measure which had the highest number of items that were double coded is the religious coping scale from the BMMRS (i.e. 5/6 items). An example from a double coded item from the religious coping scale from the BMMRS is "I look to God for strength, support, guidance". This item was coded in both the positive spiritual and emotional domains. In yet another example from God as a helper, the item "God gave me guidance through my cancer experience", was coded in the positive cognitive and the emotional domain. The following measures did not include items which were double coded: Coping with Colorectal cancer measure, Faith in Healing measure, God as a Healer, and the shortened COPE.

Q4. What is the most appropriate religious coping measure to be used for the empirical study of this thesis?

The validation studies have identified 11 religious coping tools which have been developed or validated as a main aim of the study (Table 3.3), while 10 tools have been identified from studies that have partially validated the religious coping measure, but not as a main aim of the study (Table 3.4). However, validation studies provided limited psychometric properties for these religious coping tools as identified in Table 3.6. Additionally, all of the tools displayed in Table 3.3 might not suitable for use for the population of interest of this thesis because these tools have been specifically developed for certain populations such as African-American cancer survivors (Holt et al., 2009; Hamilton et al., 2009; Hamilton et al., 2010), people with colorectal cancer (Rinaldis et al., 2009), Iranian people with cancer (Sharif et al., 2018), American and Italian people with cancer (Johnstone et al., 2009; Vespa et al., 2017), French Canadian women with breast cancer (Fillion et al., 2002), or American people with cancer (Bowman et al., 2009).

As a consequence, Table 3.4 was further examined for the selection of suitable religious coping tools for the empirical study of this thesis, in which the Brief RCOPE seemed as a suitable tool as it was the most frequently utilised and examined tool in these studies. The reported internal consistency ranged from (0.97-0.60) for the studies that utilised the Brief RCOPE. Moreover, three studies (Holt et al., 2011; Zwingmann et al., 2006, 2008) conducted factor analyses for the English and German versions of the Brief RCOPE to identify two factors: positive and negative religious coping. These were the same factors which have been originally identified in the initial studies conducted by Pargament et al. (2011) on non-cancer populations.

In terms of the measure's theoretical background, out of all of the measures reviewed and covered in this review, the Brief RCOPE was the only tool which was based on a comprehensive religious coping theory (Pargament, 1997). According to the above mentioned reasons which are linked to the psychometric evidence of the measure, and the theoretical basis of the measure, it stands out to reason that the brief RCOPE could be the most suitable measure to be utilised for the empirical study of the current thesis.

3.8 Discussion

This systematic review evaluated the psychometric characteristics, theoretical basis, and content of the religious coping tools and subscales that have been used in clinical cancer literature. This section summarises and discusses the main findings, relates it to the relevant psycho-oncology literature, and highlights the clinical and research implications for cancer care. This systematic review differs from previous reviews in its focus on religious coping measures which conceptualised spirituality as an aspect of religion. It also utilised Pargament's theory of religious coping in analysing the items making up these measures from a cognitive, behavioural, emotional, relational, and spiritual perspectives, further adding a deeper understanding of the domains that these scales covered.

3.8.1 Summary and discussion of main findings

3.8.1.1 The validated religious coping tools and their psychometric properties

This review provided a comprehensive updated assessment of the psychometric characteristics of 21 religious coping measures used in cancer research. The first 11 tools have been specifically developed or validated within the cancer context (Table 3.3), while the rest of tools were partially validated, not as a main aim of the studies (Table 3.4). Although the studies in Table 3.3 aimed to develop or further validate religious coping measures, these studies did not, in fact, provide a comprehensive assessment on most of the psychometric domains such as criterion and construct validity, inter-rater reliability, test-retest reliability, responsiveness, floor and ceiling effects, and interpretability. This observation was previously made by Selman et al. (2011) but in regards to measures of spirituality within palliative populations, which further reflect the psychometric problems within these measures.

The measures with the strongest psychometric properties were the Brief Persian RCOPE and the Coping with Colorectal Cancer measure. Both of these measures demonstrated good internal consistency, inter-rater reliability, test-retest reliability, and responsiveness. Further examination of the construct validity for the Brief Persian RCOPE, and floor and ceiling effects for both of these measures may be beneficial. The Ways of Helping Questionnaire also displayed good psychometric properties in content validity, internal consistency, construct validity, and test-retest reliability. It may benefit from further validation in some areas such as: criterion validity, inter-rater reliability, responsiveness, and floor and ceiling effects. The religious items from the shortened

COPE demonstrated good internal consistency, construct validity, inter-rater reliability, and test-retest reliability. It may need further validation for content and criterion validity, responsiveness, floor and ceiling effects, and interpretability. The Brief Persian RCOPE and the measures that are based on the RCOPE (BMMRS and MMRS) (Johnstone et al., 2009; Vespa et al., 2017) demonstrated good content validity (Johnstone et al., 2009), and good internal consistency (Johnstone et al., 2009; Vespa et al., 2017).

This systematic review also shed light on the studies that explored the utilisation of religious coping among people with cancer, and mainly evaluated the internal consistency of the religious coping measures included in these studies. The most commonly utilised and tested tool was Brief RCOPE, and the internal consistency was adequate and ranged between (0.97-0.83) for the positive religious coping scale (Bizo et al., 2014; Fitchett et al., 2004; Holt et al., 2011; Manning-Walsh, 2005; Mesquita et al., 2013; Ng et al., 2016; Pedersen et al., 2013; Phelps et al., 2009; Rand et al., 2012; Sherman et al., 2009; Sherman et al., 2005; Tarakeshwar et al., 2006; Trevino et al., 2014; Zwingmann et al., 2008; Zwingmann et al., 2006). The range for internal consistency for negative religious coping scale was between (0.77-0.89) for 11 out of the 15 studies which assessed the negative religious coping scale (Bizo et al., 2014; Fitchett et al., 2004; Holt et al., 2011; Manning-Walsh, 2005; Mesquita et al., 2013; Ng et al., 2016; Phelps et al., 2009; Sherman et al., 2005; Trevino et al., 2014; Zwingmann et al., 2008; Zwingmann et al., 2006). Additionally, the Brief RCOPE was the most commonly examined measure for the factor structure (Holt et al., 2011; Zwingmann et al., 2006, 2008). These studies confirmed the two factors originally suggested by Pargament et al. (2011). These findings suggest that the Brief RCOPE seems to be a robust measure of religious coping, which might make it suitable for use in clinical settings among people with cancer.

Moreover, the review also highlighted that the second most commonly examined measure was the RCOPE (Gall et al., 2011; Gall et al., 2009; Hebert et al., 2009; Thuné-Boyle et al., 2011). However, none of these four studies utilised the full version of the RCOPE, rather authors selected representative items (Gall et al., 2011), only 4 items (Hebert et al., 2009), 2-item per scale (Gall et al., 2009), or certain scales which were appropriate for the study sample (Thuné-Boyle et al., 2011). As a consequence, the two studies that have conducted factor analyses of the RCOPE (Hebert et al., 2009; Thuné-Boyle et al., 2011) did so for the scales/items that have been selected for the studies, and not for the whole measure. However, the internal consistency for the selected scales and items from the RCOPE ranged from 0.65 to 0.96, which is adequate for the majority of the scales of the RCOPE. The full RCOPE is theoretically-based, and is a comprehensive measure in the assessment of religious coping (Pargament et al., 2000). Hence, if the research and clinical setting permits the use of such a long measure, then utilising the full RCOPE could allow for a comprehensive assessment of religious coping among people with cancer.

The rest of the measures (Religious Coping Scale, Search for Meaning in Religion, Religious Problem Solving Scale, Brief COPE, COPE, BMMRS, MRR, and Spiritual Strain scale) demonstrated limited psychometric evidence as less studies have evaluated religious coping using these measures (Carver et al., 1993; Elumelu et al., 2015; Fillip et al., 1990; Hamrick & Diefenback, 2006; Nairn & Merluzzi, 2003; Park et al., 2009; Park et al., 2009; Polite et al., 2018; Sabanciogullari & Yilmaz, 2019; Vespa et al., 2011). However, the majority of these studies (Fillip et al., 1990; Hamrick & Diefenback, 2006; Nairn & Merluzzi, 2003; Park et al., 2009; Park et al., 2009; Polite et al., 2018; Sabanciogullari & Yilmaz, 2019; Vespa et al., 2011) reported adequate internal consistencies ranging from 0.7 to 0.97 for the majority of these religious coping measures. This reflects the need for future studies to assess other psychometric properties for these measures.

The limited psychometric properties in the identified psychometric domains may point that researchers may need to focus on validating theoretically-based tools, rather than developing new religious coping measures. Utilising validated and theoretically–based tools is important in devising culturally sensitive psychological interventions (Craig et al., 2008). Also, it is crucial to examine the measures' psychometric properties in other cultural contexts given that most validation studies which provided partial psychometric data have been conducted in Western countries (Carver et al., 1993; Fitchett et al., 2004; Gall & Bilodeau, 2020; Gall et al., 2009; Gall et al., 2011; Gall, 2004; Hamrick & Diefenback, 2006; Hebert et al., 2009; Holt et al., 2011; Manning-Walsh, 2005; Nairn & Merluzzi, 2003; Park et al., 2009; Park et al., 2009; Phelps et al., 2009; Polite et al., 2018; Rand et al., 2012; Sherman et al., 2005; Sherman et al., 2009; Tarakeshwar et al., 2006; Thuné-Boyle et al., 2011; Trevino et al., 2014; Vespa et al., 2011; Zwingmann et al. 2006; Zwingmann et al., 2008).

3.8.1.2 The theoretical basis of religious coping measures

Six out of the 11 measures identified in the validation studies (i.e shortened COPE, Coping with Colorectal Cancer measure, Ways of Helping Questionnaire, God as a Helper, God as a Healer, Faith in Healing) were not based on a specific theory of religious coping. Only four religious coping measures were based on theory (i.e., Cancer and Deity Questionnaire, Perspectives of Support from God scale, the Brief RCOPE, and the religious coping scale from the BMMRS). Three key theories formed the basis of these measures: object relations theory (Fairbairn, 1943, 1952; Guntrip, 1956, 1969; Winnicott, 1953, 1966), Reed's theory of spirituality (Reed, 1992), and Pargament's theory of religious coping (Pargament, 1997). Additionally, Pargament's theory seemed to be prominent as it guided the development of both the Brief RCOPE, and the spiritual/religious coping scale from the BMMRS. Moreover, although Cancer and Deity Questionnaire was based on Reed's theory of spirituality, the items making up the tool were derived from Pargament's et al (1990) 24-item measure of Styles of Religious Coping Scale.

Researchers interested in achieving a theoretical and comprehensive understanding of religious coping might need to take into consideration the theoretical basis of the measures they employ in their studies, and to clearly define how they conceptualise religious coping. It is also valuable to mention that Pargament et al. (2000) suggested that three sources should be utilised when designing a religious coping measure. These sources are: previous measures in the field, empirical findings, and a theory. Therefore, the findings of this review does not indicate that the measures should not be based on empirical findings or previous items from similar measures the literature. Rather, these findings emphasised that the theoretical foundation is a missing source in the development of religious coping measures. Hence, the underlying theoretical basis of the measure might need to be considered by researchers when designing religious coping measures. Consequently, theoretically-based measures would allow for a proper integration of religious and spiritual factors into clinical interventions for this population (Pargament et al., 2000).

3.8.1.3 The subcomponents of the religious coping tools based on the cognitive, behavioural, emotional, relational, and spiritual dimensions

Six measures had items which assessed the cognitive domain of religious coping (Cancer and Deity Questionnaire, Faith in Healing, God as a Helper, God as a Healer, Perspectives of Support from God scale, and the religious coping scale from BMMRS), with less emphasis on the emotional and behavioural domains. The emotional domain of religious coping was utilised in all of the reviewed tools except for the God as a Healer measure and the religious coping scale from the BMMRS. This reflects the importance of this domain as one of the main dimensions of religious coping. As suggested by Pargament (1997), one of the main functions of religious coping is providing comfort to people during the coping process. More emphasis was placed on the positive emotional side of religious coping in these measures. The weight given for the positive emotional dimension may require further consideration by researchers given that religious coping is not always linked with adaptive mental health outcomes (Abu-Raiya & Jamal, 2019; Gall & Bilodeau, 2020). This observation was also previously made by Abu-Raiya et al. (2010) in that religious coping can be a “double-edged sword” (Abu-Raiya, Pargament, & Magyar-Russell, 2010). Meaning, it can result in both positive and negative emotional consequences.

The measures which assess religious coping in a generic manner such as the shortened COPE and Coping with Colorectal Cancer measure concentrated more on the behavioural domain compared to other measures which assessed the multidimensional nature of religious coping such as the Brief Persian RCOPE. The shortened COPE does not specifically address religiously-based cognitions. For example, the item “I have been trying to find comfort in my religion or spiritual beliefs” does not specifically indicate *what* beliefs and *how* they help to achieve comfort (Pargament et al., 2000). Hence, measures which address religious coping in a generic manner might be limited in its utility to help us understand and measure the complexity of religious coping

The relational/social aspect was only briefly addressed in the Brief Persian RCOPE (Sharif et al., 2018) (Pargament et al., 2011). Although the spiritual domain was only assessed in the Cancer and Deity Questionnaire, it is important to mention that the double coded items also included the spiritual domain along with other domains such as emotional or cognitive domains. Therefore, the spiritual domain is not neglected in these measures, and were assessed in the Cancer and Deity Questionnaire, Perspectives of Support from God scale, God as a Helper measure, religious coping subscale from the BMMRS, and the Brief Persian RCOPE. Moreover, both the positive and negative aspects of a person’s relationship with God were assessed. The negative items within the measures reflect the understanding that the use of religion in coping is not only positive, but it could also involve a negative side (Pargament, 1997; Cummings & Pargament, 2010).

As discussed earlier, items that measure more than one dimension of religious coping (double coded) were evident in five measures (i.e. Brief Persian RCOPE, Cancer and Deity Questionnaire, God as a Helper, Perspectives of Support from God scale, and the religious coping scale from the BMMRS). Given the multi-dimensionality of religious coping, having an item which belong to more than one domain is expected in measures of religious coping, because any religious coping dimension can serve many functions of religion (i.e. feeling close to God is a spiritual dimension, and it could also result in feelings of comfort which is an emotional dimension) (Pargament, 1997) (Section 2.4.2). Researchers interested in developing new religious coping measures might need to consider the multidimensionality of religious coping to understand the contribution of the concept to health outcomes (Pargament et al., 2000).

The main findings of this review can be further discussed in light of the meta-analysis conducted by Salsman and collaborators (2015) which categorised religious coping measures into the behavioural domain. Our results indicated that categorising religious coping measures into the behavioural domain may hinder the measurement of the multi-dimensionality of religious coping. This is because religious coping does not only include the behavioural dimension. In fact, the analysis of the items based on the multidimensional aspect of religious coping reflected that other domains are also important to examine such as the cognitive, emotional, social, and spiritual dimensions.

3.8.1.4 The most appropriate religious coping tool for the empirical study of this thesis

Several reasons have led to the selection of the Brief RCOPE as the measure to be utilised for the empirical quantitative study for this thesis. First, the Brief RCOPE has been the most commonly tested measure of religious coping in studies which evaluated religious coping among people with cancer. Hence, the measure has good psychometric evidence in terms of the internal consistency and factor analysis as described earlier. Moreover, it is the only measure that has been based on a comprehensive theory of religious coping. Additionally, it is appropriate for the population of this thesis who may specific physical and time constraints, which may not allow them to fill out the longer version of the RCOPE. Longer measures are not deemed appropriate in some clinical settings, such as the clinical setting of this thesis (Broadbent, Petrie, Main, Weinman, 2006; Pargament et al., 2011). Finally, the measure has demonstrated sensitivity to change when utilising clinical interventions (Pargament et al., 2011).

3.9 Research implications

This systematic review identified a total of 21 measures of religious coping, each with its unique psychometric properties as well as theoretical backgrounds/or lack of. For researchers who plan to utilise these measures, it is important to identify the research aim of the study at first. If the research aim is to examine the multidimensional concept of religious coping, then generic measures that only provide a broad idea about religious coping such as Coping with Colorectal Cancer measure, or the religious items from the COPE may not be helpful. Consequently, and despite its good psychometric properties, measures such as Coping with Colorectal Cancer measure may not allow for a detailed understanding of the content of religious coping.

Additionally, researchers might need to consider the cultural context in which the religious coping measure has been developed and/or validated. Measures such as Ways of Helping Questionnaire, Perspectives of Support from God scale, and Holt et al.'s (2011) three measures are more suitable to African-American cancer survivors, compared to groups from other cultures. Another factor for consideration is the length of the measure. It is not a coincidence that the Brief RCOPE has been heavily utilised in studies that assess religious coping. First, it is a theoretically-based measure, relatively short, and has been found to be sensitive to clinical change following interventions (Pargament et al., 2011). Therefore, the Brief RCOPE might be an appropriate measure to use in most clinical settings where time or space might be scarce. However, if time is not an issue within the research setting, then utilising a more comprehensive and theoretically-based measure such as the full version of RCOPE might be the most appropriate option given the comprehensive coverage of all of the functions of religious coping. Consequently, and given the population of interest for this thesis, the Brief RCOPE was considered as the most appropriate measure to assess religious coping among women with breast cancer.

Another major point when selecting a measure of religious coping is to differentiate between measures of religious coping versus measures of religious/spiritual outcomes. Given that measures of spiritual outcomes such as spiritual well-being could be confounded with mental health outcomes, it is important for researchers to avoid using these measures when assessing similar mental health outcomes in the study.

3.10 Clinical implications

Several clinical implications for cancer care will be discussed in light of the results of this chapter. Despite the surge of research on religious/spiritual coping, the field could still be considered in its infancy in terms of the conceptualisation and measurement of religious coping. Therefore, for oncology health care providers, it is not only important to inquire about the religiosity levels of patients, but it is also imperative to understand how patients utilises their religion to help them cope with their illness. Hence, this distinction should be made clear to clinicians discussing spiritual/religious factors with patients.

Additionally, clinicians who are planning to use religious coping measures in their practice need to be aware of the multidimensional nature of religious coping, and to ask specific questions about patients' use of religiously based thoughts, behaviours, or feelings which help them in the coping process. This is a crucial point because many excluded measures such as the Adapted Prayer Scale (Persian) (Rezaei, Adib-Hajbaghery, Seyedfatemi, & Hoseini, 2008), the Adapted Prayer Scale (English) (Meraviglia, 2002), and the Adapted Prayer Scale (Turkish) (Erci, Katabulut, & Ucuzal, 2014) which assess religious behaviours (i.e. praying), did not explicitly mention that those religious behaviours are conducted by patients for the sake of coping with the illness. Additionally, given the limited psychometric properties for the majority of the reviewed measures in this chapter, it becomes important for clinicians who plan to use these measures, to balance between the dimensions that the tool assesses, and the psychometric properties of the tool. For example, although the Coping with Colorectal Cancer measure (Rinaldis et al., 2009) has good psychometric properties, it does not assess the multidimensional nature of religious coping. However, if the aim of utilising the religious coping measure in clinical practice is to assess clinical change after the implementation of an intervention, then selecting the Brief RCOPE might be the most appropriate selection. This is because the measure has demonstrated sensitivity to detect clinical change after an intervention (Pargament et al., 2011).

Moreover, given that this review defined religious coping within the context of religion, and spirituality as a person's relationship with God, measures which defined spirituality as a broader concept were not included in this review. Therefore, measures identified in this chapter may only be applicable to populations with a religious background. This is an important clinical implication in the selection of religious coping tools from this review.

3.11 Strengths and limitations of the review

This review has several strengths. First, this is the first review that focused on religious coping in cancer research, rather than on broad spirituality/religion concepts. Second, the search was rigorous in that it covered seven databases, in addition to the reference lists of major reviews in the field. Moreover, it did not only include studies that aimed to develop or further validate a measure of religious coping, but also included studies that examined religious coping in cancer research and provided partial psychometric properties for these measures. Thus, this review attempted to provide a comprehensive story about the state of art on religious coping measures in cancer research. Third, it provided a list of instruments that measure religious coping, their theoretical basis and psychometric properties. Thus, this review will be helpful for clinicians and researchers when they select religious coping measures for their clinical practice or research.

Despite the above mentioned strengths, this systematic review has some limitations. First, the search strategy is restricted to seven databases, which may not have covered all of the articles on this topic. However, the bibliography lists of all included papers and several meta-analyses and systematic reviews were checked to identify further references. From these reference lists, only a small number of papers (n=24) was identified, which further reflects that rigorous search was implemented in this review. In addition, grey literature was not included, and also only articles in English language were considered for the review. Therefore, there may be other studies on religious coping measurement which were not included in this review. This point was addressed by including validation studies of tools which were translated from English to other languages. Second, the operational definition of religious coping for this thesis and systematic review, which defined spirituality within a religious context, may have limited the number of the included measures, which may have assessed spirituality in a broad manner. However, the rationale for selecting this definition was described in Section 1.9.

Third, only two reviewers extracted the psychometric properties from the validation studies and analysed the sub-components of the items within religious coping measures. Although they are experienced clinicians and researchers, their opinions may not represent others in the field. However, a previous systematic review have also utilised two researchers to extract psychometric data (Selman et al., 2011). Fourth, there was some discrepancy in the application of the psychometric quality criteria by the two reviewers.

However, this discrepancy is expected and was contingent on how strict was the reviewer in assessing the psychometric properties of the tools. For example, when assessing the three measures from Holt et al's. (2009) study, one reviewer gave a rating of (0) to responsiveness, while the other reviewer gave a rating of (?). Nevertheless, these discrepancies were resolved by discussion.

3.12 Summary

This thesis has so far demonstrated that female breast cancer is a serious public health problem, and more so within the Omani context, given the late age of presentation and consequently the expected poor prognosis. This was then linked to the high levels of anxiety and depression, and low quality of life among women with breast cancer. Within the context of MRC guidelines in designing and evaluating clinical interventions, both religious coping and illness perceptions were identified as amenable theoretical variables which could be identified and changed to improve these women's quality of life. Given that cultural factors have been identified in the literature as prominent in influencing both illness perceptions and religious coping, an integrated model was suggested to measure religious coping, illness perceptions and study their associations with the psychosocial outcomes within the Omani breast cancer clinical context.

Religious coping was selected as a distinct coping strategy given that it was reported in the literature as a valuable coping resource among women with breast cancer in general, and more so among Omani women with breast cancer. However, given the inconsistent findings from the literature on the relationships between religious coping and mental health outcomes, and the known measurement issues of religious coping, this systematic review evaluated in details how religious coping measures have been developed and/or further validated in clinical cancer research. The identification of the Brief RCOPE as a suitable measure for religious coping could allow for an appropriate measurement of the construct among Omani women with breast cancer. However, given that cultural factors may not be fully captured when only quantitative measures, such as the Brief RCOPE, are used, therefore it becomes essential to also evaluate religious coping using qualitative methods. Qualitative studies could allow us to achieve a comprehensive and holistic understanding of both religious coping and illness perceptions among the population of interest of this thesis. As a result, this thesis will adopt mixed methods research design in order to reach a comprehensive understanding of religious coping and illness perceptions among Omani women with breast cancer. Consequently, next chapter aims to provide an overview of mixed methods study design, the rationale, and the steps used in designing this mixed methods thesis.

Chapter 4: Research Methodology

4.1 Summary

Chapter 3 presented a systematic review (SR) of religious coping measures that have been developed or validated in clinical cancer research. The SR concluded that the Brief RCOPE may be a useful tool to measure religious coping among Omani women with breast cancer in the quantitative arm of this thesis (Chapter 5). This chapter explicates the rationale for implementing a mixed methods research design thesis to examine religious coping and illness perceptions among Omani women with breast cancer. Moreover, it will discuss the strengths as well as the challenges associated with this research design. The philosophical foundations and various typologies for mixed methods research design will be discussed. Finally, this chapter will also deliberate the application of mixed methods research design as it applies to this thesis.

4.2 Introduction

Most of the research exploring the role of religious coping and illness perceptions on psychosocial outcomes in women with breast cancer has primarily taken a quantitative approach, and has been conducted in non-Arab countries, as evidenced by the literature reviewed in Sections 2.3.3 and 3.3 (Braam & Koenig, 2019; Kaptein et al., 2013; Kaptein et al., 2015; Schreiber & Brockopp, 2012; Thuné-Boyle, Stygall, Keshtgar, & Newman, 2006). Therefore, a quantitative approach to the study of religious coping and illness perceptions within an Arab clinical setting is essential to establish an initial understanding of the relationships among these variables and to fill this knowledge gap. The importance of the exploration of religious coping and illness perceptions within specific cultural contexts have been described in Section 1.9.

In addition to the importance of using a quantitative approach in this thesis, a qualitative approach is also essential to obtain a rich and meaningful understanding of the illness experience of Omani women with breast cancer (Timans, Wouters, & Heilbron, 2019). Such an understanding could not be achieved through only implementing a quantitative approach to research. Quantitative research mainly provides numerical data on the measured variables via the use of standardised tools. Consequently, this approach alone does not allow for a more detailed contextual interpretation of relevant cultural and social factors that could be an integral part in the understanding of illness perceptions and religious coping. On the other hand, the exclusive application of a qualitative approach does not allow for generalisations to be made about the study sample, given that qualitative data only represent the perspectives of the selected study participants (Queirós, Faria, & Almeida, 2017). As a consequence, using both of these approaches is pivotal to achieving a comprehensive understanding of religious coping and illness perceptions among this population (Creswell & Plano Clark, 2018). Moreover, combining these two approaches could offset the limitations inherent in each one of them (Creswell & Plano Clark, 2018).

In order to ensure the transparency and rigour of mixed methods research, certain research decisions have to be clearly explained. These decisions involve identifying the philosophical assumptions, procedures, and rationale behind the use of mixed methods design (Alavia, Archibaldb, McMasterc, Lopeze, & Cleary, 2018). Therefore, this chapter purposes to describe the utility of this research approach to the study of illness perceptions and religious coping among a sample of Omani women with breast cancer.

4.3 Mixed Methods research design

Mixed methods research has been conceptualised as the research approach situated in the middle of the research continuum where quantitative and qualitative methods are on the opposite ends of the research spectrum (Johnson, Onwuegbuzie, & Turner, 2007; Ponce & Pagán-Maldonado, 2015; Rapanta, & Felton, 2019). It is the third methodological movement, which followed the quantitative and qualitative approaches, respectively (Fetters & Molina-Azorin, 2017; Johnson et al., 2007; Ozawa & Pongpirul, 2014). This research methodology is utilised to attain a complex understanding and multiple perspectives into a research problem (Creswell & Plano Clark, 2018).

The field of mixed methods research has undergone several changes over the last three decades (Creswell & Plano Clark, 2018; Doyle, Brady, & Byrne, 2016; Fetters & Molina-Azorin, 2017; Johnson et al., 2007; Timans et al., 2019). A recent review highlighted the continuous proliferation of mixed methods research studies within health care since 2003 (Kaur, Vedel, El Sherif, & Pluye, 2019). This increase was attributed by Kaur et al. (2019) to Tashakkori and Teddlie's (2003) initial handbook on mixed methods research. Additionally, the increasing sophistication of research studies is another reason that this approach has grown in popularity (Creswell & Plano Clark, 2018; Fetters, Curry, & Creswell, 2013; Halcomb & Hickman, 2015; Johnson et al., 2007).

Mixed methods research was initially viewed as the collation of quantitative and qualitative data in one study (Green, Caracelli, & Graham, 1989; Schoonenboom &

Johnson, 2017). However, with the cumulative research evidence in the field, mixed methods design has been conceptualised as an independent methodology characterised by the integration of quantitative and qualitative approaches at multiple points throughout the research study (Creswell & Plano Clark, 2018; Fetters et al., 2013; Green, Caracelli, & Graham, 1989; Halcomb & Hickman, 2015). The integration points are contingent upon the specific design of mixed methods research. These points of integration could take place during data collection (at the same time, or sequential), data analysis, or at both of these points. Another point of integration between qualitative and quantitative approaches is when providing a rationale for the mixing of these two approaches, which is imperative as the rationale will inform the choice of the specific mixed methods study design (Creswell & Plano Clark, 2018). Additionally, the rationale for conducting the mixed methods study will shape how the research questions will be formulated. For example, if the reason for the use of mixed methods is to expand the quantitative findings, then the research question will address that rationale. The rationale of the mixing will also impact how the study findings will be explained (Creswell & Plano Clark, 2018; Fetters et al., 2013; Halcomb & Hickman, 2015).

There are several advantages of using a mixed methods design in this thesis. First, this mixed methods thesis creates an opportunity to answer mixed methods research questions which could not be answered if only a purely quantitative or qualitative approaches has been adopted. More specifically, this design can answer this research questions: how can the qualitative interviews expand on the findings from the quantitative study? Second, given that religious coping has been conceptualised as a complex multidimensional concept (Pargament, 1997; Pargament, Feuille & Burdzy, 2011; Pargament & Mahoney, 2005; Xu, 2016), and is influenced by sociocultural factors (Pargament, 1997) (Section 1.9), it would be an oversight if only standardised measures will be used to assess this theoretical concept. The inclusion of the qualitative approach in mixed methods design will help the researcher to deepen the understanding of the complex mechanisms that could influence the psychosocial outcomes among this population (Ozawa & Pongpirul, 2014). Consequently, this mixed methods thesis hopes to provide research outcomes which may have clinical utility to improve the quality of life of these women (Palinkas, Mendon, & Hamilton, 2019), via devising culturally sensitive clinical interventions (Craig et al., 2008).

In addition to the advantages of using a mixed methods design, several challenges must also be acknowledged and tackled as part of the research process. Generally speaking, some of the challenges of using mixed methods design include whether the research team has research skills in both approaches, and the question of the availability of time and human resources which might be scarce in some research settings (Creswell & Plano Clark, 2018). For this thesis, two main challenges existed and were tackled. First, the selection of the sample for the qualitative study (phase 2; chapter 6) was a challenging task. Given that both religious coping and illness perceptions have been conceptualised as dynamic and changing throughout the illness trajectory (Sections 2.4.2 and 2.3.1), we decided against inviting the same sample of participants who had taken part in the quantitative study to take part in the qualitative study. This decision was made on the basis that it was expected that these participants would not necessarily be at the same place in terms of using their coping skills and illness perceptions when the qualitative study commenced. Therefore, a decision was made to invite a new sample of Omani women with breast cancer to take part in this phase of the study; however, we were mindful of ensuring that this new sample was matched as closely as possible to the previous sample in terms of the demographic as well as the clinical characteristics of the quantitative study sample.

The second challenge was related to which quantitative findings to follow up in the qualitative study. However, this issue was resolved after careful consideration of the theoretical framework in order to expand on the theory, and the findings from the quantitative study. Consequently, a decision was made to expand on both significant and non-significant findings, as this is the most recommended and comprehensive approach utilised in mixed methods study designs (Creswell & Planto Clark, 2018).

4.4 The philosophical assumptions of this mixed methods thesis

The philosophical assumptions or worldviews in mixed methods research are the general guiding principles which inform all of the stages of the research process (Creswell & Plano Clark, 2018). The explicit identification of the philosophical foundation is of utmost importance because it shows the rigour of the mixed methods study (Alavi et al., 2018; Shannon-Baker, 2016). Therefore, this section will discuss the main worldviews and outline the worldview which will be selected for this study.

There exist four central worldviews in research: post-positivism, constructionism, transformative, and pragmatism (Creswell & Plano Clark, 2018). As shown in Table 4.1, the differences among these worldviews can be grouped into five philosophical assumptions: ontology, epistemology, axiology, methodology, and rhetoric. Post-positivism is consistent with quantitative research which implements standardised measures to collect quantitative data, with the aim of formulating and/or revising theories. Constructionism, on the other hand, is often linked with the qualitative approach, which conceptualises reality according to participants' social construction of it. The transformative worldview is guided by ethical values such as justice, and it aims to empower marginalised groups within society (Creswell & Plano Clark, 2018).

The previously stated worldviews were not deemed suitable for the research questions of this thesis. Post-positivism is associated with only one research tradition which is quantitative methodology. This does not fit with our attempt to go beyond quantitative research to obtain a detailed understanding of the illness experience of Omani women with breast cancer. Constructivism, on the other hand, is only linked with qualitative research, and does not fit with the research question, because an initial quantitative understanding is essential. The transformative worldview has a moral emphasis to improving the lives of disadvantaged groups. Given that this thesis is situated within health care, it is not driven by the essence of the transformative worldview.

Table 4.1 The Fundamental Characteristics of the Four Worldviews

Philosophical Question	**Post-positivism**	**Constructivism**	**Transformative**	**Pragmatism**
Ontology (what is the nature of reality?)	Singular reality (researcher reject or fail to reject hypotheses)	Multiple realities (e.g. researchers uses quotes to illustrate different perspectives)	Multifaceted and based on cultural positions (e.g. researchers recognise power dynamics)	Singular and multiple realities (e.g. researchers test hypotheses and provide multiple perspectives)
Epistemology (What is the relationship between the researcher and participants?)	Distance and impartiality (e.g. researchers objectively collect data on instruments)	Closeness and subjectivity (e.g. researchers visit with participants at their sites to collect data)	Collaboration (e.g. researchers involve participants as collaborators, build the trust with them)	Practicality (e.g. researchers collect data by "what works" to address research question
Axiology (what is the role of values?)	Unbiased (e.g. researchers use checks to eliminate bias)	Biased (e.g. researchers actively talk about and use their personal biases)	Based on human rights and social justice for all (e.g. researchers advocate for this premise)	Multiple stances (e.g. researchers include biased and unbiased perspectives)
Methodology (what is the process of research?)	Deductive (e.g. researchers test a priori theory)	Inductive (e.g. researchers start with participants' views and build "up" to patterns and theories)	Participatory (e.g. researchers involve participants in all research stages)	Combining (e.g. researchers collect quantitative and qualitative data and mix them)
Rhetoric (What is the language of research?)	Formal styles (e.g. researchers use agreed-upon definitions of variables)	Informal style (e.g. researchers write in an informal style)	Advocacy, activist-oriented (e.g. researchers use language to advocate for human rights)	Formal or informal (e.g. researchers may employ both styles of writing)

Source: Creswell and Plano Clark (2018), adapted from Creswell (2013)

The worldview selected for this thesis is therefore pragmatism. Pragmatism embraces the existence of numerous realities through the flexible implementation of quantitative and qualitative approaches in research (Johnson & Onwuegbuzie, 2004; Teddlie & Tashokkori, 2009; Mitchell, 2018; Morgan, 2007; Pansiri, 2005; Parvaiz, Mufti, & Wahab, 2016). It is a practical approach to answering research questions using "what works". Hence, pragmatism adopts a problem-solving approach within the research setting (Biesta, 2010; Creswell, 2013; Johnson & Onwuegbuzie, 2004; Parvaiz et al., 2016; Patton, 1990). The use of pragmatism has been advocated by several authors in the field of mixed methods research (Bierley, 2017; Johnson & Onwuegbuzie, 2004; Teddlie & Tashokkori, 2009).

The implementation of pragmatism in this thesis can be justified given the researcher's aim to achieve a comprehensive understanding of the role of religious coping and illness perceptions in predicting the psychosocial outcomes of Omani women with breast cancer. This could be initially achieved by conducting a quantitative study to attain a preliminary quantitative understanding of the theoretical constructs within the integrated model (Section 2.6). To further understand and explain the quantitative results, a qualitative study was designed to expand on the significant and non-significant findings from the quantitative study. The flexibility of the pragmatic worldview facilitated data collection, which took place at two time points. Therefore, the researcher did not only rely on a single perception of reality by using a quantitative research approach. Instead, an attempt was made to explain the quantitative findings within the cultural context of the Omani society by also using a qualitative approach (Pansiri, 2005; Morgan, 2007).

4.5 Typologies of mixed methods design

Various typologies exist in mixed methods research. As per the categorisation suggested by Creswell and Plano Clark (2018), mixed methods research has three main designs: the convergent design, the explanatory sequential design, and the exploratory sequential design. In the convergent design, qualitative and quantitative research findings are combined for comparison purposes. The exploratory sequential design begins with the qualitative study to explore relevant themes, which will be later further examined in the quantitative phase. Finally, the explanatory sequential design begins with the collation and analysis of the quantitative data. Once the analyses of the quantitative data are completed, the researcher then designs the qualitative phase to expand on the quantitative findings (Creswell & Plano Clark, 2018).

This thesis will implement the explanatory sequential mixed methods design. This design is the most suitable to answering the research questions (Baran, 2020), as the focus of the quantitative study is to gain an initial understanding of the integrated model (Section 2.6). Following the quantitative phase, the qualitative phase aims to expand on the findings from the quantitative study via qualitative interviews. For this thesis, the follow up explanation variant (i.e. the qualitative study) will be implemented. This variant is used when the quantitative phase has more weight, compared to the qualitative phase (Creswell & Plano Clark, 2018).

4.6 The application of a mixed methods design to understand the predictive role of religious coping and illness perceptions on psychosocial outcomes among Omani women newly diagnosed with breast cancer

Given that the design of this mixed methods thesis was explained earlier, this section will discuss how the qualitative approach was selected for the second phase of this thesis, the sampling and measurements for the two phases of this thesis. Qualitative psychological research sheds light on the human experience and meaning-making process of the study's participants, which is achieved through the analysis of transcripts (Pietkiewicz & Smith, 2014; Willig, 2019). There exist various approaches to qualitative psychological research (Alase, 2017; Langdridge, 2007). These approaches differ in their research aims and questions, methods of data collection and analysis, and how they view the relationship between the researcher and research participants (Willig, 2019). We aimed to select a qualitative approach which would allow us to understand the cultural and social factors that could impact religious coping and illness perceptions of the population of this thesis. Therefore, several relevant qualitative approaches were carefully considered as possible choices. These approaches were: grounded theory, thematic analysis, discourse analysis, and interpretative phenomenological analysis (IPA) (Larkin, 2015). Grounded theory uses the themes generated from qualitative analysis to develop theories (Khan, 2014). This approach is not suitable for the current thesis as it does not fit with the research question, which aims to explore the lived illness experience of women with breast cancer. Thematic analysis, on the other hand, is a flexible method of analysing themes which are pertinent to the research questions (Braun & Clarke, 2006). However, thematic analysis does not primarily focus on the interpretative aspect, which allows us to achieve a detailed understanding of these women's illness experience. Consequently, this approach was not considered suitable in answering the research question for this study (Larkin, 2015).

Discourse analysis, which analyses the language structure used by research participants, was also considered (Ussher & Perz, 2014). However, discourse analysis does not explicitly highlight the meaning and psychological context behind the use of language, rather focuses on the purpose of language structures in participants' accounts (Larkin, 2015). On the other hand, the IPA approach to research is dedicated to focusing on the lived illness experience of research participants, which makes it directly linked to the research questions of the qualitative study. Therefore, the IPA approach was chosen as the theoretical framework for the qualitative phase of this mixed methods thesis, and thus will be explained in more details the next section.

4.6.1 The Interpretative Phenomenological Analysis

IPA is one of the recognised qualitative methodologies in psychology, and it has its origins in health psychology (Smith, Flowers, & Larkin, 2009). This adds further support to implementing this qualitative approach given the population of interest of this thesis. Smith and Osborn (2015) indicated that the IPA approach is valuable when exploring emotional experiences such as the diagnosis of breast cancer. The IPA approach aims to obtain a rich understanding of participants' lived experience, through the researcher's interpretation and analysis of these personal reflections (Smith et al., 2009). Therefore, IPA goes beyond the narratives to interpret the meaning of these experiences.

IPA takes into account the cultural and social factors which could influence participants' interpretations of their experiences (Langdridge, 2007; Smith et al., 2009). It is well known in the literature that the cultural background of individuals shapes and maintains the development of illness perceptions (Dein, 2004; Kaptien et al., 2013; Kaptein et al., 2015; Kleinman, Eisenberg, & Good, 1978), and religious coping (Pargament, 1997). To achieve a thorough understanding of how the IPA approach will drive the qualitative study, it is critical to highlight the theoretical background of this approach. The theoretical pillars of IPA will inform all stages of research including sample selection, data analysis and the conclusions made. IPA centers on three main theoretical pillars: phenomenology, hermeneutics, and idiography (Pietkiewicz & Smith, 2014; Smith, et al., 2009).

Phenomenology was established by Edmund Husserl, and it primarily aims to understand how individuals perceive the world around them (Moran, 2000; Pietkiewicz & Smith, 2014). The role of the researcher is to bring this experience to the reader, without trying to fit this experience into a box of pre-existing conceptualisations. During semi-structured interviews, which is one of the key methods of data collection in IPA, the researcher encourages the participant to express the feelings and thoughts which are linked to their experience (Smith et al., 2009).

The second theoretical pillar is hermeneutics, which has been developed by Martin Heidegger. The hermeneutics approach grew from existentialism, which purposes to capture a holistic understanding of an experience (Smith & Osborn, 2008; Smith et al., 2009). Hermeneutics is a dynamic process which involves the researcher and participant.

This process has also been labelled as double hermeneutics because of the two-step process involved. First, the participant attempts to make sense and expand on their experience using their own words. The second step involves the researcher's interpretation of the meaning and significance of the participant's experience within the participant's social and cultural context (Moran, 2000; Obeidat, Dickerson, Homish, Alqaissi, & Lally, 2013; Smith & Osborn, 2008; Todorova, 2011). Because the focus is on the interpretation of participant's experience, the researcher has a duty to put aside their own preconceptions to achieve a personalised account of the participant's experience (Langdridge, 2007).

The third constituent of the IPA methodology is the idiographic focus which highlights the need to present a thorough account of the participant's experience. Therefore, the IPA approach requires relatively small sample sizes to achieve this detailed understanding of the research phenomenon. A small sample size allows the researcher to engage in detailed thematic comparisons across the study sample (Smith et al., 2009).

In order to establish the rigour of qualitative studies, Larkin (2015) highlighted the importance to clearly identifying the Theory versus the theory of the study. As emphasised by Larkin (2015), Theory (with capital T) is the epistemological/methodological framework which drives the qualitative study. For the qualitative study of this thesis, the epistemological framework will be the IPA approach, which guided the type of research questions, the type of questions used in the interview schedule (e.g. open ended questions), the sample selection, thematic analysis of the interviews, and the conclusions drawn (Smith et al., 2009).

On the other hand, the theory (small t) refers to the psychological theory which is utilised to explain the psychological findings. Given that the qualitative study is linked to the quantitative study in attempting to expand its findings, the same integrated model will be implemented to guide the content of interview questions. Additionally, the model will act as a bridge between this study and the psychological literature in the field.

4.6.2 Sampling

The sampling technique in a study is guided by the choice of its methodology. Random sampling is usually sought in quantitative research to generalise the study's findings to other comparable populations (Abulela & Harwell, 2019). However, convenience sampling is most often implemented in qualitative studies as these studies seek to better understand the research problem from the participant's point of view (Hamilton, 2020). For the quantitative study of this thesis, all women with breast cancer were identified through a clinical database at the Sultan Qaboos University Hospital (SQUH). Out of the 161 patients diagnosed with female breast cancer during the study period (June 2015-August 2017), 103 participated (64%).

For the qualitative study, a small group composed of six women with breast cancer were invited to take part. The selection of a small, homogenous, and purposeful sample for the qualitative study was guided by the IPA approach as discussed earlier (Alase, 2017; Langdridge, 2007; Smith et al., 2009). Clinical factors which were considered included: the treatment at the time of interview, the stage of illness, and time since diagnosis. Demographic factors included the average age of the participants, and their marital status (Langdridge, 2007; Smith et al., 2009). Practical issues were also taken into consideration when selecting the convenience sample for the qualitative study. Parallel sampling is the term used in mixed methods designs when the study sample of the qualitative phase is not a subsample of the quantitative phase. However, although the sample is independent, it belonged to the primary population of Omani women who were newly diagnosed with breast cancer (Wium & Louw, 2018; Venkatesh, Brown, & Sullivan, 2016).

4.6.3 Measurements

In phase one of the study, the measurement tools were administered to 103 Omani women with breast cancer receiving their treatment from the Day Care Unit in the SQUH. The questionnaires administered were: *Brief Illness Perceptions Questionnaire* (B-IPQ, Broadbent, Petrie, Main, & Weinman, 2006; Saarti, Jabbour, El Osta, Haji, & Khabbaz, 2016)*, Arabic Brief Religious Coping Scale* (A-BRCS, Al-Hadeethi, Hunt, Thomas, & Al-Qaysi, 2016; Pargament, Smith, Koenig, & Perez, 1998*), Hospital Anxiety and Depression Scale* (HADS, Zigmond & Snaith, 1983), and the *European Organization for Research and Treatment of Cancer Quality of Life Questionnaire* (EORTC QLQ-C30, version 3, Aaronson et al., 1993). These measures will be described in more details in Chapter 5.

Multiple techniques exist in the integration of data in mixed methods research (Creswell & Plano Clark, 2018). In sequential mixed methods designs, it is crucial for the qualitative collection and analysis of data to be connected to the quantitative phase of the study. This is an important step to ascertain the cohesiveness and interconnection of the research process between the two phases. In this thesis, the selected significant and non-significant quantitative findings guided the choice of the interview schedule questions which were used in the qualitative phase. For instance, the quantitative results led to exploration of the ways in which religious coping and illness perceptions played a role in the psychosocial adjustment of participants. The second point of data integration occurred when the results from the qualitative study were implemented to expand on the quantitative findings. This point was addressed by explaining the findings from both phases of the study and will be further discussed in details in Chapter 7.

4.7 Summary

This chapter provided a brief overview about mixed methods research, and various aspects associated with it. It also provided a context for the use of mixed methods in this thesis. The next chapter will introduce the quantitative arm of this mixed methods thesis by examining the mediating role of religious coping between illness perceptions and the psychosocial outcomes of Omani women with breast cancer. The quantitative phase aims to test the integrated model which was discussed in Section 2.6. Hence, the quantitative phase will identity the initial relationships of the theoretical variables identified in the integrated model, and will set the basis for the qualitative study thereafter in Chapter 6.

Chapter 5: The Utility of the Integrated Model to Investigate Religious Coping as a Mediator between Illness Perceptions and Psychosocial Outcomes among Omani Women with Breast Cancer

5.1 Abstract

The previous chapter discussed the characteristics of a mixed methods research design and the rationale behind its utilisation in this thesis. The implementation of this research design in regards to the two phases of this thesis was explained. This study is a theoretically-driven study, and is the first phase of this mixed methods thesis which aims to test the utility of the previously proposed integrated model (Section 2.6). More specifically, it aims to explore the mediating role of religious coping between illness perceptions, on the one hand, and psychosocial outcomes, namely symptoms of anxiety and depression and quality of life, on the other hand, among Omani Muslim women with breast cancer. This cross-sectional survey study was conducted with 103 women within the first year of diagnosis. The main findings indicated that negative religious coping mediated the relationships between the emotional illness representations, and psychosocial outcomes (i.e. anxiety and depression), whilst positive religious coping mediated the relationship between timeline and the global health status. The significance of the findings, as well as the clinical and theoretical implications will be discussed within the relevant literature.

5.2 Introduction

The literature reviewed in Sections 2.3 and 2.4 described in detail the inception of the common-sense model, Pargament's theory of religious coping, and the utilisation of the common-sense model in studies with people with chronic illness as well as women with breast cancer. In order to demonstrate the knowledge gaps in the literature of the common-sense model in people with chronic illnesses, and women with breast cancer, a brief description of the relevant empirical evidence will follow. The reasons for proposing the integrated model (Section 2.6) will also be reviewed next section.

5.2.1 A Brief review of the empirical evidence of the common-sense model

An integrated theoretical model (Section 2.6), which combines the common-sense model (Leventhal et al., 1980) and the mediator model of religious coping (Pargament, 1997) was suggested in Section 2.6 for several reasons. First, there is a limited body of empirical evidence which examines coping as a mediator between illness perceptions and psychosocial outcomes in studies which have utilised the common-sense model in people with chronic illness (Hagger & Orbell, 2003; Hagger et al., 2017; Hagger & Orbel, 2020), and women with breast cancer (Kaptein et al., 2013; Kaptein et al., 2015). Second, within the common-sense model, religious coping has never been examined as a coping resource among this population. This is despite the empirical evidence which suggests that religious coping is a valuable coping resource for women with breast cancer from various religious and cultural backgrounds (Al-Azri et al., 2014; Mehrabi, Hajian, Simbar, Hoshyari, & Zayeri, 2015; Park et al., 2017). Religious coping has also been reported to be associated with several mental health outcomes (Gall et al., 2009; Hebert et al., 2009; Pedersen et al, 2013; Thuné-Boyle et al., 2013; Zamanian et al., 2015; Zwingmann et al., 2006; Zwingmann et al., 2008). Third, the studies utilising the common-sense model clearly lacks cultural diversity as none of the studies in the literature which have been conducted with women who have breast cancer, have done so within an Arabic clinical setting (Hagger & Orbell, 2020). Examining illness perceptions in patient' cultural contexts is important because culture has been found to influence people's emotional responses to the illness (Dein, 2004; Kleinman, Eisenberg, & Good, 1978). The fourth reason to suggest the integrated model was to combine two theoretical and robust constructs which are amenable for change via clinical interventions. Theory-driven research could highlight the various mechanisms which could be associated with important psychosocial outcomes such as quality of life among Omani women with breast cancer. This theoretical understanding could help researchers in designing culturally sensitive interventions among this population (Craig et al., 2008).

Despite the increase in the number of studies which utilise the common-sense model to examine the core theoretical constructs which are illness perceptions, coping, and illness outcomes among people with chronic illnesses (Hagger et al., 2017), several gaps still exists in the literature. First, there is a scarcity in the studies which assess the mediating role of coping between illness perceptions and illness outcomes among people with chronic illness, and women with breast cancer (Hagger et al., 2017; Hagger & Orbell, 2020). Even the studies which have examined the mediating role of coping between illness perceptions and illness outcomes in people with chronic illness found that coping did not act as a mediator between illness perceptions and illness outcomes (Hagger et al., 2017).

Several authors in the field (Coyne & Ricioppo, 2000; Gibbons, Groarke, & Sweeney, 2016) have suggested that the likely reason for the lack of the mediating role of coping could be associated with the use of generic measures that assess coping in these studies, which in turn, does not examine illness-specific coping strategies. Therefore, the current study will utilise an illness-specific religious coping measure, given that religious coping was found to be a valuable resource among women with breast cancer from various cultural backgrounds (Al-Azri et al., 2014; Mehrabi et al., 2015; Park et al., 2017).

The second gap in the literature is the scarcity of studies which address all of the core theoretical constructs within the common-sense model in one study (Hagger et al., 2017; Hagger and Orbell, 2003; Hagger & Orbell, 2020). Additionally, there is a clear knowledge gap in the literature of women with breast cancer, which was evident in the meta-analysis conducted by Hagger et al. (2017). More specifically, out of the 254 studies that have been included in the meta-analysis of Hagger et al. (2017), only five studies were conducted with women with breast cancer (Corter, Findlay, Broom, Porter, & Petrie, 2013; Costanzo, Lutgendorf, & Roeder, 2011; Fischer et al., 2013; Rozema, Völlink, & Lechner, 2009; Silva, Moreira, & Canavarro, 2012). Moreover, none of these studies utilising the common-sense model among women with breast cancer have been done in an Arabic clinical context. Therefore, this knowledge gap will be addressed in this study by examining all of the core constructs among Omani women with breast cancer.

Within the breast cancer literature, there is also a dearth of studies that have been conducted to examine the mediating role of coping between illness perceptions and illness outcomes (Section 2.3.3). Most of the studies utilising the common-sense model in women with breast cancer examined the relationships between illness perceptions and psychosocial outcomes (Charlier et al., 2012; Fanakidou et al., 2018; Fischer et al., 2013; Gibbons et al., 2016; Kus et al., 2017; McCorry et al., 2013; Millar, Purushotham, McLatchie, George, & Murray, 2005; Rozema et al., 2009; Silva et al., 2012; Tang at al., 2017; Thuné-Boyle, Myers, & Newman, 2006). Therefore, only limited studies were conducted to examine the relationships between illness perceptions and coping (Fernandes & McIntyre, 2020; Lan et al., 2019; Rozema et al., 2009), and coping and psychosocial outcomes among this population (Millar al., 2005; Rozema et al., 2009). This study will add novel knowledge from the Arab world by examining the associations between all of the core constructs within the integrated model which include illness perceptions, religious coping, and psychosocial outcomes among Omani women with breast cancer.

Within the breast cancer literature, the mediating role of religious coping between illness perceptions and psychosocial outcomes have not been examined. Rather, other generic coping strategies such as problem-focused coping, venting emotions, and behavioural avoidant coping have been evaluated as potential mediators between illness perceptions and psychosocial outcomes (McCorry et al., 2013; Rozema at al., 2009). However, neither of these two studies (McCorry et al., 2013; Rozema at al., 2009) which examined the mediating role of coping found out that coping strategies acted as a mediator between illness perceptions and psychosocial outcomes (McCorry et al., 2013; Rozema at al., 2009). Only Gibbons et al. (2016) reported that the relationship between women's understanding of the illness (coherence perceptions) and their perceived stress as a consequence of the cancer diagnosis was explained and mediated by women's anxious preoccupation (i.e. used as a copy strategy). The lack of a mediating role of coping generally within the common-sense model has been attributed by Gibbons et al. (2016) and Hagger and Orbell (2020) to the utilisation of general psychosocial outcome measure tools such as the RAND (a quality of life measure) (Rozema et al., 2009), rather than cancer-specific outcome tools.

On the other hand, several studies have found that illness perceptions were associated with symptoms of anxiety, depression, and quality of life among women with breast cancer (Charlier et al., 2012; Fanakidou et al., 2018; Fischer et al., 2013; Gibbons et al., 2016; Kus et al., 2017; Lee, Baek, Jeon, & Im, 2019; McCorry et al., 2013; Millar et al., 2005; Rozema et al., 2009; Silva et al., 2012; Tang at al., 2017; Thuné-Boyle, Stygall, Keshtgar & Newman, 2006). When the role of illness perceptions are compared to coping, McCorry et al. (2013) found that illness perceptions were the strongest predictors of anxiety and depression. The identity dimension predicted depression (Gibbons et al., 2016), distress (Miller et al., 2005), and both anxiety and cancer-related distress (Gibbons et al., 2016). The perceived emotional causes of the illness also contributed to the variance in depression (Gibbons et al., 2016), whilst timeline only predicted distress (Fischer et al., 2013; Miller et al., 2005). Consequences was positively correlated with symptoms of anxiety (Kus et al., 2017; Silva et al., 2012; Thuné-Boyle et al., 2006) and depression (Kus et al., 2017; Silva et al., 2012), and negatively correlated with quality of life (Rozema et al., 2009; Silva et al., 2012). Generally speaking, identity and consequences were the strongest predictors of the psychosocial outcomes in most of these studies.

The relationships between illness perceptions and coping strategies have also been examined within the context of women with breast cancer, but only weak correlations have been found (Fernandes & McIntyre, 2020; Lan et al., 2019; Rozema et al., 2009). To synthesise the findings from these studies, the more severe the illness perception is, the more likely that women with breast cancer will utilise avoidance coping (i.e. helplessness and anxious preoccupation), and the less likely they are to use problem-focused coping or confrontation coping (Fernandes & McIntyre, 2020; Lan et al., 2019; Rozema et al., 2009). It has been argued that use of measures that assess coping as a general style, and not as situation-specific, could have led to these weak relationships between illness perceptions and coping (Coyne & Ricioppo, 2000; Hagger & Orbell, 2020). Hence, these studies recommended the use of illness-specific measures in studies examining coping among people with chronic illness (Coyne & Ricioppo, 2000; Hagger & Orbell, 2020). Therefore, this study will utilise situation-specific religious coping, given that religious coping has been shown to be one of the most utilised coping skills by women with breast cancer (Al-Azri et al., 2014; Gonzalez, Tanenbaum, & Commissariat, 2016; Watkins, Kanu, Hamilton, Kozachik, & Gaston-Johansson, 2017; Zwingmann, Writhz, Muller, Korber, & Murken, 2006). As a consequence, and given that this study will examine the mediating role of religious coping, it will be important to review the relationships between religious coping and symptoms of anxiety, depression, and quality of life among women with breast cancer.

5.2.2 The Relationships between religious coping and psychosocial outcomes among women with breast cancer

This section will synthesise the studies that have specifically focused on the relationships between negative and positive religious coping, and symptoms of anxiety, depression, and quality of life among women with breast cancer. Negative religious coping has been found to be strongly and positively associated with negative mental health outcomes such as anxiety (Thuné-Boyle, Stygall, Keshtgar, Davidson, & Newman, 2013; Zwingmann et al., 2006; Zwingmann, Müller, Körber, & Murken, 2008), depression (Gall & Bilodeau, 2020; Hebert, Zdaniuk, Schulz, & Scheier, 2009; Thuné-Boyle et al., 2013; Zwingmann et al., 2006), and distress (Gall et al., 2009). However, mixed results have been observed on the relationships between negative religious coping and positive mental health outcomes such as quality of life among Iranian women with breast cancer (Rohani, Abedi, Omranipour, & Langius-Eklöf, 2015; Zamanian et al., 2015). For example, negative religious coping did not predict health-related quality of life among Iranian Muslim women newly diagnosed with breast cancer (Rohani et al., 2015). This is despite the fact that the patients showed higher use of religious coping compared to the control group. This finding has been attributed by the authors to the measure used to assess religious coping which only produced a single score for both existential and religious domains (Rohani et al., 2015). Furthermore, the authors indicated that the existential domain was linked to quality of life, but not the religious domain (Rohani et al., 2015). On the other hand, another Iranian study found a negative correlation between negative religious coping and quality of life (Zamanian et al., 2015). Therefore, the relationships between negative religious coping and positive psychological outcomes such as quality of life has been inconclusive in the literature, which is in contrast to the relationships between negative religious coping and negative mental health outcomes as described earlier.

Studies have reported mixed findings on the relationships between positive religious coping and negative psychosocial outcomes such as distress, anxiety, and depression (Gall et al., 2009; Hebert et al., 2009; Thuné-Boyle et al., 2013; Zwingmann 2006, 2008). However, positive religious coping was found to be associated with positive psychological outcomes such as quality of life or positive mood (Gall et al., 2009; Pedersen, Christensen, Jensen, & Zachariae, 2013; Thuné-Boyle et al. 2013; Zamanian et al., 2015). Therefore, positive religious coping shows more consistent evidence with positive psychological outcomes such as quality of life, compared to negative psychological outcomes such as symptoms of anxiety and depression.

The current study will fill two knowledge gaps in our understanding of religious coping and illness perceptions. First, it will provide novel information from the Arab Muslim world that has not been addressed before, using theory-driven research. Exploring these two theoretical constructs within specific cultural contexts is important given that culture has been found to impact upon both illness perceptions (Cameron & Moss-Morris, 2010; Dein, 2004; Kaptien et al., 2013; Kaptein et al., 2015; Kleinman et al., 1978) and religious coping (Thuné-Boyle, Stygall, Keshtgar, Davidson, & Newman, 2011). Second, to the author's knowledge, no previous study in the literature has explored the mediating role of religious coping between illness perceptions and psychosocial outcomes among this population. The integrated model, which is shown in Figure 5.1, will be examined in this study.

5.3 Rationale for this study

The impetus for conducting this study was to examine the mediating role of religious coping between illness perceptions and psychosocial outcomes among Omani women with breast cancer. According to two comprehensive systematic reviews on illness perceptions (Kaptein et al., 2013, 2015), one systematic review on religious coping among women with breast cancer (Schreiber & Brockopp, 2012), and the most recent literature reviewed by Z.A. (Sections 2.3.3 and 2.4.3), no previous study has explored the mediating role of religious coping on the outcomes among Omani Muslim women with breast cancer. Although Al-Azri et al. (2014) have previously explored the key coping

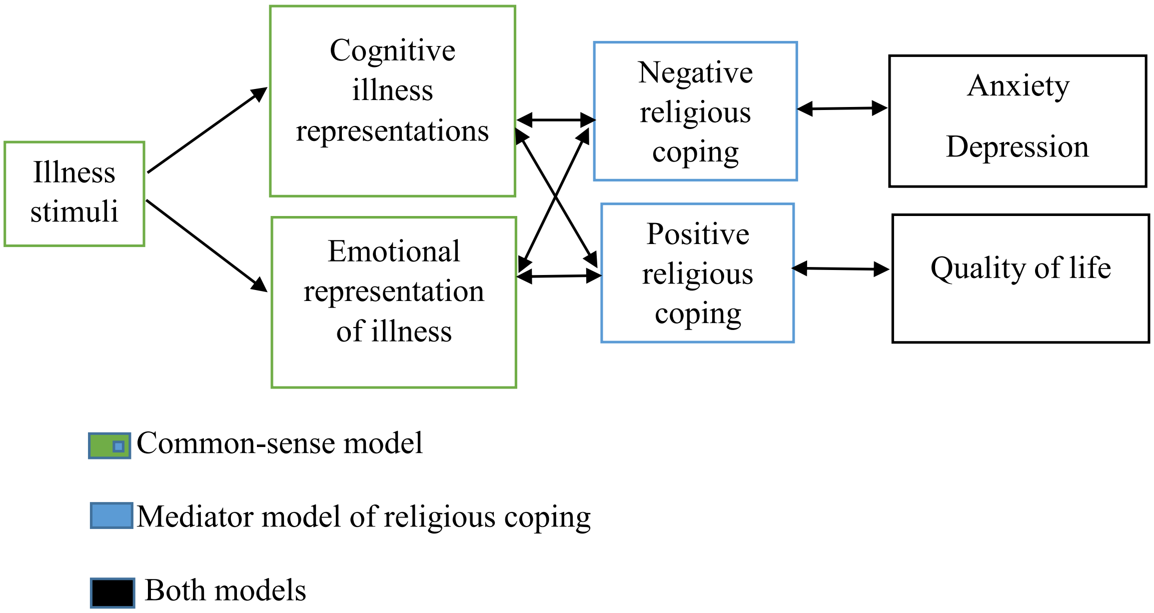


Figure 5.1. The Integrated Theoretical Model Combining the Common-Sense Model and the Mediator Model of Religious Coping.

methods utilised by Omani Muslim women with breast cancer, their study was qualitative, and did not utilise a specific psychological theory to explain their findings. As a consequence, it did not provide information on the mechanisms that could be associated with the psychosocial outcomes among this population (Al-Azri, Al-Awisi, Al-Rasbi, & Al-Moundhri, 2014). Therefore, research is needed in this area to highlight the potential mechanisms affecting psychosocial outcomes among this population. Results from our study could guide designing effective clinical and psychological interventions for Omani women with breast cancer. This study intends to fill a gap in the literature given the lack of theory-based research from this part of the world, and the lack of any empirical evidence on religious coping as a mediator between illness perceptions and psychosocial outcomes. Consequently, the main aims for this study are to identify current anxiety and depression symptomatology levels, and quality of life, and to determine if religious coping will mediate the relationship between illness perceptions, on the one hand, and symptoms of anxiety, depression and quality of life, on the other hand, among Omani women with breast cancer by testing the utility of the integrated model.

An interview-based survey was chosen over other methods such as telephone interviews, self-administered, or postal questionnaires as these were not deemed appropriate for the Omani cultural context. First, telephone interviews for research purposes are not allowed as per the Sultan Qaboos University Hospital (SQUH) policy due to confidentiality concerns. Self-completed questionnaires, on the other hand, would have been difficult for patients as they were receiving their treatment at the Day Care Unit (DCU). Patients' concentration could have been negatively affected due to the busy environment at the DCU. Hence, the presence of the researcher was crucial to ensure the accuracy of participants' responses. Postal questionnaires were not appropriate because many participants are from distant towns and underserved areas. This may have posed difficulties in relation to sending and receiving questionnaire booklets. In addition, in Oman, it is not culturally sensitive and common to send survey questionnaires by post.

An interview-based survey design has several advantages such as the ability of the interviewer to explain challenging items, and the expected larger number of participants given that participants are more likely to respond to the questions compared to when these surveys are mailed to them (Bloch, Phellas, & Seale, 2011). However, interview-based surveys have some disadvantages such as being time and resource consuming, and the possibility of bias. However, the researcher (Z.A.) interviewed all participants herself so that participants' responses would not be affected by different interviewers' personal styles (Bloch et al., 2011). Moreover, Z.A. maintained a neutral attitude during the interview, and assured participants that there were no right or wrong answers in order to tackel the possibility of social desirability bias.

A survey design was chosen because it is cost-effective, and can generate large amounts of data (Creswell & Creswell, 2017). The cross-sectional nature of the study was appropriate for the study aims, as this study was exploratory in nature given the lack of studies in this field in the Arab world in general, and in Oman in particular (Kaptein et al., 2013, Kaptein et al., 2015; Pargament, Feuille, & Burdzy, 2011).

Research questions:

1. What are the current levels of anxiety and depressive symptomatology, and quality of life among Omani women with breast cancer?
2. What is the current use of positive and negative religious coping and illness perceptions among Omani women with breast cancer?
3. Can the integrated model predict symptoms of anxiety, depression, and the quality of life among Omani women with breast cancer?

Thus, this study is guided by the following hypotheses:

1. Consequences, identity, timeline, concern and emotional representations will be positively associated with negative religious coping, and negatively associated with positive religious coping.

2. Positive religious coping will be positively associated with the quality of life domains, while negative religious coping will be positively associated with symptoms of anxiety and depression.

3. Consequences, identity, timeline, concern and emotional representations will be positively associated with symptoms of depression and anxiety, and negatively associated with quality of life.

4. Positive and negative religious coping will mediate the relationship between illness perceptions, on the one hand, and symptoms of anxiety, depression, and quality of life, on the other hand.

5.4 Method

5.4.1 Study design

A cross-sectional interview-based survey design was implemented to examine the utility of the proposed integrated model.

5.4.2 Participants

Participants were women with breast cancer within one year of the diagnosis. They were identified using a clinical database at the Sultan Qaboos University Hospital (SQUH) in Muscat. Based on recent Omani clinical reports, almost half of the newly diagnosed cases of breast cancer in the Sultanate of Oman are diagnosed and treated in the SQUH, while the other half are diagnosed and treated at the Royal Hospital (one of the largest tertiary care hospitals in the Sultanate of Oman operating under the Ministry of Health). Out of the 161 patients diagnosed with female breast cancer during the study period (June 2015- August 2017), 103 (64%) participated in the study. Reasons for not participating were: logistical difficulties in recruitment of patients in the Outpatient Units (N=52, 32.2%), patients were deceased at the time of the interview (N=3, 1.86%), patients' refusals (N=8, 5%), and patients were receiving treatment elsewhere (N=19, 11.8%). All women were interviewed within the first year of diagnosis, and the mean time since diagnosis was 4.1 months (S.D. = 2.87).

5.4.3 Power calculations

A priori sample size analysis was calculated to estimate the required sample size for a multiple linear regression which included 10 predictor variables (consequences, timeline, personal control, treatment control, identity, coherence, concern, emotional representations, positive religious coping, and negative religious coping) using G*Power with an alpha level of 0.05, minimum power established at 0.95, and an effect size of 0.15 (Cohen, 1992). The analysis highlighted that 89 participants were necessary to find a statistically significant effect in the model. Thus, the current sample size (103) was deemed sufficient for the necessary linear multiple regression analyses.

5.4.4 Inclusion/exclusion criteria

The inclusion criteria were: Omani women newly diagnosed with breast cancer (within one year of diagnosis), over the age of 18 years, and able to comprehend Arabic or English language. These inclusion criteria were verified by checking the Electronic Patient Records (EPR), and were checked with the patients themselves before conducting the interview.

The exclusion criteria were: women with breast cancer who were less than 18 years of age, with psychological or cognitive disorders, and unable to take part in the interview due to physical difficulties. Participants were excluded from the study if they were unable to give informed consent. Only one person was excluded due to intellectual challenges.

5.4.5 Procedure

Ethical approval was granted from the ethics committee at the SQUH (MREC # 1085), and was endorsed by the University of Strathclyde Ethics Committee. Patients' information were collected and stored in accordance with the Data Protection Act (2018), and ethical standards of the SQUH and University of Strathclyde. All newly diagnosed patients were approached in the DCU and Oncology Outpatient Department (OPD) at the SQUH by Z.A., and were invited to participate in the study. This was done after gaining patients' initial approval from the consultant in charge of their medical care. A brief explanation was given about the main goals of the study, confidentiality, and their free will to participate or refuse to take part in the study, or to withdraw during the study. If patients agreed to hear more about the study, then they were given a written information sheet about the study, its goals and investigators. Following the Helsinki Principles, patients were informed that they could withdraw from the study at any time without providing any reason, and that their withdrawal would not negatively affect their treatment at the SQUH in any way. After seeking participants' consent, Z.A. read all questions to the consenting participants and wrote down the answers herself. Participants were debriefed orally, and were also given a written debriefing sheet at the end of the interview. The interviews took place in a private office either at the DCU, or the OPD. Data collection took place over two years and two months starting in June 2015 and ending in August 2017.

5.4.6 Pilot testing the questionnaire booklet

This step was conducted with five patients who had breast cancer within one year of the diagnosis. Those participants were not part of the study sample. The objective of the pilot test was to confirm the readability, clarity, and cultural sensitivity of all items (Portney & Watkins, 2009). All respondents indicated that the questions were clear and self-explanatory.

5.4.7 Measures

Demographic Questionnaire

This section had six questions. Four questions covered socio-demographic variables, and two questions covered demographic religious questions. The demographic variables were: age, marital status, educational level, and employment status. These demographic factors were chosen given their association with illness perceptions (Hopman & Rijken, 2015; Postolica, Iorga, Petrariu, & Azoicai, 2017; Ma, Yan, Wu, & Huang, 2018). These questions were chosen to examine any potential relationship with the predictor variables. The last two items included demographic religious variables, which were the perceived religiosity level and perceived commitment to prayers. These demographic variables were organised as the following: Age was treated as a continuous variable; whereas the following variables were treated as categorical: Marital status (married/ divorced/ widowed/ never married); Educational level (primary/ secondary/ university/ postgraduate); Employment status (working/ not working/ retired). Given that there is no part-time work system in Oman, all participants who held a job were doing so on a full-time basis.

Demographic religious factors included the following two questions to capture perceived level of religiosity and commitment to prayer: how much does Islam as a religion govern your life? (very religious/ religious/ moderate/ not religious); and how do you perceive your commitment to your daily five prayers? (very committed/ committed/ moderately committed, little commitment).

Clinical variables

Clinical variables were collated and verified by directly asking the participants, checking against each participant's Electronic Patient Record (EPR), and consultation with consultant medical oncologist Dr. Khalid Al-Baimani (K.A). Participants were asked about the time since diagnosis, which was treated as a continuous variable, previous medical history (yes/ no), and previous encounter with a psychiatrist or mental health professional (yes/ no). They were also asked about the treatment received at the time of interview: chemotherapy alone or with other combinations -Trustuzumab or Pertuzumab, Trustuzumab alone or with radiation, hormonal alone or with radiation or Trustuzumab. Finally, the stage of the illness was also verified (Stage I or II, Stage III-locally advanced disease, Stage IV-metastatic disease).

Time since diagnosis, treatment at the time of diagnosis, and the stage system were verified by checking against each participant's Electronic Patient Record (EPR). In addition, Z.A. and Dr. K.A. met several times to verify the treatment received at the time of the interview, and the best method to categorise it from a medical point of view. As for the stage of illness, the latest version of the National Comprehensive Cancer Network (NCCN) guidelines version 1.2017 was utilised (Section 1.2.1). Thus, T (tumour size), N (regional lymph nodes involvement), M (presence of metastasis) system that was used in each patient's EPR was converted under the supervision of Dr. K.A. into the stage system (Section 1.2.1).

Brief Illness Perceptions Questionnaire (Brief-IPQ, Broadbent, Petrie, Main, & Weinman, 2006; Saarti, Jabbour, El Osta, Haji, & Khabbaz, 2016)

The Brief-IPQ is one of the most widely used brief measures to assess patients' perceptions about their illness. This measure was chosen over longer versions of the Illness Perceptions Questionnaire because it was appropriate for the clinical setting and patient population (who were by and large attending the DCU to receive their chemotherapy treatment) (Broadbent et al., 2015). The Brief-IPQ contains nine questions in total. The first eight items were scored from 0 to 10, with 10 reflecting stronger perception for that specific item/domain. Each item measures a specific dimension of the patient's illness perception. The questions addressed the following aspects of the patient's perception of their illness: the perceived influence of the illness on a patient's life (consequences), the perceived timeline of the illness, the perceived personal control of the illness, the perceived efficacy of the treatment, the perceived severity of symptoms (identity), patient's concern about their illness, patient's understanding of their illness, and the emotional influence of the illness on patient's life. For example, the consequence dimension was assessed by the following question: how much does your illness affect your life? 0-10 (0 = not effect at all – 10 = severely affects my life).

The ninth item assesses the patient's ranking of the three key factors that caused the illness from their point of view. Given the research aims and questions, the cause item was not examined in this study because it provided qualitative data on illness perceptions, while the focus of this study was on the quantitative assessment of various illness perceptions which have been previously examined within the literature of breast cancer. Unlike the cause item, other quantitative illness perceptions have been shown to be associated with various outcome measures regardless of the cultural group investigated in previous research (Moss-Morris et al., 2002). Additionally, given that the cause item is not rated on a continuous scale ranging from 1-10, as are other illness perceptions, but rather is determined by patients' attribution of their illness, which is largely based on these patients' cultural background, it was deemed not possible to compare this item with breast cancer populations from other cultures (Dein, 2004). As for the brief Brief-IPQ has been shown to have good psychometric properties (concurrent, predictive and discriminant validity) in various illness populations including 23 studies on cancer, including breast cancer (Broadbent et al., 2015). The culturally translated Arabic version of the Brief-IPQ was utilised for this study (Saarti et al., 2016).

*Arabic Brief Religious Coping Scale (*A-BRCS, Al-Hadeethi, Hunt, Thomas, & Al-Qaysi, 2016; Pargament, Smith, Koenig, & Perez, 1998*)*

The A-BRCS is the cross-culturally validated measure of the Brief Religious Coping Scale (Brief-RCOPE) (Pargament et al, 1998). The measure has been translated into the Arabic language, and adapted to the Islamic beliefs and culture. The choice for this measure was based on the findings from the systematic review of chapter 3. As with the RCOPE, the A-BRCS has two subscales; positive and negative religious coping. Each scale comprises 14 items, 7 items for each scale. Each item is rated from 1 (strongly disagree) to 4 (strongly agree). Therefore, the minimum score could be 7 (low levels of religious coping) to 28 (high levels of religious coping). Participants were asked to report their use of religious coping within the context of their cancer experience. In other words, it was made clear to them that the study aimed to explore their utilisation of their religion to cope with the illness. For this study, Cronbach's alpha was found to be 0.81, 0.91 for the positive and negative religious coping scales, respectively, which are in line with what has been found elsewhere (Al-Hadeethi et al., 2016). Therefore, the A-BRCS was used in this study because of its good psychometric properties, its previous use in cancer studies, and cultural sensitivity to Arabic and Muslim populations.

European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (version 3) (EORTC QLQ-C30, Aaronson et al., 1993)

The EORTC QLQ-C30 is a quality of life measure developed by the European Organisation for Research and Treatment of Cancer group. The Arabic version, which was translated by the EORTC QLQ group, was implemented in this study (Aaronson et al., 1993). The translated version of the ERORTC-C30, version 3 has been validated on Arabic and Muslim patient populations diagnosed with breast cancer (Awad, Denic, & El Taji, 2008). It is comprised of 30 questions that cover the following five quality of life domains: physical functioning, role functioning, cognitive functioning, emotional functioning, and social functioning. In addition, it has three symptom scales: fatigue, pain and nausea/vomiting scales. The measure also contains the following single-item symptoms: diarrhoea, constipation, appetite loss, insomnia, dyspnoea, and financial difficulties. Each of the five functional domains, the three symptom subscales and the single symptom items has separate single scores. For this study, the symptom single items and non-psychosocial subscales were excluded as they were not relevant to the study's research questions.

The answers were scored on a Likert-type scale from 1 (not at all) to 4 (very much). The last two items of the questionnaire, which comprise the global health status, were rated from 1 (very poor) to 7 (excellent). For the functional scales, the higher the score, the better the level of functioning. However, high scores on the symptom scales/items represent low/poor levels of functioning. The researcher utilised Aaronson et al.'s (1993) scoring manual. In order to standardise the raw scores, linear transformation was implemented using SPSS IBM version 25.0 (Statistical Package for the Social Sciences). Therefore, the standardised scores ranged from 0 to 100.

The measure demonstrated good psychometric properties among Arab and Muslim populations with breast cancer as evidenced by the Cronbach's alpha of greater than 0.7 for all of the functional scales (Awad et al., 2008). The measure has also been reported as one of the most promising instruments to measure quality of life among women with breast cancer by the Patient Reported Outcome Measurement Group (2009) (Davies, Gibbons, Mackintosh, & Fitzpatrick, 2009). For this study, reliability analysis using Cronbach's alpha was above 0.7 for all of the psychosocial domains. More specifically, the following reliability estimates were found for the following domains: role functioning (0.93), emotional functioning (0.79), social functioning (0.78), and global health status (0.84).

Hospital Anxiety and Depression Scale (HADS, Zigmond & Snaith, 1983; El-Rufaie & Absood, 1987)

The Hospital Anxiety and Depression Scale (HADS) was originally devised to assess symptoms of anxiety and depression among patients in outpatient hospital settings (Zigmond & Snaith, 1983). The validated Arabic version was used for this study to explore symptoms of anxiety and depression among the participants (El-Rufaie & Absood, 1987). The HADS is composed of two subscales: an anxiety subscale and a depression subscale. Each scale has seven items, and are rated from 0 to 3, with (zero) representing the absence of a symptom, (1) representing having the symptom occasionally, (2) having the symptom a lot of the time, and (3) having the symptom most of the time. Scores can range from 0 to 21. Since the inception of the HADS, numerous studies have explored its validity and reliability among Arab and Muslim heterogeneous patient populations. It has been found to be a valid and reliable measure to estimate symptoms of anxiety and depression (Al Aseri et al., 2015; El-Rufaie & Absood, 1987; El-Rufaie & Absood, 1995) with Cronbach's alpha ranging from 0.73-0.78 for the anxiety subscale, and 0.77-0.88 for the depression subscale. The measure's good psychometric properties have also been confirmed within a general oncology population (Annunziata, Muzzatti, & Altoe, 2011) and has been confirmed by the literature review conducted by Bjelland and colleagues (Bjelland, Dahl, Haug, & Neckelmann, 2002). In addition, the HADS was found to be a reliable measure among a sample of Muslim Iranian patients with breast cancer, with Cronbach's alpha of 0.78 for the anxiety subscale, and 0.86 for the depression subscale (Montazeri, Vahdaninia, Ebrahimi, & Jarvandi, 2003). For this study, Cronbach's alpha was found to be 0.79 for the anxiety subscale, and 0.75 for the depression subscale.

5.4.8 Data analysis

All data analyses were conducted using SPSS IBM version 25.0 (Statistical Package for the Social Sciences).

5.4.9 Descriptive analysis

Mean scores and standard deviations were calculated for each of the predictors (illness perceptions, positive and negative religious coping subscales), as well as for the psychosocial outcome measures (symptoms of anxiety, depression, and quality of life).

Given that the scores were not normally distributed (skewed), log transformation, square root transformation, reciprocal transformation, and reverse score transformation were used, but they were unsuccessful. Therefore, in line with the recommendation by Field (2014), the bootstrapping method was utilised instead to obtain confidence intervals and significance testing (Field, 2014).

5.4.10 Inferential analysis

Given that the data were not normally distributed, Spearman's correlations were utilised to examine the associations among predictor and outcome variables. In addition, multiple regression analyses were conducted to examine expected relationships among illness perceptions, positive and negative religious coping, symptoms of anxiety and depression, and the psychosocial domains of the quality of life subscales. The assumptions for each mediation model were checked. Each model was checked for the existence of outliers, collinearity among independent variables, independent errors, normal distribution of the errors, homoscedasticity, and the linearity of the data.

To check for outliers, the case diagnostic option of the SPSS program was utilised to make sure that no more than 5% of the standardised residuals exceeded the absolute value of 2. To check the assumption of collinearity, both the tolerance and VIF values of each model were observed. No model exceeded the recommended values of 10 for VIF, and no model was below the value of 0.2 for tolerance. For the assumption of independent errors, Durbin-Watson values were observed, and all of the models had an approximate value of 2, which met the assumption of independent errors (Field, 2014). The assumptions of the linearity of data, homoscedasticity, and normal distribution of the residuals were all met, as the following measures were examined: histograms, Q-Q plot of the residuals, and the plot of the residuals by the predicted values were also observed.

Mediation analyses were conducted using PROCESS SPSS software (by Andrew F. Hayes); direct and indirect effects were examined using bootstrap procedure (samples 5000; 95% bias-corrected confidence intervals) (Model 4) (Preacher & Hayes, 2004). These mediation analyses examined the relationships between illness perceptions and psychosocial outcomes mediated through positive and negative religious coping, which were entered concurrently as mediators. The mediation analyses were conducted with the six outcome variables (anxiety, depression, global health status, emotional functioning, role functioning, and social functioning).

Given that Process only examines one outcome variable at a time with each of the independent variables (each one of the eight illness perception dimensions), eight mediation analyses were conducted to examine each and every outcome variable for this study. For example, section (5.5.3.1) involved eight mediation analyses with anxiety as the outcome variable. Model 4 in Process was used to test for the mediation of both forms of religious coping between illness perceptions and anxiety.

As for the predictors of positive and negative religious coping (Sections 5.5.3.1.1 and 5.5.3.1.2), Tables 5.8 and 5.9 display illness perceptions as predictors of positive and negative religious coping, respectively. For the rest of the 7 mediation analyses predicting the psychosocial outcomes, Sections 5.5.3.1.1 and 5.5.3.1.2 will be identical in the subsequent analyses because the same illness perceptions were entered in the analyses. Hence, Tables 5.8 and 5.9 will be displayed only once. Figure 5.2 displays a path diagram of anxiety as an outcome. This path analysis is repeated for every mediation analysis for every outcome.

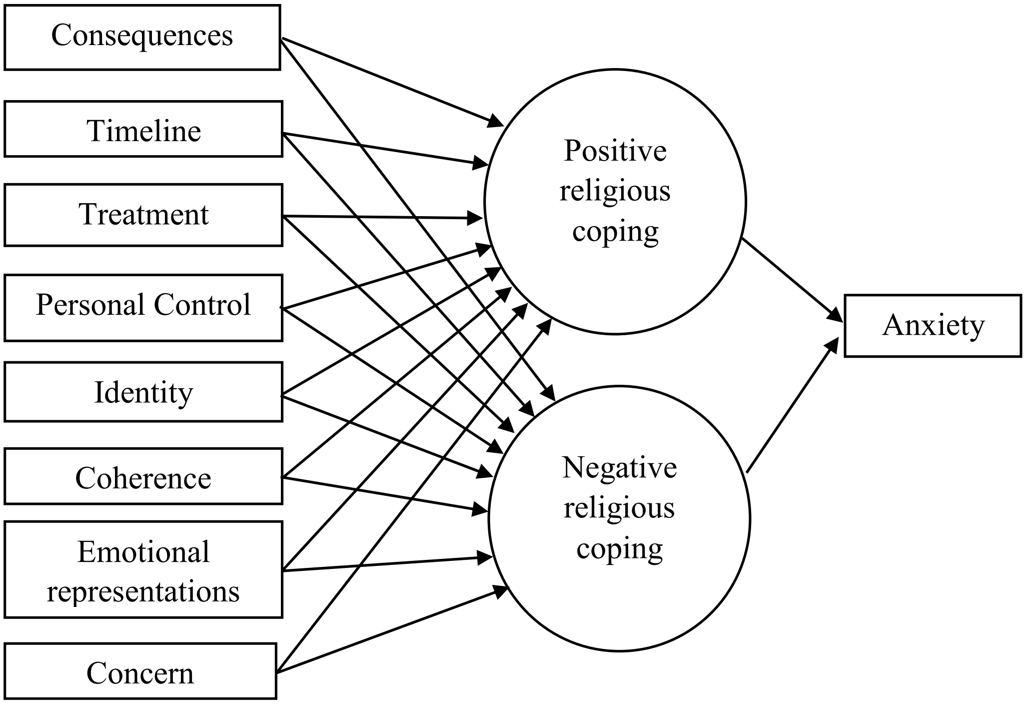


Figure 5.2. Path Diagram of Anxiety as a Psychosocial Outcome

5.5 Results

5.5.1 Participants' demographic characteristics and religiousness

Table 5.1 describes the demographic characteristics of study participants. The age range was 19-57 years. The majority were married, unemployed, with a primary education, perceived themselves as moderately religious, and were very committed to the daily five Islamic prayers.

Table 5.1 Socio-demographic Characteristics and Religiousness of 103 Participants

Mean age (Years)	41.28 (S.D.=7.56)
Demographic variable	**N (%)**
Marital status	
Married	91 (88.3%)
Divorced	5 (4.9%)
Widowed	2 (1.9%)
Never married	5 (4.9%)
Employment status	
Working	39 (37.9%)
Not working	60 (58.3%)
Retired	4 (3.9%)
Educational attainment	
Primary	34 (32.0%)
Secondary	28 (28.2%)
University	34 (33.0%)
Postgraduate	7 (6.8%)
Perceived religiosity	
Very religious	22 (21.4%)
Religious	19 (17.5%)
Moderate	60 (58.3%)
Not religious	2 (1.9%)
Perceived commitment to prayers	
Very committed	60 (58.0%)
Committed	16 (15.5%)
Moderately committed	27 (26.2%)
Not committed	0 (0%)

5.5.2 Participants' clinical information

Table 5.2 displays clinical information of the illness, current treatment, and participants' previous medical comorbidities. The majority of participants denied a previous encounter with a mental health professional, were on chemotherapy, and in different stages of the illness.

Table 5.2 Clinical Variables and Treatment of Participants at the Time of Interview

Mean time since diagnosis (months)	4.1 (S.D. = 2.87)
Clinical variables	N 103 (%)
Stage of illness	
Stages I and II	48 (46.6%)
Stage III (locally advanced breast cancer)	35 (34.0%)
Stage IV (metastatic disease)	19 (18.4%)
Premorbid medical history	
No	75 (72.8%)
Yes	28 (27.2%)
Previous encounter with a mental health professional	
No	100 (97.1%)
Yes	3 (2.9%)
Treatment at the time of interview	
Chemotherapy[a]	89 (85.5%)
Trustuzumab[b]	6 (6.0%)
Hormonal therapy[ab]	8 (8.0%)

[a] Some patients were concurrently receiving Trustuzumab or Pertuzumab (Section 1.2.2)

[b] Some patients were concurrently receiving radiotherapy (Section 1.2.2)

Q1. What is the current level of anxiety and depressive symptomatology, and quality of life among Omani women with breast cancer?

Table 5.3 displays the mean and standard deviations of anxiety and depressive symptomatology. Normative levels are observed as suggested by Zigmond and Snaith (1983) for both symptoms of anxiety and depression.

Table 5.3 Means and SDs for the Anxiety and Depression Scales

Variable	**Mean (S.D.)**
Anxiety	4.88 (3.68)
Depression	4.56 (3.64)

Table 5.4 displays the scores of quality of life domains among study participants. Compared to the reference data as reported by Scott et al. (2008) for patients with similar clinical profiles, this sample reported higher functioning scores on the four identified psychosocial domains of the EORTC-QLQ-C30 measure.

Table 5.4 Means and SDs of the Psychosocial Quality of Life Domains (EORTC-QLQ-C30) Subscales and References Data[a]

EORTC-QLQ-C30 Subscale	Mean (S.D.) Study Sample n=103	Mean (S.D.) Reference Data[a] n=2782
Global Health Status[b]	76.21 (16.60)	61.8[b] (24.6)
Role Functioning[b]	82.52 (29.18)	70.9 (29.9)
Emotional Functioning[b]	81.96 (19.69)	68.6 (23.8)
Social Functioning[b]	82.69 (25.24)	77.0 (27.1)

[a]Scott et al., 2008: Reference data were adapted from Scott et al. (2008), and are provided for comparison purposes with patients of similar clinical profiles

[b]Higher scores reflect better functioning

Q2. What is the current use of religious coping and illness perceptions among Omani women with breast cancer?

Table 5.5 provides the means and standard deviations for the scores of the religious coping subscales. Compared to the mean of negative religious coping subscale, the sample exhibited higher scores for positive religious coping subscale.

Table 5.5 Means and S.D. of religious coping

Variable	Mean (S.D)
Positive Religious Coping	17.62 (3.48)
Negative Religious Coping	5.32 (3.88)

Table 5.6. provides the means and standard deviations for the illness perceptions dimensions. Compared to the asthma and diabetes reference groups, this sample displayed lower scores on the perceived consequences of the illness and the timeline dimension, and high scores on the personal and treatment control dimensions. However, the sample had higher scores on the identity dimension compared to the reference groups.

Table 5.6. Means and (S.D.) of the Brief-Illness Perception Questionnaire (Brief-IPQ) Dimensions of Omani Muslim Women with Breast cancer and Two Reference Groups of Patients with Asthma and Diabetes*

Brief-IPQ Dimension	Omani Breast Cancer Patients n=103	Reference Group Asthma n=309	Reference Group Diabetes n=119
Consequences	2.54 (2.57)	3.5 (2.3)	4.7 (2.9)
Timeline	2.54 (2.26)	8.8 (2.2)	9.2 (1.9)
Personal control	7.18 (2.54)	6.7 (2.4)	6.7 (2.3)
Treatment control	8.42 (1.70)	7.9 (2.0)	8.0 (2.3)
Identity	4.92 (2.47)	4.50 (2.30)	4.6 (2.8)
Concern	4.10 (2.92)	4.6 (2.8)	7.0 (3.1)
Coherence	7.33 (2.48)	6.5 (2.6)	7.9 (2.3)
Emotional response	3.53 (2.72)	3.3 (2.9)	4.3 (3.3)

*Reference data were adapted from Broadbent et al. (2006)

Q3. Can the integrated model predict symptoms of anxiety, depression and quality of life among Omani women with breast cancer?

The initial correlations among the variables included within the integrated model are shown in Table 5.7. The following correlations represent a summary of the relationships found among the study variables:

1. The identity dimension and other illness representations

High perceived illness identity was positively associated with consequences, timeline, and emotional representations. Identity was also negatively associated with the control dimension.

2. The control dimension with other illness representations

Negative relationships were found between personal control, on the one hand, and consequences, timeline, and concern, on the other hand. Treatment control had a positive relationship with emotional representations and coherence.

3. The timeline dimension with other illness representations

Timeline was negatively correlated with control dimension, and positively correlated with emotional representations and consequences.

4. The emotional representation dimension with other illness representations

Emotional representations were positively associated with timeline, identity and consequences.

5. Illness perceptions and religious coping

For hypothesis 1, it was expected that negative religious coping would be positively associated with consequences, identity, timeline, concern and emotional representations. These associations were all supported, except for the relationship between negative religious and concern. These relationships between negative religious coping and illness perceptions could potentially indicate a mediating role of negative religious coping. The expected negative relationships between positive religious coping, and consequences, identity, and concern were not substantiated. Only the timeline was significantly and negatively associated with positive religious coping.

6. Religious coping and psychosocial outcomes

Hypothesis 2 suggested that positive religious coping would be positively associated with quality of life domains. None of these correlations were supported for positive religious coping. These non-significant relationships might signify that positive religious may not be a mediator in this model. Negative religious coping was expected to display positive correlations with anxiety and depression. The relationships expected for negative religious coping were supported for anxiety and depression, but also for the emotional functioning. Non-significant relationships were found with other other quality of life domains. Therefore, these correlations might suggest that negative religious coping will mediate the anxiety, depression, and some emotional functioning models.

7. Illness perceptions and psychosocial outcomes

The first part of hypothesis 3 suggested that consequences, identity, timeline, concern, and emotional representations would be positively associated with anxiety and depression. All of these correlations were supported, except for the relationship between identity and anxiety. All expected relationships between depression and illness perceptions were supported. These correlations could imply that illness perceptions could have direct effects on the anxiety and depression models.

The second part of hypothesis 3 suggested that consequences, identity, timeline, concern and emotional representations would be negatively associated with the quality of life domains. Role functioning had a negative and significant relationship with consequences. Emotional functioning only displayed the expected negative correlations with consequences, concern, and emotional representations. On the other hand, global health status was significantly correlated with all of the illness perceptions categories except for identity.

5.5.3 Mediation analyses

Mediation analyses were conducted to examine the mediating role of positive and negative religious coping between illness perceptions and psychosocial outcomes. The illness perceptions which will be examined are consequences, timeline, personal control, treatment control, identity, concern, coherence, and emotional representations. Psychosocial outcomes are symptoms of anxiety, depression, and the following quality of life domains: emotional functioning, role functioning, social functioning, and global health status.

Two separate sets of mediation analyses were conducted. The first set included the emotional representations of illness and the concern items, while the second set excluded these two dimensions/items. The *emotional representations of illness* and the *concern* dimensions were excluded in the second set of the mediation analyses because of the researcher's concern that they might overlap with the psychosocial outcomes of anxiety, depression, and the emotional functioning domain of the quality of life (Gould, Brown, & Bramwel, 2010). In fact, Table 5.7 reflects the conceptual overlap among the scales as a result of the strong and statistically significant relationships between emotional representations, on one hand, and symptoms of anxiety and depression on the other hand. Moreover, there was a significant and negative relationship between emotional representations and emotional functioning. Additionally, the concern item was positively and significantly associated with symptoms of anxiety and depression, and negatively and significantly associated with emotional functioning.

Table 5.7 Spearman Correlations among the Variables within the Integrated Model

Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
(1) Consequences	-														
(2) Timeline	0.43**	-													
(3) Personal control	-0.25*	-0.43**	-												
(4) Treatment control	0.01	-0.30**	0.38**	-											
(5) Identity	0.46**	0.27**	-0.14	-0.04	-										
(6) Concern	0.47**	0.30**	-0.21*	0.10	0.36**	-									
(7) Coherence	0.04	-0.22*	0.36**	0.53**	-0.06	0.14	-								
(8) Emotional representations	0.51**	0.22*	-0.11	0.23*	0.35**	0.58**	0.20*	-							
(9) Positive Religious Coping	0.01	-0.25*	0.09	0.19	-.011	0.10	0.11	0.17	-						
(10) Negative Religious Coping	0.26**	0.20*	-0.17	-0.00	0.22*	0.19	-0.05	0.32**	-0.09	-					
(11) Anxiety	0.40**	0.20*	-0.18	0.02	0.15	0.27**	0.19	0.50**	0.04	0.47**	-				
(12) Depression	0.48**	0.20*	-0.19	0.04	0.38**	0.34**	0.13	0.53**	0.02	0.43**	0.66**	-			
(13) Role Functioning	-0.26**	-0.18	0.10	0.17	-0.19	-0.06	0.05	-0.06	-0.07	-0.05	-0.23*	-0.26**	-		
(14) Emotional Functioning	-0.23*	-0.16	0.07	-0.02	-0.02	-0.20*	-0.23*	-0.44**	-0.04	-0.26**	-0.55**	-0.48**	0.12	-	
(15) Social Functioning	-0.36**	-0.12	0.13	-0.04	-0.38**	-0.18	0.03	-0.20*	-0.08	-0.10	-0.10	-0.27**	0.25*	0.15	
(16) Global Health Status	-0.46**	-0.37**	0.34**	0.19	0.26**	-0.28**	0.09	-0.31**	0.06	-0.18	-0.28**	-0.38**	0.28**	0.28**	0.27**

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

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

The first set of mediation analyses included the **emotional representation of illness (IPQ 8), and concern dimension (IPQ 6)** with a confidence interval of 95 %. Mediation analysis using Process (Andrew F. Hayes, http:www.afhayes.com), with no covariates included as they were found to have non-significant correlations with both the potential mediators (positive and negative religious coping), and outcome variables resulted in the following findings:

5.5.3.1 Mediation analysis with anxiety as the outcome

These analyses assessed whether positive or negative religious coping had a mediating role between illness perceptions and anxiety. The relationships between positive and negative religious coping and the eight illness perceptions will be examined as the first part of the mediation analyses.

5.5.3.1.1 Direct effects predicting positive religious coping

As displayed in Table 5.8, only timeline predicted positive religious coping. The model was significant, and it accounted for 26.26% of the variance in positive religious coping. When the model was run without the emotional representations and concern items, consequences emerged as a new significant predictor of positive religious coping.

Table 5.8. Direct Effects Predicting Positive Religious Coping

Path	**B (SE)**	**LLCI, ULCI**	**P**	**R^2**
Consequences	0.16 (0.17)	-0.18, 0.50	.360	0.26*
Timeline	-0.71 (0.16)	-1.03, -0.38	<.001	
Personal Control	0.21 (0.15)	-0.08, 0.50	.157	
Treatment Control	0.01 (0.22)	-0.43, 0.46	.957	
Identity	-0.17 (0.15)	-0.46, 0.13	.264	
Concern	0.24 (0.14)	-0.04, 0.51	.089	
Coherence	-0.16 (0.16)	-0.46, 0.17	.342	

Path	B(SE)	LLCI,ULCI	P
Emotional Representations	0.20 (0.15)	-0.11, 0.50	.208

5.5.3.1.2 Direct effects predicting negative religious coping

Negative religious coping was predicted by the emotional representation as illustrated in Table 5.9. In addition, the model was significant (p=0.019) in predicting negative religious coping. When the model was run without the two emotional items, the model became non-significant and no new predictors explained the variance in negative religious coping.

Table 5.9. Direct Effects Predicting Negative Religious Coping

Path	B (SE)	LLCI, ULCI	P	R^2
Consequences	0.04 (0.20)	-0.36, 0.44	.826	0.19
Timeline	0.01 (0.20)	-0.37, 0.38	.977	
Personal Control	-0.15 (0.17)	-0.50, 0.18	.367	
Treatment Control	0.22 (0.26)	-0.75, 0.30	.395	
Identity	0.14 (0.17)	-0.21, 0.49	.419	
Concern	-0.13 (0.16)	-0.45, 0.19	.424	
Coherence	-0.12 (0.19)	-0.50, 0.26	.535	
Emotional Representations	-0.47 (0.18)	0.11, 0.83	.011	

5.5.3.2 Mediation analyses in predicting anxiety

Table 5.10 displays the final model, with all of the independent variables and mediators included. The model was significant with the emotional representations, consequences, and negative religious coping all being significant predictors of anxiety. Negative religious coping mediated the relationship between emotional representations and anxiety. The final model predicted 50.8% of the variance in anxiety. The total effect model was also significant with a variance of 46.16% in predicting anxiety, where only consequence and emotional representations significantly predicting anxiety. Therefore, there were direct effects of consequences, emotional representations, and negative religious coping on anxiety, whereas the rest of illness perceptions did not have direct effects on anxiety. When this model was run omitting the emotional representations and concern items, negative religious coping and consequences continued to be significant predictors with direct effects on anxiety. The emotional representations ceased to have direct effects on anxiety. In the total effect model, only consequences had direct effects on anxiety. Negative religious coping did not mediate the relationship between illness perceptions and anxiety.

Table 5.10. Mediation Analysis Predicting Anxiety

Path	**Effect**	**B (SE)**	**LLCI, ULCI**	**P**	**R^2**
Positive religious coping	Direct	-0.11 (0.10)	-0.29, 0.08	.250	0.46*
Negative religious coping	Direct	0.20 (0.08)	0.05, 0.36	.010	
Consequences	Direct	0.46 (0.16)	0.15,0.77	.004	
Timeline	Direct	-0.12 (0.13)	-0.18, 0.41	.430	
Personal Control	Direct	-0.21 (0.13)	-0.47, 0.05	.115	
Treatment Control	Direct	-0.16 (0.20)	-0.57, 0.24	.426	
Identity	Direct	-0.13 (0.14)	-0.4., 0.14	.349	
Concern	Direct	-0.19 (0.12)	-0.44, 0.05	.125	
Coherence	Direct	0.13 (0.15)	-0.16, 0.43	.368	
Emotional Representations	Direct	0.62 (0.14)	0.34, 0.89	<.001	

Path	**Indirect Effects**	**Effect (SE)**	**LLCI, ULCI**
Consequences	*Via negative religious coping*	0.01 (0.04)	-0.08, 0.09
	Via positive religious coping	-0.02 (0.03)	-0.12, 0.02
Timeline	*Via negative religious coping*	0.00 (0.05)	-0.11, 0.10
	Via positive religious coping	0.07 (0.08)	-0.03, 0.30
Personal Control	*Via negative religious coping*	-0.03 (0.04)	-0.41, 0.10
	Via positive religious coping	-0.02 (0.03)	-0.13, 0.01
Treatment Control	*Via negative religious coping*	-0.05 (0.74)	-0.21, 0.08
	Via positive religious coping	0.00 (0.03)	-0.08,0.06

Path	Indirect Effects	Effect (SE)	LLCI, ULCI
Identity	*Via negative religious coping*	0.03 (0.04)	-0.03, 0.14
	Via positive religious coping	0.02 (0.03)	-0.01, 0.12
Concern	*Via negative religious coping*	-0.03 (0.04)	-0.14, 0.05
	Via positive religious coping	-0.03 (0.03)	-0.16, 0.01
Coherence	*Via negative religious coping*	-0.02 (0.05)	-0.16, 0.05
	Via positive religious coping	0.02(0.03)	-0.01, 0.13
Emotional Representations	*Via negative religious coping*	0.10 (0.05)	0.02, 0.24
	Via positive religious coping	0.02 (0.03)	-.013, 0.01

5.5.3.3 Mediation analyses with depression as the outcome

All of the independent variables and mediators are displayed in the final model in Table 5.11. Four variables predicted 46.27% of the variance in the overall depression model, and these were: the emotional representations, consequences, identity, and negative religious coping. Only negative religious coping mediated the relationship between emotional representations and depression. The total effect model was significant in predicting 43.20% of the variance in depression. The overall model remained significant when the emotional items were removed from the analyses, and the same variables continued to have direct effects on depression. As expected, the emotional representations did not have direct effects on depression because it was removed from the analyses. Consequently, negative religious coping did not mediate the relationship between any illness perception and depression. Only consequences had direct effects on anxiety.

Table 5.11. Mediation Analysis Predicting Depression

Path	Effect	B (SE)	LLCI, ULCI	P	R^2
Positive religious coping	Direct	-0.05 (0.09)	-0.24, 0.13	.562	0.47*
Negative religious coping	Direct	0.17 (0.08)	0.01, 0.33	.033	
Consequences	Direct	0.35 (0.16)	0.04,0.67	.027	

Path	Effect	B (SE)	LLCI, ULCI	P
Timeline	Direct	-0.02 (0.15)	-0.32, 0.27	.869
Personal Control	Direct	-0.19 (0.13)	-0.45, 0.08	.161
Treatment Control	Direct	-0.15 (0.21)	-0.56, 0.26	.476
Identity	Direct	0.29 (0.14)	0.02, 0.56	.035
Concern	Direct	-0.10 (0.13)	-0.35, 0.16	.454
Coherence	Direct	0.12 (0.15)	-0.18, 0.42	.414
Emotional Representations	Direct	0.50 (0.14)	0.21, 0.78	.001

Path	Indirect Effects	Effect (SE)	LLCI,ULCI
Consequences	*Via negative religious coping*	0.01 (0.04)	-0.06, 0.1
	Via positive religious coping	-0.01(0.02)	-0.1, 0.02
Timeline	*Via negative religious coping*	0.00 (0.04)	-0.10, 0.08
	Via positive religious coping	0.04 (0.06)	-0.05, 0.21
Personal control	*Via negative religious coping*	-0.03 (0.04)	-0.16, 0.03
	Via positive religious coping	-0.01 (0.02)	-0.11, 0.01
Treatment control	*Via negative religious coping*	-0.04 (0.06)	-0.23, 0.05
	Via positive religious coping	-.00 (0.02)	-0.06, 0.01
Identity	*Via negative religious coping*	0.02 (0.04)	-0.02, 0.14
	Via positive religious coping	0.01 (0.02)	-0.01, 0.09
Concern	*Via negative religious coping*	-0.02 (0.04)	-0.13, 0.03
	Via positive religious coping	-0.01 (0.02)	-0.11, 0.01
Coherence	*Via negative religious coping*	0.02 (0.04)	-0.15, 0.04
	Via positive religious coping	0.01 (00.02)	-0.01, 0.09
Emotional Representations	*Via negative religious coping*	0.08 (0.05)	0.01, 0.22
	Via positive religious coping	-0.01 (0.02)	-0.1, 0.01

5.5.3.4 Mediation analyses with social functioning as the outcome

Table 5.12 displays the overall social functioning model which was significant in predicting 24.93% of social functioning. Only consequences and identity had direct effects on social functioning. About 24.75% of the variance in social functioning was significantly predicted by the total effect model. Neither positive nor negative religious coping mediated the relationship between illness perceptions and social functioning. When this model was run without the two emotional items, the overall model remained significant in predicting 24.60% of the variance in social functioning, with the same predictors having direct effects on social functioning. The total effect model was similarly significant, with the same predictors having direct effects on social functioning.

Table 5.12. Mediation Analysis Predicting Social Functioning

Path	**Effect**	**B (SE)**	**LLCI, ULCI**	**P**	**R^2**
Positive religious coping	Direct	0.20 (0.77)	-1.33,1.74	.792	0.25
Negative religious coping	Direct	0.26 (0.66)	-1.06, 1.57	.700	
Consequences	Direct	-2.94 (1.28)	-5.48, -0.40	.024	
Timeline	Direct	0.42 (1.32)	-2.21, 3.05	.819	
Personal Control	Direct	0.53, 1.09	-1.64, 2.71	.616	
Treatment Control	Direct	0.06 (1.67)	-3.26, 3.38	.997	
Identity	Direct	-2.70 (1.12)	-4.92, -0.48	.016	
Concern	Direct	0.44 (1.04)	-1.63, 2.50	.656	
Coherence	Direct	1.36 (1.23)	-1.08, 3.80	.286	
Emotional Representations	Direct	-0.70 (1.2)	-3.08, 1.68	.634	

Path	**Indirect effects**	**Effect (SE)**	**LLCI, ULCI**
Consequences	*Via negative religious coping*	0.01 (0.12)	-0.16, 0.39
	Via positive religious coping	0.03 (0.24)	-0.28, 0.76
Timeline	*Via negative religious coping*	0.00 (0.13)	-0.25, 0.30
	Via positive religious coping	-0.14 (0.66)	-1.73, 0.95
Personal control	*Via negative religious coping*	-0.04 (0.15)	-0.67, 0.10
	Via positive religious coping	0.04 (0.25)	-0.32, 0.75
Treatment control	*Via negative religious coping*	-0.06 (0.21)	-0.87, 0.16
	Via positive religious coping	0.00 (0.25)	-049, 0.59
Identity	*Via negative religious coping*	0.04 (0.12)	-0.09, 0.47
	Via positive religious coping	-0.03 (0.24)	-0.71, 0.25
Concern	*Via negative religious coping*	-0.03 (0.13)	-0.39, 0.11
	Via positive religious coping	0.05 (0.24)	-0.30, 0.81
Coherence	*Via negative religious coping*	-0.03 (0.15)	-0.67, 0.12
	Via positive religious coping	-0.03 (0.22)	-0.65, 0.30
Emotional representation	*Via negative religious coping*	0.12 (0.28)	-0.33, 0.83
	Via positive religious coping	0.04 (0.24)	-0.27, 0.74

5.5.3.5 Mediation analyses with emotional functioning as the outcome

All of the independent variables and mediators are shown in Table 5.13, and the overall model significantly predicted 34.73% of the variance in emotional functioning. Only the emotional representations of illness predicted emotional functioning. About 32.88% of variance in emotional functioning was predicted in the total effect model. Moreover, there was a lack of the mediating role of religious coping in the model. The overall model remained significant, when the emotional items were omitted from the analyses, and the model predicted 23.07% of the variance in emotional functioning. A new predictor, the consequences item, emerged with direct effects on emotional functioning. Additionally, 20.71% of the variance in emotional functioning was predicted by the total effect model, with the new consequences item having direct effects on emotional functioning.

Table 5.13. Mediation Analysis Predicting Emotional Functioning

Path	**Effect**	**B (SE)**	**LLCI, ULCI**	**P**	**R^2**
Positive religious coping	Direct	0.83 (0.56)	-0.28, 1.95	.141	0.35*
Negative religious coping	Direct	-0.25 (0.48)	-1.20, 0.70	.607	
Consequences	Direct	-1.03 (0.93)	-2.87, 0.81	.271	
Timeline	Direct	-0.15 (0.88)	-3.28, 0.21	.084	
Personal Control	Direct	0.12 (0.78)	-1.43, 1.68	.878	
Treatment Control	Direct	1.50(1.21)	-0.91, 3.90	.219	
Identity	Direct	1.24 (0.80)	-0.36, 2.84	.127	
Concern	Direct	0.62 (0.74)	-0.86, 2.09	.408	
Coherence	Direct	-1.21 (0.89)	-2.97, 0.56	.178	
Emotional Representations	Direct	-3.34 (0.83)	-4.99, -1.69	.000	

Path	Indirect effect	Effect (SE)	LLCI, ULCI
Consequences	*Via negative religious coping*	-0.01 (0.11)	-0.33, 0.17
	Via positive religious coping	0.13 (0.20)	-0.11, 0.84
Timeline	*Via negative religious coping*	-0.00 (0.14)	-0.24, 0.25
	Via positive religious coping	-0.59 (0.55)	-2.05, 0.22
Personal control	*Via negative religious coping*	-0.04 (0.13)	-0.14, 0.46
	Via positive religious coping	0.17 (0.24)	-0.05, 0.96
Treatment control	*Via negative religious coping*	0.06 (0.20)	-0.17, 0.70
	Via positive religious coping	0.01 (0.25)	-0.46, 0.60
Identity	*Via negative religious coping*	-0.04 (0.12)	-0.40, 0.12
	Via positive religious coping	-0.14 (0.18)	-0.78, 0.05
Concern	*Via negative religious coping*	0.03 (0.12)	-0.12, 0.40
	Via positive religious coping	0.20 (0.24)	-0.03, 1.13
Coherence	*Via negative religious coping*	0.03 (0.15)	-0.14, 0.52
	Via positive religious coping	-0.13 (0.21)	-0.90, 0.07
Emotional representation	*Via negative religious coping*	-0.12 (0.24)	-0.01, 1.0
	Via positive religious coping	0.16 (0.21)	-0.57, 0.41

5.5.3.6 Mediation analyses with role functioning as the outcome

Table 5.14 displays all of the independent variables and mediators in the overall model. The overall model was significant in predicting the variance in role functioning, with only treatment control having direct effects on role functioning. The total effect model was likewise significant in predicting role functioning. However, religious coping did not have a mediating role. When running this model without the two emotional items, both the overall model and total effects models remained significant in predicting role functioning. Also, treatment control continued to have direct effects on the role functioning model.

Table 5.14. Mediation Analysis Predicting Role Functioning

Path	Effect	B (SE)	LLCI, ULCI	P	R^2
Positive religious coping	Direct	-1.05 (0.92)	-2.88, 0.78	.256	0.21
Negative religious coping	Direct	-0.58 (0.79)	-2.14, 0.98	.459	
Consequences	Direct	-2.23 (1.51)	-5.23, 0.77	.143	
Timeline	Direct	-1.41 (1.43)	-4.26, 1.43	.326	

Path	Effect	B (SE)	LLCI, ULCI	P
Personal Control	Direct	0.71 (1.28)	-1.83, 3.26	.579
Treatment Control	Direct	4.49 (1.98)	0.57, 8.41	.025
Identity	Direct	-1.50 (1.31)	-4.11, 1.10	.256
Concern	Direct	0.78 (1.21)	-1.63, 3.19	.523
Coherence	Direct	-1.09 (1.45)	-3.97, 1.79	.454
Emotional Representations	Direct	-0.04 (1.36)	-2.73, 2.66	.979

Path	Indirect effect	Effect (SE)	LLCI, ULCI
Consequences	*Via negative religious coping*	-0.03 (0.18)	-0.61, 0.22
	Via positive religious coping	-0.17 (0.03)	-1.03, 0.15
Timeline	*Via negative religious coping*	-0.00 (0.21)	-0.44, 0.41
	Via positive religious coping	0.74 (0.65)	-0.26, 2.40
Personal control	*Via negative religious coping*	0.09 (0.21)	-0.12, 0.88
	Via positive religious coping	-0.22 (0.31)	-1.28, 0.13
Treatment control	*Via negative religious coping*	0.13 (0.31)	-0.83, 0.71
	Via positive religious coping	-0.01 (0.35)	-0.18, 1.34
Identity	*Via negative religious coping*	-0.08 (0.19)	-0.81, 0.10
	Via positive religious coping	0.18 (0.30)	-0.14, 1.15
Concern	*Via negative religious coping*	0.07 (0.20)	-0.13, 0.78
	Via positive religious coping	-0.25 (0.28)	-1.22, 0.07
Coherence	*Via negative religious coping*	0.07 (0.21)	-0.15, 0.95
	Via positive religious coping	0.17 (0.30)	-0.16, 1.26
Emotional representation	*Via negative religious coping*	-0.28(0.39)	-1.31, 0.34
	Via positive religious coping	-0.21 (0.27)	-1.11, 0.12

5.5.3.7 Mediation analyses with global health status as the outcome

The overall model of global health status was significant, and it explained 30.76% of the variance in the model, as shown in Table 5.15. However, no significant mediators predicted the model. The total effects model was significant in predicting 30.69% of global health status. Also, there were no directs effects of any illness perceptions on global health status. When this model was run omitting the emotional representations and concern items, the overall model remained significant in predicting 28.83% of global health status, and consequences emerged as having direct effects on global health status. The total effects models remained significant in predicting 28.27% of the variance, with both personal control and consequences emerging as new predictors. Additionally, positive religious coping emerged as a new mediator between timeline and global health status.

Table 5.15 Mediation Analysis Predicting Global Health Status

Path	**Effect**	**B (SE)**	**LLCI, ULCI**	**P**	**R^2**
Positive religious coping	Direct	-0.06 (0.49)	-1.03, 0.91	.903	0.3076
Negative religious coping	Direct	-0.12 (0.42)	-0.95, 0.71	.780	
Consequences	Direct	-1.36 (0.80)	-2.94, 0.23	.092	
Timeline	Direct	-0.80 (0.76)	-2.29, 0.71	.297	
Personal Control	Direct	1.32 (0.67)	-0.02, 2.66	.053	
Treatment Control	Direct	0.78 (1.04)	-1.29, 2.85	.457	
Identity	Direct	-0.21 (0.69)	-1.58, 1.12	.766	
Concern	Direct	0.01 (0.64)	-1.26, 1.28	.990	
Coherence	Direct	-0.13 (0.76)	-1.65, 1.39	.862	
Emotional Representations	Direct	-1.19 (0.72)	-2.61, 0.23	.100	

Path	**Indirect effects**	**Effect (SE)**	**LLCI, ULCI**
Consequences	*Via negative religious coping*	-0.01 (0.1)	-0.27, 0.16
	Via positive religious coping	-0.01 (0.12)	-0.32, 0.2
Timeline	*Via negative religious coping*	-0.00 (0.11)	-0.25, 0.21
	Via positive religious coping	0.04 (0.35)	-0.68, 0.75
Personal control	*Via negative religious coping*	0.02 (0.12)	-0.15, 0.35
	Via positive religious coping	-0.01 (0.13)	-0.4, 0.18
Treatment control	*Via negative religious coping*	0.03 (0.16)	-0.18, 0.56
	Via positive religious coping	-0.00 (0.12)	-0.28, 0.23
Identity	*Via negative religious coping*	-0.02 (0.10)	-0.32, 0.11
	Via positive religious coping	0.01 (0.11)	-0.16, 0.34
Concern	*Via negative religious coping*	-0.02 (0.10)	-0.13, 0.30
	Via positive religious coping	-0.01 (0.13)	-0.36, 0.20
Coherence	*Via negative religious coping*	0.01 (0.12)	-0.14, 0.40
	Via positive religious coping	0.01 (0.11)	-0.18, 0.31

Path	Indirect effects	Effects (SE)	LLCI, ULCI
Emotional representation	*Via negative religious coping*	-0.06 (0.23)	-0.53, 0.41
	Via positive religious coping	-0.01 (0.13)	-0.37, 0.18

5.6 Discussion

The present study explored the factors that may be associated symptoms of anxiety and depression, and quality of life among Omani Muslim women with breast cancer. More specifically, it evaluated the utility of the integrated model (Section 2.6) in which religious coping was examined as a potential mediator between illness perceptions and psychosocial outcomes. This section summarises the main results, relates it to the relevant literature, and highlights the clinical implications of this study to the field of clinical health psychology.

5.6.1 Summary and discussion of main findings

This study has two main contributions to the literature. First, it is the first theoretically-driven study conducted in the Arab Muslim region which explored if religious coping mediated the relationships between illness perceptions, on the one hand, and symptoms of anxiety, depression and quality of life, on the other hand, among this population. Second, this study also evaluated the theoretical implications of removing the emotional dimensions from the mediation analyses.

5.6.2 Current levels of anxiety and depression, and quality of life among Omani women with breast cancer

The sample's mean scores for symptoms of anxiety and depression were within the normal range, which is below the reported threshold for anxiety and depression as laid out by Zigmond and Snaith (1983). These results are in contradiction to the literature reviewed in Section 1.5, which described elevated levels of anxiety and depression among women with breast cancer within the first year of diagnosis (Aly et al., 2017; Elsheshtawy, Aboelez, Ashour, Elbahaey, & Farouk, 2015; Jacob et al., 2017; Park et al., 2018). In their systematic review and meta-analysis, Pilevarzadeh et al. (2019) highlighted that approximately 30% of women with breast cancer within the Middle East region were diagnosed with depression. However, none of these studies were conducted in Oman, which might make generalisations not feasible to the Omani population. It is possible that socioeconomic difficulties which are associated with the treatment of cancer in the form of the cost of treatment sessions as well as possible lost income during the treatment phase could be linked to anxiety and depression (Alemayehu, Deyessa, Medihin, & Fekadu, 2018; Ell et al., 2005; Kaptein et al., 2013; Pilevarzadeh et al., 2019). However, socioeconomic difficulties which could result from patients' financial contributions to the cancer treatment are not a concern for Omani women because health care services are provided free of charge for all citizens.

Similarly, the sample's mean scores on quality of life domains were higher (i.e. which indicates good quality of life) compared to women with breast cancer with similar clinical profiles (Scott et al., 2008). This may reflect that this sample is doing psychologically better compared to samples recruited from other countries (Hashemi et al., 2019). However, the higher scores on the social and role functioning scales among our sample were also comparable to Saudi women with breast cancer who were undergoing chemotherapy (Albabtain, Alwhaibi, Alburaikan, & Asiri, 2018). These elevated scores on quality of life domains for our sample are expected given the normal levels of anxiety and depression as reported earlier. The literature suggests a link between levels of anxiety and depression and quality of life (Section 1.7) (El Haidari, Abbas, Nerich, & Anota, 2020). It is possible that Omani cultural and religious traditions, which were not examined in this study, could explain the elevated scores on quality of life. Within the Saudi society, which is culturally similar to the Omani culture, Albabtain et al. (2018) found that among a sample of 95 Saudi women with breast cancer, complementary and alternative medicine which is rooted in religious beliefs, was associated with higher scores on the social and role functioning domains (Albabtain et al., 2018). For their study, these women were supported by their families to seek complementary and alternative medicine. Therefore, given the cultural similarity between our sample and Albabtain et al.'s (2018) sample, it is possible that social support and alternative spiritual treatment could have led to high scores on these quality of life domains.

5.6.3 The severity of illness perceptions and the use of religious coping among Omani women with breast cancer

Compared to the reference data (Broadbent et al., 2006) of patients with diabetes and asthma, Omani women with breast cancer exhibited less severe illness perceptions in the following domains: consequences, timeline, identity, personal and treatment control. The majority of these women perceived the illness as having less severe consequences on their lives, with short duration, and they believed in their ability, and that of the medications, to manage and treat the illness. It is possible that the social and family support received by these women, which is a characteristic of the Omani society, could have reduced the impact of the illness and its treatment on these women (Al-Bahri, Al-Moundhri, Al-Mandhari, Al-Azri, 2019; Al-Azri et al., 2014).

The low timeline scores reflected women's perceptions that the illness will have a short duration. It seemed that these women perceived the illness duration as connected to the length of their treatment, which typically lasts for six months. On the other hand, the sample perceived the illness as having more symptoms (i.e. high identity scores) compared to the asthma and diabetes reference groups. One possible reason for the high identity scores is that it could reflect these women's perception and experience of the side effects from the cancer treatments received at the time of the interview (e.g. most often chemotherapy).

Interestingly, the scores on the emotional domains (e.g. emotional representations and the concern domains) were low and comparable to the asthma reference group. Given the normative levels of anxiety and depression in this sample, having lower scores on the emotional representations and concern dimensions is expected, given the potential conceptual overlap among these items as observed in this study and elsewhere (Gould et al., 2010). Therefore, these women were less emotionally affected by the illness compared to the diabetic reference group. It is also of interest to mention that Kaptein et al. (2013) found that Dutch and Japanese women's illness perceptions of their breast cancer were more severe compared to the reference asthma and diabetes groups. Kaptein et al.'s (2013) results are in contrast to ours in that our sample perceived the illness as less threatening. These findings reflect that illness perceptions are not only influenced by the type of illness, but also by the cultural backgrounds of patients (Dein, 2004; Kleinman et al., 1978;

Leventhal et al., 1997). Other reasons could include the time since diagnosis as Kaptein et al's. (2013) study utilised women who were earlier in the illness trajectory (i.e. they were on average two months after the first chemotherapy session) compared to our sample who have been diagnosed for an average of four months. Also, our sample were on average younger (i.e. 41.28 years, S.D. =7.56) compared to Kaptein et al's. (2013) study in which the average age of women was 49.9 years, S.D. = 9.59. It is possible these clinical and demographic factors could have influenced how women perceived the illness and emotionally reacted to it.

The high implementation of positive religious coping and the low levels of negative religious coping among this sample, may reflect in part a secure relationship with God, and low levels of religious struggles, respectively. Also, it may reflect the high prevalence of positive religious coping among this population, which could be explained within the context of Islam which encourages Muslims to be proactive in times of sickness. The Qur'an, according to Islamic religion, explicates that reading it could aid in the healing of the sick people. Islamic literature further underscores the significance of seeking a combination of religious and medical treatments. This has been explicitly deliberated in Prophet Muhammad's saying "there is a cure for every illness except old age" (Ibn-i-Majah vol. 5, no. 3436, p. 1) (As cited in Al-Azri et al., 2014).

Our findings were comparable to other studies which have demonstrated that Muslim women with breast cancer are much more likely to utilise positive religious coping compared to negative religious coping (Al-Azri et al., 2014; Rohani et al., 2015; Zamanian et al., 2015). These findings have also been corroborated in other populations from other religious groups (Morgan, Gaston-Johansson, & Mock, 2006; Thuné-Boyle, Stygall, Keshtgar, Davidson, & Newman, 2011). For example, positive Islamic beliefs were noted to help Omani women with breast cancer (Al-Azri et al., 2014), whereas African-American women with breast cancer as well as British women with breast cancer have also reported high levels of positive religious coping (Morgan et al., 2006; Thuné-Boyle et al., 2011). Therefore, these findings reflect that positive religious coping is a common coping skill utilised by women with breast cancer from different cultural and religious backgrounds.

5.6.4 The utility of the integrated model in predicting symptoms of anxiety, depression, and quality of life among Omani women with breast cancer

The correlations among the theoretical constructs within the integrated model will be discussed first. Thereafter, the results from the two sets of mediation analyses will be deliberated.

5.6.4.1 The correlations among illness perceptions, religious coping and the psychosocial outcomes within the integrated model

Table 5.7 revealed the interdependence among the cognitive and emotional dimensions, which adds more empirical evidence to the common-sense model (Leventhal et al., 1997), and the empirical literature testing the model in women with breast cancer (Fischer et al., 2013; Ma et al., 2018; Rozema et al., 2009). The significant and positive relationship between the timeline dimension and the emotional representation is also comparable to other studies on women with breast cancer (Fischer et al., 2013; Ma et al., 2018; Rozema et al., 2009). This means that when women with breast cancer would perceive their illness as having a long duration, then this will be associated with more emotional distress as they might envision the possible consequences of the illness on their lives.

However, a few of the expected correlations between the control dimension and other illness perceptions were not substantiated in this study. The control dimension was not correlated with the identity dimension, which is in contrast to the studies by Rozema et al. (2009) and Fischer et al. (2013). This finding may be attributed to the wording of the item measuring the personal control dimension in the Brief-IPQ: "How much control do you feel you have over your illness" (Brief-IPQ; Broadbent et al., 2006). Despite the use of the Brief Arabic IPQ in this study, which was validated in an Lebanese Arab clinical setting (Saarti et al., 2016), the measure was not specifically culturally adapted within the Omani Arab setting. The Omani society might be more religious compared to the multi-cultural Lebanese context (Saarti et al., 2016). Therefore, the control item does not appear to acknowledge the religious beliefs of Muslims in surrendering control to God (Almegewly, Gould, & Anstey, 2019). The belief in God's control over the illness was similarly recognised in three of the measures reviewed in Chapter 3 (God as a Helper, God as a Healer, and Faith in Healing) (Holt et al., 2009). These measures highlighted that the belief in God's control of the healing process from cancer was an essential component of religious coping among African American cancer survivors. Therefore, despite seeking medical help, they believed that doctors were only tools sent by God, through which healing occurs, but the Healer is God (Holt et al., 2009). Therefore, it might be clinically useful for the Omani population to conduct a cultural adaptation of the Brief IPQ measure by including the religious contribution to the perceived control of the illness.

The correlation between religious coping and illness perceptions among women with breast cancer has not been previously explored in the literature. However, a study on patients with chronic kidney disease explored this association to find out that religious coping was positively associated with the following illness perceptions: timeline, personal control, consequences, and illness coherence (Ibrahim, Desa, & Chiew-Tong, 2012). Though, because religious coping was calculated as a single score, and not as two separate scores for positive and negative religious coping, it is not clear from their findings which type of religious coping was associated with these illness perceptions (Ibrahim et al., 2012). Nevertheless, some of the reported associations in our study resembled those of Ibrahim et al.'s (2012) findings in that positive religious coping was positively associated with timeline, whereas negative religious coping displayed positive associations with threatening illness perceptions: consequences, timeline, identity and emotional representations. Therefore, negative religious coping was associated with more illness perceptions compared to positive religious coping. These findings further reinforce that negative religious coping is associated with negative mental health measures (Gall et al., 2009; Hebert et al., 2009; Thuné-Boyle et al., 2013; Zwingmann et al., 2006; Zwingmann et al., 2008), compared to positive religious coping which is more likely to be associated with positive mental health measures (Gall et al., 2009; Pedersen et al., 2013; Thuné-Boyle et al. 2013; Zamanian et al., 2015).

All illness perceptions were associated to varying degrees with symptoms of anxiety, depression, and quality of life. The strongest associations were found between the emotional representation of illness and symptoms of anxiety and depression. Significant and negative associations were established between emotional representations and both emotional functioning and global health status. Similar correlations among emotional representations of illness and the psychosocial outcomes have been substantiated in the literature (Rozema et al., 2009; Kus et al., 2017). The concern item was also positively correlated with symptoms of anxiety and depression, and negatively correlated with emotional functioning and global health status. These findings have been collaborated by the results from Kus et al. (2017), but no previous study supported the negative associations between the concern dimension and quality of life domains as was found in this study. The associations between the emotional illness representations and psychosocial outcomes could indicate the overlap among these variables. Meaning, the emotional representations could also be measuring symptoms of anxiety and depression.

The perceived consequences of illness was significantly associated with all of the measured psychosocial outcomes. These findings are comparable to the literature in that positive relationships were found between consequences and symptoms of anxiety (Kus et al., 2017; Silva et al., 2012), depression (Kus et al., 2017; Silva et al., 2012), while a negative relationship was found between consequences and quality of life (Silva et al., 2012). Given these associations between consequences and all psychosocial outcomes in this study, it becomes of paramount importance to evaluate this illness perception throughout the illness trajectory within the health care setting. Additionally, it is also crucial to establish the availability of the social support system to reduce the possible perceived consequences of the illness or its treatment on women's lives.

The timeline of the illness was positively associated with anxiety and depression, and negatively associated with global health status. The literature supports this positive correlation between the timeline, on the one hand, and anxiety and depression, on the other hand (Kus et al., 2017). However, no previous study has found negative relationships between timeline and the quality of life domains. The positive relationships between timeline and symptoms of anxiety and depression reflect that women who thought of the illness as having a longer duration, would be more likely to exhibit more symptoms of anxiety and depression. As a consequence, there is a need to educate these women about the timeline of the illness, and the meaning of a long course of illness for them, in order to correct maladaptive timeline perceptions.

Perceived personal control was only positively associated with global health status, which reflects the importance of perceived control over the illness on the quality of life among this population. The lack of relationships between the control dimension and other psychosocial outcomes may reflect the difficulty in the interpretation of this item by this Muslim population as mentioned earlier. The identity item, on the other hand, showed positive correlations with symptoms of depression, and negative correlations with social functioning. The positive relationship between identity and depression was previously supported by the Kus et al. (2017). This finding indicate that the more symptoms perceived by the patient, the more likely she will exhibit symptoms of anxiety and depression, which might be negatively associated with her social relationships.

The findings described earlier on the correlations between illness perceptions and symptoms of anxiety, depression, and quality of life added empirical evidence to the established correlations within the common-sense model (Hagger & Orbell, 2003; Hagger & Orbell, 2017; Hagger & Orbell, 2020; Kus et al., 2017; Rozema et al., 2009; Silva et al., 2012). Additionally, it corroborates more evidence to the overlap between the emotional items (e.g. emotional representations and the concern item), and symptoms of anxiety, depression, and the emotional functioning subscale (Gibbons et al., 2016; Gould et al., 2010).

Positive religious coping displayed non-significant associations with psychosocial outcomes, as opposed to negative religious coping. The existing literature has reported mixed evidence on the relationships between positive religious coping and mental health outcomes (Gall, Miguez de Renart, & Boonstra, 2000; Thuné-Boyle et al., 2006; Zamanian et al., 2015; Zwingmann et al., 2006). However, the relationships between negative religious coping and negative psychosocial outcomes were comparable to other studies in the literature (Gall & Bilodeau, 2020; Hebert et al., 2009; Zamanian et al., 2015; Zwingmann et al., 2006). These findings highlight the need to identify and correct negative religious coping to ensure good quality of life for this population. It also adds further evidence that negative religious coping continues to be the more robust predictor of psychosocial outcomes, compared to positive religious coping (Pargament et al., 2011).

5.6.4.2 The mediation of religious coping between illness perceptions and the psychosocial outcomes

The first set of mediation analyses, which included the two emotional items, showed that negative religious coping mediated the relationship between the emotional representations of illness, and the anxiety and depression. None of the studies in the literature examined religious coping as a mediator between illness perceptions and psychosocial outcomes among women with breast cancer (Section 2.3.3). However, only one study found that anxious preoccupation coping acted as a mediator between patients' illness perceptions and psychological outcomes (Gibbons et al., 2016). Therefore, this study sheds light on the mediating role of religious coping as a new theoretical construct. Although negative religious coping had a minimal mediating role, it might be worthwhile to identify and correct maladaptive religious thoughts among women with breast cancer (Section 3.2). Although religious coping is a multi-dimensional construct, the negative religious coping dimension measured in the Brief RCOPE, which was used in this study, tapped into the cognitive as well as the spiritual domains. Therefore, correcting negative religious thoughts could lead to the reduction of symptoms of anxiety and depression among this population. This step could be done through the implementation of culturally sensitive clinical interventions (Khan, 2019; Schreiber & Brockopp, 2012).

Moreover, the mediation analyses highlighted the relationships between the following illness perceptions: the emotional representations, consequences, identity, and treatment control and several psychosocial outcomes. When the emotional representation of illness were included in the mediation analyses, these emotional representations were associated with anxiety, depression and emotional functioning. As a result, addressing the emotional representations among this population within healthcare is important given its associations with the emotional outcomes. The second most important illness perception which should also be addressed is the perceived consequences of the illness, given its association with anxiety, depression, and social functioning. This translates into the clinical value of identifying the ways in which the illness or its treatment might be negatively affecting these women's lives. Consequently, mobilising the social resources of these women could help these women to minimise the perceived negative consequences of illness on their lives.

The second set of mediation analyses, which did not include the emotional items, demonstrated that positive religious coping only mediated the relationship between timeline and global health status. The limited role of positive religious coping could be attributed to several reasons such as the outcomes measured, the significance of religious coping for this population, and the religious coping measure used in this study. It is possible that positive religious coping could be associated with other mental health outcomes such as positive mood. This is a reasonable factor given that one of the functions of religion is to help people achieve positive emotions (Pargament, 1997). Additionally, positive religious coping might not be as significant for this population given that they displayed normative levels of anxiety and depression as discussed earlier. Additionally, although the religious coping measure used in this study is theoretically-based and the most tested measure within psycho-oncology, it does not assess a broad range of religious coping strategies, which might have resulted in positive religious coping mediating only one psychosocial outcome.

Additionally, the second set of mediation analysis allowed for the emergence of other illness perceptions which were associated with the measured psychosocial outcomes. The most recurrent dimension that was associated with five out of the six outcome measures was again the perceived consequences, followed by the perceived identity of the illness. Additionally, treatment control was associated with role functioning, while personal control was associated with the global health status. These findings might indicate that there is a clinical need to examine and correct these women’s perceived consequences of illness. Given that the Omani society is family-oriented, it might be valuable to mobilise these women’s family support system to reduce the negative consequences of the illness and its treatment on their lives. Moreover, the perceived identity of the illness should also be addressed within the health care setting. The perceived identity of the illness refers to the perceived symptoms of the illness, but in this study, participants answered this item within the context of the side effects of chemotherapy. Given that the majority of these women were on chemotherapy treatment, it is valuable for health care providers to seek further information from these women after each chemotherapy session in order to pharmacologically address if any of these side effects could be offset with other medications. The correlations of personal control and treatment control with role functioning and global health status, respectively, also reflect that it might be helpful for the perceived control to be assessed within the health care setting.

In general, Hagger and Orbell (2020) indicated that there is scarcity in the number of studies testing the mediating role of coping within the common-sense model. The minimal mediating role of religious coping could indicate that other illness-specific coping methods such as doctor's visits or cancer-specific coping such as fighting spirits, which were not examined in the study, could have explained the variance in the psychosocial outcomes measured in this study. It is worthwhile to mention that studies utilising the common-sense model with people with chronic medical conditions did not find support for the mediation of coping skills (Hagger & Orbell, 2020). It is possible that the examination of only a few coping strategies in these studies could have led to these findings (Hagger & Orbell, 2020). The examination of only a small number of coping strategies could have led to simplistic statistical mediation models which do not take into account the complexity and the large number of coping strategies implemented by this population to help them in the management of the illness (Hagger & Orbell, 2020).

5.7 Theoretical implications

The integrated model was partially supported in this study. First, significant correlations were established among the various illness perceptions, and also between these illness perceptions, and the emotional representations of illness. This is in support of the original common-sense model and also the integrated model, which hypothesised the relationships among these illness dimensions.

Second, the mediating role of religious coping was limited to only three mediation models, which may reflect the minimal role of religious coping as a mediator in this illness context. It is possible that this finding could be attributed the use of the religious coping measure itself which assessed only two broad types of religious coping. Although the measure was deemed appropriate for several reasons as indicated earlier, the items within the measure do not specifically assess the behavioural dimensions of religious coping, which could be more clearly linked to the outcomes measured in this study. For instance, the Brief RCOPE does not address the reading of Holy Qur'an as a religious coping mechanism, which might be a valuable religious coping resource for Muslim patients (Al-Azri et al., 2014). As a consequence, theoretically speaking, these findings might need to be substantiated in future research by utilising a more comprehensive tool of religious coping such as the RCOPE. As suggested by Hagger and Orbell (2020), the measurement of only a few types of coping might not reflect the complex ways in which illness perceptions are linked and correlated with coping and various outcomes.

Illness perceptions were associated with most of the psychosocial outcomes in this study, as opposed to religious coping which was associated with only a few psychosocial outcomes. This reflects that theoretically speaking, illness perceptions might have a stronger predictive role on the psychosocial outcomes compared to religious coping. The emotional representations, consequences, identity, and control dimensions demonstrated significant associations with the psychosocial outcomes in this study.

Additionally, the mediation analyses conducted with and without the emotional representations of illness highlighted its overlap with symptoms of anxiety and depression, and the emotional functioning subscale. As a consequence, any interpretation of the relationships between the emotional representations of illness items and negative mental health outcomes should be done with caution in future research. This is especially true when the Brief- IPQ is utilised in clinical research to predict negative psychosocial outcomes. If the research context allows, utilising the long version of the Illness Perceptions Questionnaire may be helpful to avoid the possible overlap/confounding with negative mental health outcomes such as symptoms of anxiety and depression.

5.8 Clinical implications

The findings of this study suggest that clinicians caring for Omani women with breast cancer might usefully assess illness perceptions as one of the clinical domains within health care. This could be done using the Brief-IPQ (Broadbent et al., 2006). Given that the Brief-IPQ evaluates all of these domains, it is recommended that clinicians assess all of these illness perceptions, but focus more specifically on the four dimensions reported earlier (e.g. consequences, identity, personal and treatment control) which appear to be particularly important to the psychosocial outcomes for these women. However, for the Brief-IPQ to be utilised in a clinical setting, it needs to be adapted within such settings given that the measure was designed for research purposes.

Additionally, it might be helpful for these women if clinicians caring for them would start a dialogue to explore the meaning of their scores on the perceived consequences and identity of the illness. It has been previously addressed by Kaptein et al. (2015) that future research need to establish cut-off scores for the IPQ in order to determine the scores that would need to be addressed via clinical interventions. Therefore, if high scores are detected on the identity dimension and the patient indicated that the side effects of the cancer treatment is a source of concern, then this needs to be addressed by the oncologist her/himself in order to manage the cancer treatment with medications that could offset the side effects of the treatment. This is because the identity domain which includes the symptoms experienced by women in relation to the illness, was answered within the context of the side effects from the cancer treatment. That is, in the case of breast cancer, women do not typically suffer from symptoms that affect their lives, rather symptoms arise as a consequence of the side effects from the cancer treatments.

Given that there are no clear guidance as for specific cut-off scores for the treatment and personal control, it might be helpful for clinicians to discuss with patients their perceptions of their personal efficacy in controlling the illness, as well as their beliefs about the efficacy of the treatment received. Addressing these illness perceptions is important because as found in this study, low scores on personal and treatment control were associated with worse role functioning and worse quality of life. Low quality of life could consequently negatively impact their prognosis and response to the medical treatment (Section 1.7).

Moreover, the findings of this study emphasise the need to address negative religious coping among this population. Given the mediating role of negative religious coping on anxiety, depression, and emotional functioning, it might be helpful that clinicians administer the Arabic Brief Religious Coping Scale to women with breast cancer *(*Al-Hadeethi et al., 2016; Pargament et al., 2000). Within the Omani clinical context, clinicians might particularly open a dialogue with women who utilise negative religious coping, and understand its meaning for them. For women who would indicate their use of negative religious coping, a suggestion could be made by the treating clinicians to refer them to an appropriate professional, such as a religious counsellor, in order to address negative religious coping (Section 3.2). High scores on positive religious coping scale may not be a concern as they are associated with better quality of life.

5.9 Strengths and limitations

One of the strengths of this study is that it is the first theory-driven study which explored the mediating role of religious coping between illness perceptions and psychosocial outcomes among Omani Muslim women newly diagnosed with breast cancer. Additionally, this study utilised a culturally sensitive and theoretically-based measure to assess positive and negative religious coping (Pargament et al., 2011). Therefore, this study added novel empirical and theoretical data to the knowledge base on women with breast cancer.

However, this study has two main limitations. First, given its cross-sectional nature, causal relationships could not be drawn, and as a result any interpretations and consequent suggestions of their impact should be made with caution. However, given the scarcity of literature on Omani women with breast cancer and the exploratory nature of this study, the design of the study was deemed appropriate. Second, despite the use of culturally as well as clinically sensitive measures to evaluate illness perceptions and religious coping, the brevity of both of these measures are a strength as well as a weakness (Broadbent et al., 2006; Pargament et al., 2011). The Brief-IPQ assesses each dimension of illness perception with one item, and so this may have not resulted in a comprehensive assessment of illness perceptions. The same issue applies to the Brief Arabic Brief Religious Coping Scale, as it may not have allowed the researcher to comprehensively evaluate the various functions of religion, compared to the full version of the RCOPE

(Pargament et al., 2011). However, these two brief measures were specifically selected for this study in consideration of the emotional and physical needs of the study sample. Long measures are considered inappropriate within the clinical setting of this study where most women were receiving their chemotherapy treatment, waiting for the medical team to arrive and discuss their concerns and blood results, and side effects from the treatment (Broadbent et al., 2006). Therefore, the researcher was mindful of the need to conduct quality research, but also took into consideration her ethical responsibility toward these women. In future studies which aim to examine religious coping, it might be more appropriate to utilise the full version of the RCOPE measure (Pargament et al., 2000), given its comprehensive coverage of the various methods of religious coping. Additionally, the specific scales within the RCOPE measure could be specifically selected to answer the research questions of the future studies.

5.10 Summary

This study demonstrated that among this sample of Omani Muslim women with breast cancer, who were highly religious and committed to prayers, negative religious coping predicted more negative psychological outcomes, compared to positive religious coping. This is despite the high utilisation of positive religious coping, and low levels of negative religious coping. Illness perceptions also influenced various psychosocial outcomes. These findings raise questions about the dimensions of religious coping which were emotionally protecting these women from displaying high levels of anxiety and depression. This is an especially important question given the advanced stage of illness and the relatively young age for this population. Despite the use of a theoretically-based measure to evaluate religious coping, this study highlighted that positive religious coping only mediated one outcome model. Although this study provided an initial understanding of the relationships among the variables within the integrated model, the findings do not fully explain the reason behind the high use of positive religious coping and its minimal role in the prediction of psychosocial outcomes. It is possible that the Likert-scale measures utilised in this study do not take into account the personalised experiences of these women and other cultural or religious factors that could have influenced the psychosocial outcomes. Hence, implementing a qualitative approach to the study of illness perceptions and religious coping could be valuable in expanding and making sense of the results of this study. The utilisation of open-ended questions would allow participants to express their opinions freely without the need to choose from a set of answers within a specific measure. Qualitative research is more sensitive to the social and cultural context of participants compared to the quantitative approach. Therefore, as the second arm of this mixed methods thesis, next chapter will further explore how religious coping and illness perceptions would affect the psychosocial outcomes within the context of the lived experience of Omani women with breast cancer.

Chapter 6: Understanding the Lived Illness Experience of Omani Women Diagnosed with Breast Cancer: An Interpretative Phenomenological Analysis Approach

6.1 Abstract

Chapter 5 presented a theory-based quantitative study, which examined the mediating role of religious coping between illness perceptions and the psychosocial outcomes among Omani women newly diagnosed with breast cancer. The main results highlighted that negative religious coping mediated the relationships between illness perceptions, on the one hand, and anxiety and depression on the other hand. Positive religious coping only mediated the relationship between the perceived illness timeline and global health status. This chapter presents the qualitative arm of this mixed methods thesis, and it aims to expand and make sense of the quantitative findings within the context of understanding the lived illness experience of this population. Consequently, an Interpretative Phenomenological Analysis (IPA) approach will be utilised as the framework driving this study. The integrated model (Section 2.6) will continue to guide this study in the selection of the interview schedule questions. The findings from this qualitative arm highlighted three superordinate themes: the context of illness perceptions, the utilisation of the multi-dimensional positive religious coping, and other factors associated with the emotional well-being of these participants. The significance of these findings, as well as the clinical and theoretical implications will be discussed within the relevant literature.

6.2 Introduction

The previous chapter found support for some aspects of the integrated model that was proposed in Section 2.6. The quantitative study, however, lacked contextual information on the participants' personal illness experiences and the meaning of these experiences for these women. As a result, the qualitative approach to research can help to fill this knowledge gap by accessing the personal accounts of these women to obtain a better understanding of their illness experience and the coping methods that have helped them deal with the illness (Willig, 2019).

Qualitative research focuses on people's reflection and understanding of their significant personal experiences, which are relevant to the research questions of this study. As discussed in Section 4.6.1, the meaning-making process is culturally and contextually specific. Therefore, concentrating on the meaning-making process of women with breast cancer from different cultural backgrounds may not allow us to understand the processes experienced by Arab women with breast cancer (Obeidat, Dickerson, Homish, Alqaissi, & Lally, 2013). Hence, the relevant literature within the same cultural context of Arab women with breast cancer will be reviewed in the next section.

6.3 The illness experience for Arab women with breast cancer

A recent thematic review conducted by Fearon, Hughes, and Brearley (2020) synthesised the illness experience of Arab women with breast cancer. In their comprehensive search of eight electronic databases, Fearon et al. (2020) included 19 qualitative studies from 11 Arabic countries, which examined the recurrent themes women shared in relation to their illness experience. Three super-ordinate themes emerged from the thematic synthesis: perceptions and reactions, managing or enduring the illness, and changing family roles. The first theme addressed women's illness perceptions of the treatment side effects, and the perceived identity of the illness as a death sentence. The thematic synthesis highlighted the adaptive change in the perceived illness identity throughout the illness trajectory, in which the illness identity changed from a maladaptive identity which equated breast cancer with death, to perceiving breast cancer as a chronic illness (Fearon et al., 2020). This dynamic change in illness perceptions fits with the common-sense model (Leventhal, Meyer, & Nerenz, 1980), which suggests that illness perceptions are dynamic and changeable as the patient acquire new illness experience, which challenges the previously held maladaptive illness cognitions (Leventhal, Phillips, & Burns, 2016). The second theme addressed women's coping difficulties, and the valuable role of religion in helping them deal with illness. The third theme addressed their changing roles as mothers and wives, and embracing new positive roles within the family. For many women, the illness was regarded as a beneficial opportunity which helped them to re-evaluate their priorities in life (Fearon et al., 2020).

Only two out of the 19 studies included in the review by Fearon and colleagues (2020) were conducted in Oman (Al-Azri, Al-Awisi, Al-Rasbi, & Al-Moundhri, 2014; Al-Azri et al., 2014), and the authors in both of these Omani studies utilised Framework Analysis as their method of data analysis. These two studies did not employ a clear theoretical framework, and instead based their topic guide for the interviews on the empirical literature. The main findings from the first Omani study showed that religious beliefs were one of the coping skills utilised by Omani women with breast cancer.

Additionally, other coping skills such as denial, hopefulness, and the supportive care of family members and healthcare providers were also valuable coping resources for these women (Al-Azri et al., 2014). The second Omani study focused on the psychological manifestations of breast cancer on the lives of these women (Al-Azri et al., 2014). The two Omani studies utilised the same sample of women, but the studies focused on the different dimensions of the women's illness experience, such as the coping processes, and also their perceived consequences of breast cancer on their lives. However, these studies were not guided by a specific Theory or theory as mentioned in Section 4.6.1 (Larkin, 2015). Theoretically driven research is paramount to achieving a comprehensive understanding of the illness experience of these women, which could be then utilised to inform theoretically-based clinical interventions in the future (Section 1.9) (Craig et al., 2008).

The remaining studies that were included in the review by Fearon et al. (2020) utilised heterogeneous qualitative approaches, and only two of these studies implemented the IPA approach (Almegewly, Gould, & Anstey, 2019; Obeidat et al., 2013). Almegewly et al. (2019) examined the lived illness experiences of 18 Saudi women with breast cancer who were 6 to 47 months post-diagnosis. Therefore, the sample included women with a wide range of post-diagnosis experiences. Nevertheless, three key themes emerged from the analysis: the meaning of breast cancer, hiding the illness, and the role of religion in coping with the illness (Almegewly et al., 2019). Obeidat and colleagues (2013) also explored the lived illness experience of 28 Jordanian women, but these women were within 6 months of their surgical treatment, as the study aimed to specifically explore the factors that influenced these women's decisions about the surgical intervention they had undergone. Four superordinate themes emerged from the analysis: dreading breast cancer, coping skills, the psychological impact of the treatment, and the emergence of a new self (Obeidat et al., 2013). The identified themes from the Saudi and Jordanian studies share many commonalities of the lived illness experiences of these Arab women with breast cancer. These shared experiences involved the vital role of positive religious coping in helping them deal with breast cancer. These studies clearly demonstrated that positive religious coping involved these women's thoughts and behaviours that are based on their religion (i.e. Islam) (Section 2.4.2). The second shared experience is the fear responses in reaction to being diagnosed with breast cancer. These emotional responses could have been a consequence of the maladaptive illness perceptions related to breast cancer, and more specifically the perceived identity of the disease as a death sentence (Almegewly et al., 2019; Obeidat et al., 2013). Despite the fact that 55% of Jordanian women are diagnosed in the early stages of the disease, they exhibited these maladaptive identity illness perceptions (Obeidat et al., 2013).

The current study will add new theoretical knowledge to what is known so far on the illness experience of Arab women with breast cancer. More specifically, it will allow us to achieve a theoretical understanding of the potential mechanisms that could influence the psychosocial outcomes among Omani women with breast cancer. Another aim of this study is to expand on the significant and non-significant results from the quantitative study. Despite the high utilisation of positive religious coping among the study sample, the quantitative arm of this thesis highlighted that religious coping mediated only the anxiety, depression, and the global health status. Although the quantitative findings provided an initial understanding of the role of religious coping and illness perceptions, it did not fully explain the role of culture, and more specifically the aspects of religious coping that mediated the relationship between illness perceptions and psychosocial outcomes. Therefore, in order to provide a cohesive story, the integrated model will be further examined to inform the content of the interview questions. Additionally, given that the quantitative study did not examine the dynamic nature of religious coping and illness perceptions, this study aims to explore how these two constructs changed from the time of diagnosis till the time of the interview. Therefore, this study will also fill a gap in the literature by examining the dynamic nature of religious coping and illness perceptions.

6.4 Rationale for the study

This study aims to further expand and make sense of the findings from the quantitative arm of this thesis. As mentioned earlier, quantitative questionnaires do not allow for a complex understanding of the multiple cultural and social factors that could impact the psychosocial outcomes for women with breast cancer. Meaning-making happens within the cultural context in which people live in. Therefore, it is important to utilise a qualitative approach to highlight these crucial aspects of participants' experiences.

Additionally, the quantitative findings need further explanations given that the majority of these women in the quantitative study were women newly diagnosed with the disease. Despite the advanced stage of their disease, they displayed normal levels of anxiety and depression, as well as elevated scores on quality of life (e.g. reflecting good quality of life). Therefore, it is important to further explore the mechanisms behind these findings.

This study also aims to be guided by theory given the lack of theory driven research from previous Omani studies as well as other studies from Arabic countries. This will be clearly addressed through identifying the Theory and theory in this study. The Theory that will derive the questions for the interviews is the IPA approach. The psychological theory, which will be utilised, is the integrated model.

There is a lack of knowledge on the dynamic nature of illness perceptions in Arab countries, and within the Omani context in specific. Additionally, the existing qualitative studies in the literature do not fully explain the dynamic nature of religious coping; rather they most often address religious coping at one point of time (Fearon et al., 2020). Therefore, this study also aims to address this knowledge gap in the field.

Aim and research questions

The aim of this study is to explore the lived illness experience of Omani women newly diagnosed with breast cancer. This study will answer the following three research questions:

1. How do Omani women newly diagnosed with breast cancer understand and give meaning to their illness experience and how did their experience change over time?
2. What were participants' coping processes and did religious coping play any role at all in their illness experience?

3. What were the factors that helped participants' emotional well-being in relation to the illness?

6.5 Methods

6.5.1 Study design

Semi-structured interviews are the most commonly implemented method to collect data in IPA. Interviews have a unique advantage in that they allow the researcher to obtain a detailed and thorough personal account from participants on their illness experience (Alase, 2017; Smith et al., 2009). Therefore, the use of interviews will fulfil the theoretical requirement of idiography, one of the main pillars of the IPA approach (Smith et al., 2009) (Section 4.6.1).

6.5.2 Participants

Specific criteria were applied in the selection of the qualitative study sample (Section 4.6.2). Therefore, Omani women who were within 6 months of their diagnosis with breast cancer were approached. The qualitative study sample resembled the quantitative study sample (Tables 5.1 and 5.2), and this selection allowed the researcher to expand and make sense of the results obtained from the quantitative phase of this thesis. Table 6.1 displays the demographic and clinical profiles for the participants in this study.

Table 6.1. Sample Characteristics of the Qualitative Study

Participant	Age	Time since diagnosis	Stage	Current treatment	Marital status	Educational level
1	33 Years	5.5	3	Chemotherapy	Married	Bachelor
2	35 years	6	3	Chemotherapy	Married	Bachelor
3	39 years	1.5	3	Chemotherapy	Married	Bachelor

Participant	Age	Time since diagnosis	Stage	Current treatment	Marital status	Educational level
4	37 years	4	4	Chemotherapy	Married	No formal education
5	45 years	4	4	Chemotherapy	Married	No formal education
6	48 years	4	2	Chemotherapy	Married	Diploma

6.5.3 Sample size

The specific details on the sample size for this study was discussed in section 4.6.2. The study sample was composed of six Omani women who were relatively homogenous in terms of key socio-demographic and clinical factors (Smith et al., 2009).

6.5.4 Inclusion/exclusion criteria

Inclusion criteria comprised women above 18 years of age, newly diagnosed with breast cancer (within 3 to 6 months of diagnosis), and on chemotherapy treatment. Exclusion criteria included women who were intellectually challenged, with communication difficulties, recurrent breast cancer, and women who had been diagnosed with breast cancer for more than 6 months.

6.5.5 Procedure

Ethical approval was granted from the ethics committee at the SQUH (MREC # 1904), and was endorsed by the University of Strathclyde Ethics Committee. Patients' information were collected and stored in accordance with the Data Protection Act (2018) and ethical standards of the SQUH and University of Strathclyde. Participants were identified through a clinical database at the SQUH. Women meeting the inclusion criteria were approached in the Day Care Unit (DCU) by Z.A., and were invited to participate in the study. This was done after obtaining patients' initial approval from the consultant in charge of their medical care. A brief explanation was provided about the goals of the study, the confidentiality of all information, their free will to participate or refuse to take part in the study or to withdraw during the study, and anonymity of the written scripts.

As per the recommendations of Smith et al. (2009), anonymity was explained to the participants as it applied to this study (i.e. only edited scripts would be included in any published papers to illustrate emerging themes). If patients agreed to hear more about the study, they were given a written information sheet about the study (Appendix 9). The information sheet included the study aims, information about the investigators, and the interview schedule in order to ensure that potential participants were fully aware of the questions that would be asked, and to allow them to make an informed decision about whether to take part in the study or not. Following the Helsinki Principles, patients were informed that they could withdraw from the study at any time without providing any reason, and that their withdrawal would not negatively affect their treatment at the hospital in any way. After seeking participants' consent, Z.A. read all questions to the consenting participants. On average, each interview lasted for about 60 minutes. The interviews were audio-recorded and transcribed verbatim in Arabic language by Z.A. Participants were provided with a written debriefing sheet at the end of the interview which included information about the purpose of the study, possible results, data storage, and where to seek psychological help if the participant would feel distressed at the end of the interview (Appendix 10). These information were also repeated orally. The interviews took place in a private office at the DCU. Data collection took place over two months starting in July, 2019 and ending in August, 2019.

6.5.5.1 Translation procedures

Translation procedures are crucial methodological issues in cross-cultural qualitative research, and this process must be clearly described to ensure the rigour of the qualitative study (Oxley, Günhan, Kaniamattam, & Damico, 2017; van Nes, Abma, Jonsson, & Deeg, 2010). Translation in this study included two main parts: the first is related to translation of the interview schedule, and the second is related to the translation of the quotes, which are utilised in the results section. The interview questions were translated using the back translation method (Brislin, 1970). The interview questions were initially devised and reviewed in English language by the supervisory team and Z.A. Back translation procedure was conducted with the help of a professional certified translator, a native speaker in Arabic. The translator, and supervisory team reviewed the two English versions to ensure that the meaning was conserved. Pilot testing for the Arabic version of the interview questions was conducted with the help of two women with breast cancer who were within one year of the diagnosis of the disease. These women were not part of the study sample. Pilot testing was conducted to ensure the readability, clarity, and cultural relevance of all questions (Portney & Watkins, 2009). Participants indicated that the questions were clear and self-explanatory.

Special consideration was also given in regards to the translation of the quotes utilised in the results section. This is because this study is considered a multi-lingual study, in which the researcher and participants shared the same culture and language (Arabic), while the study findings are communicated in English language for an English speaking audience (Oxley et al., 2017; van Nes et al., 2010). The rigour of this cross-cultural study was achieved by the researcher's (Z.A.) familiarity with the socio-cultural setting of participants, and shared language with the participants (Laverack & Brown, 2003). Experts of cross-cultural qualitative research have recommended that data collection, transcription, and analysis occur in the first language of participants (Laverack & Brown, 2003; MacLean, Meyer, & Estable, 2004; Squires, 2009; Twinn, 1997; van Nes et al., 2010). The aim of this procedure is to preserve the meaning created by participants within their socio-cultural setting. Utilising the language of participants in the analysis of data is vital when the qualitative approach utilised in the study is IPA. This is because the focus of this approach is on the interpretation of the meaning of the participant's experience, which might be lost or altered during the translation process (Squires, 2009).

Therefore, several measures were implemented to ensure that the data analysed reflected these women's representations of the meaning-making process of their illness experience. First, the researcher conducted the analysis using the Arabic transcripts, and not the translated ones (Laverack & Brown, 2003; Squires, 2009; Twinn, 1997; van Nes et al., 2010). The second step involved utilising an official certified translator who is a native Arabic speaking, and is familiar with the Omani cultural context. The official translator translated the quotes from Arabic into English language. According to the recommendation by van Nes et al. (2010), it is important that the researcher (Z.A) acts as the "translation moderator" (p.315) to clearly illustrate the meaning and metaphors used by participants. Both the researcher (Z.A.) and translator (E.A.) communicated on several occasions to highlight the specific cultural meaning of certain phrases and quotes to ensure that these were clearly represented in the quotes. In a few cases where the translator omitted Arabic metaphors, but still was able to fully demonstrate the meaning of the quote (Squires, 2009), Z.A. discussed with the translator to ensure that these linguistic dimensions are clearly displayed in the quotes used in the results section.

6.5.6 The study protocol

Two main considerations were taken into account when devising the interview schedule for this study. The first consideration was related to the mixed methods sequential explanatory design of this thesis, which purposes to expand on the quantitative study results of Chapter 5. Table 6.2 displays the questions used in the semi-structured interviews.

Table 6.2 Interview Schedule Questions

1. Can you please tell me how you have been since your breast cancer diagnosis?
2. How are you feeling at the moment? And over the last week or so?
3. How did you think about the impact of the illness on your life at the time of diagnosis?
4. How do you see the impact of your illness now?
5. Can you please tell me what helped you in coping with breast cancer, so that you felt positive, and were enjoying life at the time of diagnosis? And what is helping you right now?
   Prompts: Meaning something that made you feel positive, to have good experience, to enjoy life.
6. Can you please tell me what helped you in coping with breast cancer to not feeling low or down?
   Prompt: any coping strategy that reduced these feelings.
   At the time of diagnosis? And now?
7. What role, if any, did religion have in the way that you thought about the illness? And what role, if any, did religion play in how you cope with your illness? Has that changed over time?
8. How do you describe your social life after diagnosis with cancer?

Prompts: Was it affected by the illness? If so in what ways?
Your relationships with extended family? and neighbours?

9. Do you think your illness has affected your responsibilities?
   If so how? and in what ways?
10. Is there anything else that we have not covered yet that influenced how you understand the illness?
11. Is there anything that we have not talked about that helped you to cope with the illness?
12. Is there anything else that influenced your well-being during the course of your illness?

Table 6.3 displays specific significant and non-significant results that were followed up, and the way the quantitative findings shaped the selection of the interview schedule.

Table 6.3 Point of Integration: Interview Schedule based on quantitative findings

Significant Findings	Interview Schedule Questions
Perceived consequences had direct effects on anxiety, depression, global health status, social functioning, and emotional functioning, when the emotional items were removed from the analyses	How did you think about the impact of the illness on your life at the time of diagnosis? How do you see the impact of your illness now?
Some illness perceptions had direct effects on religious coping: Timeline and consequences predicted positive religious coping (when emotional items were removed from analysis) Negative religious coping was predicted by emotional representations	What role, if any, did religion have in the way that you thought about the illness?
Direct effects of the consequences and identity dimensions on social functioning domain of quality of life	How do you describe your social life after diagnosis with cancer? **Prompts**: Was it affected by the illness? If so in what ways? Your relationships with extended family? and neighbours?

Significant Findings	**Interview Scheduale Questions**
The significant relationship between the perceived treatment control and role functioning	Do you think your illness has affected your responsibilities? If so how? and in what ways?
Non-Significant Findings	**Interview Schedule Questions**
Lack of mediation of positive religious coping in five psychosocial outcomes: anxiety, depression, role functioning, emotional functioning, and social functioning	Can you please tell me what helped you in coping with breast cancer, so that you felt positive, and were enjoying life at the time of diagnosis? And what is helping you right now? **Prompts**: Meaning something that made you feel positive, to have good experience, to enjoy life Can you please tell me what helped you in coping with breast cancer to not feeling low or down? **Prompt**: any coping strategy that reduced these feelings. At the time of diagnosis? And now?
Lack of mediation of religious coping in most of the psychosocial outcomes	What role, if any, did religion play in how you cope with your illness? Has that changed over time?

The second consideration when devising the interview schedule was the theoretical assumptions of the IPA approach. Given that IPA is primarily concerned with exploring the lived experience of participants, it was imperative to ask open-ended questions that are as broad as possible. At the same time, it was crucial to ascertain that these questions will enable the research questions to be answered. In addition to fulfilling the IPA premise, it was crucial to maintain the thesis's theoretical focus. More specifically, the content of the interview questions were derived from the integrated model, with a focus on illness perceptions, coping, and religious coping.

6.5.7 Interview process

Interviewing in IPA involves an interactive dialogue between the interviewer and participant (Smith et al., 2009). Although the participant should be given the opportunity to express their experience without much interference, the interview schedule was developed for two reasons. First, it provided guidance on the direction of the interview, which, in turn, is linked to the research questions. Second, it allowed the interviewer to build rapport with the participants by moving from descriptive questions to questions that require more interpretations and reflections by participants.

6.5.8 Data analysis

Smith et al. (2009) indicated that "the existing literature on analysis in IPA has not prescribed a single "method" for working with data" (p.79). The common denominator in all of these IPA methods of data analysis is evaluating the participant's experiences, so that the researcher can make sense of it (Alase, 2017; Smith et al., 2009). In general, most methods of data analysis within IPA begin with analysing the first case, and then reiterating the same analytical procedures across other cases. Also, the researcher's role in interpreting and analysing the participant's experience is pivotal. A focused attention to sentence structures and their underlying meaning, and how they fit with psychological literature is essential to the analytic process (Alase, 2017; Smith et al., 2009).

For this study, the researcher (Z.A.) followed the recommendations made by Smith et al. (2009) in the analysis of data. First, Z.A. began data analysis by reading the transcripts several times, while listening to the audio recording of each interview. This step helped Z.A. to have a comprehensive overview of the interview. In addition, listening to the audio recording allowed her to appreciate the linguistic context (e.g. emotional expressions of participants) throughout the transcripts (Smith et al., 2009).

Following the initial readings of the transcripts and listening to the audio recordings, Z.A. followed five steps in the analysis of the transcripts (Smith et al., 2009). The first step began with the analysis of the transcripts using three categories of notes: descriptive, linguistic, and conceptual notes. Therefore, IPA does not explicitly involve the development of codes; rather the analysis process involves taking detailed notes within each transcript. Table 6.4 displays an example of this noting process from two transcripts, where normal text in the exploratory comments section reflected descriptive noting, italicised text reflected linguistic noting, and underlined text reflected conceptual noting. Table 6.4 was made in light of Smith et al's. (2009) recommendations. As a consequence, in the descriptive noting, Z.A. summarised the events as deliberated by the participants. The linguistic noting involved Z.A.'s interpretations of the sociocultural meaning of participants' use of Arabic metaphors throughout the interviews. Conceptual noting required more analytical work by Z.A. in addressing the underlying meaning of participants' meaning-making process, while linking it to the integrated model of this study. For example, in Table 6.4, the underlined exploratory comments reflect the conceptual analysis in which Z.A. linked the meaning of participant's experience to the integrated model (e.g. when people hugged the participant, this reflected that people around her associated the illness identity of breast cancer with death).

In order to preserve the coherence of the analysis, the local Omani supervisor S.A., who is familiar with the cultural and social context of participants, read three transcripts.

Both Z.A. and S.A. then met three times to discuss the emerging themes during the analysis of transcripts. The aim of this process was to ensure the coherence of the analysis (Smith & Osborn, 2015).

After the completion of the initial noting process, the researcher in the second step worked on the creation of themes within the transcripts. Themes are summarised psychological statements about the participants' experiences. Hence, themes involve the analytical work of the researcher and the participant (Smith et al., 2009). A large number of themes (up to 50 themes) emerged from each transcript.

In the third step, Z.A. searched for links among the various themes throughout the first transcript to merge some themes into one broad general theme. This step helped the researcher to provide a cohesive description of the participant's experience. Several techniques have been applied in this study to link themes together. For instance, in abstraction, the researcher combined similar themes to create one broad theme. Subsumption, on the other hand, refers to the process of lumping several themes under one "super-ordinate" theme (Smith, et al., 2009, p.97).

After the completion of the analysis process of the first transcript, the fourth step involved the researcher's moving to the next case and repeating the same steps as outlined previously. The researcher was aware that she should not let the previously learned information from the first case cloud her judgment in the analysis of the new case. Finally, the last step in the IPA analysis process involves searching for patterns across cases.

Table 6.4 Sample of initial comments

Themes	Original transcript (1)	Exploratory comments
	When people visited me home to say hi, after they knew that I was diagnosed with the illness,	Reflecting social solidarity, as one of the cultural traditions within the Omani culture is visiting and supporting the sick people
Illness perception of identity, cancer as a death sentence	they came, hugged me, and cried, they made me feel that I will die,	People's emotional reactions to her illness. People hugging the participant as a sign of their own illness identity perceptions "she is dying". It seems that this is also reflecting the illness identity or label as cancer is equal to death
	or somebody will tell you that you must do these religious activities,	Giving advice, does this reflect the collectivistic Omani culture? People being protective of her by suggesting religious activities that would help her get cured through the use of religious activities
	so I tell them you people may die well before me…	Participant trying to challenge this severe illness identity (they may die before her), meaning that even if she was diagnosed with cancer, those people coming to support her might well die before her. Illness perceptions: cancer does not equal to death
Illness perceptions and cultural factors	so everyone will come up with advises that a normal person cannot do	Feeling overwhelmed? In their eyes now she belongs to a different group, she does not belong to them?

Themes	**Original transcript (2)**	**Exploratory comments**
Cognitive positive religious coping	Yes, in the hands of God, because God will not give	Surrendering everything to God, spiritual coping. Positive religious coping, interpretation of the meaning of the illness.
	you such an affliction if he does not love you	
	It is a call from God, it is like God is telling me that you	*Metaphor, an illness like a bell or call* Implying not doing enough religiously speaking?
Meaning-making of the cause of the illness using religious means	have forgotten or ignored some religious obligations,	
	you have to come back to me (God), this is all for my own good”	Reframing the illness as a religiously positive experience, spiritual coping

6.5.9 Validity issues in qualitative research

Several guidelines have been suggested to help qualitative researchers establish validity for their research. Generally speaking, these guidelines do not take into account qualitative data which are rich in sociocultural meaning (Smith et al., 2009; Smith & Osborn, 2015). Given its comprehensive emphasis, Yardley's (2008) criteria was utilised in this study to assess its validity. Four main criteria have to be established to assess the validity of the qualitative research as will be discussed next. It is important to keep in mind that there is some overlap in the criteria discussed below, which is an expected outcome when discussing validity in qualitative research.

Sensitivity to context in qualitative studies could be demonstrated in all research stages (Yardley, 2008). For this study, sensitivity to context was established throughout the stages of research starting with the mere choice of selecting an IPA approach to the final write up of this Chapter. Selecting the IPA approach stemmed from the research team's sensitivity to the sociocultural context of the participants. In addition, sensitivity to context was demonstrated in the introduction section of this chapter by discussing relevant empirical studies which included study samples of Arab and Omani women with breast cancer. Sensitivity to context was also maintained throughout the data collection process by Z.A.'s sensitive approach in interviewing the participants. In order to put aside any prejudgments, Z.A. avoided making assumptions when participants' discussed common cultural phenomenon. Hence, she prompted them to expand on these reflections. Sociocultural factors related to the Omani society and Islamic culture were noted and discussed throughout the results and discussion sections of this Chapter. The inclusion of extracts from participants' transcripts also revealed sensitivity to context, as it illustrated how these analytical claims have been made (Yardley, 2008).

Another validity criterion is the researcher's commitment to the rigour of the study. Commitment was demonstrated throughout data collection by Z.A.'s consideration of the participant's needs during the interviews. Her professional background as a clinical psychologist helped her to utilise clinical interviewing to encourage the participants to reflect on their experience. Commitment to data analysis was demonstrated by the researcher's attention which went over and above the descriptions provided by the participants, and more into analysing the latent meaning of the participants' experience (Yardley, 2008).

Rigour in this study was demonstrated by ensuring that the sample was carefully selected to help us answer the research questions (Section 5.6.2). Rigour overlaps with the sensitivity to context during data collection as the researcher strived through the use of her interviewing skills to encourage an honest and detailed exploration of the participants' experience. The last factor in the rigour of this study is related to the comprehensiveness of the qualitative analysis. This was achieved by following the analytical steps outlined earlier and drafting and redrafting several versions of the results section of this chapter (Yardley, 2008).

The transparency in this study was addressed as the researcher showed the research steps in a transparent manner, and this included providing the rationale of the study, detailing the sample selection and the interview schedule. Additionally, the role of the researcher, her clinical and educational background, how she conducted the interviews, and the steps in the analyses of the data were also explained in details (Yardley, 2008).

Coherence in qualitative research refers to the consistency among the themes and super-ordinate themes generated among the cases. In this study, coherence was established in the results section by ensuring that appropriate links were made across the themes, and across the cases through the use of extracts. Coherence was also maintained by demonstrating that despite the separateness of these themes, there exists considerable overlap among them. Coherence also involved highlighting and explaining these contradictions within the super-ordinate themes in the results and discussion sections (Yardley, 2008).

The final category of Yardley's (2008) quality criteria centres on the relevance and importance of the study findings to literature and/or clinical practice. This criteria was addressed by situating the study findings within the relevant empirical as well as theoretical literature. The aim was to illustrate how these findings address the knowledge gaps in the field. The clinical implications were also addressed in a separate section to highlight the utility of these results to the population of this thesis.

6.6 Reflexivity issues

Reflexivity in qualitative research refers to the author's awareness about how their sociocultural background and subject position may have influenced the qualitative data analysis process. Being reflective about one's own role in the research process is important, especially when the author is engaged in the interpretation of participants' significant experiences, as it is the case in this study (Langdridge, 2007). Therefore, this section will focus on my personal reflections in conducting this study.

This section is based on my research journal which I kept throughout the research process. Additionally, this section has also benefited from the reflexivity questions which have been suggested by Langdridge (2007). The section will address how my interest developed in the field, my relationship to the topic being examined, my relationships to the study participants, and how I could have influenced the analysis of the data. Given the importance of reflexivity in qualitative research, placing this section before the results section should help the reader to situate the research in its context in terms of the researcher's role in this study.

Personally speaking, I developed this interest in learning more about women with breast cancer since I became a member in the breast Multi-Disciplinary Team (MDT) in 2014 at the SQUH. As a consequence, I received and managed a large number of referrals from women with breast cancer who were having psychological difficulties following their cancer diagnosis. My professional background in clinical psychology further increased my interest level to learn about the coping skills that these women utilised to help them manage the illness.

Despite the ambivalence of my colleagues on the supportive role of religion in helping Omani women cope with their illness, I observed that many of the referred breast cancer cases strongly believed in the role of religion to help them cope with their illness. I was struck once when I saw a young Omani woman with breast cancer in a psychotherapy session, who completely refused chemotherapy, and instead sought the spiritual/religious healer to begin her only cancer treatment from there. This led me to think more deeply about the strength of her belief system of the causes of the illness, and her perception of the efficacy of the spiritual treatment received. Without this strong belief in the spiritual treatment, this young lady who not have thought about only utilising this spiritual treatment as the treatment of choice for the cancer. Unfortunately, this patient passed away as the illness metastasised to other body organs. This incident made me think deeply about the reasons that led to such a highly educated young woman to make this decision of not seeking treatment options at the hospital. Upon further reflection, I realised that it could have been partly her strongly held religious beliefs that led to the behaviour of only seeking one treatment method.

My interest in the field further increased as I conducted research prior to embarking on my PhD study at the two main hospitals in Oman, to examine the prevalence of anxiety and depression among a mixed sample of Omani people with cancer. Following this research, my participation at the EURAMA (European Asian Breast Cancer Cogress) conference in 2014 which was held in Muscat, Oman, further increased my interest in psycho-oncology, and more specifically women with breast cancer.

Additionally, my specific interest in religious coping came from my own personal interest in religion. I came from a family in which religious topics were frequently discussed. As I was growing up and my critical thinking skills advanced, I went deeper into thinking about spiritual matters, as I also tried to make sense of the various events that I observed and witnessed during my adolescent years, and as a young adult. All of these factors have collectively made me interested in studying religious coping and illness perceptions among Omani women with breast cancer.

My aim from conducting this research was to achieve a deeper contextual understanding of the factors that could be linked with psychosocial outcomes among Omani women with breast cancer. I wish to pave the road for culturally sensitive research which will allow researchers and clinicians in the field to develop appropriate interventions that match the cultural traditions of the Omani populations in order to improve their quality of life. Conducting this study has actually helped me to achieve a holistic understanding of religious coping and illness perceptions among this population. Without conducting the qualitative study, the sociocultural context, which is so fundamental to these women, could have been completely missed. I also learned that different dimensions of religious coping were associated with different psychological outcomes.

Clinically speaking, I am an outsider to the group being investigated. However, I worked with another subgroup of this population in the first phase of my PhD, as I collected the quantitative data and I have also previously conducted a qualitative study to explore patients' experiences of being interviewed. I have also seen many women with breast cancer within the context of psychotherapy sessions. Therefore, I have a sound background knowledge of the psychological issues that women with breast cancer might face. Culturally speaking, I consider myself as an insider as I speak the same language as that of participants, and I have also learned local Omani dialects as a result of working in the same clinical setting for more than 10 years. I also have a good understanding of the Omani traditions and culture. Moreover, I consider myself as an insider from a religious point of view as I share the same religion with the Omani women whom I have interviewed. In general, and as a result of my personality and professional background in psychotherapy, I have high empathy levels, and I honour and respect the feelings and experiences of the women I interviewed for this study.

Being an Arab woman who is conducting research with Omani women who have breast cancer, I consider this aspect to be helpful to the research process, given the sensitive nature of the illness (within the Omani context) (Section 1.4.3). Therefore, being a woman researcher seemed to have positively influenced the research outcome, because it made these women feel at ease while sharing their illness experience with me. Additionally, speaking the same language and dialect further enhanced my understanding of the sociocultural meaning, and to ensure no misunderstanding would happen.

I was a bit anxious about conducting the interviews despite my experience in clinical interviewing. I think this anxiety was linked with using a new approach (i.e. IPA) to collecting data as well as analysing it. I was aware of the need to bracket off my previous experience as well as my professional background, so that it did not negatively affect data collection and analysis, but this was a challenging task to accomplish. Additionally, the Arab culture does not embrace bracketing off well, because in this clinical context, the women I interviewed assumed that I knew why they engaged in some religious activities. Therefore, when I asked them about the reason behind them engaging in these religious activities, some of them were surprised, because they assumed that I "should" know. Nevertheless, I dealt with this aspect by explaining that I was exploring the research phenomenon, so I need to double check with them, rather than assume that things happened for a particular reason.

I do not think that the quality of the research work was influenced by outside forces. On the contrary, before the start of data collection, I made sure to read all possible guidance as well as the philosophy of the Interpretative Phenomenological Analysis in order to bracket off any pre-perceived judgments and thoughts that may negatively influence the interview process as well as the data analysis.

Being an Arab and a Muslim woman could have influenced how I analysed the data. My cultural background could have made me more likely to assume that my readers would have an idea about the Muslim culture. Therefore, it could have resulted in less explanations about the sociocultural context of the study. If I was someone else who belonged to another culture, I could have interpreted the results differently, and this could have depended on the sociocultural context. For instance, the results section demonstrated that in some of the stories that participants shared, the social network or family were overinvolved in the early stages of the illness trajectory. If I was someone who did not understand the collectivist Omani culture, I could have interpreted this more negatively, rather than viewing it as a supportive move within this cultural context. However, my education and training which took place in Western countries have allowed me to understand and appreciate other cultural views. Therefore, during the results write up phase, I was aware of this bias and made sure to explain and discuss the sociocultural factors that have been raised throughout the interviews. I was able to do that through the mental work of going outside the group and viewing the sociocultural context as if from a distance, rather than assuming it.

In terms of how the findings from this study might impact the participants, it is my hope that these findings will be utilised to improve the lives of Omani women with breast cancer. Designing culturally appropriate clinical interventions could not be achieved without the prior theoretical understanding of how religious coping and illness perceptions could have been associated with the psychosocial outcomes for women in this study. Hence, I do not think the findings of the study could, in any way, lead to any form of harm to the study participants. In the unlikely possibility of emotional harm as a consequence of the reflective experience which could occur as a result of the interview, participants were encouraged to contact the researcher so that she could refer them to see a mental health professional within the same hospital.

Additionally, the findings may help clinicians and researchers working in Oman within the field of psycho-oncology to better understand the needs of this clinical population. It will also fill a gap in the literature by shedding light on this important area and enriching the discipline's understanding of the theoretical background of this qualitative study. I also think that the findings from this study may have a positive influence on my career as it will equip me with the knowledge and skills to improve the field of psycho-oncology, on a research and clinical levels.

I think that the findings from this study could be a novel addition to the literature within the Arab and Omani clinical context. It could enrich the literature in the field of psycho-oncology given the scarcity of research conducted in this part of the world. Additionally, the findings of this research will help in providing a holistic treatment for Omani women with breast cancer.

6.7 Results

Table 6.5 displays the three super-ordinate themes and ten sub-ordinate themes which emerged from the analysis. Despite the separateness of the super-ordinate themes, they are in some ways interconnected. The first super-ordinate theme centred on illness perceptions and how these perceptions have impacted the way participants and families felt about the illness. It also addressed the change in illness perceptions across the illness trajectory. The second super-ordinate theme demonstrated the dynamic and multi-dimensional concept of positive religious coping, and its role in understanding participants' lived illness experience. The third super-ordinate theme addressed other factors that were associated with participants' emotional well-being since the diagnosis of the disease. This theme included family support factors, participants' personality characteristics, and other coping skills that have helped these participants deal with breast cancer.

Table 6.5 Summary of Themes

Super-ordinate themes	**Sub-ordinate themes**
The context of illness perceptions	-Dealing with others' illness perceptions -Addressing threatening illness perceptions early in the illness trajectory -The link between illness perceptions and positive religious coping -The dynamic nature of illness perceptions
The utilisation of multi-dimensional positive religious coping	-The cognitive dimension of positive religious coping -The emotional, behavioural and spiritual dimensions of positive religious coping -Religious coping since the diagnosis
Other factors associated with emotional well-being	-The supportive role of the family -Intra-personal factors -Non-religious coping skills

Q1. How do Omani women newly diagnosed with breast cancer understand and give meaning to their illness experience and how did their experience change over time?

6.7.1 The context of illness perceptions

This theme addressed the central role of illness perceptions on participants' lives and their emotional well-being throughout the illness trajectory. Also, it illustrated how some dimensions of illness perceptions were intertwined with certain positive religious coping dimensions. The theme demonstrated the role of illness perceptions in facilitating the acceptance of illness for these women and their families.

Illness perceptions heavily influenced illness related emotional reactions for participants and their families. This theme also addressed the dynamic nature of illness perceptions, and how it impacted the emotional well-being of participants, and the mechanisms of change of illness perceptions.

6.7.1.1 Dealing with other's illness perceptions

Respondent 1 shared her experience at the doctor's office when she learned about her diagnosis of breast cancer, and her sense of responsibility toward her mother at that time. It appeared that she was concerned about her mother's perception of the identity (or label) of the illness as a death sentence:

Respondent 1:*"My friend asked me to leave the doctor's room, and so I did, I started to cry. All I kept thinking about was how I would tell my mother that I was sick, I wasn't really crying because I'd been diagnosed with cancer".*

Z.A: "So as soon as you were informed, you weren't able to concentrate on it, you kept thinking about your mother?"

Respondent 1: "*Yes, I only kept thinking about my mother. Look, it never occurred to me that all those who die only die of cancer, so why would I view cancer as the end of me? And that I would eventually die from it. This isn't to say that I'm immune to these kind of thoughts, whenever they occur in my head, I always try to dismiss them by saying: "No, even when others tell you otherwise, even when others try to convince you that you only have three days left to live in this world, will your sadness help the situation?"* (Respondent 1, aged 33 years, 5.5. months post-diagnosis, on chemotherapy).

Several contradictions are observed in the above excerpt. On the one hand, she shared that death did not come to her mind, but in the same sentence she indicated that these thoughts still came to her mind. Additionally, she very clearly showed her concern of her mother's perception of the identity of the illness, reflecting how breast cancer is labelled and perceived by the society as a life threatening illness. This illness perception of identity has been activated at the time of diagnosis. In another instance, respondent 1 also reflected upon how she thought of and made sense of the reactions of people in her social network. The way people reacted to the news of her illness revealed how they thought of and perceived the illness. For instance, respondent 1 interpreted the jokes people made as if her death is imminent:

Respondent 1*: "Often times when others come by to visit me after knowing about my diagnosis, they'd hug me and cry, which really sits uncomfortably with me and makes me feel as though I'm really about to die. Others also like to offer unnecessary advice, asking me to do this and leave that (pray all the time, or go to the spiritual healer). I'd always respond back to them by saying that you really never know who would die first, so there is no need to prepare me for death before my time. All this unnecessary advice that was given to me was so overwhelming that others with no cancer could not apply them"* (Respondent 1, aged 33 years, 5.5. months post-diagnosis, on chemotherapy).

The collectivist mentality of the Omani society became evident in the extract above by the suggestions made to her to engage in more religious activities, which in their minds, could be a way to get close to God, so He could cure her illness, and if not, then at least when she dies she will be prepared (e.g. pure, free from sins). Although the meaning behind this advice is implicit, and never explicitly said to the participant, it could have reflected these people's illness perceptions, and their beliefs about the efficacy of religious coping methods within an Islamic background. As a consequence, this seems to be a projection of how people in her social network perceived the illness identity as a death sentence, and this in itself, from their point of view, could have needed tough religious measures/or a miracle to be cured. Unsolicited advice from people within her social network was often about encouraging the patient to seek consultations from people working within traditional and spiritual medicine. The extract also indicates the social obligation in Islam in visiting the sick; therefore, for respondent 1, people in her social network tried to offer their support of her at the time of diagnosis. Along the same lines, respondent 2 shared her family's reaction when they knew about her diagnosis:

Respondent 2: *"when they learned about my diagnosis through my brother, they were in shock. When they had first spoken to me about it, they were in tears, I remember them worryingly saying to me: "is that it? As if I will be leaving this world (laughing), I tried to be as reassuring as possible, and that all I needed was their support, and for them to be there for me. I explained to them that with this illness, the more you magnify it, and make it seem serious, the likelier for it to be. They did struggle with understanding how I felt about it emotionally, and my mother and sisters would always remind me that I could always travel abroad if I ever felt the need to. It's okay though, I totally understand why they were worried"* (Respondent 2, aged 35 years, 6 months post-diagnosis, on chemotherapy).

Respondent 2 described the emotional reactions by her family members, which suggested that intense anxiety was generated in fear of losing her to death. This fear could have been linked to the illness identity equating breast cancer with death. Her laughs in the context of sharing her disease with the family could be indicative of her way to cope with her anxiety of the illness, too. The brother's role was supportive to respondent 2 and family as he addressed maladaptive illness perceptions, which seemed to have helped the family accept the illness. Out of the family's concern and support, travelling abroad for a second medical opinion was also suggested. Seeking a second medical opinion is a common practice among some families in Oman, and it reflects care, love, and their sense of obligation toward the sick family member.

Similar to respondent 2, respondent 4 also shared that her family and husband suggested that she seeks a second medical opinion abroad to double check her medical results. This step could also be indicative of denial, fear of the illness, as well as the family-oriented nature of the Omani society:

Respondent 4: "*I've been scheduled for a later appointment in Oman, so I travelled to India for a second opinion to confirm what I had been told in my town*"

Z.A.: So you wanted to make sure?

Respondent 4: "*Yes indeed, I wanted to make sure the diagnosis was correct".*

Z.A.: Who suggested India?

Respondent 4: "*My family and my husband, it was mainly to review all my test results, they thought it would be better to have a second opinion*" (Respondent 4, aged 37 years, 4 months post-diagnosis, on chemotherapy).

In order to further illustrate the maladaptive illness perceptions of people around her, respondent 6 explains, from her point of view, how society perceives cancer:

Respondent 6: "*The majority believe that cancer is the world's deadliest disease. And a cure has not yet been discovered, and that you're destined to die from it. How is it possible to fight cancer? How can you conquer such a disease? Some could go as far in ignorance, as to not shake hands with the cancer patient! Some still believe that cancer may be contagious, which really does take a toll on the mental health of the patient"* (Respondent 6, aged 48 years, 4 months post-diagnosis, on chemotherapy).

This extract displayed maladaptive illness perceptions of identity and coherence, which seems to be prevalent in the society. This, in turn, appeared to have negatively affected the patient's psychological well-being in relation to the illness, through possibly intensifying her fears about the illness outcomes. Being treated as if she has a contagious disease by some people in her social network could also intensify the stigma against her and people with cancer in the society.

6.7.1.2 Addressing threatening illness perceptions early in the illness trajectory

Some participants had threatening identity perceptions of breast cancer at the time of diagnosis, which negatively affected how they felt about the illness. Respondent 2 was very emotional in the days following her diagnosis of the illness with all of her questions centred on the perceived consequences as well as the identity of the illness:

Z.A.: So, since Dr. A. told you about your disease, you thought about all of these things?

Respondent 2: "*Yes I did, all of them at the same time, this entire world of chemotherapy, femininity, children, cure. This entire course of treatment, everything I'll be going through, everything that I'm bound to face in this journey. I, just like everyone else, would hope to receive treatment over a course of one day, and find myself recovered on the next. This is what I want and truly wish for. My husband really stood by me throughout the whole thing, he kept reassuring me, he'd always tell me not to over magnify the situation, and that it's a disease bound to be cured, just like all diseases. I'd tell him things like "this isn't just any illness, this isn't flu". He phoned my closest family member, my brother, who also happens to work in the medical supplies field. He told him: "(A)'s been diagnosed with cancer, and she's been feeling so and so, and I feel helpless about it. Talk to her if you can, she might feel better" he then asked him not to speak to me… my brother reached out to me in the evening... He explained to me how cancer is an illness, just like any other, with plenty of people who've gone through remission. And that its therapy has evolved and improved throughout the years, and that I won't necessarily go through the painful stages of chemotherapy, and that although some side effects can happen, that'll require me to endure them and be patient… my face had nearly set itself on fire from how much I'd been crying"* (Respondent 2, aged 35 years, 6 months post-diagnosis, on chemotherapy).

For respondent 2, the mere experience of being diagnosed with cancer was stressful enough for her, which necessitated the support of her husband and brother, who addressed and corrected her maladaptive illness perceptions on identity, consequences, and treatment control. Her emotional distress at the time of diagnosis seemed to be linked with and preceeded by these dimensions of illness perceptions. Both her husband and brother attempted to challenge the stigma of the illness by considering it "just like any other disease". The brother's support could be best understood within the context of the collectivist Omani culture characterised by a high level of interdependence among family members. Respondent 3 also shared her negative emotional reactions to the diagnosis, and described it as a "shock", especially that she was completely healthy before then. Similarly, for her, the severe illness perceptions of identity, timeline, as well as consequences were all addressed early by her brother who also happened to work in the medical field:

Respondent 3: "*I thought about everything when I was diagnosed with cancer, because for us cancer means death, it is death for us (her emphasis), and of course this is an old idea, like this is the end, I have my kids, what will happen to them, my house, I thought about everything, that I will spend my whole life sick, I will spend my whole life till I die sick. This was how I perceived the illness in the past…. but my brother was with me all the time, he told me it is a stage, and it will pass, you will go back to your husband. This illness was a shock in the olden days, now it is Alhamdulillah (praise be to God) everyone gets cured from it, it is like any other chronic illness, similar to diabetes, and high blood pressure"* (Respondent 3, aged 39 years, 1.5 months post-diagnosis, on chemotherapy).

Correcting severe and threatening illness perceptions (e.g. identity, consequences, timeline, and treatment control) seemed to have helped respondent 3 to reduce her anxious feelings, and cope in a more helpful manner at the time of diagnosis. Her brother addressed the timeline dimension by reassuring her that it is a "stage" of her life, and not her whole life. Yet for her, other illness perceptions such as the efficacy of treatment, her personal contribution to recovery (i.e. personal control), as well as the timeline perceptions were all addressed by her social network, too. She seemed to have utilised these adaptive illness perceptions to encourage her move forward in her journey toward recovery:

Respondent 3: "*I felt people's closeness to me, I felt like really close to them, I felt that in the past some were away from me, but since I was diagnosed with the illness, I felt the closeness of my family, friends, neighbours, the whole society. I am not sure if it is empathy, but they were united to say one thing: you are on your path to recovery, you will be cured.. I have taken my strength from them"* (Respondent 3, aged 39 years, 1.5 month post-diagnosis, on chemotherapy).

Not only did they address these dimensions of illness perceptions, but they have also shown her a new side of their care and support, which was not clearly visible before the diagnosis. Other participants have also indicated that their families encouraged them to be on top of their treatment regimens such as respondent 5:

Respondent 5: "*They take a lot of care of me, in terms of the treatment in the hospital, even when I do not take my medications, they ask me why are you not taking them?"* (Respondent 5, aged 45 years, 4 months post-diagnosis, on chemotherapy).

This reflects the family's perceptions of the efficacy of the treatment (e.g. treatment control). It also echoed the tremendous level of support she received from her family in monitoring her medications intake, and also in regularly accompanying her to the hospital to receive her chemotherapy treatment. Similarly, for respondent 4, her family-in-law helped her to think of the current phase as temporary (e.g. addressing illness timeline):

Respondent 4: "*They always encourage me, they encourage me a great deal. It is like this is a stage, and it will pass, my family and neighbours all say the same thing, and many people go through the same stages.. my husband also elevates my morals, he does not scare me of the treatment, he always encourages me, so basically this treatment is temporary stage"*(Respondent 4, aged 37 years, 4 months post-diagnosis, on chemotherapy).

In addressing the timeline illness perceptions, the participant's family members and key people within her social network perceived the illness as temporary, and associated it with the treatment period, which typically lasts for approximately 6 months. By and large, families encouraged participants to view the illness as temporary. Addressing these illness perceptions appeared to have facilitated coping for these women. For respondent 4, her family seemed to have normalised the illness, and its treatment by reminding her that "many people go through the same stages". She also seemed to have a hidden fear "he does not scare me", which may possibly indicate her attempt to cope despite her fear.

6.7.1.3 The link between illness perceptions and positive religious coping

Three participants linked their illness perceptions of identity, timeline, treatment control, and consequences to some dimensions of positive religious coping at various points throughout the illness trajectory. For two of these participants, their illness perceptions did not seem to be severe and threatening at the time of diagnosis. For instance, both respondents 4 and 5 did not express having threatening illness representations, which helped them maintain their emotional well-being at the time of diagnosis:

Respondent 4: "*Alhamdulillah (praise be to God), I have to accept what God has written for me, and every illness has a treatment, treatments are available, and this illness is now very common, I have to elevate my morale so that the illness will not destroy my life"*(Respondent 4, aged 37 years, 4 months post-diagnosis, on chemotherapy).

For respondent 4, she immediately used her positive religious coping methods, a cognitive coping strategy (illness as a predestined by God), which seemed to have helped her along with her perceptions of the identity of the illness as "a common illness". Perceiving cancer as a "common illness" could have also helped her to reduce the possible social stigma of cancer, as a threatening and uncommon illness. Her illness perceptions of the efficacy of treatment (e.g. treatment control) appeared to have also reassured her. However, respondent 5 denied any negative perceived consequences of the illness on her life at the time of diagnosis, and in the following months. Her balanced emotional reaction seemed to be the outcome of the non-threatening illness perceptions of identity and consequences, and her use of positive religious coping:

Respondent 5: "*Nothing really came to my mind when I was diagnosed with the illness, and it never crossed my mind that it will affect my life, but I remembered my God, and Alhamdulillah (praise be to God), and my family all helped and encouraged me, so that I have to always keep God in my mind, so that God would help me in every stage* *of life .. so if I would say that I am dying, why would someone even say that? The illness is a proof that God is thinking about you, to test a person's patience, it is not like this is the end of my life, or the end of life, no, no, I need to go on about my life as normal"* (Respondent 5, aged 45 years, 4 months post-diagnosis, on chemotherapy).

The intertwining between illness perceptions and positive religious coping was equally apparent for respondent 6 in the days following the diagnosis, as she displayed a deep gratitude to God about the healthy years of her life up to the diagnosis of breast cancer:

Respondent 6: "*life and death are in the hands of Allah, no one will stay forever in this life, everyone will die, everyone will die with a predetermined reason, which has already been decided by God, but what came to my mind was my kids, my husband, how they will be, what will happen to them? I know that life continues no matter what, but you know it's the motherly feeling of concern about her family. But the other thing is fearing death, Alhamdulillah (praise be to God) no one will die until their years are up .. so it is destined by God, it is not a problem for me"*(Respondent 6, aged 48 years, 4 months post-diagnosis, on chemotherapy).

The extract above reflects that the participant thought about dying, but she was not afraid to face death. It also reveals the close link between her illness perceptions and how she used her strongly held religious beliefs to help her cope with the illness. Unlike respondents 4 and 5 who displayed less severe illness perceptions, respondent 6 seemed to have severe illness perceptions of identity, but then these were immediately followed with positive religious coping which seemed to have reassured her, that being diagnosed with cancer does not necessarily mean that she will die from it. Similarly, respondent 3 indicated severe illness perceptions at the time of diagnosis, but a few weeks later, these perceptions reduced in intensity, and hence the prominent role of religious coping came to light:

Respondent 3: "*The religious aspect has helped me a great deal in this illness, regardless of the illness, whether it was cancer or something else, if it was diabetes or hypertension, the illness itself does not matter, what really matters is that it is a call from God* " (Respondent 3, aged 39 years, 1.5 month post-diagnosis, on chemotherapy).

6.7.1.4 The dynamic nature of illness perceptions

The dynamic nature of illness perceptions is the last sub-ordinate theme, and it demonstrated the change in illness perceptions from the time of diagnosis till the date of interview. This change in illness perceptions seemed to have helped these women to feel well about the illness, and to accept it. Participants who initially had severe illness perceptions at the time of diagnosis showed a reduction in the severity of these perceptions months later (e.g. at the time of the interview). For instance, respondents 1 and 3 displayed severe illness perceptions, but the intensity reduced after their encounter with a health care provider, a supportive family member, or their own illness experience. Respondent 1 specifically described how her maladaptive illness perceptions of identity had been negatively influenced by social media:

Respondent 1: "*I was devastated at first, because of the reputation of the illness, because when I googled the illness after my diagnosis, and generally in the social media, they have exaggerated view about cancer as an illness, but in reality the cancer experience is not the same way as described on google, when you read you feel like you will die, even when they talk about chemotherapy they tell you it will burn" (*Respondent 1, aged 33 years, 5.5. months post-diagnosis, on chemotherapy).

The extract above demonstrated that social media negatively influenced the participant's illness perceptions. It is possible that everyone's illness experience is different from others, and therefore heterogeneity of illness perceptions could be the result of different people sharing their experiences on social media. Respondent 3 explained that:

"Now I look at it as a stage in life that will pass, and I can see many cases in society just like me, and there are worse cases, and they have been all cured"

*"So the illness has not affected my life, because at first I thought I am sick, but how I view it today is I am in treatment, I am even living a much better life compared to the past, I am on the road to recovery" (*Respondent 3, aged 39 years, 1.5 month post-diagnosis, on chemotherapy).

In the first excerpt, respondent 3 perceived the illness as a stage that she only associated with the course of chemotherapy. Within this context, the illness is perceived as temporary. Using other cognitive techniques such as mental comparisons with people with worse prognosis also seemed to have made her feel better about her illness. This change comes in contrast to her thoughts about the illness earlier "I will *always* be sick". Additionally, the shift in illness perceptions occurred in regards to how she perceived the consequences of the illness on her life. It becomes evident in the above excerpt that post-traumatic growth occurred in the way she perceived her life changing for the better.

Those who initially had less severe threatening illness perceptions (respondents 4, 5 and 6) did not demonstrate changes in their illness perceptions. For instance, respondent 4 said:

> "*At the start it was like a shock, when I first heard the news, but when you find someone who talks to you, like my doctor, she talked to me, and told me that this is a normal illness, and we have a lot of doctors in Oman, they are able to do the surgery, so she explained everything to me, so I accepted the treatment"* (Respondent 4, aged 37 years, 4 months post-diagnosis, on chemotherapy).

Respondent 4 seemed to be referring to the stages of loss in which shock is the expected psychological reaction to protect her from overwhelming feelings. The health care provider seemed to have addressed the identity of the illness and the treatment control dimension to increase the patient's confidence in the treatment offered to her, and to reassure her. The health care provider also addressed the needed medical facts, which may have helped the participant to cope with her illness. Other participants have also noticed that the perceived consequences of the illness on their lives have changed to become more adaptive as a result of their illness experience. Family support seemed to have played a role in the reduced perceived consequences of the illness on their lives. Respondent 2 explained:

"*In terms of the consequences of the illness, it is not affecting me, because I am supported by my family.. now I see it as any other illness, it is like fever, like flu, I have heard a lot from people, I have seen many sick people, all of this exposure has helped me*" (Respondent 2, aged 35 years, 6 months post-diagnosis, on chemotherapy).

Therefore, the reduced perceived consequences on her life seemed to have occurred via the availability of family support. Similarly respondent 5 shared a similar experience:

"*The illness has not negatively affected my life because my children, siblings and everyone are helping me, I have ten children*" (Respondent 5, aged 45 years, 4 months post-diagnosis, on chemotherapy).

Respondent 5 has also shared a similar observation that the reduced perceived consequences on her life came as a result of the family support she receives from her close and extended family. Respondent 1 shared that although she lost some physical aspects that are associated with her physical appearance, she continues to be the same person who enjoys the same things she used to enjoy before the diagnosis with the illness:

"*Patients are those people who are bed-ridden, someone who is in pain, and sometimes people with mental illnesses, we (women with breast cancer) don't need pity, we are not sick, Alhamdulillah, my disease has not prevented me from doing anything, I am living my life to the fullest, I am travelling, I do my errands, I have fun, although it is true that I have lost my hair, but I am wearing a wig, and I still take care of my looks, so I am living my life to the fullest*" (Respondent 1, aged 33 years, 5.5. months post-diagnosis, on chemotherapy).

In the above extract, it appears that respondent 1 is having a unique conceptualisation of how she views/perceives illness and health. She associated being sick with the level of impaired physical functioning of the person, and because she is going about her life as normal, she refuses to be labelled as a patient. Although acknowledging the physical loss, she does not perceive any negative consequence of the illness on her life.

When it comes to the perceived influence of the illness on their responsibilities, some participants indicated that some changes are inevitable given the side effects of the chemotherapy treatment. However, both participants and their families demonstrated an accepting attitude and flexibility toward the changes in the reduced ability of the participant to perform expected tasks/responsibilities:

> Respondent 6: "*In terms of household responsibilities including cooking, cleaning, and things like that, the house helper takes care of that, but in terms of taking care of my children and looking after them, I guess there are mild impairments, but they are very mild, not that much.. it is normal that I will sometimes need some time off especially after surgery.. my family are accepting of this*" (Respondent 6, aged 48 years, 4 months post-diagnosis, on chemotherapy).

Respondent 6 is making a distinction between taking care of the physical needs of her family versus their psychological needs. With the wide prevalence of household helpers in the Omani society, she did not perceive the reductions of time she spends with her children as significantly impairing her role as a mother and wife. Respondent 4 also indicated that she continues to perform her family responsibilities:

> Respondent 4: "*I don't feel there is any negative impact of my illness on my family responsibilities, I always try to do the things I used to do in the past, I never gave up on this*" (Respondent 4, aged 37 years, 4 months post-diagnosis, on chemotherapy).

Respondent 3, on the other hand, represented a different perspective in that she utilised the illness as an opportunity to reduce the previous burden of family responsibility:

> Respondent 3: "*My husband works away from home, which makes him unavailable all the time, so all of the kids' responsibilities were on my shoulders. They are heavily dependent on me, now, I am not, yes I can still go around to do errands, it is not that the illness prevented me, but I used the illness as a leeway to rest, and also I am not supposed to do all of these things in the first place*" (Respondent 3, aged 39 years, 1.5 months post-diagnosis, on chemotherapy).

The extract above reflects the gender roles, which are prevalent in the society (e.g. men and women are expected to do certain tasks). So the reduction in her responsibilities was seen in a positive light, and is beneficial to her. It appears that respondent 3 has utilised the illness as an opportunity to reflect on her life, and the needed changes in it.

Q2. What were participants' coping processes and did religious coping play any role at all in their illness experience?

6.7.2 The utilisation of multi-dimensional positive religious coping

The second theme addressed the utilisation of positive religious coping among the study sample. All of the participants used this coping method when first diagnosed with illness, as they perceived the illness as a gift sent from God. Therefore, participants were thankful to God for receiving this gift (e.g. the disease). The use of positive religious coping seemed to have helped participants to manage their emotional reactions by not feeling overwhelmed at the time of diagnosis, but these methods did not appear to make them feel happy at that time. They continued to utilise the positive cognitive dimension of religious coping in the following weeks and months of the diagnosis, albeit to varying degrees. The multidimensional aspect of religious coping including the cognitive, emotional, spiritual, and behavioural dimensions were also revealed in participants' descriptions of their illness experience. These other dimensions of positive religious coping seemed to be associated with more positive emotions compared to the cognitive dimension of positive religious coping. The implementation of religious coping after the diagnosis with breast cancer will also be illuminated within this theme.

6.7.2.1 The cognitive dimension of positive religious coping

The use of the cognitive aspect of positive religious coping seemed to have helped participants manage their emotional reactions by not feeling negative about the illness. This was clearly evident as participants coped with their illness throughout the illness trajectory. As respondent 5 said:

"I really feel normal, I did not feel annoyed or anything because of the cancer, because this (illness) is from Allah, this means that God favoured me and thought about me in a good way, it is a test to see if the person will be patient enough in good and bad times, so alhamdulillah (praise be to God) I am feeling normal, because I believe in God, God heals every patient, I am very content" (Respondent 5, aged 45 years, 4 months post-diagnosis, on chemotherapy).

Respondent 5 perceived the illness as a normal occurrence of life and gave meaning to her illness experience using positive religious coping "God favoured me". The cognitive aspect of religious coping was evident in her belief in the omnipotence of God's power to heal, as well as the cause of the illness, which is God thinking of her. The link between the perceived cause of the illness with religious coping is clear in this instance. Similarly, respondent 3, who seemed to have struggled to accept and cope with the illness, used the metaphor of the "alarm" to signify the cause of her illness. This seemed to have helped her in finding meaning of her illness. For her, the aim of this alarm was to allow her to get spiritually closer to God. Hence, the cognitive aspect of religious coping could have helped the participant in her struggle to initially accept the illness. She said:

Respondent 3:" God has given me this illness, it is a test from him (Ibtila), God knows the best, what is good and what is bad for me, given that it is an affliction, I will accept it, this is how I convinced myself, there must be a way for treatment, and only God knows where the goodness is".

Z.A.: So you surrendered all control to God?

*Respondent 3: "Yes, in the hands of God, because God will not give me such an affliction if he does not love me, it is a call from God, it is like God is telling me that you have forgotten or ignored some religious obligations, I have to come back to Him, this is all for my own good" (*Respondent 3, aged 39 years, 1.5 month post-diagnosis, on chemotherapy).

Although respondent 3 indicated in the transcript (not cited here) that she used to be a practicing Muslim before her diagnosis, she was not satisfied with her level of religious practice. As a result, she rationalised that the illness is a call from God, and this was what helped her to make sense of the illness. She also believed that God will heal her. These religious methods reflect her attempts to make sense of the illness by convincing herself to think that the illness is for her own good (even if she might have felt ambivalent about it). This may possibly reflect the dynamic nature of the stages of loss, and more specifically what helped her accept the illness, and not feel negative about it. Respondent 1 also shared the first thing she said when the doctor shared with her the news of her illness:

Respondent 1: "*When the doctor asked me do you want to start with the good news or the bad news? I told him please start with the bad news, he said you have cancer, immediately I said Alhamdulillah (praise be to God)"* (Respondent 1, aged 33 years, 5.5. months post-diagnosis, on chemotherapy).

With respondent 1, it also becomes evident that her immediate reaction was to praise God, and to accept the illness as a sign of His love:

Respondent 1: "I feel that God loves me, that is why He gave me this illness, so that I come back to my family, better than my female friends, it is much better than showing off and what not" (Respondent 1, aged 33 years, 5.5. months post-diagnosis, on chemotherapy).

The previous excerpt demonstrated the participant's use of positive religious coping at the time of diagnosis. It could reflect the need to make sense of the illness immediately at that time. It also demonstrated the emerging new priorities in the participant's life.

6.7.2.2 The emotional, behavioural and spiritual dimensions of positive religious coping

Although the cognitive dimension of positive religious coping was prominent throughout the interviews, other dimensions of positive religious coping also emerged including behavioural, emotional, and spiritual dimensions. The behavioural and spiritual dimensions of positive religious coping seemed to be linked to positive feelings such as comfort and emotional relief. For example, respondent 2 described the four dimensions of the religious coping process, which included the cognitive, emotional, behavioural, and spiritual dimensions, and specifically described the link between the behavioural domain and emotional comfort:

Respondent 2: "*The religious factor by itself brings emotional relief, whenever I will get and hold the Holy Qur'an or start praying, and feel close to God, I will not feel any harm .. I have always put in my mind that this is all good, maybe there is good, no, not maybe, it is for sure, I am sure there is something good down the road, there must be something that God tries to move me away from, He is asking me to get closer to him, and the illness is God's way of telling me that, He remembered me, because prophet Jacob had so many illnesses which were indescribable, this tells us that when God decides to give someone an illness, He can remove it too. Any person has to be always close to God, of course by praying, this is a must, also by reading Qur'an, in order to increase the curing powers, for real, my sisters and husband would always ask me to read Qur'an, and really after the chemotherapy session, when I feel very frustrated and tired, I start reading Qur'an, and my tears automatically fell down, because since my illness I feel tired from the chemotherapy, but I have tried that when I read Qur'an, the pain will go away, this is how I get close to God"* (Respondent 2, aged 35 years, 6 months post-diagnosis, on chemotherapy).

For respondent 2, it becomes clear that the side effects of chemotherapy were overwhelming for her. Therefore, as a part of coping with this pain, she reads the Qur'an to get immediate emotional relief. The possible mechanism of comfort seems to be through the activation of spiritual channels by feeling closer to God, and by thinking about Him in a benevolent manner. Respondent 4 also displayed analogous emotional relief as a result of reading Qur'an, but her mechanism of achieving this emotional relief is different:

Respondent 4: "*Reading Qur'an is a great relief, I just feel it, because when reading I will forget the illness, I will not think about it*" (Respondent 4, aged 37 years, 4 months post-diagnosis, on chemotherapy).

For respondent 4, it appears that reading the Qur'an helped her emotionally via distracting her from thinking about the illness, which consequently brought her emotional relief. Respondent 6 also indicated that one of the consequences of reading the Qur'an for her is emotional relief, through enhancing her spiritual relationship with God:

"When I sit to read Qur'an, I feel so emotionally relieved, like this helps me feel strong, even when I cry when reading Qur'an, I feel Allah is with me, and He will never give up on me" (Respondent 6, aged 48 years, 4 months post-diagnosis, on chemotherapy).

Other participants similarly displayed comparable emotional and behavioural dimensions of positive religious coping. For instance, respondent 3 shared that she was maintaining her regular daily prayers throughout the day:

Respondent 3: "*Alhamudlillah (praise be to God), I was not very regular on it in the past, now I am more regular, this is in addition to the other supplications twice a day"*

Z.A.: What led you to increasing these night prayers?

Respondent 3: "*maybe to get close to God, because as I told you before, if God loves a person, He will give him an affliction" (*Respondent 3, aged 39 years, 1.5 month post-diagnosis, on chemotherapy).

Respondent 3 seemed to display more than one dimension of religious coping, including the spiritual, behavioural, as well as the cognitive dimension. The spiritual dimension is present in her need to feel close to God, while the behavioural dimension was evident by reading the Qur'an. The cognitive dimension was also clear in her perception of God as a loving entity. Respondent 5 also mentioned:

Respondent 5: "*Alhamulillah, because when I remember God, I feel the emotional relief, that is why people must get close to God, alhamudlillah*" *(*Respondent 5, aged 45 years, 4 months post-diagnosis, on chemotherapy).

This respondent linked the spiritual dimension of religious coping with achieving emotional relief as the end result. Based on the previous extracts, the various dimensions of positive religious coping seem to be intertwined. Although several methods of positive religious coping were utilised, its key aim for these participants was to enhance their spiritual connection to God.

6.7.2.3 Religious coping since the diagnosis

For four participants, the frequency of the use of religious coping at the time of diagnosis increased compared to the time prior to the diagnosis, while the remaining two participants did not exhibit any difference in their use of religious coping. The frequency of engaging in religious coping after the diagnosis with illness seemed to have changed for two participants only, while for the remaining four participants, the use of religious coping stayed the same, but was comparatively higher compared to the time prior to the diagnosis. The magnitude of prayers, or recitations of the Qur'an initially increased for four participants to help them cope with the illness, but it stayed the same compared to the time prior to the diagnosis for only two participants. In one instance, situational factors, in addition to the diagnosis of the illness, contributed to the increase in religious coping activities for respondent 6. For instance, respondent 6 was alone with her husband when diagnosed abroad, and therefore was away from family and social responsibilities. As a result, she engaged in more prayers, recitations of the Qur'an, and other Islamic prayers. Although, she engaged in these religious activities more frequently at that time, she appeared embarrassed to talk about the increase in her prayers since her diagnosis with the illness. Her embarrassment could be understood within the Islamic context which encourages Muslims to be close to God through prayers and other religious activities at all times, and not only when they are going through difficult times. She laughed in embarrassment as she was describing this:

Respondent 6: "*I feel my religious coping has increased since the diagnosis with illness, I feel from the very beginning, but some people will say I am a good person and I treat people nicely, and I pray, and what not, why did God inflict such a pain on me? So some people can reach this level of thinking, but for me I don't feel, I feel the illness, thank God for everything, I am now praying additional prayers (laughing), and I am Muslim, I am reading Qur'an more often, I used to read in the past, but more so now, even Ruqya, I used to read in the past, but now I am reading it twice a day, once in the morning and once in the evening. When I was in India, there was no one, only me and him (husband),and I had nothing to distract me where we were, now I am at home, I have many responsibilities, those of my kids, the house, guests, people going, people coming, so I got busy, so I am trying to go back to these things, but it is not going to be the same way, because before it was only me and him in the same room, and I have the Qur'an with me"* (Respondent 6, aged 48 years, 4 months post-diagnosis, on chemotherapy).

The previous passage reflects two additional important points regarding the participant's cultural background. She seemed to criticise people's use of negative religious coping and accordingly those asking the "why me" question, despite them being "good people". This implies that from respondent 6's point of view, those people should not question God even if they think of themselves as good people, and do not deserve to be diagnosed with cancer. This is linked to the Islamic teaching that encourages Muslims to always be grateful to God in all situations. The other cultural dimension is associated with the social nature of Omani people in general. Despite being recently diagnosed with cancer, her family and friends visited her regularly, and they remained in contact with her. This practice also reflects the Islamic requirement of supporting sick people by visiting them. Furthermore, it reflects the collectivist Omani society, and social cohesion among its members. The "*ruqya*" is a religious practice of reading specific verses from the Qur'an for the sake of being cured from an illness. For respondent 6, this has reduced since she resumed her medical treatment in Oman.

Other participants have also revealed how religious coping increased since the time of diagnosis, but stayed almost the same in the weeks following the diagnosis. For example, for respondent 3, and although she had memorised the longest verse in the Qur'an, after the diagnosis of illness, several other religious activities increased:

"*The daily ritual prayers, I used to recite from before, but I started doing more of Ruqya, I was not used to reading it before, I have already memorised sorat albaqara from before the illness, I have memorised it through a WhatsApp group, I have memorised it page by page, and I used to read it every day even before the illness. Alhamdulillah (praise be to God), I used not to pray after midnight frequently, but now thanks God I pray at night everyday" (*Respondent 3, aged 39 years, 1.5 month post-diagnosis, on chemotherapy).

As clearly presented, respondent 3 had some religious background before the diagnosis of illness, which further increased after the diagnosis of illness. Moreover, the current availability of technology seemed to have played a prominent role to help her achieve her religious goals such as the memorisation of the verses. For respondent 3, the use of religious coping was more intense at the time of diagnosis, but later became less concentrated and more organised:

"*Now I have become more organised in terms of performing the various prayers, now I wake up at night, pray the night prayers, I supplicate to God… but when I was first diagnosed, I was doing all of these prayers at the same time*" *(*Respondent 3, aged 39 years, 1.5 month post-diagnosis, on chemotherapy).

Some variability also existed among participants on their previous use of religious coping and religious activities in general, and their current utilisation of religious coping. For instance, respondent 1 described herself in the past as a fun-loving woman who used to take great care about her appearance. She also did not perceive herself as religious. However, when she was diagnosed, it opened her horizons to new meaning-making experiences:

Respondent 1: "*I thank God that He gave me this strength, I am even surprised at myself, I have a strong belief in God, and I completely accept that this affliction is from God, because He loves me, so I came back to God so strongly after I became sick, that is why I think of this illness as a good thing in my life, it changed my life, it made me stronger… now I feel very much closer to God, and before doing anything which might be against the laws of Islam, I will think about God, in the past I was not used to thinking about Him .. even my prayers, in the past I used to pray like two hours late, and I don't feel anything, now I try my best to pray on time, and read the Qur'an everyday"* (Respondent 1, aged 33 years, 5.5. months post-diagnosis, on chemotherapy).

For respondent 1, it became evident that her inner strength is associated with her belief in how much God loves her, which is why she thinks He has chosen this illness for her. It seems that she perceived the illness as if she is getting a special status with God, which makes her feel favoured over other people. This has obviously led to an increase in the frequency and punctuality of her prayers compared to the time before her diagnosis. However, respondent 5 considered the illness as a remembrance from God, and hence did not associate it with specific negative illness perceptions, which is why her use of religious coping did not change after the diagnosis, compared to the period before the diagnosis:

*Respondent 5: "Alhamdulillah (all praise to God), I am normal, like nothing really changed in my life, if anything changed I would have been influenced somehow by it, so really, I am living my life (laughs) .. remembering God makes me feel content, I don't feel sad, when you are sad and whenever you read the Qur'an, the sadness will go away" (*Respondent 5, aged 45 years, 4 months post-diagnosis, on chemotherapy).

The spiritual relationship with God for respondent 5 seemed to be secure, and her perception of him is benevolent. This seems to have helped her in her adaptation and acceptance of the illness at the time of diagnosis.

Q3 What were the factors that helped participants' emotional well-being in relation to the illness?

6.7.3 Other factors associated with emotional well-being

This theme addressed three main factors, other than illness perceptions and religious coping, which seem to be associated with participants' emotional well-being. These factors were: the supportive role of family and friends, intra-personal factors, and other non-religious coping skills. The supportive role of the family and friends involved the care received from husbands, family of origin as well as family in-law. The second sub-theme involved intra-personal factors such as having a kind heart, being loved by other people, and personality factors such as resilience. These intra-personal factors helped some participants feel emotionally well since the diagnosis of illness. The third factor involved the use of non-religious coping to help them cope with their illness. These factors did not seem to differ since the time of the diagnosis, and later when they were interviewed.

6.7.3.1 The supportive role of the family

Although religious coping methods were the most important for respondent 6, she indicated that after religious factors comes the role of her husband who has been the most supportive person of her during times of adversity:

Respondent 6: "*My husband has always been my backbone, especially when I was feeling very low…he helped me to get over the first traumatic event, and the same thing now with this illness, he stood up with me with his calmness, with everything. Sometimes I would feel really nervous, especially before the chemotherapy sessions, but he calms me to a great extent like a cube of ice, and let me get through this stage"* (Respondent 6, aged 48 years, 4 months post-diagnosis, on chemotherapy).

Respondent 6 utilised two powerful metaphors in Arabic language to describe the supportive role of her husband as her “backbone” and “cube of ice”. These are common Arabic metaphors, the first refers to a strong support system, and while the second implies of feeling of being calmed down. Respondent 1 also described a similar experience, in that her husband is the only person she confides in and who accompanies her to all of the chemotherapy sessions. She decided not to disclose how she feels to other family members, so that they do not to worry about her. She described his reaction before the doctor told her about her diagnosis:

Respondent 1: “*I was sitting with my husband, he told me even if they told you that you have the illness, so what? Your aunt had the illness, and she was cured”*

“Since I was diagnosed with the illness I have never complained to anyone, maybe I would tell my husband, I would be very honest with him, but not in front of my family. In front of my family and friends, I am a very strong person” (Respondent 1, aged 33 years, 5.5. months post-diagnosis, on chemotherapy).

Respondent 1 described the special and trusting relationship she has with her husband, which enables her to share with him intimate emotions, which she does not share with anyone else. Maybe this reflects her perceptions of him being solid enough to bear all of her sufferings. It is also evident that she is protective of her family from any emotional ramifications of her illness, especially after she started her chemotherapy treatment. She described that her disease helped her appreciate the love and care of her old friends:

Respondent 1: “*Only when I was diagnosed with the illness, did I discover people’s love, everyone has their own way to show their support, I even had friends that I have not seen since fourth or fifth grade, once they heard about my illness, they searched for my address and came to see me at home*” (Respondent 1, aged 33 years, 5.5 months post-diagnosis, on chemotherapy).

Respondent 1 seemed to be surprised that “even” old friends went out of their way to visit her at home. This seemed to have increased her appreciation of the renewed care by people who were not previously within her social network. Other participants discussed the supportive role of their family of origin, neighbours, and family-in-laws:

Respondent 4: *"They all encourage me, they encourage me a lot, they tell me that it is a phase and it will pass, and many people go through this, Alhamdulillah"*(Respondent 4, aged 37 years, 4 months post-diagnosis, on chemotherapy).

Here, the collectivist social solidarity becomes evident as her social network supports her. Moreover, the normalisation of the illness experience was implemented by her social network telling her that she is not the only person suffering from this illness, and that many others are in the same boat. This strategy could have been used by others to decrease their feelings of isolation and stigmatisation.

6.7.3.2 Intra-personal factors

This sub-theme refers to factors within the individual, which have helped their emotional well-being in relation to the illness. Some of these factors included having a pure heart and forgiveness of people's mistakes. This point was raised by respondent 5 who said:

"*I have a pure heart for all people, and I like good things to happen to others in the same way that I like these good things to happen to me… so I think this is what really helped me during my illness because I am kind-hearted, and it has really helped me to have peace of mind" (*Respondent 5, aged 45 years, 4 months post-diagnosis, on chemotherapy).

It is possible that forgiveness is also another religious coping mechanism, but it has not been explicitly mentioned in her explanations about its relevance within the religious context. It is possible that this cognitive technique (wishing people well) leads to emotional well-being. Personality factors have also been cited as factors that helped participants cope with their illness. Respondent 3 discussed that her strong personality have helped her to deal with adversity in both now and in the past:

"*Maybe my strong personality helped me to feel good about my illness, it helped me accept the illness. I agree that it was a shock at the beginning, but I know that I am strong and I will overcome this phase if God wills, I am sure that I will be better than before because I am strong" (*Respondent 3, aged 39 years, 1.5 month post-diagnosis, on chemotherapy).

Respondent 3 seems to be referring to being resilient as a personality trait when facing various life adversaries. Because being diagnosed with cancer was not her first encounter with a difficult situation, she had confidence in her ability to overcome the challenge of this illness, too. Similarly, respondent 1 referred to her strong personality as a factor in her ability to bear all of the pain associated with the side effects of chemotherapy:

"*The first two days I feel tired from the chemotherapy, but I still talk to myself, I talk a lot to myself, don't do this, I get tired, I ask myself to stand up, and I really would stand up, once I had diarrhoea, and I was throwing up to the point that I lost consciousness, but I was talking to myself, stand up, don't give up, and I was able to do it"* (Respondent 1, aged 33 years, 5.5 months post-diagnosis, on chemotherapy).

For respondent 1, her encouraging internal self-talk was her empowering and motivating force despite the very difficult physical side effects of chemotherapy. This internal self-talk reflected the strength it gave her to go on about her day, and life in general. Respondent 2 also shared her positive personality which have helped her feel positive during the treatment period:

Respondent 2: "*My in-laws always remind me that I can overcome the illness, they know me, I would have always put the positive before the negative things in all difficult life situations, even if someone is mad at me, I would absorb their negative feelings, and give that person time to cool down. They would have always reminded me that I am a strong person*" (Respondent 2, aged 35 years, 6 months post-diagnosis, on chemotherapy).

6.7.3.3 Non-religious coping skills

In addition to religious coping, participants also displayed other coping skills which have helped them cope with the illness throughout the illness trajectory. Most of these coping skills involved cognitive techniques such as reframing, reappraisal of the situation, or distraction. Respondent 2 shared that:

"*I stop myself from feeling worse by refocusing on my treatment, I want to reach the stage in which doctors would tell me that the disease is cured, it has not metastasised to other body parts*" (Respondent 2, aged 35 years, 6 months post-diagnosis, on chemotherapy).

For her, it seems that she was trying to focus on the solution, which was in her own control, and is about being compliant to her treatment regimen. Respondent 5 also shared her cognitive techniques that have helped her feel better about her illness:

"In this day and age even children are diagnosed with this disease, poor young souls, so alhamudlillah, everyone could get diagnosed with the disease, the good thing is that treatment is available... and if you obsess about your illness, then this will also negatively affect your body" *(*Respondent 5, aged 45 years, 4 months post-diagnosis, on chemotherapy).

For respondent 5, putting her illness in perspective is one of her cognitive coping methods. She also appeared to focus on the solution which is being compliant to her treatment. Awareness of her thinking style seemed to be yet another coping strategy she utilised. Respondent 4 also displayed awareness of her thinking style and shared that:

"*I should always be mindful of my thinking, because if I let my morale down then the illness will beat me, you know, but if I keep my thinking positive then I will beat the illness, the illness is not the end of the world*" (Respondent 4, aged 37 years, 4 months post-diagnosis, on chemotherapy).

Respondent 1 also demonstrated that despite her feelings of loss, she is able to keep a perspective:

"*I often tell myself so what, if you don't' have a breast, others have lost a limb, or their eyesight, yet others are brain dead, basically they are dead, so I ask myself: what did you lose? You hair? It will grow again, if not you can buy a wig, if I do not have a wig, then I can wear a hijab, if it is about the breast I lost, well as long as my husband is fine, then I don't mind. So I try to always have this self-talk about everything, so as* *much as I can I don't want to be weak*" (Respondent 1, aged 33 years, 5.5 months post-diagnosis, on chemotherapy).

In the above excerpt, respondent 1 seemed to be using cognitive-problem solving in addressing each negative implication which was associated with her illness or its treatment. She started with her hair which could echo its special significance for her, and lists a number of solutions and worse case scenarios. Then, she moved to the breast she lost, and devises a solution, which she linked to the most concerned person for her as a married woman; her husband. With these self-made solutions, she reduces the negative feelings linked to her illness experience.

6.8 Discussion

This study explored how Omani women newly diagnosed with breast cancer understood and gave meaning to their illness experience throughout the illness trajectory. It also examined the dynamic nature of their coping processes, and the critical role of religious coping as an important coping resource. Finally, it examined other factors which helped participants' emotional well-being in relation to the illness. This section summarises the main results, relates it to the relevant literature, and highlights the clinical implications. To our knowledge, this study is the first of its kind in the Arab region as it explored illness experiences of Omani women using clear theoretical frameworks, which included the IPA approach and the integrated model of this thesis.

Our findings complement and add strong theoretical foundation to previous qualitative studies from Oman and other countries (Al-Azri et al., 2014; Al-Azri et al., 2014; Ahaddour & Broeckaert, 2018; Almegewly et al., 2019; Fearon et al., 2020; Howard, Bottorff, Balneaves, & Grewal, 2007; Sajadian, Mahsa, Motaharinasab, Kazemnejad, & Haghighat, 2017; Shabrina & Iskandarsyah, 2018) by its utilisation of an integrated theoretical model, which helped to explain the psychological mechanisms in which illness perceptions and religious coping impacted the psychological well-being of these women. Previous studies in the literature have not assessed the varied nature of illness perceptions, and their association with religious coping in a theoretically driven manner (Al-Azri et al., 2014; Al-Azri et al., 2014; Ahaddour & Broeckaert, 2018; Almegewly et al., 2019; Smit, Coetzee, Roomaney, Bradshaw, & Swartz, 2019).

6.8.1 Summary and discussion of main findings

6.8.1.1 The context of illness perceptions

The first theme shed light on illness perceptions of participants, their families, and people in their social network. For more than half of the sample, the illness perceptions of consequences, timeline, and identity were severe enough to cause anxious feelings for participants and their families at the time of diagnosis. There is also evidence from the literature from various cultural groups that, at the time of diagnosis, women diagnosed with breast cancer had profoundly challenging emotional experiences, which were frequently associated with a severe perceived identity of the illness (Al-Azri et al., 2014; Barden, Gutierrez, Gonzalez, & Ali, 2016; Blow et al., 2011; Fearon et al., 2020; Fu, Xu, Liu, & Haber, 2008; Howard et al., 2007; Liamputtong & Suwankhong, 2015). These women most often linked breast cancer with dying and leaving their families and young children behind. Therefore, these emotional reactions seemed to be linked with the perceived identity of breast cancer as a deadly disease.

Participants were also concerned about the emotional reactions of their families, and people in their social network. This concern seemed to have been substantiated as their families were highly distressed in relation to the diagnosis of the illness early in the illness trajectory. Our findings fits with the wider literature as families from various cultural backgrounds have indicated strong emotional reactions once they knew about the disease. These studies indicate that breast cancer is a disease which affects the whole family and not only the woman (Al-Azri et al., 2014; Barden et al., 2016; Blow et al., 2011; Dickerson, Alqaissi, Underhill, & Lally, 2011; Howard et al., 2007). The literature also corroborates these findings in that women with breast cancer from Oman, United States and China were protective of the emotional well-being of their families and perceived informing the family of the illness as a heavy burden (Al-Azri et al., 2014; Dickerson et al., 2011; Fu et al., 2008). Indeed, a Chinese study highlighted that Chinese women did not inform their families of their disease in the first place (Fu et al., 2008). These findings might indicate that not only patients, but also their families, might benefit from psychological support during the early diagnosis period of the illness.

Additionally, participants in our study were concerned about others' perception of them and their unhelpful emotional reactions to the cancer diagnosis. These findings fit with the illness experience of women with breast cancer from other cultures in that some of these women established boundaries with other people, and avoided people with extreme unhelpful emotional reactions (i.e. crying, exaggerating the illness), as they did not find these emotional expressions particularly supportive for them (Barden et al., 2016; Howard et al., 2007). The findings of our study also highlighted that participants were negatively affected by people's negative perceptions of breast cancer. Similar results have been found in previous qualitative studies among Omani, Arab, and other populations from other cultural groups in which participants suffered from the negative emotional reactions and excessive pity from people in their networks (Al-Azri et al., 2014; Almegewly et al., 2019; Barden et al., 2016; Blow et al., 2011; Obeidat et al., 2013). These findings might suggest the need for comprehensive public awareness campaigns about breast cancer which aim to address such prevalent negative and maladaptive illness perceptions. The identity illness perception of linking breast cancer with death seemed to have resulted in extreme unhelpful emotional reactions by other people.

Consequently, our study findings revealed that participants were not only overwhelmed by their own illness perceptions, but were also concerned about their family's illness perceptions. A previous study with patients diagnosed with head and neck cancer found that the illness perceptions of caregivers were more threatening compared to patients' illness perceptions, and the caregivers' illness perceptions predicted a significant variance of patients' quality of life (Richardson, Morton, & Broadbent, 2015). Therefore, these findings along with ours suggest that it might be helpful within the clinical health care setting to examine and correct the illness perceptions of the main caregiver of the patient.

For our sample, some family members facilitated sharing the diagnosis of the illness with the rest of the family, and corrected threatening illness perceptions, in order to reduce the burden of these women. Sharing the disease news with others (including family or co-workers) was similarly perceived as a burden in another study from the United States (Dickerson et al., 2011). But for our study, some family members addressed and corrected maladaptive illness perceptions such as the perceived course of the illness, the label and perceived symptoms of the illness, perceived treatment efficacy, and perceived consequences of the illness on these women's lives. These findings could suggest that health care providers may not have equipped these women with the needed information about their illness. Therefore, these women utilised their family members to correct certain illness perceptions. Previous qualitative studies have suggested similar findings in that women with breast cancer felt that not enough information about the treatment of the illness, prognosis, and consequences were provided to them by health care providers (Barden et al., 2016; Bond et al., 2010; Dickerson et al., 2011; Howard et al., 2007; Iskandarsyah et al., 2013; Mehrabi, Hajian, Simbar, Hoshyari, & Zayeri, 2016; Sacks et al., 2016). This, in turn, necessitated that they become proactive in learning about their disease from varied sources such as books, other family members with similar illness experience, or by asking their health care providers about all questions they may have (Bond et al., 2010; Fu et al., 2008). These findings could suggest that health care provides might need to consider the amount of disease-specific information that are needed by each woman with breast cancer, given that these information needs may vary individually depending on the woman (Dickerson et al., 2011).

The involvement of the family in general, and male relatives specifically, in the treatment decisions and information provision about the disease was not only highlighted as important in our study, but was also evident in another Omani study and other collectivistic cultures from South Asian and Latina cultures (Al-Bahri, Al-Moundhri, Al-Mandhri, & Al-Azri, 2018: Barden et al., 2016; Howard et al., 2007). Collectivist societies such as Omani, South Asian, and Latina cultures reflect the supportive involvement of the immediate family (husband and children), as well as the family of origin including mothers, sisters, and mothers in law of these women.

Although the change in the severity of illness perceptions among our sample was evident, but the literature reported mixed findings on the changeability of illness perceptions (Fearon et al., 2020; Howard et al., 2007; McCorry et al., 2013; Mehrabi et al., 2016; Shabrina & Iskandarsyah, 2018). The meta-analysis conducted by Fearon et al. (2020) on the illness experiences of Arab women with breast cancer found that three studies (Doumit, El Saghir, Huijer, Kelley, & Nassar, 2010; Hammoudeh, Hogan, & Giacaman, 2017; Jassim, & Whitford, 2014) showed that the identity of breast cancer as a death sentence at the time of diagnosis changed into a more adaptive perception later in the illness trajectory. However, the content of illness perceptions for women who continued to exhibit severe maladaptive illness perceptions were about the likely increased risk of other family members to get cancer, and women who did not have adequate disease-related information (AL-Azri et al., 2014; Alqaissi, & Dickerson, 2010; Doumit, Huijer, Kelley, El Saghir, & Nassar, 2010; Doumit et al., 2010; Jassim, & Whitford, 2014; Kobeissi et al., 2014; McEwan, Underwood, & Corbex, 2014; Obeidat, & Lally, 2014; Obeidat et al., 2013). Research from other cultural groups have also found that for some women, they continued to display severe illness perceptions even though several years and months have passed since the diagnosis with the illness (Barden et al., 2016; Howard et al., 2007; Mehrabi et al., 2016). However, there is some evidence that these identity perceptions were more adaptive among Malaysian women despite the advanced stage of the illness (Shabrina & Iskandarsyah, 2018). But the difference in the Malaysian study may be attributed to the sample's beliefs about the efficacy of alternative/traditional treatments that they sought, which were also linked to their high scores on the personal control, as well as perceiving the identity of breast cancer as an acute condition (i.e. with short duration).

These mixed findings could be explained within the context of these women's understanding about disease-related knowledge. Women with more factual knowledge about their disease seem to fare better in terms of their illness perceptions compared to women who continued to have maladaptive illness perceptions (Howard et al., 2007; Mehrabi et al., 2016; Shabrina & Iskandarsyah, 2018). These findings might suggest that utilising clinical interventions to address maladaptive illness perceptions among women with threatening and severe illness perceptions early in the illness trajectory could be essential to improve the emotional well-being of these women. Several intervention studies with women with breast cancer highlighted that addressing maladaptive illness cognitions using cognitive behavioural techniques have had beneficial effects on the psychological adjustment for these women (Fischer et al., 2013; Stagl et al., 2015).

The link between illness perceptions and religious coping methods were also evident in this study. Several participants attributed the cause of the illness to religious factors such as a call from God, which aimed to get them spiritually closer to God. Participants in our study shared their gratitude to God by saying (Alhamdulillah), which is a fundamental belief in Islam. Gratitude in Islam is not only expected to be felt in good times, but also in difficult times as well. Our sample perceived God with complete omnipotence, who is in control of all events. Similar findings were reported in the literature from women with breast cancer from various religious backgrounds (Al-Azri et al., 2014; Ahaddour & Broeckaert, 2018; Almegewly et al., 2019; Barden et al., 2016; Blow et al., 2011; Howard et al., 2007; Liamputtong & Suwankhong, 2015). These studies concluded that, keeping in mind the religious diversity of these women, they utilised their religious beliefs which attributed the cause of illness to a religiously based reason such as a call from God, and the illness as being God's will (Al-Azri et al., 2014; Ahaddour & Broeckaert, 2018; Almegewly et al., 2019; Barden et al., 2016; Blow et al., 2011; Howard et al., 2007; Liamputtong & Suwankhong, 2015). These findings from multiple cultural groups reflect that the process of making sense of the illness within this population mainly stemmed from the religious backgrounds of these women. Therefore, it might be helpful that professionals within health care to be sensitised to the importance of religion in the lives of some women with breast cancer.

Moreover, within our sample, other cognitive religious coping methods were also utilised, and they included perceiving the illness as test from God, a sign of God's love, and an evidence that God is thinking about them. These religious cognitive techniques were also reported in the literature (Ahaddour & Broeckaert, 2018; Al-Azri et al., 2014; Almegewly et al., 2019; Fearon et al., 2020). The Islamic utility of this thinking lies in the belief that if a woman would think positively about God, and surrender all control to Him, then she stands a high chance of being rewarded in this life, and getting cured, given that Muslims believe that everything that happen are in God's control. If she passes away, then she would be rewarded in paradise because of her patience (Ahaddour & Broeckaert, 2018; Errihani et al., 2007). Hence, thinking about God in benevolent manner is encouraged and rewarded regardless of the outcome of the illness.

6.8.1.2 The utilisation of the multi-dimensional positive religious coping

Although participants were asked an open-ended question about the usefulness of coping skills in their illness journey, all of them indicated that religious coping was the main coping skill which helped them manage the illness, and make sense of it. The substantial use of positive religious coping among our participants supports the findings from the literature which showed that women with breast cancer from various countries heavily used positive religious coping in their illness experience (Al-Azri et al., 2014; Ahaddour & Broeckaert, 2018; Barden et al., 2016; Blow et al., 2011; Dickerson et al., 2011; Fearon et al., 2020; Goldblatt, Cohen, Azaiza, Manassa, 2013; Howard et al., 2007; Liamputtong & Suwankhong, 2015; Mehrabi et al., 2016; Rohani et al., 2015; Zamanian et al., 2015). These studies highlighted that for women with breast cancer who are Latina (Barden et al., 2016), American (Blow et al., 2011; Dickerson et al., 2011), Sikh Indian-Canadian (Howard et al., 2007), Thai Buddhist (Liamputtong & Suwankhong, 2015), Muslim Iranian (Mehrabi et al., 2016; Rohani et al., 2015; Zamanian et al., 2015), Arab (Ahaddour & Broeckaert, 2018; Fearon et al., 2020; Goldblatt et al., 2013), and Omani women with breast cancer (Al-Azri et al., 2014), religious coping in the form of positive religious beliefs and behaviours was a valuable coping resource for this population. These findings reflect that among this population and regardless of the cultural or religious background, there was a need to accept and make sense of the illness, and the most powerful vehicle to achieve this was the use of the religion in a benevolent manner.

Additionally, our findings highlighted that none of the participants in our study utilised negative religious coping. Only one participant criticised some people who displayed negative religious attributions, or blamed God for their affliction (e.g. of getting cancer). This finding could be partially explained by the convenience sampling of this study, which did not involve participants who utilised negative religious coping. Moreover, it is important to mention the possibility of social desirability bias in shaping participants' responses of their use of religious coping within their illness experience. Social desirability bias refers to the tendency of research participants to selectively only disclose what is perceived as socially acceptable within their specific cultural and religious context (Bergen & Labonté, 2020). Within the context of this study, social desirability bias could be a consequence of the sensitive nature of the topic covered (i.e. religious coping). As such, it is possible that the participants in this study could have had the desire to appear in a more socially acceptable manner by withholding their use of negative religious coping (i.e. not disclosing the illness as a punishment from God, or that God has abandoned them). They could have also felt concerned about being judged by the researcher Z.A. This could be especially true given that the use of negative religious coping is criticised within the Muslim community, as it has already been pointed out by one of the participants (Participant 6). On the other hand, it is equally important to mention that the researcher Z.A. took all possible measures to reduce this bias by assuring the participants that there were no right or wrong answers, and by establishing a trusting rapport with them.

However, the reduced/or lack of use of negative religious coping is largely analogous to the literature reported from various cultural backgrounds, which found that negative religious coping was minimally implemented by women with chronic illnesses, including breast cancer (Ahaddour & Broeckaert, 2018) or women with breast cancer (Gall & Bilodeau, 2020; Hebert, Zdaniuk, Schulz, Scheier, 2009: Obeidat et al., 2013; Thuné-Boyle, Stygall, Keshtgar, Davidson, & Newman, 2011; Zamanian et al., 2015). Although Ahaddour and Broeckaert (2018) reported that all of their study participants utilised positive religious coping, the perception that the illness could be a punishment from God also generally exists among some Muslims. Along the same lines, negative religious attributions were shared by one of the participants from Obeidat et al. (2013) study, in which the participant expected that people who envy her would have attributed her illness as a punishment from God (Obeidat et al., 2013). However, the minimal use of negative religious coping should not lead us to disregard this coping method, given its association with negative mental health outcomes such as anxiety (Thuné-Boyle et al., 2013; Zwingmann et al., 2008; Zwingmann, Wirtz, Müller, Körber, & Murken, 2006) and depression (Hebert et al., 2009; Thuné-Boyle et al., 2013; Zwingman et al., 2006). It is also possible that shame may prevent these women from sharing their negatively religiously oriented thoughts, because in Islam it is expected that Muslims should always think of God in a benevolent manner. Therefore, clinicians working with this population might need to open a dialogue with these women to assess the presence of negative religious coping in an open manner.

This study also clearly demonstrated that participants utilised several domains of religious coping which included religiously based behaviours, thoughts, feelings, and spiritual relationship with God. All of these religious dimensions fitted into Pargament's suggestions of the multi-dimensionality of religious coping (Pargament, 1997) (Section 2.4.1). Our results also added support to Abu-Raiya and Pargament's (2011) suggestion of the multi-dimensionality of Islam as a religion (Abu-Raiya & Pargament, 2011). Moreover, the findings of this study pointed out that different dimensions of religious coping could be utilised by participants to achieve different psychological outcomes. More specifically, at the time of diagnosis, the use of religious thoughts was not associated with feeling positive. Rather, these thoughts appeared to have helped participants to reduce their negative feelings about the illness. However, behavioural methods of religious coping such as recitation of the Qur'an and night prayers seemed to be associated with positive outcomes such as emotional comfort. In essence, the aim of all of these religious coping methods is to seek spiritual closeness with God. The multi-dimensionality of religious coping which was found in our study fits with the literature of women with breast cancer, in that regardless of their religious backgrounds, they utilised diverse cognitive, behavioural, emotional, and spiritual dimensions to help them cope with cancer (Al-Azri et al., 2014; Ahaddour & Broeckaert, 2018; Barden et al., 2016; Blow e al., 2011; Dickerson et al., 2011; Goldblatt et al., 2013; Howard et al., 2007; Liamputtong & Suwankhong, 2015). However, the content of these religious thoughts that are implemented by these women throughout the coping process, as well as the religious behaviours, differ according to the religious backgrounds of these women. Therefore, the findings from this study and the literature suggests that if the women are religious, then they might benefit from discussing their varied use of religious coping methods with their health care providers to support them throughout their illness trajectory.

However, the cognitive dimension of religious coping was heavily utilised by this sample, compared to other dimensions. Previous qualitative studies have also reported the great emphasis that was placed on the cognitive dimension of religious coping by women with breast cancer (Al-Azri et al., 2014; Ahaddour & Broeckaert, 2018; Fearon et al., 2020; Goldblatt et al.,, 2013; Howard et al., 2007). The cognitive aspect helped these women feel less overwhelmed by their illness, and consequently accept the illness.

Religious coping initially increased at the time of diagnosis, compared to the time prior to the diagnosis for the majority of participants. However, it remained stable afterwards. The majority of participants continued their heavy utilisation of religious coping after the diagnosis. Some participants continued their daily recitation of the Qur’an, in addition to the night prayers. Consequently, these women felt increasingly spiritually connected to God, compared to the time prior to the diagnosis. Longitudinal studies have reported mixed results in terms of the change in the frequency of religious coping methods (Carver et al., 1993; Culver, Arena, Antoni, & Carver, 2002; Gall & Bilodeau, 2020; Thuné-Boyle et al., 2011; Rohani et al., 2015). Gall and Bilodeau (2020) found out that the positive spiritual appraisal of the illness (i.e. illness as predestined by God) increased from 3 to 6 months from the diagnosis. While other researchers found that the use of religious coping increased around the time of surgery, then decreased afterwards (Carver et al., 1993; Culver et al., 2002; Thuné-Boyle et al., 2011). Thuné-Boyle et al. (2011) evaluated specific religious coping methods and found that both positive religious coping and negative religious coping increased around surgery and then decreased 12 months later. Rohani and colleagues (2015), on the other hand, found that compared to women with benign diagnosis in the control group, women with breast cancer used significantly more positive religious coping, but it showed a minimal decrease over a 6-month period. These varied findings have been attributed to the cultural contributions which affect the use of specific methods of religious coping (Thuné-Boyle et al., 2011). It could also reflect that women at various stages of the illness trajectory might be in need to use varied religious coping methods to help them cope and make sense of the illness.

6.8.1.3 Other factors associated with emotional well-being

The third theme addressed three fundamental factors that helped improve the emotional well-being of participants: the support of family and close people, intra-personal factors, and non-religious coping skills. The first sub-ordinate theme corroborates results from the relevant literature on the role of the family and social network in providing emotional as well as instrumental help for women with breast cancer (Al-Azri et al., 2014; Almegewly et al., 2019; Barden et al., 2016; Blow et al., 2011; Dickerson et al., 2011; Fearon et al., 2020; Fu et al., 2008; Goldblatt et al., 2013; Howard et al., 2007). Other studies have supported our findings in that husbands' roles was prominent in providing emotional support to their wives, in the form of accompanying them to their treatment sessions, and also supporting them emotionally (Al-Azri et al., 2014; Barden et al., 2016; Dickerson et al., 2011; Fearon et al., 2020; Fu et al., 2008; Howard et al., 2007). Additionally, the supportive role of the families of these women was also substantiated in the literature (Al-Azri et al., 2013; Barden et al., 2016; Blow et al., 2011; Dickerson et al., 2011; Fearon et al., 2020; Goldblatt et al., 2013). These findings might suggest that some women might benefit from involving their families in discussions within the health care setting, so that families can get a clear idea about the best possible ways they can support them at various points throughout the illness trajectory.

The importance of intra-personal factors in helping the participants cope with the illness was demonstrated in this study, and this could be understood within the literature of Post-Traumatic Growth (PTG) (Zhai, Newton & Copnell, 2019). PTG occurs when a positive transformation occurs in the way a person perceives self and life in general. This change typically occurs as a consequence of confronting stressful events (Tedeschi & Calhoun, 1996). Some of the expressions of PTG as applied to our study sample included developing internal strength, which have enabled these women to survive the illness, and hope for a better future for themselves. Several women in this study exemplified characteristics of PTG, which made them feel psychologically/internally stronger despite the challenging physical side effects of chemotherapy. Some participants were astonished of their inner strength, that they never imagined they had. Although the phenomenon of PTG was not one of the aims of this study, it is the nature of IPA approach that unexpected phenomenon could emerge during the analysis process. Other studies with women who have breast cancer have also highlighted the positive psychological changes as a result of the diagnosis of cancer (Barden et al., 2016; Blow et al., 2011; Bond et al., 2010; Evans, Show, & Sharp, 2012; Liamputtong & Suwankhong, 2015). Our findings and these cited studies suggest that the coping process for women with breast cancer is not universal and could be influenced by several factors such as personality factors as well as previous experience with adversity, all of which could have an impact on the development of PTG among this population (Blow et al., 2011). Therefore, adopting a person-centred approach in the care of these women might be more suitable to meet the psychological needs of these women

The third sub-ordinate theme was the use of non-religious coping skills by the study sample. These factors mainly involved cognitive skills, which reduced these women’s negative feelings, or improved their emotional well-being. Several studies also pointed out that women with breast cancer utilise a variety of cognitive as well a behavioural techniques to cope with the illness (Al-Azri et al., 2014; Bond et al., 2010; Blow et al., 2011; Dickerson et al., 2011; Fearon et al., 2020; Fu et al., 2008). Various cognitive and behavioural strategies such as withdrawal, denial, optimism and distraction have also been reported in several studies among women with breast cancer (Al-Azri et al., 2014; Bond et al., 2010; Blow et al., 2011; Dickerson et al., 2011; Fu et al., 2008). The use of various cognitive and behavioural coping skills by women with breast cancer might reflect the variety of coping resources utilised by this population to cope with the illness. In light of these findings, health care providers as well as family members supporting these women might need to be aware that not only religious coping and illness perceptions are important components in the illness experience for these women, but also other illness-specific coping skills are incorporated into the coping repertoire of these women to help them manage their illness experience.

6.9 Theoretical implications

This study partially supported the integrated model, and added evidence to the parallel processes within the common-sense model which occur during the encounter of a health threat (Section 2.3.1) (Diefenbach & Leventhal, 1996; Leventhal, Meyer, & Nerenz, 1980). More specifically, at the time of diagnosis, both the emotional representations of illness (e.g. patients' emotional reactions to the illness), and other cognitive illness perceptions (e.g. timeline, consequences) were activated, and they appeared to explain the emotional reactions for both participants and their families. For the families, identity perceptions which equated cancer with death, appeared to have led to these fear responses. Consequently, the prevalent illness perceptions in the society adds further support to the common-sense model by demonstrating that these perceptions are derived, and reinforced by laymen beliefs about the various illness dimensions such as illness identity (Leventhal, Phillips, Burns, 2016; Mehrabi et al., 2016).

Additionally, the integrated model was further supported in terms of the suggested associations between religious coping and illness perceptions. This study showed the specific conditions in which illness perceptions were associated with religious coping. At the time of diagnosis, less severe illness perceptions were closely linked with religious thoughts (i.e. the illness is a test from God, God remembered me). However, when illness perceptions were severe, religious coping efforts seemed to be limited in its utilisation by participants, because they focused more prominently on addressing severe illness perceptions. This is a confirmation of the staging system within the original common-sense model, which suggest that illness perceptions happens first, then coping takes place.

Additionally, this study added theoretical knowledge by demonstrating that illness perceptions changed from being severe and maladaptive at the time of diagnosis, to becoming more adaptive perceptions at the time of the interview. The mechanism for this change was associated with participants' updated knowledge about the illness, and their newly acquired illness experience. Family members typically addressed maladaptive illness perceptions. Moreover, religious coping typically increased compared to the time prior to the diagnosis, but remained relatively stable afterwards. Therefore, religious coping was less dynamic compared to illness perceptions.

The multidimensionality of religious coping was confirmed in this study as participants described the cognitive, behavioural, emotional, and spiritual dimensions that they utilised throughout their illness experience. This study also demonstrated specific theoretical linkages between the specific emotional outcomes associated with cognitive religious coping at the time of diagnosis. The implementation of religious coping by participants at the time of diagnosis seemed to lead to a reduced feeling of distress at the time of diagnosis. However, behavioural and spiritual dimensions, which were used later in the illness trajectory, were associated with positive feelings such as emotional comfort and feeling content. Additionally, the finding that spirituality was a main aim of religious coping among this sample adds further theoretical support to Pargament's (1997) theory of religious coping, which suggests that spirituality is a main goal of religion. However, none of the participants described the use of negative religious coping, which suggest that for this population, this method of coping is not used. This could be related to the sampling technique utilised in this study.

6.10 Measurement issues

This study demonstrated that participants utilised a number of positive religious coping strategies that fell into all of the domains identified in Pargament's theory of religious coping (1997). Additionally, the findings highlighted the specific religious coping thoughts and behaviours that are specifically pertinent to Omani women with breast cancer. The religiously-oriented thoughts included perceiving the illness as a sign of God's love, a test of patience, or an alarm to help these women evaluate missed religious obligations prior to the diagnosis of the disease. Additionally, other culturally relevant behavioural coping strategies involved reading the Qur'an and night prayers.

When looking to items making up the Arabic version of the brief RCOPE which was implemented in Chapter 5, it appeared that the culturally relevant behavioural domain is not precisely covered in the tool, and does not include religious behaviours such as reading Qur'an or night prayers. Additionally, the specific Islamic religious thoughts mentioned above were also not included in the measure. Therefore, although the measure assessed other relevant dimensions of the religious coping process utilised by Muslims, such as the spiritual domain and some cognitive domains, it did not evaluate the behavioural and cognitive domains in enough details. Therefore, future studies within the Omani setting or other Islamic cultural settings might benefit from including specific behavioural coping methods as well as relevant religious thoughts so that it will resonate better for the population of interest of the study.

6.11 Clinical implications

The clinical implications for this study are directly linked to the cancer clinical care spectrum. The first implication is associated with the need to conduct prospective studies in order to assess patients' illness perceptions at the time of diagnosis in order to support them to manage their emotional responses in a healthy manner. Consequently, it might be helpful for health care providers to equip these women with disease-related information which meet their individual needs. However, this step should be done after conducting prospective studies to establish this need more clearly among this population. This is might be an important step, because it will allow the patient to have accurate information about their disease, rather than depending on unreliable internet sources, or family members who may not have adequate information about the disease. More specifically, perceptions of illness identity, timeline, and consequences might require to be the focus of the clinical assessment of illness perceptions among this population.

Given the importance of family in the lives of Omani women as seen in this study, it might be helpful to ensure adequate collaboration between the health care provider and the patient and their companion/family. The aim of this collaboration is to plan with the patient on how to share the diagnosis with their families, and address any other perceived burden by the patient. This point is crucial because it was one of the main stressors for many participants at the time of diagnosis.

The third point is related to opening a dialogue with women newly diagnosed with breast cancer to assess their support systems in order to help them manage the implications of the treatment phase. This could be achieved by assessing the availability of support from their social network, and whether any professional interventions are needed to initiate that mode of support. This is important given these women's need for emotional as well as instrumental support when their treatment sessions commences.

The fourth point is linked to discussing the coping resources for these women, and encouraging them to mobilise their religious as well as general coping skills. Therefore, clinicians responsible for the care of these women might become sensitised to this dimension of clinical care. Therefore, the assessment of the general as well as religious coping process might be a helpful start to support these women throughout the illness trajectory.

6.12 Strengths and Limitations

One of the strengths of this study is that this is the first theory-driven qualitative study that examined the illness experiences of Omani women newly diagnosed with breast cancer. This study could be utilised as the basis for prospective studies which aim to better understand the associations among illness perceptions, coping, and psychosocial outcomes among this population. Then, these research attempts would hopefully be the basis for devising culturally sensitive clinical interventions suitable for this population. The second strength of this study is its utilisation of the IPA approach, which helped in shedding light on social and cultural factors which were crucial to the understanding of the illness experience for these women (Smith et al., 2009).

The third strength of study is that the researcher and interviewer (Z.A.) is an Arab and Muslim clinical psychologist. She has several years of experience in working with Omani women with breast cancer. Her experience and the similarity in the cultural background with participants have made communications with them easier, and helped them to build a trusting alliance with her. Consequently, this has helped participants to gradually open up about their illness experiences. The researcher was also aware of her pre-existing judgments about the phenomenon being explored, and therefore she attempted to "bracket them off" (Smith et al., 2009). This was achieved by documenting her experiences in a reflexivity journal. The aim of the journal was to increase the researcher's awareness of her feelings and thinking processes, so that these do not influence participant's narrative of their experience.

Moreover, sharing a similar cultural and religious background with these women helped the researcher in the analysis process, by explaining in details the significance of religious coping and cultural practices within this cultural illness context. Although the researcher was aware of the need to bracket off her knowledge about the research phenomenon, her religious background helped her to make sense, and fully explain the meaning of religious coping process as well as other cultural components that have been described within the illness experiences for these women. Having I not shared the same religion with the participants, it would have been challenging to fully capture the significance of these experiences because meaning making occurs within the particular social context. Additionally, many of the sociocultural practices such as the obligation of supporting sick people by visiting them could have been difficult to understand if the analyst did not have the experience of actually living in the Omani society.

Despite the strengths of this study, several limitations also exist. One of these is related to the nature of conveniance sampling in qualitative studies and generalizability of findings. Giving that the sample utilised is not a probability sample, no generalisation could be made from this study. However, the aim of qualitative studies is not to make generalisations, rather to understand the living experience of a specific population.

Although the researcher's cultural backgrounds was one of the strengths of the study, it might have also been a limitation. Bracketing off was a challenging task throughout the research process. Because participants expected that the interviewer was familiar with the religious and cultural background, they assumed that no explanations were needed when they discussed religious coping, given that these are well-known facts within the Islamic culture. However, this limitation was addressed by gently prompting participants to be more expressive about these "well-known" assumptions. One example is asking: how was reading the Qur'an helpful to you? Participants assumed that because it is clearly written in the Qur'an that reading it will bring out comfort, some participants were, at times, surprised when asked this question. This was addressed by the researcher's explaining that one of the aims of this study was to understand how these coping methods could be helpful to them.

Another limitation is the cross-cultural nature of this study in that it occurred in a social and cultural medium which differs from the cultural background of the readers of this research. Utilising the IPA approach in this cross-cultural research was another limitation, which is mainly linked to the potential loss of the sociocultural meaning of participants' narratives during the translation procedures. This limitation could have negatively affected the validity of the research findings if no clear and rigorous measures were taken to address them. However, translation issues for the interview questions were carefully addressed using the back-translation procedures, and the pilot testing to ensure the clarity of these questions in Arabic language for the population of the study.

In regards to the validity concerns of data analysis, this step was addressed by conducting the analysis in Arabic language, as recommended by authors in qualitative research (Laverack & Brown, 2003; Maclean et al., 2004; Squires, 2009; Twinn, 1997; van Nes et al., 2010), so that the loss of the meaning within this specific sociocultural context will be minimised. Additionally, three transcripts were reviewed with the Omani supervisor (S.A.) to ensure that the themes which emerged from the transcripts were connected to the data. Moreover, special care was taken in the translation of the quotes, as Z.A. worked closely with the official translator (E.A.) to ensure that the meaning expressed by participants is as close as possible to the English translation.

6.13 Conclusion

This study showed that among this purposeful sample of Omani women newly diagnosed with breast cancer, illness perceptions and positive religious coping helped us to understand their lived experience. The study demonstrated the dynamic aspect of both of these concepts and how they changed over time. Also, results had theoretical implications in that it partially supported the integrated model and the multidimensionality of religious coping. However, it also showed that religious coping was largely neglected in the common-sense model despite its important role in understanding the illness experience among this population, and other populations with different religious backgrounds. The next chapter will discuss the collective results from the three studies of this thesis. It will also provide the theoretical and clinical implications for the overall thesis.

Chapter 7: Summary and Discussion

7.1 Summary

This thesis implemented a mixed methods research design to explore the role of religious coping in the relationship between illness perceptions and psychosocial outcomes among Omani women newly diagnosed with breast cancer. An integrated theoretical model, discussed in Section 2.6, guided this thesis. This is the first theory-driven research in the literature, which explored this topic within a breast cancer context. Prior to embarking on the two empirical studies of this thesis (Chapters 5 and 6), a systematic review (Chapter 3) was conducted to understand how religious coping has been measured in clinical cancer research, and to identity the most suitable religious coping measure for the quantitative study of this thesis. The systematic review identified the adapted Arabic version of the Brief RCOPE as a suitable measure for the quantitative study. Therefore, this measure was implemented in the quantitative study. The qualitative phase then followed to expand on, and make sense of, both the significant and non-significant quantitative findings. This was achieved through the utilisation of Interpretative Phenomenological Analysis (IPA) as the qualitative theoretical framework. While the findings from chapters three, five, and six have been discussed in relation to the relevant literature, this chapter aims to provide an integrated discussion of the three studies of this thesis in relation to the broader literature.

7.2 Summary of key findings

The main findings from the systematic review of Chapter 3 highlighted that most of the identified 21 religious coping measures had limited psychometric properties. Only four of these measures were based on a specific theory: the Cancer and Deity Measure (Bowman et al., 2008), the Perspectives of Support from God Scale (Hamilton et al., 2010), the BMMRS (Brief Multidimensional Measurement of Religiousness and Spirituality) (Johnstone et al., 2009; Vespa et al., 2017), and the Brief Persian RCOPE (Sharif et al., 2018). Additionally, the items making up the measures which were extracted from the validation studies heavily focused on the cognitive domain of religious coping, compared to other domains, which are the behavioural, emotional, social, and spiritual domains. The Brief RCOPE was selected as the religious coping tool to be utilised for the quantitative study, because it is based on theory, and is the most tested religious coping measure in clinical cancer research. Additionally, the internal consistency was adequate and ranged between (0.97-0.83) for the positive religious coping scale, while it was between (0.77-0.89) for the negative religious coping scale. Additionally, the factor structure of the Brief RCOPE (Holt et al., 2011; Zwingmann et al., 2006, 2008), confirmed the two factors originally suggested by Pargament et al. (2011), which are the positive and negative religious coping scales.

The quantitative phase, which was based on a sample of 103 women with breast cancer, found that these women displayed normative levels of symptoms of anxiety and depression as laid out by Zigmond and Snaith (1983). Additionally, negative religious coping explained the relationship between these women’s emotional representations of illness, on the one hand, and symptoms of anxiety and depression on the other hand. This finding means that participants’ who displayed severe emotional reactions in response to the disease (i.e. fear, sadness, concern) were more likely to also exhibit general symptoms of anxiety and depression, and this was via their use of negative religious coping. This finding may also reflect that the emotional representations of illness and symptoms of anxiety and depression are conceptually similar, and might measure similar feeling states. Additionally, positive religious coping acted as a mediator between the perceived course of the illness and global health status. This means that women who perceived their illness as having a long course (i.e. perceiving the illness as chronic) were more likely to have a better quality of life, and this was achieved via the use of positive religious coping methods. Moreover, significant associations were found between some predictor variables; negative religious coping, the perceived consequences, emotional representations of the illness, perceived course of the illness, the illness identity, and the psychosocial outcomes (i.e. symptoms of anxiety, depression, and quality of life).

The qualitative phase involved conducting interviews with six Omani women who were newly diagnosed with breast cancer. Three interrelated themes emerged from the interviews and these were: illness perceptions, religious coping, and other factors which helped the emotional well-being of these women. The first theme demonstrated that at the time of diagnosis, the severe emotional reactions in relation to the illness (severe anxiety and devastation) for the women and their families appeared to be associated with their perceptions of the identity of breast cancer as a deadly disease. The theme also showed that illness perceptions changed from being threatening and maladaptive at the time of diagnosis, to being less threatening later in the illness trajectory.

The second theme highlighted the utilisation of various methods of positive religious coping among the study sample. Moreover, the theme also demonstrated that positive religious coping involved several dimensions: cognitive, behavioural, emotional, and spiritual. The cognitive dimension of religious coping, which involved religiously-based thoughts, seemed to be associated with feeling less sad and less overwhelmed at the time of diagnosis. The behavioural and spiritual dimensions, on the other hand, were linked to feelings of emotional comfort and content. Therefore, these dimensions appeared to be differentially related to how women felt about their illness.

The last theme discussed other factors that helped these women cope with the illness, reduce negative feelings, and enhance their emotional well-being. These factors were: the supportive role of the family and social network, intra-personal factors, and non-religious coping skills. The next section will provide an integrated discussion of the findings from the systematic review, and the two phases of this mixed methods thesis, in relation to the relevant literature.

7.3 Discussion of key findings

Whilst the quantitative study was cross-sectional and provided a “snapshot” of illness perceptions and the utilisation of religious coping and their relationships to symptoms of anxiety, depression, and quality of life among Omani women with breast cancer, the qualitative findings provided a contextual background into the illness experience of this population. The qualitative study enriched the thesis by highlighting women’s illness experience throughout the illness trajectory, and the change in women’s illness perceptions and religious coping from time of diagnosis to the time of the interview.

The major contribution of this thesis to the literature is that it highlighted that religious coping is a valuable coping resource for Omani women with breast cancer. This thesis also demonstrated that religious coping was associated with various illness perceptions such as perceived cause of the illness, perceived duration of the illness, and perceived consequences of the illness. Another knowledge contribution of this thesis to the literature is that it highlighted the utilisation of religious coping throughout the illness trajectory among this population, and the varied dimensions of positive religious coping which included the cognitive, behavioural, emotional, and spiritual dimensions. Moreover, this thesis showed that these dimensions of positive religious coping seemed to be associated with different psychological outcomes among this population. Finally, this thesis contributed to the literature by its theoretical, psychometric, and component analysis of the religious coping measures utilised in clinical cancer research. The discussion section will commence by outlining the main research question of this thesis and then specifically discussing the main findings from the three studies of this thesis, and its link to the literature.

Q. How do illness perceptions and religious coping impact symptoms of anxiety, depression, and quality of life among Omani women newly diagnosed with breast cancer?

This thesis provided evidence that illness perceptions were associated with how participants' felt about, and coped with, their illness throughout the illness trajectory. Given that Chapter 6 aimed to expand on the significant and non-significant findings from Chapter 5, this section will provide an integrated discussion of the selected findings of Chapter 5. It will also discuss these findings in relationship to the relevant literature.

7.3.1 The relationships between the perceived consequences of the illness and symptoms of anxiety, depression, and quality of life

The quantitative findings demonstrated that positive relationships existed between the perceived consequences of illness and symptoms of anxiety and depression, while there was a negative relationship between the perceived consequences of illness and quality of life. When the surveys were completed, the majority of participants' perceived the consequences of the illness as less severe, and this was consequently associated with normative levels of anxiety and depression (as reported by Zigmond & Snaith, 1983). Hence, less severe perceived illness consequences were associated with better quality of life. The quantitative findings also demonstrated that the mean scores for participants on the perceived consequences of the illness were lower than that of the asthma and diabetes reference groups (Broadbent et al., 2006), which means that the quantitative study sample did not display severe perceived consequences of the illness, a finding similar to the qualitative study results. At the time of the interview, all of the participants of the qualitative study had already developed adaptive perceived consequences of illness, in that they did not perceive the illness as having significantly impacted their lives in a negative way, and if any negative consequences were observed, then these were well accepted by themselves and their families. Therefore, addressing the perceived consequences of illness earlier in the illness trajectory might be helpful to better support women with breast cancer, as they might have severe perceived consequences of illness as a result of the lack of illness experience early on.

These findings fit the literature, in that both Rozema et al. (2009) and Silva et al. (2012) found an inverse relationship between the perceived consequences of illness and quality of life among women with breast cancer. In contrast, the perceived consequences that were severe and threatening were positively correlated with symptoms of anxiety and depression (Gibbons et al., 2016; Kus et al., 2017; Silva et al., 2012) and distress (Millar et al., 2005) among these women. These findings corroborate the findings of this thesis in that the perceived consequences of the illness among this population were positively associated with symptoms of anxiety and depression, and negatively associated with quality of life. Therefore, these findings reflect that it might be necessary to assess this illness perception among women with breast cancer, in order to support them to address their fears and the meaning of these severe perceptions of illness.

Moreover, it is important to mention that the qualitative findings highlighted the *process* of change for the perceived consequences of illness from the time of diagnosis to the time of the interview. The perceived consequences of the illness were one of the most prominent illness perceptions, which were activated at the time of diagnosis. When first diagnosed with the illness, the majority of women in the qualitative study expected that there would be dire consequences of the illness or its treatment on their lives, and many of them were concerned about their children and husbands should they pass away. Similar findings have also been reported in several studies in which women with breast cancer displayed severe perceived illness consequences at time of diagnosis, but this continued to persist even later in the illness trajectory (Barden et al., 2016; Howard et al., 2007; Mehrabi et al., 2016). These persistent perceived consequences might suggest the need to assess the *ways* in which the illness is negatively affecting these women's lives. Prospective future studies could focus on this area, and based on the subsequent findings, clinical interventions could be utilised to support women with severe fears, which might be linked to these perceived negative consequences of the illness.

The qualitative study did not only demonstrate that the perceived consequences of the illness became less threatening, but it also showed that some women perceived their lives as “better” compared to the time prior to the diagnosis. Some of the positive changes that resulted from the diagnosis of the illness could be explained within the literature of post-traumatic growth (PTG) (Tedeschi & Calhoun, 1996), which was evident among some participants. PTG has also been reported in the literature as one of the psychological consequences that people with difficult circumstances go through and results in positive psychological outcomes for the individual (Zhai, Newton & Copnell, 2019).

The qualitative findings demonstrated the mechanism of change for the perceived consequences of illness among this sample. These illness perceptions were most often addressed by family members (i.e. the identity of the illness was challenged from a death sentence to viewing it as any other illness), and less often by health care providers, a finding which is similar to what has been reported elsewhere in the literature (Barden et al., 2016; Bond et al., 2010; Dickerson et al., 2011; Howard et al., 2007; Iskandarsyah et al., 2013; Mehrabi, Hajian, Simbar, Hoshyari, & Zayeri, 2016; Sacks et al., 2016). This finding might reflect that the information obtained from the health care system was not perceived as adequate for these women, and consequently they attempted to fill in the missing disease-specific details via the information they obtained from their family members, or books about the disease (Barden et al., 2016; Bond et al., 2010; Ching et al., 2009; Xiong et al., 2016).

These findings suggest that addressing illness perceptions within the clinical setting might be helpful to these women's adjustment to breast cancer. However, research has also provided evidence that disease-specific information should be individually tailored to meet the information needs of each woman given that there is personal variability in these needs (Dickerson et al., 2011; Fearon et al., 2020; Drageset, Lindstrøm, & Underlid, 2009). This means that some women might require more disease-specific information, while others might not need as much detail. A previous Indonesian study conducted by Iskandarsyah et al. (2013) with women with breast cancer stressed the importance of providing information about the consequences of the illness and its treatment, as the lack of satisfaction about received information from the health care setting was linked to poor quality of life among this population (Iskandarsyah et al., 2013). Women who were satisfied with the disease-specific information provided to them were found to report better quality of life compared to women who were not satisfied with the disease-specific information (Iskandarsyah et al., 2013).

7.3.2 The relationships between the illness perceptions of timeline, consequences and positive religious coping

The quantitative findings demonstrated that the perceived timeline of the illness was negatively associated with positive religious coping. Qualitative findings supported these results in that all of the qualitative sample perceived the illness as a temporary stage of their lives because they linked the perceived illness timeline with the treatment phase only. These less severe perceptions of timeline seemed to have facilitated the use of positive religious coping (i.e. perceiving the illness as predestined by God, and an alarm to get spiritually close to God). This finding makes sense because participants from both of the empirical studies of this thesis perceived the illness as having a short duration. Additionally, this finding supports the integrated model in terms of the hypothesised theoretical relationships between the perceived illness perceptions and religious coping. Within that context, this means that once the woman is diagnosed with the illness, illness perceptions will be activated, and once this happens, patients will move on to use relevant coping skills to help them manage the illness.

The literature on quantitative studies with women with breast cancer lacks information about the association between the perceived perception of timeline and positive religious coping (Section 2.4). However, several studies (Fernandes, & McIntyre, 2020; Gibbons, Groarke, & Sweeney, 2016; Lan, Zhang, Zhang, & Yan, 2019; Rozema et al., 2009) have found that the perceived timeline of the illness was associated with both general and cancer-specific coping. A negative relationship was found between perceived timeline and cognitive and behavioural avoidance (Lan et al., 2019; Rozema et al., 2009), which means that patients who perceived the illness as more chronic were less likely to use avoidance coping strategies. Moreover, both Fernandes and McIntyre (2020) and Gibbons et al. (2016) found that lower perceived timeline (perceiving the illness as acute) was associated with more fighting spirit (i.e. patients were more likely to encourage themselves to push through the illness experience). Additionally, Gibbons et al. (2016) reported a positive correlation between perceived timeline and anxious preoccupation coping, which means that women who thought of the illness as having a long course, were more likely to be anxious in relation to the illness. Although these findings are not specifically linked to religious coping per se, they, along with the findings of this thesis, might suggest that addressing the perceived timeline among women with breast cancer might be helpful for this populations given its associations with these women's selection of various coping skills. Their choice of coping strategies will, in turn, have an impact on their psychosocial outcomes.

The positive relationship between participants' perceived consequences of the illness and positive religious coping at the time of the interview was further explained in the qualitative study, as it revealed the adaptive transformation in the perceived consequences of illness. For the majority of participants who had severe illness perceptions at the time of diagnosis, their use of positive religious coping, in the form of positive religious appraisal of the illness, increased from the time prior to the diagnosis, and remained almost stable since the diagnosis with the illness. This increase in these women's use of religious coping appeared to have helped them cope with the illness. When interviewed almost four months into the illness trajectory, the perceived consequences became less severe, but their religious coping remained almost the same throughout the illness experience. Therefore, the perceived consequences decreased over time, while positive religious coping initially increased, then stayed almost the same. These findings could be interpreted within Pargament's theory of religious coping (1997) (Section 2.4.1), which suggests that one of the functions of religion is to provide emotional comfort to people undergoing stressful situations. Therefore, these women utilised religious coping to help them achieve comfort at this difficult time of their lives.

Although the studies that examined the relationships between the perceived consequences of the illness and coping styles (Fernandes & McIntyre, 2020; Gibbons et al., 2016; Lan et al., 2019; Rozema et al., 2009) did not evaluate religious coping, these studies did find significant, yet weak, relationships between the perceived consequences and various types of coping. Findings from the literature indicates that the perceived consequences of illness were negatively associated with problem-focused coping (Rozema et al., 2009), and avoidance coping (Lan et al., 2019; Rozema et al., 2009), whilst Fernandes and McIntyre (2020) found a positive relationship between perceived consequences of illness and helplessness/hopelessness, and anxious preoccupation. Additionally, Gibbons et al. (2016) found a positive and moderately significant relationship between the perceived consequences and anxious preoccupation. These findings also reflect that the more specific the coping measure utilised was, the stronger the relationships between the perceived consequences and coping (Fernandes & McIntyre, 2020; Gibbons et al., 2016). According to these findings, it might be helpful for future studies to utilise illness-specific coping measures in order to precisely measure the coping utilised among this population. Such context-specific coping measures might shed light on the most relevant illness perceptions that have strong associations with coping skills among women with breast cancer.

Additionally, and based on the findings of this thesis, it might be helpful for researchers in future studies to adapt the available measures within their specific cultural contexts. This is particularly important for patient populations who are under-represented in the literature of the common-sense model. The key papers (Broaddbent et al., 2006; Moss-Morris et al., 2002; Weinman et al., 1996) which discussed the development and validation of the Illness Perceptions Questionnaire, or a variation of it, covered a wide range of people with medical illnesses, but did not take into consideration the cultural heterogeneity of people with chronic illnesses. More specifically, the researchers in these key papers, were involved in the development and validation of the measure on people with various illness categories, but these patient populations were only within the New Zealand and United Kingdom clinical contexts. Moreover, only people with English reading skills were involved. Therefore, patients from other cultural groups who do not have this advantage (i.e. English language) were excluded from the studies on the instrument development and validation.

As has been discussed in this thesis, the cultural context of patients plays an important role in the development and maintenance of patients' various illness perceptions (Dein, 2004). Consequently, the way that some of the items were written within the illness perceptions questionnaires may not resonate with patient populations from different cultures. For instance, the cause domain in the long version of the IPQ might need to be altered to reflect the illness causation among the Muslim population. Moreover, and as mentioned previously, both the personal and treatment control items may also need to be altered in a way that could make more sense to the Omani clinical context. This step could be accomplished by acknowledging the interaction between the belief system of the Muslim community and illness perceptions. For instance, Muslims believe that illness and health are in the hands of God, and as such they may not perceive a direct personal control over the illness or its treatment as it is already suggested by the Brief-IPQ. Consequently, it is important to recognise the challenge in devising new measures which might raise questions about its validity and reliability for use in different contexts, as well as the difficulty in comparing the findings among future studies. Hence, and in order to produce culturally sensitive research outcomes, it may be useful for researchers in future studies to consider adapting existing measures of illness perceptions rather than devising new measures.

7.3.3 The relationships between perceived consequences, illness identity and social functioning

The qualitative study supported the quantitative findings in terms of the negative relationships between the perceived consequences and identity of the illness, on the one hand, and participants' social life, on the other hand. At the time of the interview, participants have already transformed threatening perceived consequences into adaptive perceived consequences, which translated into minimal, if any, negative consequences of the illness onto their social lives. Additionally, the illness identity of equating cancer with death transformed into a more adaptive, less threatening identity, which viewed breast cancer as similar to other chronic illnesses such as diabetes. Some participants compared the illness to the common flu, given its high prevalence in society. Other quantitative studies in the literature (Fanakidou et al., 2018; Silva et al., 2012; Tang et al., 2017) have also confirmed the negative relationships between the perceived consequences and quality of life (including social functioning). However, Silva et al. (2012) found that only the psychological and physical domains of quality of life, but not the social domain, were negatively associated with the perceived impact of breast cancer. It is possible that social life for women in Silva et al.'s (2012) study was not significant for them at this point of their lives, given that these women were still undergoing their cancer treatment. Other studies (Fanakidou et al., 2018; Tang et al., 2017) have found that more threatening illness perceptions (i.e. which include perceived consequences and identity) were negatively associated with quality of life. However, because these studies only used a single score to measure illness perceptions, it is not possible to determine which illness perception was specifically associated with lower quality of life. This finding calls for the importance of discussing the perceived consequences and identity of illness with women with breast cancer, given that these two dimensions of illness perceptions were found in this thesis as well as studies from the literature to be associated with quality of life among this population.

Moreover, the qualitative findings highlighted the crucial role of social and cultural factors in minimising the negative impact of the illness and its treatment on these women's social lives. Family support appeared to be one important factor that decreased the impact of the illness for these women. The participants were consistently supported by their social network, such as neighbours and extended families, who visited them, and provided moral support during their treatment sessions at the hospital. It is important to view this within the context of the Islamic society of Oman, which encourages people to support the sick, and display this type of social solidarity in the community. However, similar findings have also been reported from other cultural groups; this research has shown the importance of support from the social network of women with breast cancer, and that this is instrumental in helping them manage and cope with the diagnosis and treatment periods (Barden et al., 2016; Howard et al., 2007). Hence, the qualitative findings of this thesis added richness to the quantitative results by highlighting the mechanisms that could have influenced the relationships between illness perceptions and the social functioning of Omani women with breast cancer. This finding suggests that discussing social support within the health care setting may be valuable for these women in helping them mobilise their support systems to reduce the negative consequences of the illness on their lives (Barden et al., 2016; Howard et al., 2007).

7.3.4 Positive religious coping was not associated with symptoms of anxiety, depression and quality of life

The lack of relationships between positive religious coping and psychosocial outcomes in the quantitative study was further explored in the qualitative study, and this resulted in two different observations, which could help to explain this finding. First, the various dimensions of positive religious coping that have been implemented by participants in the qualitative study seemed to have been associated with different psychological outcomes, compared to the outcomes measured in the quantitative study. In the qualitative study, participants who utilised the cognitive dimension of positive religious coping (i.e. illness as a test from God, illness as an alarm, illness as a favour from God), linked this dimension to helping them to accept the illness, and not feeling sad about it. Additionally, the measure, which was used to assess religious coping in the quantitative study, only provided two scores: one for positive religious coping, and one for negative religious coping. Therefore, it is not clear if the cognitive dimension could have been a significant predictor of psychosocial outcomes if it was assessed in a more comprehensive manner. Additionally, the quantitative study specifically assessed symptoms of anxiety and depression, and not other feelings such as not feeling sad, or feeling less overwhelmed. Therefore, it is possible that positive religious coping could have been associated with positive mental health outcomes, which were not measured in the quantitative study.

Our findings are in part consistent with the literature in that positive religious coping was not associated with negative mental health outcomes such as anxiety (Hebert, Zdaniuk, Schulz, & Scheier, 2009), and mood (Hebert et al., 2009; Thuné-Boyle, Stygall, Keshtgar, Davidson, & Newman, 2013). This finding has been attributed to the type of mental health outcome used in these studies, given that positive religious coping could have been more likely to be associated with positive mental health outcomes such as positive mood (Gall, Kristjansson, Charbonneau, & Florack, 2009; Thuné-Boyle et al. 2013).

On the other hand, several studies found a positive relationship between positive religious coping and positive mental health outcomes such as quality of life (Pedersen, Christensen, Jensen, & Zachariae, 2013; Zamanian et al., 2015) and positive emotional outcomes (Gall & Bilodeau, 2017). These finding are contradictory to our findings, because non-significant relationships were found between positive religious coping and quality of life. However, our findings could be interpreted by paying attention to the statistical information of our data, and more specifically ceiling effects. Ceiling effects take place when participants endorse high scores on the independent measure (i.e. positive religious coping), which results in no statistical effect on the outcome measure (i.e. quality of life) (Garin, 2014). This observation has been made in light of the high endorsement of positive religious coping among the quantitative sample.

The second observation, which could explain the non-significant relationships between religious coping and psychosocial outcomes, is how the behavioural domain was measured in the quantitative study. For this Omani sample, pertinent religious activities, which were used to help them cope, included reading the Qur'an and performing night prayers. When these behaviours were utilised later in the illness trajectory, they were associated with feelings of comfort and being emotionally content. These positive feelings were not specifically examined in the outcome measures used in quantitative study. Additionally, the items making up the positive religious coping scale, which was used in the quantitative study, did not assess in detail the culturally relevant behavioural domains that were utilised by Omani women, as demonstrated in the qualitative study. Therefore, any potential association of this dimension to the psychosocial outcomes was not measured in the quantitative study. Therefore, the lack of mediation of positive religious coping seemed to be explained by the type of the mental health outcome used (Gall, Kristjansson, Charbonneau, & Florack, 2009; Thuné-Boyle et al. 2013), and the tool used to assess religious coping.

Based on these findings, measuring religious coping using specialised and comprehensive measures, which are culturally appropriate for the population of interest, could be an important step to advance the psycho-oncology literature. This will allow for a precise assessment of the contributions of these specific religious coping methods to psychosocial outcomes. This finding is in line with what has been suggested by other authors that theoretical constructs such as religious coping need to be assessed within the same cultural context, given that meaning is created within that context (Obeidat et al., 2013; Pargament, 1997). The findings of the systematic review of this thesis (Chapter 3) also supported the implementation of comprehensive measures of religious coping such as the RCOPE (Pargament et al., 2000). This is because the RCOPE has been demonstrated to have adequate psychometric characteristics and can be used flexibility as has been shown in previous studies in the field (Gall et al., 2009, 2011; Hebert et al., 2009; Thuné-Boyle et al., 2011).

7.3.5 The general lack of explanatory role of religious coping between illness perceptions, and symptoms of anxiety, depression, and quality of life

Although negative religious coping explained the relationships between the emotional representations of illness and anxiety and depression, none of the participants from the qualitative study used negative religious coping. As discussed in Section 6.8.1.2, social desirability bias could have influenced the way participants shared their use of religious coping, and made them more likely to emphasise their use of positive religious coping, as opposed to negative religious coping. Despite the measures implemented by Z.A. to limit this bias, which included fully explaining the study, reassuring participants that there were no right and wrong answers, and making sure that they felt comfortable throughout the session, it is possible that participants could have felt concerned about being negatively perceived by Z.A. had shared their use of negative religious coping. Although several advantages of having Z.A. as an interviewer have been discussed in the reflexivity section (Section 6.6), participants might have been concerned about being negatively judged by Z.A. given that she shared the same religion with them. Consequently, participants could have avoided discussing negative religious coping which could include thinking that the illness is a punishment by God for the sins they committed. If the researcher had not been of the same faith as the participants, they could have felt more at ease in sharing their use of negative religious coping. This is because they could have been less concerned about being negatively perceived by the researcher, given that the researcher does not share the same religion with them. Thus, social desirability bias could have been less in this case.

Another reason for only disclosing positive religious coping by participants could be related to the methodology of the qualitative study, which happened not to have women who utilised negative religious coping. However, the literature has provided evidence that only a minority of women with breast cancer from various cultural groups utilised negative religious coping (Al-Azri et al., 2014; Morgan, Gaston-

Johansson, & Mock, 2006; Rohani et al., 2015; Thuné-Boyle, Stygall, Keshtgar, Davidson, & Newman, 2011; Zamanian et al., 2015). As a consequence, the qualitative evidence from the literature fits the findings of the two phases of this thesis. The majority of women in these studies most often utilised positive religious coping to help them cope with the illness (Morgan et al., 2006; Rohani et al., 2015; Thuné-Boyle et al., 2011; Zamanian et al., 2015). All of the participants in the qualitative study perceived the illness as a gift from God, or as a sign of God's remembrance of them, a finding which has also been corroborated from the qualitative literature of women with breast cancer from various cultural groups (Ahaddour & Broeckaert, 2018; Barden et al., 2016; Blow et al., 2011; Dickerson et al., 2011; Fearon et al., 2020; Goldblatt et al., 2013; Howard et al., 2007; Liamputtong & Suwankhong, 2015; Mehrabi et al., 2016). Nevertheless, the association of negative religious coping with psychosocial outcomes which was found in the quantitative study might suggest the need to assess this dimension within the health care setting in order to improve the quality of life for these women, given the link between symptoms of anxiety and depression and quality of life as described in the literature (Section 1.7).

In addition to the previous explanation for the mediating role of religious coping and some of the psychosocial outcomes, the qualitative study highlighted other non-religious factors which could have facilitated the illness adjustment for these women. These non-religious factors involved the supportive role of family, intra-personal factors, and other non-religious coping skills that mainly involved cognitive techniques to normalise the illness experience for these women.

Family factors were illuminated in the qualitative study, as the quantitative study did not capture such a rich contextual understanding of these women's illness experience. Family support was exemplified by the emotional availability and support of these women's husbands, whose emotional support seemed to have helped some participants to feel less overwhelmed about the upcoming treatment sessions or the side effects of the cancer treatment. The valuable supportive role of husbands of women with breast cancer has also been substantiated in the literature (Al-Azri et al., 2014; Barden et al., 2016; Dickerson et al., 2011; Fearon et al., 2020; Fu et al., 2008; Howard et al., 2007). However, this was not the only source of support, as old friends, neighbours, and other family members also supported these women's journey toward recovery, not only among our sample, but also women from other countries and ethnic backgrounds (Al-Azri et al., 2013; Barden et al., 2016; Blow et al., 2011; Dickerson et al., 2011; Fearon et al., 2020; Goldblatt et al., 2013). These combined findings suggest that it might be beneficial for clinicians to demonstrate sensitivity to the role of the family in supporting women with breast cancer (Barden et al., 2016; Howard et al., 2007). This could be translated into discussing the availability of family support for these women, and the possible ways to mobilise such support when not provided by the family.

Although the integrated model did not address the relationships between intra-personal factors and psychosocial outcomes for Omani women, the qualitative findings demonstrated that the positive psychological changes, described in the literature as Post-Traumatic Growth (PTG) (Tedeschi & Calhoun, 1996), seemed to have helped these women cope with their illness experience (Section 6.7.1.3). Intra-personal factors appeared to have helped these women feel positive emotions such as peace of mind, while for others these factors have helped them to manage difficult situations, such as dealing with the side effects of the cancer treatment. These findings are in line with the existing literature in that women, when reflecting on their cancer experience, noted that they feel stronger compared to the time prior to the diagnosis with the disease (Barden et al., 2016; Blow et al., 2011; Bond et al., 2010; Evans, Show, & Sharp, 2012; Liamputtong & Suwankhong, 2015). Given that factors which are related to someone's personality are difficult to tackle with short-term clinical interventions, focusing on changing amenable variables such as coping skills and illness perceptions is more time efficient, and is the main reason why these two theoretical constructs were chosen for this thesis (Section 1.9).

Other non-religious coping skills, which are already a main component within the common-sense model (Leventhal et al., 1980), were utilised by several participants, and they included cognitive reframing, cognitive problem-solving, and distraction. The utilisation of non- religious coping skills among the sample means that evaluating only a limited number of coping skills in future studies would limit our understanding of the multitude of coping skills used by this population. Studies in the literature also fit our findings given that women with breast cancer utilised various coping strategies such as distraction, withdrawal, and positive thinking (Al-Azri et al., 2014; Bond et al., 2011; Blow et al., 2011; Dickerson et al., 2011; Fearon et al., 2020; Fu et al., 2008). The use of various cognitive and behavioural coping skills by this population might reflect the variety of coping resources utilised to cope with the illness, which means that only assessing one type of coping (i.e. religious coping) in research and clinical settings will not allow us to capture a comprehensive illness experience which include a myriad of coping skills. Consequently, the fact that religious coping only mediated a few psychosocial models could have been attributed to the fact that other more cancer-specific coping skills such as fighting spirit and fatalism could have explained the variance in the psychosocial outcomes in the quantitative study (Hagger & Orbell, 2020). These cancer-specific coping skills specifically assess the use of these coping skills in relation to cancer, and not as a general coping skill which might not be necessarily linked to psychosocial outcomes among this population.

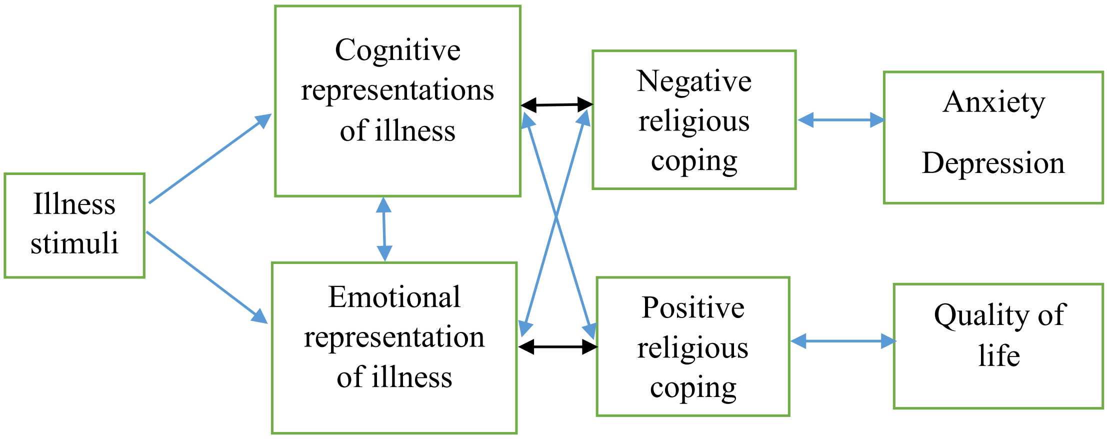
7.3.6 The relationship between treatment control and role functioning

The quantitative findings indicated that participants' perceptions of the efficacy of the treatment were positively related to role functioning, which means that the higher they believed in the efficacy of the treatment, the better their ability to perform their roles. The qualitative findings expanded on the quantitative findings and showed the sociocultural context of the relationship between perceived treatment efficacy and role functioning, in that participants' families supported them in attending their treatment sessions at the hospital and encouraged them to be on top of their treatment regimen. Therefore, the qualitative study demonstrated that these women's beliefs about the efficacy of the treatment resulted in a minimal negative effect on their main roles in life, and this was achieved via the help of their families.

Additionally, the relationship between the women's perceived treatment efficacy and role functioning seemed to be linked to the supportive role of their husbands and other members of their families, in accepting these women's reduced abilities to perform their usual responsibilities. A similar finding was described by Rozema et al. (2009) in that the perceived treatment control was associated with the role functioning among women with breast cancer. It is possible that the importance of the perceived treatment control in this thesis, and also in Rozema et al.'s (2009) study, could be attributed to the fact that all of our participants as well as some of Rozema et al. (2009) sample were receiving their cancer treatments at the time of the study. Hence, this reflected that perceived treatment control has an important function at that time in these women’s lives. It is also important to link these findings to the systematic review of Chapter 3, as treatment control was also perceived as an important religious coping strategy, and was related to God’s curing powers, which are achieved via the treatments prescribed by the doctors. The next section will discuss in details the theoretical implications of this thesis, given that this thesis is theoretically driven thesis.

7.4 Theoretical implications

The integrated model (Section 2.6), which was designed to explore the mediating role of religious coping between illness perceptions and psychosocial outcomes among Omani women with breast cancer, was partially supported in the two empirical studies conducted in this thesis (Figure 7.1. shows an updated version of the integrated model, with the relationships which were supported, and the relationships which were not supported).



🟦 Arrows with blue colour reflect supported relationships
⬛ Arrows with black colour reflect unsupported relationships

Figure 7.1 The Updated Theoretical Model Based on Thesis Findings

The original common-sense model (Leventhal et al., 1980, 2016) from which the integrated model was derived, suggests that in the presence of a health threat such as the diagnosis of a life threatening illness, both the emotional representations of illness and the illness perceptions will be activated. This thesis added theoretical support to this hypothesis in that it demonstrated that at the time of diagnosis, the activation of the emotional representations of illness (i.e. intense anxiety, fear) appeared to be associated with the threatening illness perceptions.

Additionally, this thesis demonstrated that the individualistic focus of the integrated model is not always applicable to different cultural contexts, such as the Omani population of this thesis. This is because illness perceptions and emotional representations were also activated for the families of these women. Therefore, this thesis has contributed to the theoretical and empirical literature in that it has added new knowledge to the original common-sense model in highlighting that illness perceptions also affect the families of the participants. Moreover, the findings of this thesis supported the suggested dynamic nature of illness perceptions within the common-sense model (Section 2.3.1) (Leventhal et al., 2016). The mechanism of change for illness perceptions occurred via the supportive role of family members who provided informational support for these women. Accordingly, these findings reflect that family support should be added to the integrated model as an important coping method that could help us to understand the illness experience for these women.

The finding that religious coping only mediated a few psychosocial outcomes is in contrast to the main assumption of the integrated model, which suggests that religious coping mediates the relationships between illness perceptions and psychosocial outcomes. This result could indicate that religious coping method alone did not capture the complex ways in which illness perceptions could be associated with the psychosocial outcomes among this population. Consequently, other coping skills such as illness-specific coping skills need to be added into the integrated model to capture the complex coping skills that are used by women with breast cancer. Some of these coping skills which were mentioned by participants included illness-specific cognitive as well as behavioural techniques. Additionally, this finding emphasises the point made earlier by Leventhal and colleagues (1997) to use illness procedures, rather than coping, within the original common-sense model. These procedures include any illness-related behaviour which are used by patients to manage the illness (i.e. could include a doctor's visit, or taking medications on time). Therefore, the integrated model should assimilate a variety of methods that are used by patients to manage their illness.

The mediating role of positive religious coping for only one psychosocial outcome (i.e. global health status) could be linked to the way it was measured in the quantitative study. Given that the Arabic religious coping measure, which was used in the quantitative study, assessed positive religious coping using a single score, it is not clear which type of positive religious coping was linked to global health status. However, the qualitative study demonstrated that participants made links between some illness perceptions such as the cause and identity of the illness with the cognitive dimension of positive religious coping. For instance, at the time of diagnosis, some participants perceived the cause of the illness as a call from God. Therefore, they did not perceive the identity of the illness as threatening. This linking was evident among women who demonstrated less severe illness perceptions. Additionally, when illness perceptions were severe and threatening, religious coping methods appeared to have helped these women feel less sad and less overwhelmed about the illness. Although the qualitative findings do not suggest statistical mediation, these findings reflect potential relationships between illness perceptions, positive religious coping, and psychological states at the time of diagnosis. As a consequence, prospective research is needed to examine the linkages and possible mediation of various dimensions of religious coping strategies at several points throughout the illness trajectory. Longitudinal research is important for the integrated model in order to gain clarity about the nature of relationships between the main components of the model. As a consequence, there is also a potential benefit of re-examining positive religious coping using more specialised tools given its role in the illness experience for this population.

On the other hand, the use of the behavioural domain of religious coping was associated with positive feelings such as comfort and feeling emotionally content. The specific behavioural religious methods, which are relevant for this population, were not addressed by the religious coping tool utilised in the quantitative study, which might also, in part, explain the minimal mediating role of positive religious coping. Therefore, these findings reflect that theoretically speaking, various dimensions of positive religious coping could be differentially related to various psychological outcomes. This might also potentially explain the minimal mediating role of positive religious coping in the mediation models, given that only symptoms of anxiety, depression and quality of life were measured.

Moreover, this thesis demonstrated that religious coping was not the only coping resource which helped these women in their illness experience. Indeed, other resources proved to be valuable for these women, and these included family support, intra-personal factors, as well as other non-religious coping skills. Intra-personal factors played a role in the coping process and the way these women felt about the illness, but they are not included within the integrated model or common-sense model (Cameron, Leventhal, & Love, 1998; Karademas et al., 2011; Lawson, Bundy, Belcher, & Harvey, 2010; Martin et al., 2003; Moss-Morris, Spence, & Hou, 2011). As discussed by Hagger and Orbell (2020), it is possible that the lack of the mediation of coping which is reported in the literature of the common-sense model could be attributed to the use of mediation models which do not assess a variety of coping skills that could have also been utilised by patients.

Based on the theoretical summary and discussion outlined earlier, there are several theoretical implications from this thesis. First, the integrated model should be adapted in future studies in order to reflect a more comprehensive understanding of all of the theoretical constructs within the model. The current integrated model did not capture all of the pertinent theoretical constructs, such as other non-religious coping skills and intra-personal factors which could help us understand the illness experience for this population. Second, religious coping alone, should not be the only coping mechanism included within the integrated model. Rather, other coping skills should also be added to the model, and these could include other non-religious illness-specific coping skills such as cognitive and behavioural strategies. Third, family support factors need to also be considered given that this factor was essential not only for the population of thesis, but also from other populations from other cultures. The theoretical implications from this thesis indicate the need to utilise various coping measures, which are illness-specific and culturally applicable to the population of interest of the study. The next section will discuss the measurement of religious coping in clinical cancer research according to the findings from this thesis, and how measurement issues might be addressed in future research on religious coping.

7.5 Measurement of religious coping

The systematic review of Chapter 3 indicated that the majority of religious coping tools lacked psychometric properties in several of the measured domains. Additionally, only four of the religious coping measures were based on a specific theory, and two of these measures were based on Pargament's theory of religious coping: BMMRS (Abeles, Ellison, George, Idler, & Krause, 1999) and the Brief RCOPE (Pargament, Smith, Koenig, & Perez, 1998). The lack of theoretical involvement in these measures does not necessarily imply that a religious coping measure should only be based on theory, rather these measures should be based on a combination of empirical research, previous items making up the religious coping tools, and theory (Pargament, Koenig, & Perez, 2000).

The findings of Chapter 3 indicated that the brief RCOPE was the most commonly utilised and tested measure of religious coping in the psycho-oncology literature. Despite the fact that there is a long and most comprehensive version of the brief RCOPE (i.e. the full RCOPE, Pargament et al., 2000), it was not frequently implemented as a religious coping measure in the literature. In fact, only three studies (Gall et al., 2011; Hebert et al., 2009; Thuné-Boyle et al., 2011) utilised specific subscales of the RCOPE, depending on their research questions and the relevance of these subscales to their study samples. For instance, Gall et al. (2011) utilised a representative subset of the scales that were culturally relevant for their Canadian sample, whereas Hebert et al. (2009) employed two-items per scale. Thuné-Boyle et al. (2011), on the other hand, followed the suggestion of the tool developer (Pargament et al., 2000) in selecting three items per scale, and only selecting the scales that were relevant for the population of interest in their study.

Based on the findings of Chapter 3 which reflected the limitations of the religious coping measures utilised in the cancer literature, and given the comprehensive nature of the RCOPE in evaluating numerous religious coping methods, it might be helpful for future research to utilise the subscales which will most likely answer the research questions of the study. This is an important step to move forward in understanding religious coping within cancer research, as it will help to expand on the knowledge of the relationships between the various dimensions and functions of religious coping and their relationships to various psychological outcomes. Additionally, given that the majority of the religious coping measures demonstrated limited psychometric properties, it might be more relevant to further validate these existing measures, and in different cultural contexts. This is because religious beliefs and behaviours are influenced and affected by the sociocultural factors (Pargament, 1997).

Moreover, the findings from the quantitative and qualitative phases of this thesis demonstrated the significance of using culturally sensitive and appropriate measures of religious coping, and if these measures are adapted, then this step should be conducted within the same cultural context of the study. Despite the use of the Arabic version of the Brief RCOPE, which is the Arabic Brief Religious Coping Scale (A-BRCS, Al-Hadeethi, Hunt, Thomas, & Al-Qaysi, 2016) in the quantitative phase of this thesis, there were some limitations of using this measure, which became apparent in the qualitative study. The qualitative phase showed that although the measure covered the spiritual dimension, which proved to be fundamental for Omani women, the measure did not specifically cover the culturally relevant behavioural dimension for the sample such as reading Qur'an, *ruqya* (i.e. specific verses within the Qur'an which are read for curative purposes), and night prayers. The behavioural dimension was related to positive mood. Although the quantitative measure contained one item that assessed the behavioural domain (i.e. I did my best to do good deeds to satisfy Allah), the qualitative study demonstrated that this question was generic, and did not adequately address the relevant behavioural domain for this population.

Consequently, and in order to produce research which is comprehensive in covering all relevant dimensions of religious coping, it might be valuable to utilise the long version of the RCOPE, or a representative subset of the items, after an appropriate cultural adaptation to the population of the study. Moreover, the complexity of religious coping and the multiple domains and functions it encompasses means that researchers and clinicians should be aware of the characteristics of the religious coping tool they want to implement in their research. More specifically, what are the dimensions and functions, which the tool could assess? Having a theoretically based measure will allow researchers to design clinical interventions that are tailored to the needs of the population of interest (Pargament et al., 2000).

7.6 Clinical implications

This thesis demonstrated that the most critical time to address maladaptive illness perceptions is the time of diagnosis and the following weeks after. Based on our findings, the most salient illness perceptions for this population were the perceived consequences, identity, timeline, as well as personal and treatment control of the illness. Therefore, it might be helpful for clinicians providing care for these women to discuss these illness perceptions and assess if any of these are of concern to women newly diagnosed with breast cancer.

However, very few studies in the literature have demonstrated how these maladaptive illness perceptions change into adaptive illness perceptions using a clearly described clinical intervention (Stagl et al., 2015; Fischer et al., 2013). Both Stagl et al. (2015) and Fischer et al. (2013) utilised Cognitive Behavioural Stress Management (CBSM) interventions to educate women with breast cancer about the coping skills that could help them to manage the illness. Only Stagl et al. (2015) targeted women who were newly diagnosed with breast cancer, while Fisher et al.'s (2013) sample was composed of women who had already completed their chemotherapy or radiotherapy treatment. This might raise questions about the effectiveness of this intervention at this time of the illness trajectory especially after these women's exposure to the illness experience. Stagl et al (2015) study is considered one of the prominent studies in the literature because it followed up these women for a long time, between 8 to 15 years, after the completion of the intervention. The study found that these women reported lower levels of depressive symptoms and better quality of life compared to women who have not undergone the intervention. However, Fischer et al. (2013) found that among their sample, timeline and identity dimensions were longitudinally linked to distress. Therefore, these two studies reflect the utility of developing interventions that address illness perceptions, not only at the time of diagnosis, but also when the cancer treatment is completed. Given that this thesis did not provide clear theoretical and empirical support for the use of clinical interventions among women with breast cancer, it may be helpful that clinicians providing care for these women to assess timeline and identity dimensions throughout the illness trajectory.

This thesis has also highlighted the role of the family in supporting Omani women with breast cancer, and consequently the importance of addressing the illness perceptions of their families. Our findings corroborated the results of Richardson and colleagues (2015) as they found that the illness perceptions of families of patients with head and neck cancer were associated with the quality of life of these patients. Patients' illness perceptions were more adaptive compared to that of the caregivers' (Richardson, Morton, & Broadbent, 2015). Therefore, this evidence suggested that illness perceptions should not be treated as an individual concern, rather families and significant others may have to also be included in clinical discussions that address maladaptive illness perceptions. Pourfallahi et al. (2020) has acknowledged the role of the family, and consequently included families in one of the components of their clinical intervention, which addressed illness perceptions among Iranian women with breast cancer (Pourfallahi, Gholami, Tarrahi, Toulabi, & Moghadam, 2020). Allowing families and significant others to be assimilated in clinical interventions and discussions within the health care setting may empower women and their families, and equip them with the necessary skills and knowledge to better support them at home.

This thesis also demonstrated the potential benefit of discussing and mobilising religious coping in a culturally sensitive manner in the clinical care of Omani women with breast cancer. The systematic review and meta-analysis conducted by Gonçalves et al. (2015) assessed the relationship between spiritual/religious interventions and its potential associations with mental health outcomes among heterogeneous medical patients (Gonçalves, Lucchetti, Menezes, & Vallada, 2015). However, out of the 23 included studies, only 4 studies (Breithbart et al., 2010, 2012; Djuric et al., 2009; Lloyd-Williams et al., 2013) were conducted with people who have cancer. Although the findings from the meta-analysis concluded that spiritual/religious interventions reduced anxiety symptoms among the study samples, the meta-analysis did not include the studies with the cancer samples. Therefore, the generalisations of Gonçalves et al. (2015) may not apply to the cancer context. Nevertheless, the three cancer studies (Breithbart et al., 2010, 2012; Lloyd-Williams et al., 2013) which were included in the meta-analysis reported that employing spiritually-based interventions to help advanced cancer patients in the meaning-making process, appeared to be of benefit to them. However, this approach might not be suitable for our samples which was composed of women were active in their lives, and were not in the advanced-end-stage of the illness. Additionally, none of these studies were conducted with Arab cancer populations. Therefore, more evidence is needed from this part of the world to examine the efficacy of these spiritually-based interventions. Within the Omani context, integrating spiritually-based meaning making approaches in intervention studies might benefit from the inclusion of the religious element.

A population specific systematic review was conducted by Hulett and Armer (2016) which covered all of the randomised and non-randomised clinical trials which implemented spiritually-based interventions among survivors of breast cancer. However, none of these studies were conducted within a cultural setting similar to the population of interest of this thesis. Moreover, none of these studies had a religiously-based intervention, which might be more suitable for Omani women with breast cancer. Hence, despite the positive associations between these spiritual interventions and psychological outcomes which were found in the systematic review, none of these studies were conducted within an Arabic clinical setting (Hulett & Armer, 2016).

Therefore, the generalisation to Arab and Omani clinical contexts may not be applicable.

To our knowledge, none of the studies in the literature has evaluated the impact of spiritually/religiously-based interventions on the well-being of Arab Muslim women with breast cancer. However, several studies have been conducted in Iran, which is an Islamic country, to evaluate the efficacy of spiritual and religious interventions with local Iranian women with breast cancer (Davari, Rahimian Boogar, Talepasand, & Evazi, 2018; Ghahari, Fallah, Bolhari, Mousavi, & Akbari, 2017; Pourfallahi et al., 2020; Sajadi et al., 2018) with mixed results in terms of the efficacy of these spiritually-based interventions.

Therefore, findings from this thesis as well as the findings from the relevant studies within a religiously similar background (Ghahari et al., 2017; Pourfallahi et al., 2018) did not support the utility of implementing culturally sensitive religious interventions for Omani women with breast cancer at this research stage. This is because our findings along with studies from the literature did not yield significant findings on the influence of spiritual/methods on psychosocial outcomes among this population. However, our findings may support opening a dialogue between women, their families, and health care providers on helpful coping skills which include family support, in order to help them cope with the illness experience. Additionally, this thesis did not find strong theoretical and empirical foundations to design clinical interventions. Consequently, the next section will discuss future directions for research in order to pave the road for establishing clinical interventions.

7.7 Research implications

Early on in this thesis, the role of theory driven research was established within the context of the Medical Research Council (MRC) (2000) guidelines, which provides recommendations for policy makers and researchers when designing and appraising complex interventions. Three core processes which involved, previous empirical work in the field, the importance of theory, and understanding the processes underlying the research phenomenon, were all identified within the MRC framework as essential processes that should be fulfilled before designing and evaluating complex interventions. Hence, the role of theory has been clearly identified within the MRC guidelines. As a consequence, this thesis was theory driven, and it attempted to understand the mechanisms that could underlie the psychosocial outcomes among Omani women with breast cancer. However, the current theoretical model and empirical evidence from this thesis and the related literature did not provide adequate explanation of the role of religious coping as a mediator between illness perceptions and psychosocial outcomes among women with breast cancer. The potential future directions for research in order to advance the field are outlined below.

First, the literature within the common-sense model conducted with women with breast cancer has been mostly limited to cross-sectional research (Charlier et al., 2012; Fanakidou et al., 2018; Fernandes & McIntyre, 2020; Gibbons et al., 2016; Kus et al., 2017; Lan et al., 2019; Lee et al., 2019; Ma et al., 2018; Rozema et al., 2009; Silva et al., 2012; Tang at al., 2017), which only measures the variables at one time point. Therefore, although cross-sectional study design allows for an initial understanding of the potential correlations between the various variables within the common-sense model, this design does not allow for a dynamic and complex understanding of the role of religious coping and illness perceptions on psychosocial outcomes within this population (Sedgwick, 2014). Such research designs could include longitudinal studies as well as experience sampling methodologies (Verhagen, Hasmi, Drukker, van Os, & Delespaul, 2016).

In longitudinal studies, participants are followed for a period of time in order to measure the change in the variables of interest. This research design is valuable as it allows for the measurement of differences between individuals. However, it does not allow for a unique understanding of the differences within each individual (Verhagen et al., 2016). Therefore, in order to advance our understanding of the psychosocial outcomes among women with breast cancer within the context of the common-sense model, future studies need to rely on more than one study design. One novel research design is experience sampling, which will allow for a unique understanding of the factors within an individual which could affect illness perceptions and religious coping. There are numerous designs within this research methodology, but the underlying philosophy is the measurement of affective states and cognitions throughout several time points. The aim of these measurements is to illuminate key time points in the recovery process where more support is necessary or where certain coping methods are used by participants at these time points (Verhagen et al., 2016).

Additionally, given the findings from this thesis as well as from the literature, it might be helpful for future studies to focus on studying women with breast cancer who are early in the illness trajectory. This is because these women are more likely to demonstrate severe and threatening illness perceptions at this time (Al-Azri et al., 2014; Barden et al., 2016; Blow et al., 2011; Fearon et al., 2020; Fu et al., 2008; Howard et al., 2007; Liamputtong & Suwankhong, 2015). Severe illness perceptions have been found be associated with worse psychosocial outcomes (Fischer et al., 2013; Gibbons et al., 2016; McCorry et al., 2013; Millar et al., 2005; Rozema et al., 2009; Silva et al., 2012).

Additionally, the majority of studies from the literature with women with breast cancer typically evaluate only one or two core theoretical constructs within the common-sense model, which are usually illness perceptions and psychosocial outcomes (Fanadikou et al., 2018; Lee et al., 2019; Ma et al., 2018; Tang et al., 2017; Kus et al., 2017; Silva et al., 2012). Therefore, the literature lacks adequate examination of the role of coping methods and procedures within the context of the common-sense model. Only focusing on some components of the model leads to fragmented knowledge about the theoretical model, and the underlying processes which could explain the psychosocial outcomes (Gibbons et al., 2016). Accordingly, different research methodologies could be utilised in future studies in order to gain the needed complex and dynamic understanding of how religious coping and illness perceptions change across the illness experience for these women

Moreover, future research might need to focus on the measurement of both religious coping and illness perceptions within the specific cultural contexts, and thus it is important to take into account the importance of the cultural adaption of these measures before its implementation in different cultural settings. This thesis provided some evidence that the Arabic version of the Brief IPQ (Broadbent et al., 2006; Saarti et al., 2016), although being adapted within an Arab clinical setting, did not seem to capture the way in which illness perceptions interacted with the religious beliefs of Omani women with breast cancer. This is because the personal control and treatment control items within the Brief IPQ did not take into account that for religious Muslim patients, the healing and recovery process is perceived to be controlled by God, and that medicine is only a tool to achieve full recovery. As indicated in the systematic review of this thesis, this finding has also been corroborated from some of the religious coping tools that have been designed for African American cancer survivors (Holt et al., 2009). As a result, future research needs to take into consideration the adaptation of tools which assess illness perceptions.

Along the same lines, future research should also focus on validating current religious coping measures, rather than devising new religious coping measures. This is because the religious coping measures, which were discussed within the context of the systematic review of this thesis, reflected that the majority of religious coping tools have limited psychometric properties. Moreover, it is important that multidimensional measures of religious coping are used in future studies to assess religious coping. Assessing the various functions and dimensions of religious coping may illuminate new relationships between these religious coping dimensions and psychosocial outcomes.

Additionally, research utilising the common-sense model might benefit from including tools which conceptualise coping in relation to the illness experience, rather than measuring coping in general. Although several studies (both longitudinal and cross-sectional) with women with breast cancer have included cancer-specific coping scales such as the Mental Adjustment to Cancer Scale (Fernandes & McIntyre, 2020; Gibbons et al., 2016; McCorry et al., 2013; Millar et al., 2005), other studies (Fischer et al., 2013; Charlier et al., 2012; Lan et al., 2019; Rozema et al., 2009) only assessed coping using generic coping scales, such as Coping Inventory for stressful situations (Charlier et al., 2012), COPE (Fischer et al., 2012), or the Utretch Coping

Questionnaire (Rozema et al., 2009). As a result, these studies may not reveal in full the actual coping skills that are utilised by this population within the illness context.

Finally, it is important to mention that even studies which have employed cancer specific coping measures, have only measured a limited number of coping skills, and have not assessed other coping skills such as religious coping. It has been suggested that measuring a multitude of coping skills will allow for a more complex understanding of mediation models (Hagger & Orbell, 2020). Consequently, future studies testing the common-sense model could benefit from including a range of coping skills as well as other medically-related procedures (i.e. a doctor's visit, compliance to medications) that help patients in managing the illness (Leventhal et al., 2016). This could help us achieve a comprehensive picture of the factors that could be associated with the psychosocial outcomes among women with breast cancer.

7.8 Overall conclusion

This thesis demonstrated that Omani women with breast cancer displayed maladaptive and severe illness perceptions at the time of diagnosis, and they also struggled to make sense of the illness at the initial stage of the illness. It also showed that religious coping initially increased at the time of diagnosis, but then remained stable after that. Therefore, there might be a clinical utility to open a dialogue with women newly diagnosed with breast cancer which take into account the role of culture and religion to address maladaptive illness perceptions at the time of diagnosis. It is also equally important to integrate positive religious coping into these clinical discussions. Additionally, when assessing religious coping, it is crucial that culturally sensitive measures are utilised to assess relevant religiously-based thoughts and behaviours that are applicable to the cultural context of the study.

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Appendices

APPENDIX 1 Full search strategies for the electronic databases

Database: EMBASE (Experta Medica- Ovid)	
Date of search: 1947 to January 2016	
Search strategy: search terms	
#1	Cancer.mp.
#2	Cancer*.mp.
#3	Malignan*.mp.
#4	Oncology.mp.
#5	Tumor.mp.
#6	Tumo?r*.mp.
#7	Carcinoma.mp.
#8	Neoplasm*.mp.
#9	Breast cancer*.mp.
#10	religion.mp.
#11	religious.mp.
#12	religiousness.mp.
#13	religions.mp.
#14	Religiosity.mp.
#15	spiritual.mp.
#16	Spirituality.mp.
#17	Faith.mp.
#18	Religi*.mp
#19	Religio*.mp.
#20	Chaplain*.mp.
#21	Religious belief*.mp.
#22	Spiritual belief*.mp.
#23	Prayer.mp.
#24	Church.mp.
#25	Mosque.mp.
#26	Meditation.mp.
#27	Religious involv*.mp.
#28	God.mp.
#29	Spiritual support.mp.
#30	Spirit*.mp.
#31	Cope.mp.
#32	Coping.mp.
#33	Cop*.mp.
#34	Coping behavio?r.mp.
#35	Skill*.mp.
#36	Style.mp.
#37	Attitude*.mp.
#38	Role*.mp.
#39	Outcome.mp.
#40	Assess*.mp.
#41	Scale*.mp.

#42	Psychometric*.mp.
#43	Questionnaire*.mp.
#44	Test measurement*.mp.
#45	Instrument*.mp.
#46	Develop*.mp.
#47	Construct* valid*.mp.
#48	Standardi*.mp.
#49	Reliabili*.mp.
#50	Rating*.mp.
#51	Test validity.mp.
#52	Rating scale*.mp.
#53	Psychometric*.mp.
#54	Test construction.mp.
#55	Test reliability.mp.
#56	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10
#57	10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 25 or 26 or 27 or 28 or 29 or 30
#58	31 or 32 or 33 or 34 or 35 or 36 or 37 or 38
#59	39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55
#60	56 and 57 and 58 and 59
Database: Medline (Ovid platform)	
Date of search: 1947 to January 2016	
Search strategy: search terms	
#1	Cancer.mp.
#2	Cancer*.mp.
#3	Malignan*.mp.
#4	Oncology.mp.
#5	Tumor.mp.
#6	Tumo?r*.mp.
#7	Carcinoma.mp.
#8	Neoplasm*.mp.
#9	Breast cancer*.mp.
#10	religion.mp.
#11	religious.mp.
#12	religiousness.mp.
#13	religions.mp.
#14	Religiosity.mp.
#15	spiritual.mp.
#16	Spirituality.mp.
#17	Faith.mp.
#18	Religi*.mp
#19	Religio*.mp.
#20	Chaplain*.mp.
#21	Religious belief*.mp.
#22	Spiritual belief*.mp.
#23	Prayer.mp.
#24	Church.mp.

#25	Mosque.mp.
#26	Meditation.mp.
#27	Religious involv*.mp.
#28	God.mp.
#29	Spiritual support.mp.
#30	Spirit*.mp.
#31	Cope.mp.
#32	Coping.mp.
#33	Cop*.mp.
#34	Coping behavio?r.mp.
#35	Skill*.mp.
#36	Style.mp.
#37	Attitude*.mp.
#38	Role*.mp.
#39	Outcome.mp.
#40	Assess*.mp.
#41	Scale*.mp.
#42	Psychometric*.mp.
#43	Questionnaire*.mp.
#44	Test measurement*.mp.
#45	Instrument*.mp.
#46	Develop*.mp.
#47	Construct* valid*.mp.
#48	Standardi*.mp.
#49	Reliabili*.mp.
#50	Rating*.mp.
#51	Test validity.mp.
#52	Rating scale*.mp.
#53	Psychometric*.mp.
#54	Test construction.mp.
#55	Test reliability.mp.
#56	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10
#57	10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 25 or 26 or 27 or 28 or 29 or 30
#58	31 or 32 or 33 or 34 or 35 or 36 or 37 or 38
#59	39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55
#60	56 and 57 and 58 and 59
Database: Web of Science (Core Collection)	
Date of search: 1900 to January 2016	
Search strategy: search terms	
#1	TS=(Cancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer) *Indexes=A&HCI Timespan=All years*
#2	TS=(religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR

	prayer OR church OR mosque OR meditation OR faith OR religious involv*OR God OR Spiritual support OR Spirit*) *Indexes=A&HCI Timespan=All years*
#3	TS=(cope OR coping OR cop* OR coping behavio?r OR skill*OR style OR attitude* OR role*) *Indexes=A&HCI Timespan=All years*
#4	TS=(outcome OR assess* OR scale* OR psychometric* OR questionnaire* OR test measurement* OR instrument* OR develop* OR construct* valid* OR standardi* OR reliabili* OR rating* OR Test Validity OR rating Scale* OR psychometric* OR test construction OR test Reliability) *Indexes=A&HCI Timespan=All years*
#5	#4 AND #3 AND #2 AND #1 *Indexes=A&HCI Timespan=All years*
Database: Pubmed	
Date of search: 1947 to January 2016	
Search strategy: Search terms	
(((((outcome OR assess* OR scale* OR psychometric* OR questionnaire* OR test measurement* OR instrument* OR develop* OR construct* valid* OR standardi* OR reliabili* OR rating* OR Test Validity OR rating Scale* OR psychometric* OR test construction OR test Reliability))) AND ((Cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*))) AND ((religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv*OR God OR Spiritual support OR Spirit*))) AND ((Cancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer))	
Database: Academic Search Ultra	
Date of search: 1888 to January 2016	
Search strategy: Search terms	
S1	Cancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer
S2	religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv*OR God OR Spiritual support OR Spirit*
S3	Cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*
S4	Outcome OR assess* OR scale* OR psychometric* OR questionnaire* OR test measurement* OR instrument* OR develop*OR construct* valid* OR standardi* OR reliabili* OR rating* OR Test Validity OR rating Scale* OR psychometric* OR test construction OR test Reliability
S5	KW cancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer
S6	S1 OR S5

S7	KW religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv*OR God OR Spiritual support OR Spirit*
S8	((KW religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv*OR God OR Spiritual support OR Spirit*) AND (S2 OR S7)) AND (S2 OR S7)
S9	KW cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*
S10	(KW cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*) AND (S3 OR S9)
S11	((KW cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*) AND (S3 OR S9)) AND (S8 AND S10)
S12	KW outcome OR assess* OR scale* OR psychometric* OR questionnaire* OR test measurement* OR instrument* OR develop*OR construct* valid* OR standardi* OR reliabili* OR rating* OR Test Validity OR rating Scale* OR psychometric* OR test construction OR test Reliability
S13	TX outcome OR assess* OR scale* OR psychometric* OR questionnaire* OR test measurement* OR instrument* OR develop*OR construct* valid* OR standardi* OR reliabili* OR rating* OR Test Validity OR rating Scale* OR psychometric* OR test construction OR test Reliability
S14	S12 OR S13
S15	TX religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv*OR God OR Spiritual support OR Spirit*
S16	(TX religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv*OR God OR Spiritual support OR Spirit*) AND (S8 OR S15)
S17	TX cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*
S18	((TX cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*) AND (S10 OR S17)) AND (S10 OR S17)
S19	(((TX cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*) AND (S10 OR S17)) AND (S10 OR S17)) AND (S4 OR S14)
S20	TX cancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer

S21	(TX cancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer) AND (S1 OR S5 OR S20)
S22	(S4 OR S14) AND (S4 OR S14)
S23	((S4 OR S14) AND (S4 OR S14)) AND (S16 AND S18 AND S21 AND S22)
S24	(((S4 OR S14) AND (S4 OR S14)) AND (S16 AND S18 AND S21 AND S22)) AND (S1 AND S2 AND S3 AND S4)
Database: CINAHL	
Date of search: 1944 to January 2016	
Search strategy: Search terms	
S1	MH cancer
S2	MH cancer*
S3	MH malignan*
S4	MH oncology
S5	MH tumor
S6	MH tumo?r*
S7	MH carcinoma
S8	MH neoplasm*
S9	MH breast cancer
S10	MH ((MH Breast cancer) AND (S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9)) AND (S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9)
S11	MH religion
S12	MH religious
S13	MH religiousness
S14	MH religions
S15	MH religiosity
S16	MH spiritual
S17	MH spirituality
S18	MH faith
S19	MH religi*
S20	MH religio*
S21	MH chaplain*
S22	MH religious belief*
S23	MH spiritual belief*
S24	MH prayer
S25	MH church
S26	MH mosque
S27	MH meditation
S28	MH religious involve*
S29	MH God
S30	MH spiritual support
S31	MH spirit*
S32	(MH Spirit*) AND (S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31)
S33	MH cope

S34	MH coping
S35	MH cop*
S36	MH coping behavio?r*
S37	MH skill*
S38	MH style
S39	MH attitude
S40	MH role
S41	MH outcome
S42	MH assess*
S43	MH scale*
S44	MH psychometric*
S45	MH questionnaire*
S46	MH test measurement*
S47	MH instrument*
S48	MH develop*
S49	MH construct* valid*
S50	MH reliabili*
S51	MH rating*
S52	MH test validity
S53	MH rating scale*
S54	MH psychometric*
S55	MH test construction
S56	MH test reliability
S57	S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40
S58	S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55 OR S56
S59	S10 AND S32 AND S57 AND S58
S60	MH S10 AND S32 AND S57 AND S58
S61	MH S10 AND S32 AND S57 AND S58
S62	MH Cancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer
S63	MH religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv*OR God OR Spiritual support OR Spirit*
S64	Cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*
S65	Outcome OR assess* OR scale* OR psychometric* OR questionnaire* OR test measurement* OR instrument* OR develop*OR construct* valid* OR standardi* OR reliabili* OR rating* OR Test Validity OR rating Scale* OR psychometric* OR test construction OR test Reliability
S66	S62 AND S63 AND S64
Database: PsychINFO (EBSCO host)	
Date searched: 1982 to January 2016	
Search strategy: Search terms	

S1	Cancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer
S2	religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv*OR God OR Spiritual support OR Spirit*
S3	Cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*
S4	Outcome OR assess* OR scale* OR psychometric* OR questionnaire* OR test measurement* OR instrument* OR develop*OR construct* valid* OR standardi* OR reliabili* OR rating* OR Test Validity OR rating Scale* OR psychometric* OR test construction OR test Reliability
S5	TX ancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer
S6	(TX ancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer) AND (S1 OR S5)
S7	KW cer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer
S8	TX cancer OR Cancer* OR Malignan* OR Oncology OR Tumor OR Tumo?r* OR Carcinoma OR Neoplasm* OR Breast cancer
S9	TX religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv* OR God OR Spiritual support OR Spirit*
S10	KW religion OR religious OR religiousness OR religions OR religiosity OR spiritual OR spirituality OR faith OR religi* OR religio* OR chaplain* OR religious belief* OR spiritual belief* OR prayer OR church OR mosque OR meditation OR faith OR religious involv*OR God OR Spiritual support OR Spirit*
S11	TX cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*
S12	KW cope OR coping OR cop* OR coping behavio?r OR skill* OR style OR attitude* OR role*
S13	TX outcome OR assess* OR scale* OR psychometric* OR questionnaire* OR test measurement* OR instrument* OR develop*OR construct* valid* OR standardi* OR reliabili* OR rating* OR Test Validity OR rating Scale* OR psychometric* OR test construction OR test Reliability
S14	KW outcome OR assess* OR scale* OR psychometric* OR questionnaire* OR test measurement* OR instrument* OR develop*OR construct* valid* OR standardi* OR reliabili* OR rating* OR Test Validity OR rating Scale* OR psychometric* OR test construction OR test Reliability

S15	S1 OR S5 OR S7
S16	S2 OR S9 OR S10
S17	S3 OR S11 OR S12
S18	S4 OR S13 OR S14
S19	S15 AND S16 AND S17 AND S18

APPENDIX 2 Data extraction form

Record any missing information as unclear or not described, to make it clear that the information was not found in the study report(s), not that you forgot to extract it. Write N/A id not relevant for the review.

Study ID (e.g. Smith et al., 2011)

	Eligibility criteria	**Eligibility criteria met? Yes, No, Unclear**
Study designs	-Any Study in English language that is concerned with the original development or further validation of a measure of religious coping in cancer research (cross-sectional, longitudinal, cohort)	**Yes, No, Unclear**
Domain of study	-Religious -Spiritual -Both	
Participants	-Participants must be adults diagnosed with cancer (18 years and over) -Not family members, chaplains, of health professionals	**Yes, No, Unclear**
Exclusion criteria	-An instrument to assess spirituality only -A religious coping measure is not used -General questions about religiosity or religious orientation as opposed to religious coping(Church attendance) -Religious coping was assessed using a single item (i.e. how did you use religion to cope with illness) -The instrument was not validated on cancer population	**Yes, No, Unclear**
Include	**Exclude**	**Reason for exclusion**

APPENDIX 3 Excluded articles and reasons for exclusion

ID	Title	Author/Year	Are people with cancer the participants?	Is the study a validation study?	Was the measure a religious coping measure?	Reason for exclusion
1	Reliability and validity of the Arabic translation of the palliative performance scale	Abdelhafeez et al., 2019	√	√	x	Not a RC measure
2	Spirituality Moderates Hopelessness, Depression, and Suicidal Behavior among Malaysian Adolescents	Abu Talib et al., 2015	x	x	x	Not a validation study, utiliisng adolescent population, and not a RC measure
3	Empirically based psychology of Islam: summary and critique of the literature	Abu-Raiyaa and Pargament, 2011	x	x	x	Not a validation study (literature review)
4	Nature as the Most Important Coping Strategy Among Cancer Patients: A Swedish Survey	Ahmadi & Ahmadi, 2015	√	x	√	Not a validation study
5	The Use of Religious Coping Methods in a Secular Society: A Survey Study Among Cancer Patients in Sweden	Ahmadi et al., 2017	√	x	√	Not a validation study
6	Culture, religion and spirituality in coping: the example of cancer patients in Sweden.	Ahmadi, 2006	√	√	√	Book

7	Religiosity, Religious Coping, and Distress	Alferi et al., 1999	√	x	√	Not a validation study
8	Article DOI: http://doi.org.10.11560/jahp.27.2_140	Authors names written in Japanese language, 2014.	?	?	?	Article in Japanese language
9	The system of beliefs inventory(SBI-15): a validation study in Israel	Baider et al., 2001	x	√	x	Not a population of interest, not RC measure, rather it measures religious belief and social support
10	A Scale to Assess Religious Beliefs in End-of-Life Medical Care	Balboni et al., 2019	√	√	x	Not a RC measure, it assesses religious beliefs at the end of life and its influence of medical decisions
11	Psychology and Theology Meet: Illness Appraisal and Spiritual Coping	Baldacchino et al., 2012	√	x	x	Not a validation study (qualitative study)
12	Religious Belief as a Coping Strategy	Becker et al., 2006	√	x	x	Not RC measure
13	Development and validation of a new tool for the assessment and spiritual care of palliative care patients	Benito et al., 2014	√	√	x	Not a RC measure, but spiritual care
14	Relationship between spirituality, meaning in life, psychological distress, wish for hastened death, and their influence on quality of life in palliative care patients	Bernard et al., 2017	√	x	x	Not a RC measure, rather an outcome measure (FACIT-Sp)

15	The Role of Religion and Spirituality in Psychological Distress Prior to Surgery for Urologic Cancer	Biegler et al., 2012	√	x	√	Not a validation study
16	Spiritual/Religious Coping of Women with Breast Cancer	Borges et al., 2017	√	x	√	Not a validation study
17	Evaluation of the FICA tool for spiritual assessment	Borneman et al., 2010	√	√	x	Not a RC measure, rather spiritual assessment
18	The contribution of spirituality and spiritual coping to anxiety and depression in women with a recent diagnosis of gynecological cancer	Boscaglia et al., 2005	√	x	√	Not a validation study
19	Spirituality, quality of life, psychological adjustment in terminal cancer patients in hospice	Bovero et al., 2015	√	x	x	Not a validation study, no RC measure, rather an outcome measure FACIT-Sp
20	The Relationship Between Religious Coping Style and Anxiety over Breast Cancer in African American Women	Bowie et al., 2001	x	√	√	Not a population of interest (normative population)
21	Spirituality and Coping Among Survivors of Prostate Cancer	Bowie et al., 2005	√	x	√	Not a validation study
22	Religious Coping and Types and Sources of Information Used in Making Prostate Cancer Treatment Decisions	Bowie et al., 2017	√	x	√	Not a validation study
23	The spiritual dimension of palliative care	Burton, 1998	√	x	x	Not a validation study (review paper)
24	Engagement of patients in religious and spiritual practices: Confirmatory	Büssing et al., 2005	√	√	x	Not a religious coping measure. 26 items

	results with SpREUK-P 1.1 questionnaire as a tool of quality of life research					divided as the following: Conventional religious practice:4 items, Existentialistic practice: 6 items, Unconventional spiritual practice:5 items, Humanistic Practice: 6 items, Nature-oriented practice: 3 items, Guardian Angel: 1 item
25	Role of religion and spirituality in medical patients: confirmatory results with the SpREUK questionnaire	Büssing et al., 2005	√	√	x	Not a RC measure. It measures religiousness and its relationships to how they cope with the illness
26	Search for meaningful support and the meaning of illness in German cancer patients	Büssing et al., 2005	√	√	x	Not a religious coping measure (survey attitudes of patients with severe diseases towards spirituality/religiosity

						and adjustment to illness
27	Relevance of religion and spirituality in German patients with chronic diseases	Büssing et al., 2007	√	x	x	Not a RC measure
28	Adaptive Coping and Spirituality as a Resource in Cancer Patients	Büssing et al., 2007	√	√	x	Not a RC measure, rather trust in God’s help
29	Spirituality, religiosity, and dealing with illness in Arabic and German patients	Büssing et al., 2007	x	√	x	Not population of interest (patients with hypertension), not RC measure
30	Reliance on God’s help, depression and fatigue in female cancer patients	Büssing et al., 2008	√	x	x	Not a validation study, not RC measure
31	Psychosocial and spiritual needs of patients with chronic diseases: validation of the Chinese version of the Spiritual Needs Questionnaire	Büssing et al., 2013	√	√	x	Not a religious coping measure, spiritual needs
32	Reliance on God’s Help Scale as a Measure of Religious Trust—A Summary of Findings	Büssing et al., 2015	√	x	x	Not a validation study (review article), not RC measure
33	Spirituality as a Resource to Rely on in Chronic Illness: The SpREUK Questionnaire	Büssing, 2010	√	√	x	Not a RC measure
34	Nursing Diagnosis of ‘‘Spiritual Distress’’ in Women With Breast Cancer Prevalence and Major Defining Characteristics	Caldeira et al., 2016.	√	x	x	Not a validation study, not RC measure (outcome measure)

35	Spiritual Well-Being and Spiritual Distress in Cancer Patients Undergoing Chemotherapy: Utilizing the SWBQ as Component of Holistic Nursing Diagnosis	Caldeira et al., 2017	√	√	x	Not RC measure, outcome measure (spiritual well-being)
36	Active coping mediates the association between religiosity/spirituality and quality of life in ovarian cancer	Canada et al., 2006	√	√	x	Not a RC measure, rather Systems of Beliefs Inventory
37	A 3-factor model for the FACIT-Sp	Canada et al., 2008	√	√	x	Not a RC measure, but outcome measure
38	Effectiveness of prayer in reducing anxiety in cancer patients	Carvalho et al., 2014	√	x	x	Not a validation paper, not a RC measure (religiousness)
39	Role of attachment to GOD in secular and religious/spiritual ways of coping with a serious disease	Cassibba et al., 2013	√	x	x	Not a RC measure (outcome measure-System of Beliefs Inventory)
40	Evaluating the impact of spirituality on the quality of life, anxiety, and depression among patients with cancer: an observational transversal study	Chaar et al., 2018	√	√	x	Not RC measure, but outcome measure (FACIT-Sp)
41	Multidimensional Approach Toward Spiritual Coping: Construction and Validation of the Spiritual Coping Questionnaire (SCQ)	Charzyńska, 2015	x	√	√	Not population of interest
42	An Integrative Review of the Concept of Spirituality in the Health Sciences	Chiu et al., 2005	√	x	x	Not a validation study (review article)

43	Religion and Spirituality in Coping with Breast Cancer: Perspectives of Chilean Women	Choumanova et al., 2006	√	x	x	Not a validation study (qualitative study)
44	Spontaneous reports of religious coping by patients with chronic physical illness	Cigrang et al., 2003	√	x	x	Not a validation study, open ended questions about religious coping were used (not standardised measure)
45	Assessing spiritual growth and spiritual decline following a diagnosis of cancer: reliability and validity of the spiritual transformation scale	Cole et al., 2008	√	√	x	Not a RC measure, an outcome measure
46	Religious/spiritual coping and level of hope in patients with cancer in chemotherapy	Costa et al., 2019	√	x	√	Not a validation study
47	Exploring the relationships among spiritual well-being, quality of life, and psychological adjustment in women with breast cancer	Cotton et al., 1999	√	x	x	Not a validation study, not RC measure (FACIT-Sp)
48	Relational spirituality and quality of life 2007 to 2017: an integrative research review	Counted et al., 2018	√	x	x	Not a validation study (review article)
49	Coping and distress among women under treatment for early stage breast cancer: comparing African	Culver et al., 2002	√	x	x	Not a validation study

	Americans, Hispanics, and non-Hispanic Whites					
50	Medicine for the Spirit: Religious Coping in Individuals with Medical Conditions	Cummings & Pargament, 2010	√	x	√	Not a validation study, review article
51	Validation of the Portuguese Version of the Brief Multidimensional Measure of Religiousness/Spirituality (BMMRS-P) in Clinical and Non-clinical Samples	Curcio et al., 2015	X	√	√	Population of interest not explicitly stated
52	Effect of Spiritual-Religious Intervention on Illness Perception in Women with Breast Cancer	Davari et al., 2018	√	x	x	Not a validation study, did not use RC measure
53	The impact of spirituality, religiosity, and spiritual pain in coping strategies and quality of life (QOL) of caregivers of advanced cancer patients (CACP) in the palliative care(PC) setting	Delgado et al., 2011	x	?	√	Only abstract is available
54	Spirituality, religiosity, and spiritual pain in advanced cancer patients	Delgado-Guay et al., 2011	√	x	√	Not a validation study
55	Frequency, intensity, and correlates of spiritual pain in advanced cancer patients assessed in a supportive/palliative care clinic	Delgado-Guay et al., 2016	√	x	x	Not RC measure, only one item on spiritual pain
56	The System of Belief Inventory: A Validation Study in Turkish Cancer Patients	Erci & Ataturk, 2017	√	√	x	Not a RC measure, rather beliefs and social support (SBI-15)

57	Brazilian Validation of the Brief Scale for Spiritual/Religious Coping—SRCOPE-14	Esperandio et al., 2018	x	√	√	Not a population of interest (normative population)
58	Anger Toward God: Social-Cognitive Predictors, Prevalence, and Links With Adjustment to Bereavement and Cancer	Exline et al., 2011	√	x	x	Not a validation study, not a RC measure (3 questions about anger towards God)
59	The Religious and Spiritual Struggles Scale: Development and Initial Validation	Exline et al., 2014	x	√	x	Population not of interest (undergraduate students), not a RC measure
60	Coping with breast cancer in later life:the role of religious faith	Feher & Maly, 1999	√	x	x	Not a validation study (qualitative study)
61	“Why me?” – women’s use of spiritual causal attributions in making sense of breast cancer	Gall & Bilodeau, 2017	√	x	√	Not a validation study
62	Religious Resources in Long-Term Adjustment to Breast Cancer	Gall et al., 2000	√	x	√	Not a validation study
63	A longitudinal study on the role of spirituality in response to the diagnosis and treatment of breast cancer	Gall et al., 2009	√	√	x	Not a RC measure, Imagine of God scale
64	Attachment to God and coping with the diagnosis and treatment of breast cancer: a longitudinal study	Gall et al., 2019.	√	√	x	Not a RC, but attachment to God
65	Integrating religious resources within a general model of stress and coping: long term adjustment to breast cancer	Gall, 2000	√	x	√	Not a validation study

66	Relationship with God and the quality of life of prostate cancer survivors	Gall, 2004	√	√	x	Not RC measure (Image of God)
67	Instruments Measuring Spirituality in Clinical Research	Garssen et al., 2012	x	x	x	Not a validation study (letter to editor)
68	Spirituality and quality of life in gynecologic oncology patients	Gioiella et al., 2001	√	x	x	Not a validation paper, not a RC measure (spiritual well- being)
69	The Relationship Between Religious Coping and Depression in Iranian Patients with Cancer	Goudarzian et al., 2017	√	x	√	Not a validation study.
70	Correlation between religious coping and depression in cancer patients	Haghighi, 2013	√	x	√	Not a validation study
71	Image of God in relation to coping strategies of palliative cancer patients	Hanneke et al., 2010	√	√	x	Not a RC measure (Image of God)
72	Farsi version of the Multidimensional Health Locus of Control and God Locus of Health Control Scales: validity and reliability study among Iranian women with a family history of breast cancer	Hashemian et al., 2014	x	√	x	Not a population of interest, not a RC measure
73	Measuring Religiousness and Spirituality: Issues, Existing Measures, and the Implications for Education and Wellbeing	Hill & Maltby, 2009	x	x	√	Not a validation study, review article
74	A brief spiritual beliefs inventory for use in quality of life research in life-threatening illness	Holland et al., 1998	√	√	x	Not a RC measure, rather measures religious beliefs and social support (SBI-15)

75	The role of religious and spiritual beliefs in coping with malignant melanoma	Holland et al., 1999	√	x	x	Not a validation study, and not a RC measure (Systems of Beliefs Inventory-15)
76	Spiritual Health Locus of Control and Breast Cancer Beliefs Among Urban African American Women	Holt et al., 2003	x	√	x	Population not of interest (normative African American women), and no RC measure
77	Comparison of the Effects of Religious Cognitive Behavioral Therapy (RCBT), Cognitive Behavioral Therapy (CBT), and Sertraline on Depression and Anxiety in Patients after Coronary Artery Bypass Graft Surgery: Study Protocol for a Randomized Controlled Trial	Hosseini et al., 2017	x	x	x	Not a validation study
78	Expansion and Validation of the Spiritual Health Locus of Control Scale	Hotl et al., 2007	x	√	x	Not a validation study, not population of interest
79	Religiousness, Spirituality, and Salivary Cortisol in Breast Cancer Survivorship: A Pilot Study	Hulett et al., 2018	√	x	√	Not a validation study
80	The religiousness as a way of coping with anxiety in women with breast cancer at different disease stages	Janiszewska et al., 2008	√	x	x	Not a validation study, not a RC measure
82	Religious beliefs, coping, and psychological well-being among Greek cancer patients	Kaliampos et al., 2017	√	√	x	Not a RC measure

83	Coping With Breast Cancer at the Nexus of Religiosity and Hawaiian Culture: Perspectives of Native Hawaiian Survivors and Family Members	Ka'opua et al., 2008	√	x	x	Not a validation study (qualitative study). No measure of RC
84	Depression and religiosity and their correlates in Lebanese breast cancer patients	Kassm et al., 2016	√	x	x	Not a RC measure (religiosity measure)
85	Spiritual/Religious Coping Strategies and their Relationship with Illness Adjustment among Iranian Breast Cancer Patients	Khodaveirdyzadeh et al., 2016	√	x	√	Not a validation study
86	"and whatever you ask for in prayer, having faith and believing, you will receive"(Mathew 21:22: Spirituality and reliability in radiotherapy patients. Results of a prospective study	Kiel et al., 2007	√	x	x	Not a validation study(abstract only), not RC measure (FACIT-Sp)
87	Determining best methods to screen for religious/spiritual distress	King et al., 2017	√	x	√	Not a validation study
88	Religious attitudes and practices of hospitalized medically ill older adults	Koenig, 1998	x	√	√	Population of interest not explicitly stated
89	"I know he controls cancer": The meanings of religion among Black Caribbean and White British patients with advanced cancer	Koffman et al., 2008	√	x	x	Not a validation study (qualitative study)
90	A Systematic Review of Studies Using the Brief COPE: Religious Coping in Factor Analyses	Krägeloh, 2011	√	x	√	Not a validation paper (review article)

91	Spirituality influences health related quality of life in men with prostate cancer	Krupski et al., 2006	√	x	x	Not a validation study, not RC measure (FACIT-Sp)
92	Establishing the validity of a spiritual distress scale for cancer patients hospitalized in southern Taiwan	Ku et al., 2010	√	√	x	Not a RC measure, spiritual beliefs
93	Spirituality and psychological well-being in women with breast cancer	Price-Abdelrazzaq, 2006	√	x	x	Not a validation study (Ph.D thesis)
94	The Role of Spirituality in the Psychological Adjustment to Cancer: A Test of the Transactional Model of Stress and Coping	Laubmeier et al., 2004	√	√	x	Not a RC measure, rather spiritual well-being (outcome measure)
95	Religious/spiritual coping and adjustment in individuals with cancer: unanswered questions, important trends, and future directions	Lavery & O'Hea, 2010	√	x	√	Not a validation study (review article)
96	Ethnicity and spirituality in breast cancer survivors	Levine et al., 2007	√	x	x	Not a validation study (qualitative study)
97	Development and Initial Validation of a Spiritual Support Subscale for the MOS Social Support Survey	Levine et al., 2015	√	√	x	Not a RC measure
98	Development and validation of the Chinese version of spiritual interests related illness tool for patients with cancer in Taiwan	Lin et al., 2015	√	√	x	Not a religious coping measure, rather spiritual needs.
99	Use of Religion: An Effective Method of Coping among Chinese Patients with Cancer	Liu et al., 2015	√	x	x	Not a validation study (qualitative study)

100	Is there a correlation between spirituality and anxiety and depression in patients with advanced cancer?	McCoubrie & Davies, 2005	√	x	x	Not a validation study, no RC measure (spiritual well-being-outcome measure)
101	It's Out of My Hands: How Deferring Control to God Can Decrease Quality of Life for Breast Cancer Patients	McLaughlina et al., 2013	√	x	x	Not a validation study
102	Prayer in People With Cancer	Meraviglia, 2002	√	√	x	Not a RC measure, but a prayer scale
103	The Effects of Spirituality on Well-Being of People With Lung Cancer	Meraviglia, 2004	√	√	x	Not a RC measure, a prayer scale
104	Effects of spirituality in breast cancer survivors	Meraviglia, 2006	√	√	x	Not a RC measure (Prayer Scale)
105	Spirituality Measurement in African American Cancer Survivors	Mollica & Nemeth, 2013	√	x	x	Not a validation study (review article), did not include a measure of RC
106	The role of spirituality in the relationship between religiosity and depression in prostate cancer patients	Nelson et al., 2009	√	√	x	Not a RC measure, FACIT-Sp
107	Anxiety and Depression in Cancer Patients: The Association with Religiosity and Religious Coping	Ng et al., 2017	√	x	√	Not a validation study
108	Spirituality and religious coping for cancer patients and providers: An 'Almighty' belief for palliative care	Pareek et al., 2019	√	x	√	Only abstract available
109	Religious struggle as a predictor of mortality among medically ill elderly patients	Pargament et al., 2001	x	√	√	Population of interest not explicitly stated

110	Religious Coping Methods as Predictors of Psychological, Physical and Spiritual Outcomes among Medically Ill Elderly Patients: A Two-year Longitudinal Study	Pargament et al., 2004	√	x	√	Not a validation study
111	Religion/Spirituality and Health in the Context of Cancer: Cross Domain Integration, Unresolved Issues, and Future Directions	Park et al., 2015	√	x	√	Not a validation study (review article)
112	Advancing our understanding of religion and spirituality in the context of behavioral medicine	Park et al., 2017	√	x	√	Not a validation study (review paper)
113	Intrinsic religiousness and well-being among cancer patients: the mediating role of control-related religious coping and self-efficacy for coping with cancer	Perez & Smith, 2015	√	x	√	Not a validation study
114	An Evaluation of Psychosocial and Religious Belief Differences in a Diverse Racial and Socioeconomic Urban Cancer Population	Polite et al., 2017	√	√	x	Not RC measure (God locus of health control)
115	Hope, spirituality, sense of coherence, and quality of life in patients with cancer	Post-White et al., 2016	√	x	x	Not a validation study (qualitative study)
116	Two years after cancer diagnosis, what is the relationship between health-related quality of life, coping strategies and spirituality?	Préau et al., 2011	√	x	x	Not a religious coping measure, only two general questions was used.

117	Spiritual Coping: A Gateway to Enhancing Family Communication During Cancer Treatment	Prouty et al., 2015	√	x	√	Not a validation study
118	Integrating spirituality into patient care: an essential element of person-centered care	Puchalski, 2013	x	x	x	Not a validation paper (review article)
119	Religious Practice and Spirituality in the Psychological Adjustment of Survivors of Breast Cancer	Purnell et al., 2009	√	√	x	Not RC measure (religious practice and FACIT-Sp)
120	Religious and Other Predictors of Psychosocial Adjustment in Cancer Patients	Rifkin et al., 1999	√	x	x	Not a validation study, did not use RC measure (Religious Imagination scale)
121	System of belief inventory (SBI-15R): a validation study in Italian cancer patients on oncological, rehabilitation, psychological and supportive care settings	Ripamonti et al., 2015	√	√	x	Not a RC measure (religious beliefs and social support)
122	The relationship between religion/spirituality and physical health, mental health, and pain in chronic pain population	Rippentrop et al., 2005.	x	√	√	Not population of interest (patients with chronic pain).
123	Self-Forgiveness, Spirituality, and Psychological Adjustment in Women with Breast Cancer	Romero et al., 2006	√	x	x	Not RC measure, only one item to measure spirituality
124	Spiritual Coping, Perceived Growth, and the Moderating Role of Spiritual Mindfulness in Cancer Survivors	Rudaz et al., 2018	√	√	x	Only of the two items measured spiritual coping

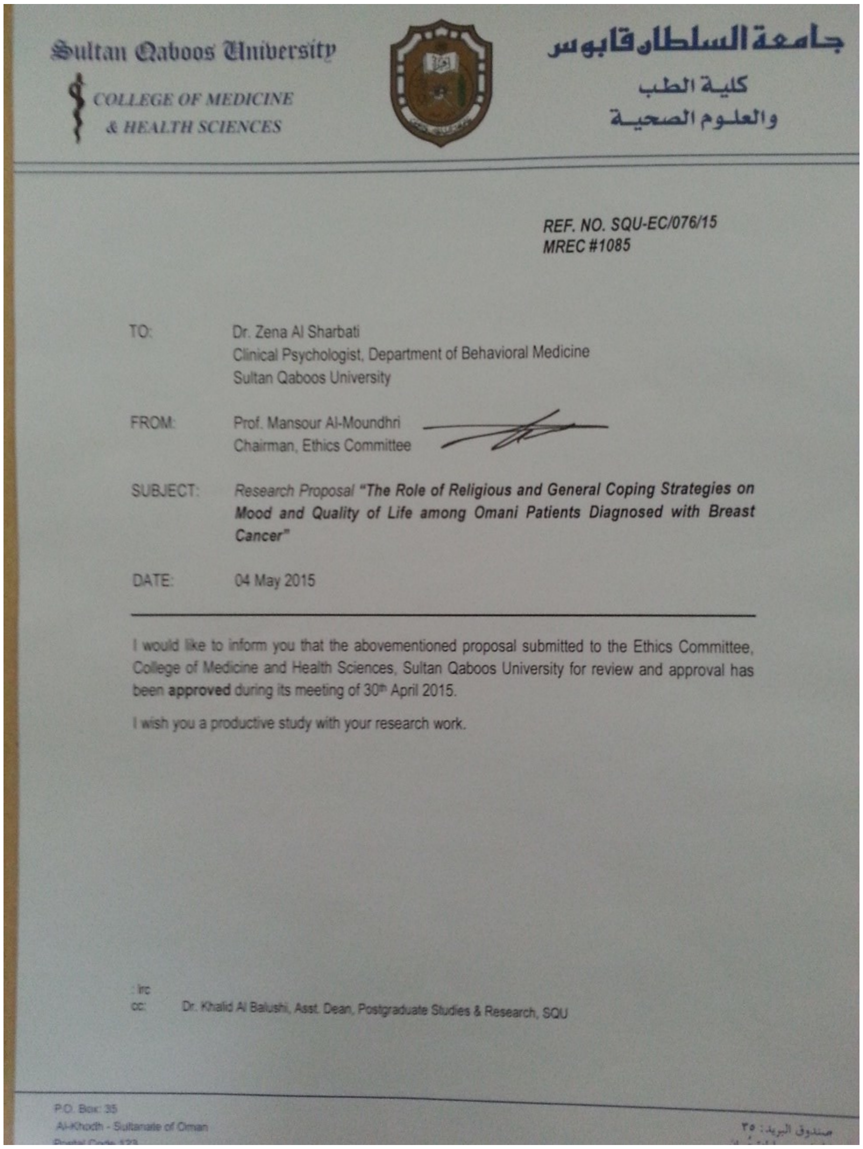
125	Psychometric characteristics of the Muslim Religiosity Scale in Iranian patients with cancer	Safari et al., 2016	√	√	x	Not a RC measure (religiousness scale)
126	Changes in Spirituality and Quality of Life in Patients Undergoing Radiation Therapy	Samuelson et al., 2012	√	x	x	Not a validation study, not a RC measure (FACIT-Sp)
127	Image of God: effect on coping, psycho-spiritual well-being and fear of recurrence in early breast cancer	Schreiber, 2009	√	x	x	Not a validation study (Ph.D thesis), not a RC measure
128	Psychometric properties of the Image of God Scale in breast cancer survivors	Schreiber, 2012	√	√	x	Not a RC measure (Image of God)
129	Image of God: Effect on Coping and Psychospiritual Outcomes in Early Breast Cancer Survivors	Schreiber, 2014	√	x	x	Not a validation study, not a RC measure
130	Distinguishing between spiritual distress, general distress, spiritual well-being, and spiritual pain among cancer patients during oncology treatment	Schultz et al., 2017	√	x	x	Not a validation paper, no RC measure (FACIT-Sp)
131	The measurement of spirituality in palliative care and the content of tools validated cross-culturally: a systematic review	Selman et al., 2011	√	x	x	Not a validation paper (systematic review)
132	Religion/spirituality and social support in improving the quality of life of patients with advanced cancer	Silva et al., 2019	√	x	x	Not a validation study, did not use a standardised measure
133	The stage-specific role of spirituality among African American Christian	Simon et al., 2007	√	x	x	Not a validation paper (qualitative paper)

	women throughout the breast cancer experience					
134	Relational and Spiritual Coping Among Emerging and Young Adult Cancer Survivors	Sira et al., 2019	√	x	x	Study did not validate turning to religion subscale
135	Is ‘Seeking God’s Help’ Associated with Life Satisfaction and Disease-specific Quality of Life in Cancer Patients? The HUNT Study	Sørensen et al., 2012	√	x	√	Not a validation study of the RCOPE
136	Religion, spirituality and cancer: Current status and methodological challenges	Stefanek et al., 2005	√	x	√	Not a validation study (review article)
137	The Role of Spirituality in the Breast Cancer Experiences of African American Women	Tate, 2011.	√	x	x	Not a validation paper (review article)
138	Religious and spiritual resources, CAM, and conventional treatment in the life of cancer patients	Tatsumura et al., 2003	√	x	x	Not a validation study(qualitative study)
139	Use of Prayer among Persons with Cancer	Taylor & Outlaw, 2002	√	x	x	Not a validation study (qualitative study)
140	Prevalence and associated factors of spiritual needs among patients with cancer and family caregivers	Taylor, 2006	√	√	x	Not a religious coping measure, rather spiritual needs
141	Do religious/spiritual coping strategies affect illness adjustment in patients with cancer: a systematic review of the literature	Thuné-Boyle et al., 2006	√	x	√	Not a validation study (review article)
142	Do spirituality and faith make a difference? Report from the Southern	Travado et al., 2010	√	x	x	Not a validation study, not a RC

	European Psycho-oncology Study Group					measure (visual analog)
143	The Role of Spirituality and Religious Coping in the Quality of Life of Patients With Advanced Cancer Receiving Palliative Radiation Therapy	Vallurupalli et al., 2012	√	x	√	Not a validation study
144	Spirituality and well-being in cancer patients: A review	Visser et al., 2010	√	x	x	Not a validation study, does not cover a measure of RC
145	The Role of Religion/Spirituality for Cancer Patients and Their Caregivers	Weaver et al., 2004	√	x	x	Not a validation study (review article)
146	Religious coping and problem-solving by couples faced with prostate cancer	Yoshimoto et al., 2006.	√	x	x	Not a validation study, did not include a standardised measure of RC
147	Religious Coping and Quality of Life in Women with Breast Cancer	Zamanian et al., 2015	√	x	√	Not a validation study
148	Initial Evidence of Religious Practice and Belief in Depressed African American Cancer Patients	Zhang et al., 2013	√	x	x	Not a validation study (qualitative study).

APPENDIX 4 Studies ethical approval

Sultan Qaboos University ethical approval of quantitative study



Sultan Qaboos University
COLLEGE OF MEDICINE
& HEALTH SCIENCES

جامعة السلطان قابوس
كلية الطب
والعلوم الصحية

REF. NO. SQU-EC/076/15
MREC #1085

TO: Dr. Zena Al Sharbati
Clinical Psychologist, Department of Behavioral Medicine
Sultan Qaboos University

FROM: Prof. Mansour Al-Moundhri
Chairman, Ethics Committee

SUBJECT: *Research Proposal* ***"The Role of Religious and General Coping Strategies on Mood and Quality of Life among Omani Patients Diagnosed with Breast Cancer"***

DATE: 04 May 2015

I would like to inform you that the abovementioned proposal submitted to the Ethics Committee, College of Medicine and Health Sciences, Sultan Qaboos University for review and approval has been **approved** during its meeting of 30th April 2015.

I wish you a productive study with your research work.

: lrc
cc: Dr. Khalid Al Balushi, Asst. Dean, Postgraduate Studies & Research, SQU

University of Strathclyde endorsement of the decision of the Sultan Qaboos University’s Research Ethics Committee

University of Strathclyde ethical approval email

From: Ethics <ethics@strath.ac.uk<mailto:ethics@strath.ac.uk>>
Date: 26 June 2015 12:09:52 BST
To: Pauline Adair <pauline.adair@strath.ac.uk<mailto:pauline.adair@strath.ac.uk>>
Cc: Zena Al-Sharbati <zena.al-sharbati@strath.ac.uk<mailto:zena.al-sharbati@strath.ac.uk>>, Susan Rasmussen <s.a.rasmussen@strath.ac.uk<mailto:s.a.rasmussen@strath.ac.uk>>, Ethics <ethics@strath.ac.uk<mailto:ethics@strath.ac.uk>>
Subject: Approval of external's Ethics Committee: UEC15/48: Adair/Al-Sharbati: The role of religious and general coping strategies on mood and quality of life among Omani patients diagnosed with breast cancer.

Dear Pauline/Zena/Susan

I refer to the above study and can confirm that the Convener of the University Ethics Committee (“UEC”) has endorsed the decision of the Sultan Qaboos University’s Research Ethics Committee and granted University ethics approval on behalf of the UEC. University insurance has also been confirmed.

I would remind you that the Committee must be informed of any changes that are made to the research project, so that they have the opportunity to consider them. The Committee would also expect you to report back on the progress and outcome of your project, (by providing an annual progress report and a final report) and with an account of anything which may prompt ethical questions for any similar future project and with anything else that you feel the Committee should know.

On behalf of the Committee, I wish you success with this project.

Kind regards

Helen

Helen Baigrie
Contracts Manager
Research & Knowledge Exchange Services
University of Strathclyde
Graham Hills Building
50 George Street
Glasgow

G1 1QE

Direct Line +44 (0) 141 548 4539
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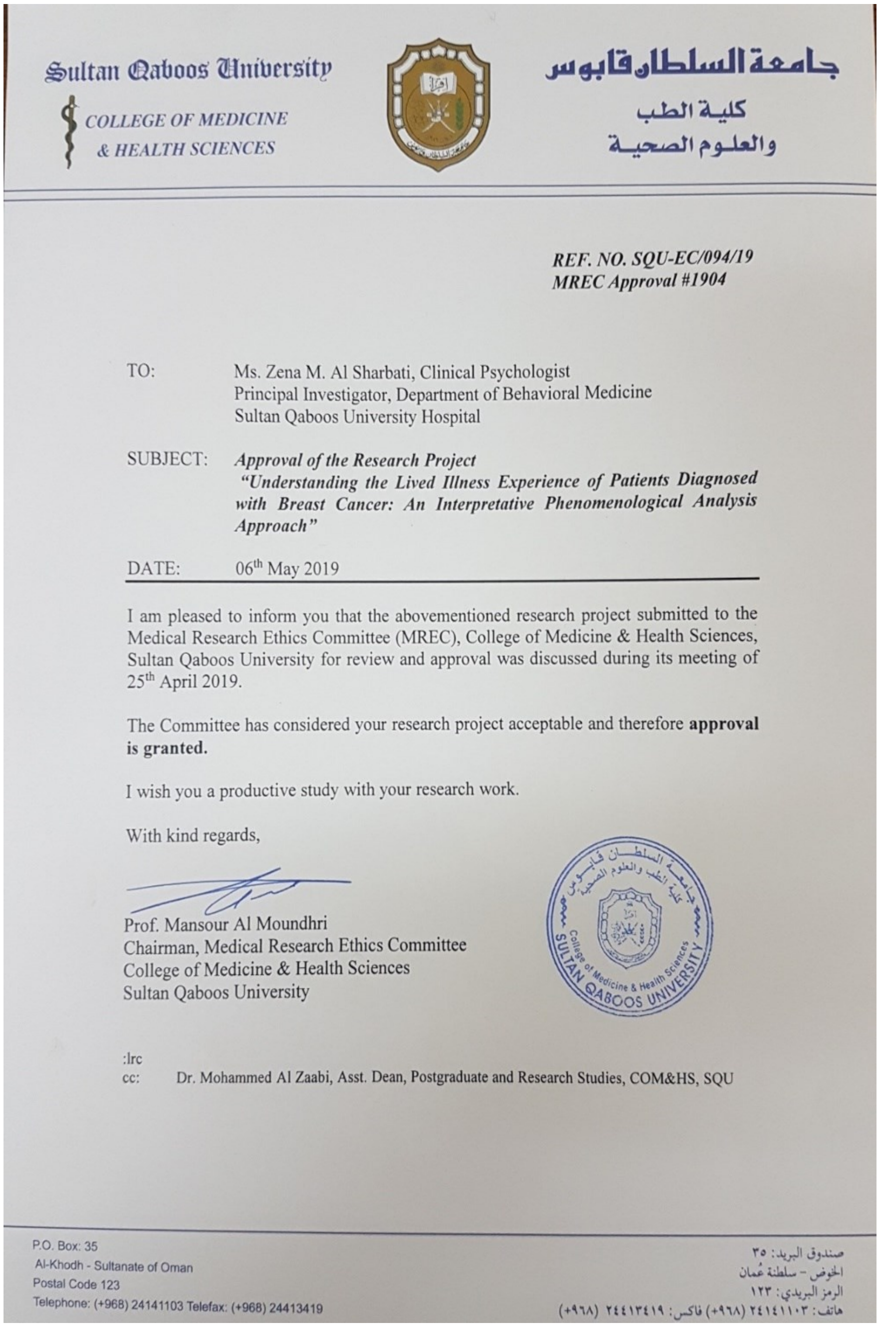
Sultan Qaboos University ethical approval of qualitative study



Sultan Qaboos University
COLLEGE OF MEDICINE
& HEALTH SCIENCES

جامعة السلطان قابوس
كلية الطب
والعلوم الصحية

REF. NO. SQU-EC/094/19
MREC Approval #1904

TO: Ms. Zena M. Al Sharbati, Clinical Psychologist
Principal Investigator, Department of Behavioral Medicine
Sultan Qaboos University Hospital

SUBJECT: *Approval of the Research Project*
"Understanding the Lived Illness Experience of Patients Diagnosed with Breast Cancer: An Interpretative Phenomenological Analysis Approach"

DATE: 06th May 2019

I am pleased to inform you that the abovementioned research project submitted to the Medical Research Ethics Committee (MREC), College of Medicine & Health Sciences, Sultan Qaboos University for review and approval was discussed during its meeting of 25th April 2019.

The Committee has considered your research project acceptable and therefore **approval is granted.**

I wish you a productive study with your research work.

With kind regards,

Prof. Mansour Al Moundhri
Chairman, Medical Research Ethics Committee
College of Medicine & Health Sciences
Sultan Qaboos University

:lrc
cc: Dr. Mohammed Al Zaabi, Asst. Dean, Postgraduate and Research Studies, COM&HS, SQU

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Al-Khodh - Sultanate of Oman
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صندوق البريد: ٣٥
الخوض - سلطنة عُمان
الرمز البريدي: ١٢٣
هاتف: ٢٤١٤١١٠٣ (+٩٦٨) فاكس: ٢٤٤١٣٤١٩ (+٩٦٨)

University of Strathclyde endorsement the decision of the Sultan Qaboos University's Research Ethics Committee

Endorsement and Sponsorship: UEC19/42: Al-Sharbati/Rasmussen/Hunter: Understanding the lived illness experience of patients diagnosed with breast cancer: An Interpretative Phenomenological Analysis approach

Ethics <ethics@strath.ac.uk> Jun 28, 2019, 10:23 AM

to me, Louise, Susan, Zena, Simon

Dear Zena

I refer to the above study and can confirm that the Convener of the University Ethics Committee (UEC) has endorsed the decision of the Sultan Qaboos University Research Ethics Committee and granted University ethics approval on behalf of the UEC. University insurance has also been confirmed.

The University agrees to act as sponsor of the above mentioned project subject to the following conditions:

1. That the project obtains/has and continues to have University/Departmental Ethics Committee approval.

2. That the project is carried out according to the project protocol.

3. That the project continues to be covered by the University's insurance cover.

4. That the Director of Research and Knowledge Exchange Services is immediately notified of any change to the project protocol or circumstances which may affect the University's risk assessment of the project.

5. That the project starts within 12 months of the date of this letter.

As sponsor of the project the University has responsibilities under the Scottish Executive's Research Governance Framework for Health and Community Care. You should ensure you are aware of those responsibilities and that the project is carried out according to the Research Governance Framework.

I remind you that the Committee must be informed of any changes that are made to the research project, so that they have the opportunity to consider them. The Committee also expects you to report back on the progress and outcome of your project, (by providing to ethics @strath.ac.uk copies of Annual Progress Reports and an Outcome Report) and with an account of anything which may prompt ethical questions for any similar future project and with anything else that you feel the Committee should know.

Any adverse event that occurs during an investigation must be reported as quickly as possible to UEC and, within the required time frame, to Sultan Qaboos University or to any appropriate external agency.

On behalf of the Committee, I wish you success with this project.

Kind regards

Angelique

Angelique Laverty
University Ethics Committee Manager
Research & Knowledge Exchange Services (RKES)

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50 George Street
Glasgow
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The University of Strathclyde is a charitable body, registered in Scotland, with registration number SC015263

APPENDIX 5 Consent forms for the quantitative study

(Arabic Version)

معلومات الدراسة و إقرار المشاركة في الاستبيان

عنوان الموضوع:دور طرق التأقلم الديني وتاثيره على المزاج و جودة الحياة لدى المرضى المصابين بالسرطان

اسماء الباحثين : أ.زينة الشربتي, د.بولين ادير, د.سوزان راسموسان,,بروفيسور سمير العدوي, د.اكرام برني, بروفيسور منصور المنذري.

المكان: قسم الباطنية, مركز العناية اليومية, مستشفى جامعة السلطان قابوس.

السلام عليكم و رحمة الله و بركاته

اخي- اختي - المواطن(ة)

تقوم جامعة السلطان قابوس بعمل دراسة تتعلق باستقصاء دور طرق التعامل الديني و تأثيره على المزاج و جودة الحياة لدى المرضى. نحن نقدر مشاركك في الاستبيان عن طريق ملء هذه الاستمارات و التي تسأل عن طريقة تعاملك مع المرض و شعورك خلال اليوم و جودة حياتك. ان هناك فوائد جمة للمشاركة حيث سوف تمكننا من مساعدة قسم الباطنية فهم احتياجات المرضى النفسية لتقديم افضل الخدمات النفسية لهم.

في حال وافقت على المشاركة في هذه الاستبيان، سيبقى إسمك طي الكتمان . لن يكون لأي شخص، حق الإطلاع على ملفك الطبي باستثناء المذكورة اسماءهم اعلاه.

موافقة الباحث:

لقد شرحت بالتفصيل للمشترك في الاستبيان ل__________________________ (اسم المشترك) طبيعته ومجرياته. ولقد أجبت على كل أسئلته بوضوح على خير ما أستطيع. وسوف أعلم المشترك بأي تغييرات في مجرياته أو فوائده في حال حصولها أثناء البحث.

________________________ ______________________________

إسم الباحث توقيع الباحث

____

التاريخ

موافقة المشترك:

لقد قرأت استمارة القبول هذه وفهمت مضمونها. تمت الأجابة على أسئلتي جميعها. وبناء عليه فأنني، حرا مختارا، أجيز إجراء هذا الاستبيان و أوافق على الإشتراك فيه، وإني أعلم ان ________________________ و مساعديه سيكونون مستعدين للإجابة على أسئلتي و يمكنني الاتصال بهم على المحول (4367, 1150) . كما أعرف تمام المعرفة بانني حر في الإنسحاب من هذا الاستبيان متى شئت حتى بعد التوقيع على الموافقة دون ان يؤثر ذلك على العناية الطبية المقدمة لي.

________________________ ________________________

إسم المشترك توقيع المشترك

____

التاريخ

(English Version)

Study Information and Consent Form

Study Title: The role of religious coping strategies on mood and quality of life among Omani patients diagnosed with breast cancer.

Researchers: Zena Al-Sharbati, Pauline Adair, Susan Rasmussen, Samir Al-Adawi, Ikram Burney, Mansour Al-Moundhri

Location: Dept of Medicine, Day Care Unit, Sultan Qaboos University Hospital

Alsalam Alaikum

Dear Citizen,

We are conducting a study on the relationship between religious coping strategies and its influence on mood and quality of life. We appreciate your participation in this study by completing these questionnaires which may take about 40 minutes of your time. The questionnaire asks you to learn about your use of religious coping strategies and how you feel during the day and the quality of your life. The purpose of the study is to help the Department of Medicine to better understand patients' emotional needs and their use of religious coping skills so that we can develop and provide the best psychological services in the future that are sensitive to the religious aspect.

All the information you volunteer will remain confidential and secure at all times and only the study researchers will have access to it. If at any time you wish to withdraw from the study you are free to do so and there will be no personal or medical consequences to your withdrawal and your data will be destroyed.

If you have any questions or concerns about the study then please contact us:

Zena Al-Sharbati – 2414-4367

Researcher's consent:

I have explained to the participant -------------------------------- the nature of the study and I have answered all of her/his questions. I will inform the participant if there are any changes to the research protocol.

Name of participant:___________________

Signature of participant:____________________

Date:___________

Participant consent:

I have read the consent form and I understood its content. All of my questions have been answered. I consent to taking part in this survey, and I am aware that I can contact the study researchers at anytime to answer my questions. I am aware that I can withdraw from the research at any time even after signing this consent form without any negative personal or medical consequences to me.

Name of participant:___________________

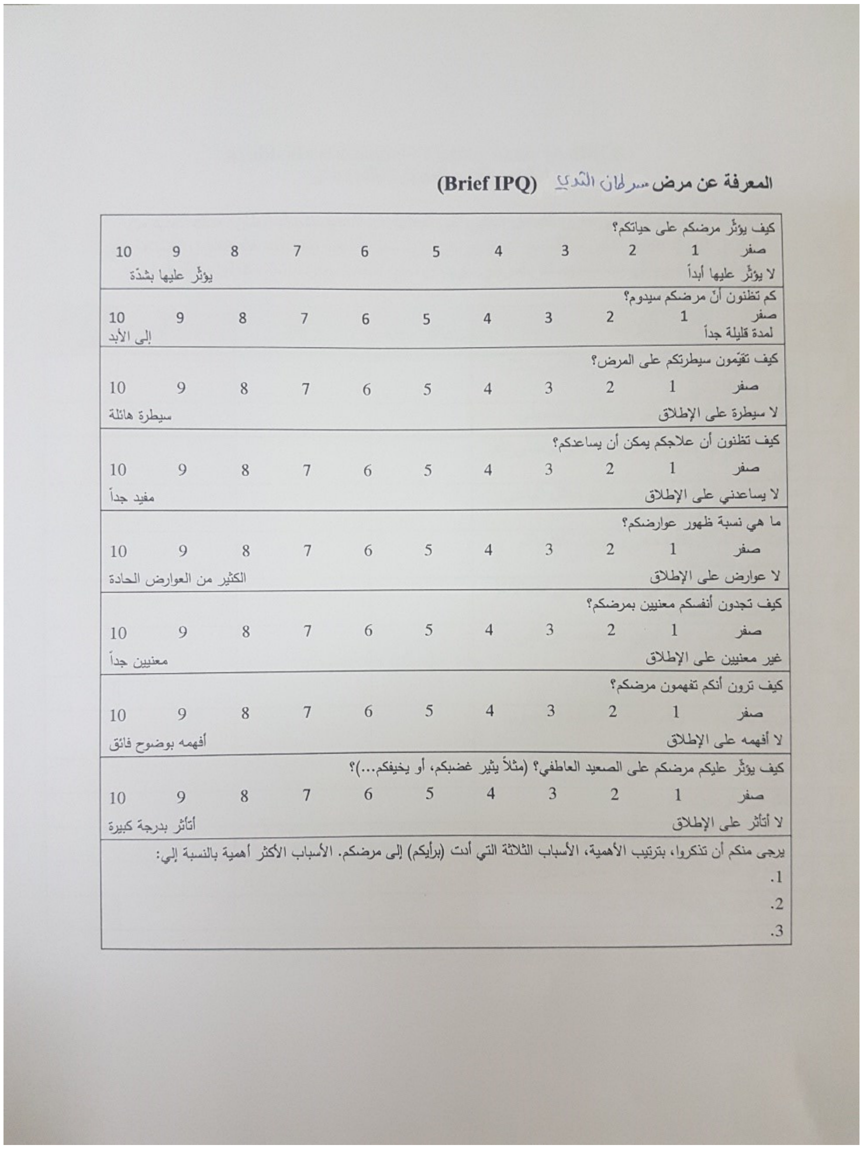
Signature of participant:__________________

Date:___________

APPENDIX 6 Questionnaires used for the quantitative study

(Arabic Version)

Arabic- Brief Illness Perceptions Questionnaire



المعرفة عن مرض سرطان الثدي **(Brief IPQ)**

كيف يؤثّر مرضكم على حياتكم؟
صفر 1 2 3 4 5 6 7 8 9 10
لا يؤثّر عليها أبداً يؤثّر عليها بشدّة

كم تظنون أنّ مرضكم سيدوم؟
صفر 1 2 3 4 5 6 7 8 9 10
لمدة قليلة جداً إلى الأبد

كيف تقيّمون سيطرتكم على المرض؟
صفر 1 2 3 4 5 6 7 8 9 10
لا سيطرة على الإطلاق سيطرة هائلة

كيف تظنون أن علاجكم يمكن أن يساعدكم؟
صفر 1 2 3 4 5 6 7 8 9 10
لا يساعدني على الإطلاق مفيد جداً

ما هي نسبة ظهور عوارضكم؟
صفر 1 2 3 4 5 6 7 8 9 10
لا عوارض على الإطلاق الكثير من العوارض الحادة

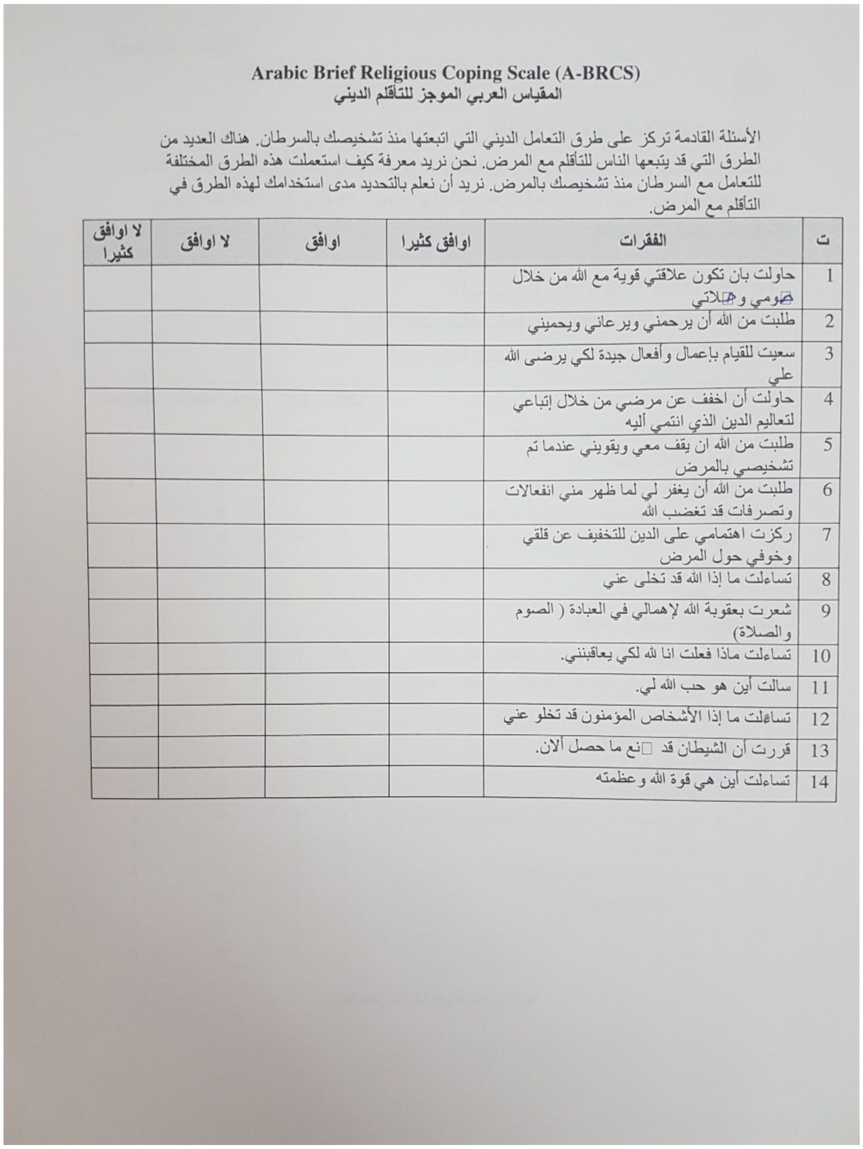
كيف تجدون أنفسكم معنيين بمرضكم؟
صفر 1 2 3 4 5 6 7 8 9 10
غير معنيين على الإطلاق معنيين جداً

كيف ترون أنكم تفهمون مرضكم؟
صفر 1 2 3 4 5 6 7 8 9 10
لا أفهمه على الإطلاق أفهمه بوضوح فائق

كيف يؤثّر عليكم مرضكم على الصعيد العاطفي؟ (مثلاً يثير غضبكم، أو يخيفكم...)؟
صفر 1 2 3 4 5 6 7 8 9 10
لا أتأثر على الإطلاق أتأثر بدرجة كبيرة

يرجى منكم أن تذكروا، بترتيب الأهمية، الأسباب الثلاثة التي أدت (برأيكم) إلى مرضكم. الأسباب الأكثر أهمية بالنسبة إلي:
.1
.2
.3

Arabic version of the Brief RCOPE (the Arabic Brief Religious Coping Scale)



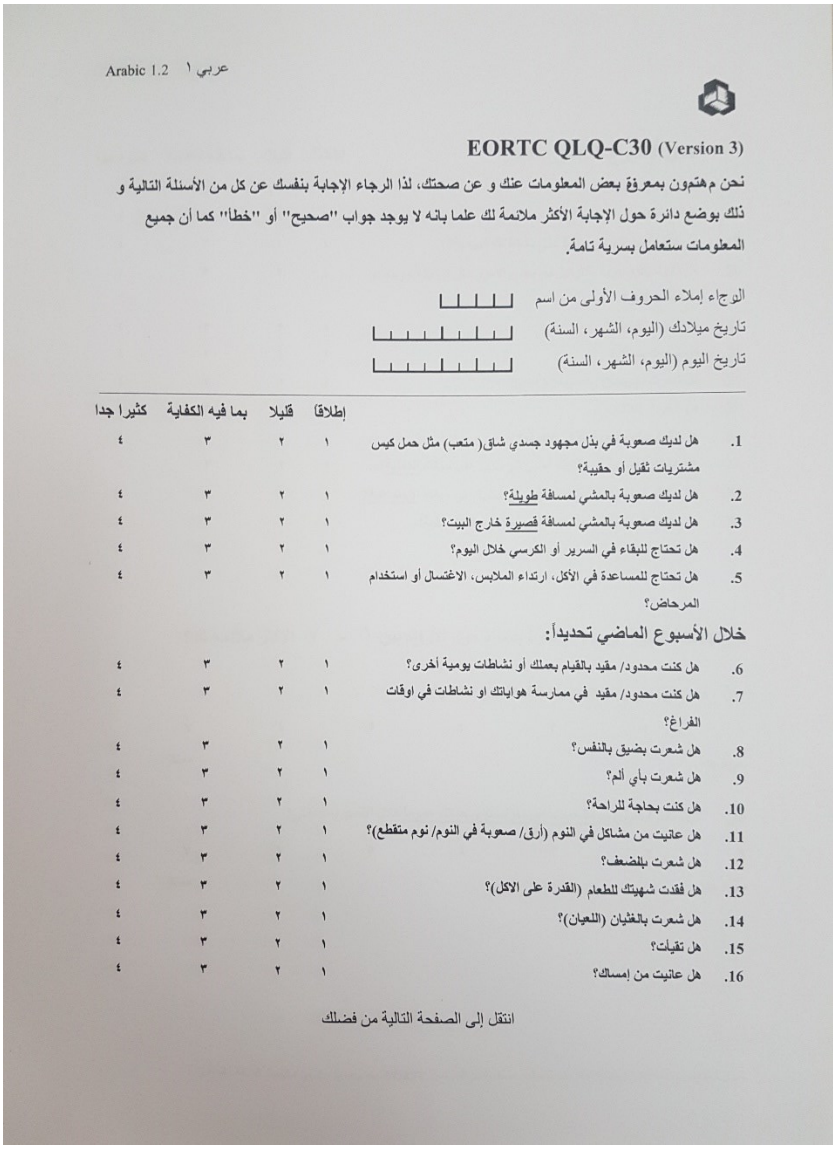
Arabic Brief Religious Coping Scale (A-BRCS)

المقياس العربي الموجز للتأقلم الديني

الأسئلة القادمة تركز على طرق التعامل الديني التي اتبعتها منذ تشخيصك بالسرطان. هناك العديد من الطرق التي قد يتبعها الناس للتأقلم مع المرض. نحن نريد معرفة كيف استعملت هذه الطرق المختلفة للتعامل مع السرطان منذ تشخيصك بالمرض. نريد أن نعلم بالتحديد مدى استخدامك لهذه الطرق في التأقلم مع المرض.

ت	الفقرات	اوافق كثيرا	اوافق	لا اوافق	لا اوافق كثيرا
1	حاولت بان تكون علاقتي قوية مع الله من خلال صومي وصلاتي				
2	طلبت من الله أن يرحمني ويرعاني ويحميني				
3	سعيت للقيام بإعمال وأفعال جيدة لكي يرضى الله علي				
4	حاولت أن اخفف عن مرضي من خلال إتباعي لتعاليم الدين الذي انتمي أليه				
5	طلبت من الله ان يقف معي ويقويني عندما تم تشخيصي بالمرض				
6	طلبت من الله أن يغفر لي لما ظهر مني انفعالات وتصرفات قد تغضب الله				
7	ركزت اهتمامي على الدين للتخفيف عن قلقي وخوفي حول المرض				
8	تساءلت ما إذا الله قد تخلى عني				
9	شعرت بعقوبة الله لإهمالي في العبادة (الصوم والصلاة)				
10	تساءلت ماذا فعلت انا لله لكي يعاقبنني.				
11	سالت أين هو حب الله لي.				
12	تساءلت ما إذا الأشخاص المؤمنون قد تخلو عني				
13	قررت أن الشيطان قد □نع ما حصل ألان.				
14	تساءلت أين هي قوة الله وعظمته				

Arabic version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (version 3) (Page 1)



Arabic 1.2 عربي ١

EORTC QLQ-C30 (Version 3)

نحن م هتمون بمعروة بعض المعلومات عنك و عن صحتك، لذا الرجاء الإجابة بنفسك عن كل من الأسئلة التالية و ذلك بوضع دائرة حول الإجابة الأكثر ملائمة لك علما بانه لا يوجد جواب "صحيح" أو "خطأ" كما أن جميع المعلومات ستعامل بسرية تامة.

الوجاء إملاء الحروف الأولى من اسم ⎿⏌⏌⏌⏌
تاريخ ميلادك (اليوم، الشهر، السنة) ⎿⏌⏌⏌⏌⏌⏌⏌⏌
تاريخ اليوم (اليوم، الشهر، السنة) ⎿⏌⏌⏌⏌⏌⏌⏌⏌

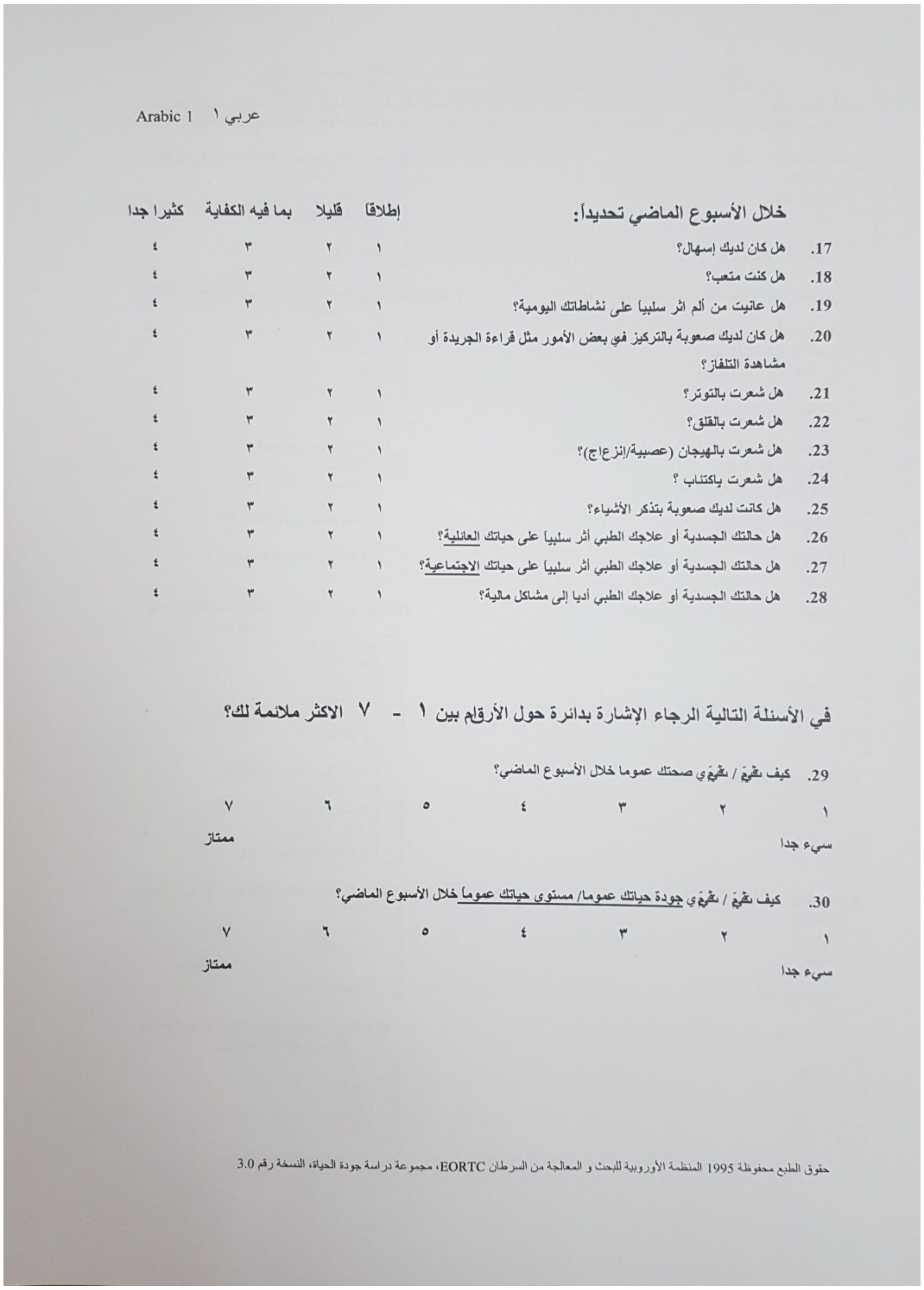
	إطلاقا	قليلا	بما فيه الكفاية	كثيرا جدا
1. هل لديك صعوبة في بذل مجهود جسدي شاق(متعب) مثل حمل كيس مشتريات ثقيل أو حقيبة؟	١	٢	٣	٤
2. هل لديك صعوبة بالمشي لمسافة طويلة؟	١	٢	٣	٤
3. هل لديك صعوبة بالمشي لمسافة قصيرة خارج البيت؟	١	٢	٣	٤
4. هل تحتاج للبقاء في السرير أو الكرسي خلال اليوم؟	١	٢	٣	٤
5. هل تحتاج للمساعدة في الأكل، ارتداء الملابس، الاغتسال أو استخدام المرحاض؟	١	٢	٣	٤

خلال الأسبوع الماضي تحديداً:

6. هل كنت محدود/ مقيد بالقيام بعملك أو نشاطات يومية أخرى؟	١	٢	٣	٤
7. هل كنت محدود/ مقيد في ممارسة هواياتك او نشاطات في اوقات الفراغ؟	١	٢	٣	٤
8. هل شعرت بضيق بالنفس؟	١	٢	٣	٤
9. هل شعرت بأي ألم؟	١	٢	٣	٤
10. هل كنت بحاجة للراحة؟	١	٢	٣	٤
11. هل عانيت من مشاكل في النوم (أرق/ صعوبة في النوم/ نوم متقطع)؟	١	٢	٣	٤
12. هل شعرت بالضعف؟	١	٢	٣	٤
13. هل فقدت شهيتك للطعام (القدرة على الاكل)؟	١	٢	٣	٤
14. هل شعرت بالغثيان (اللعيان)؟	١	٢	٣	٤
15. هل تقيأت؟	١	٢	٣	٤
16. هل عانيت من إمساك؟	١	٢	٣	٤

انتقل إلى الصفحة التالية من فضلك

Arabic version of the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (version 3) (Page 2)



Arabic 1 عربي ١

خلال الأسبوع الماضي تحديداً:

		إطلاقا	قليلا	بما فيه الكفاية	كثيرا جدا
17.	هل كان لديك إسهال؟	١	٢	٣	٤
18.	هل كنت متعب؟	١	٢	٣	٤
19.	هل عانيت من ألم اثر سلبياً على نشاطاتك اليومية؟	١	٢	٣	٤
20.	هل كان لديك صعوبة بالتركيز في بعض الأمور مثل قراءة الجريدة أو مشاهدة التلفاز؟	١	٢	٣	٤
21.	هل شعرت بالتوتر؟	١	٢	٣	٤
22.	هل شعرت بالقلق؟	١	٢	٣	٤
23.	هل شعرت بالهيجان (عصبية/إنزعاج)؟	١	٢	٣	٤
24.	هل شعرت باكتئاب ؟	١	٢	٣	٤
25.	هل كانت لديك صعوبة بتذكر الأشياء؟	١	٢	٣	٤
26.	هل حالتك الجسدية أو علاجك الطبي أثر سلبياً على حياتك العائلية؟	١	٢	٣	٤
27.	هل حالتك الجسدية أو علاجك الطبي أثر سلبياً على حياتك الاجتماعية؟	١	٢	٣	٤
28.	هل حالتك الجسدية أو علاجك الطبي أديا إلى مشاكل مالية؟	١	٢	٣	٤

في الأسئلة التالية الرجاء الإشارة بدائرة حول الأرقام بين ١ - ٧ الاكثر ملائمة لك؟

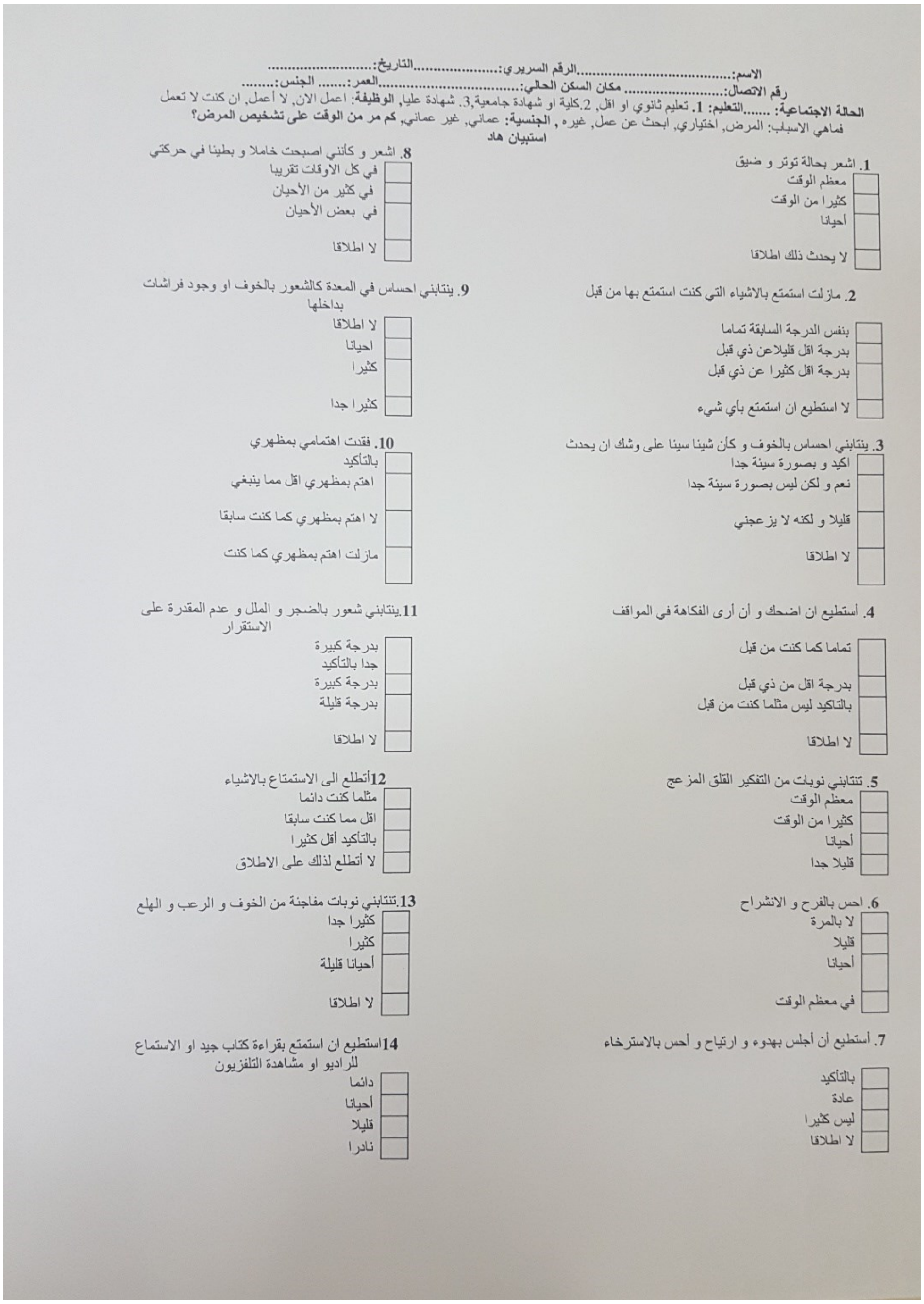
29. كيف تقيّمَ / تقيّمَي صحتك عموما خلال الأسبوع الماضي؟

١	٢	٣	٤	٥	٦	٧
سيء جدا						ممتاز

30. كيف تقيّمَ / تقيّمَي جودة حياتك عموما/ مستوى حياتك عموماً خلال الأسبوع الماضي؟

١	٢	٣	٤	٥	٦	٧
سيء جدا						ممتاز

The Arabic version of the Hospital Anxiety and Depression Scale



الاسم:.......................................**الرقم السريري:**.....................**التاريخ:**.........................
رقم الاتصال:........................ **مكان السكن الحالي:**..................................**العمر:**....... **الجنس:**........
الحالة الاجتماعية: ......**التعليم: 1.** تعليم ثانوي او اقل, 2.كلية او شهادة جامعية,3. شهادة عليا, **الوظيفة:** اعمل الان, لا أعمل, ان كنت لا تعمل
فماهي الاسباب: المرض, اختياري, ابحث عن عمل, غيره , **الجنسية:** عماني, غير عماني, **كم مر من الوقت على تشخيص المرض؟**

استبيان هاد

1. اشعر بحالة توتر و ضيق
☐ معظم الوقت
☐ كثيرا من الوقت
☐ أحيانا
☐ لا يحدث ذلك اطلاقا

2. مازلت استمتع بالاشياء التي كنت استمتع بها من قبل
☐ بنفس الدرجة السابقة تماما
☐ بدرجة اقل قليلاعن ذي قبل
☐ بدرجة اقل كثيرا عن ذي قبل
☐ لا استطيع ان استمتع باي شيء

3. ينتابني احساس بالخوف و كأن شينا سينا على وشك ان يحدث
☐ اكيد و بصورة سيئة جدا
☐ نعم و لكن ليس بصورة سيئة جدا
☐ قليلا و لكنه لا يزعجني
☐ لا اطلاقا

4. أستطيع ان اضحك و أن أرى الفكاهة في المواقف
☐ تماما كما كنت من قبل
☐ بدرجة اقل من ذي قبل
☐ بالتاكيد ليس مثلما كنت من قبل
☐ لا اطلاقا

5. تنتابني نوبات من التفكير القلق المزعج
☐ معظم الوقت
☐ كثيرا من الوقت
☐ أحيانا
☐ قليلا جدا

6. احس بالفرح و الانشراح
☐ لا بالمرة
☐ قليلا
☐ أحيانا
☐ في معظم الوقت

7. أستطيع أن أجلس بهدوء و ارتياح و أحس بالاسترخاء
☐ بالتأكيد
☐ عادة
☐ ليس كثيرا
☐ لا اطلاقا

8. اشعر و كأنني اصبحت خاملا و بطينا في حركتي
☐ في كل الاوقات تقريبا
☐ في كثير من الأحيان
☐ في بعض الأحيان
☐ لا اطلاقا

9. ينتابني احساس في المعدة كالشعور بالخوف او وجود فراشات بداخلها
☐ لا اطلاقا
☐ احيانا
☐ كثيرا
☐ كثيرا جدا

10. فقدت اهتمامي بمظهري
☐ بالتأكيد
☐ اهتم بمظهري اقل مما ينبغي
☐ لا اهتم بمظهري كما كنت سابقا
☐ مازلت اهتم بمظهري كما كنت

11.ينتابني شعور بالضجر و الملل و عدم المقدرة على الاستقرار
☐ بدرجة كبيرة جدا بالتأكيد
☐ بدرجة كبيرة
☐ بدرجة قليلة
☐ لا اطلاقا

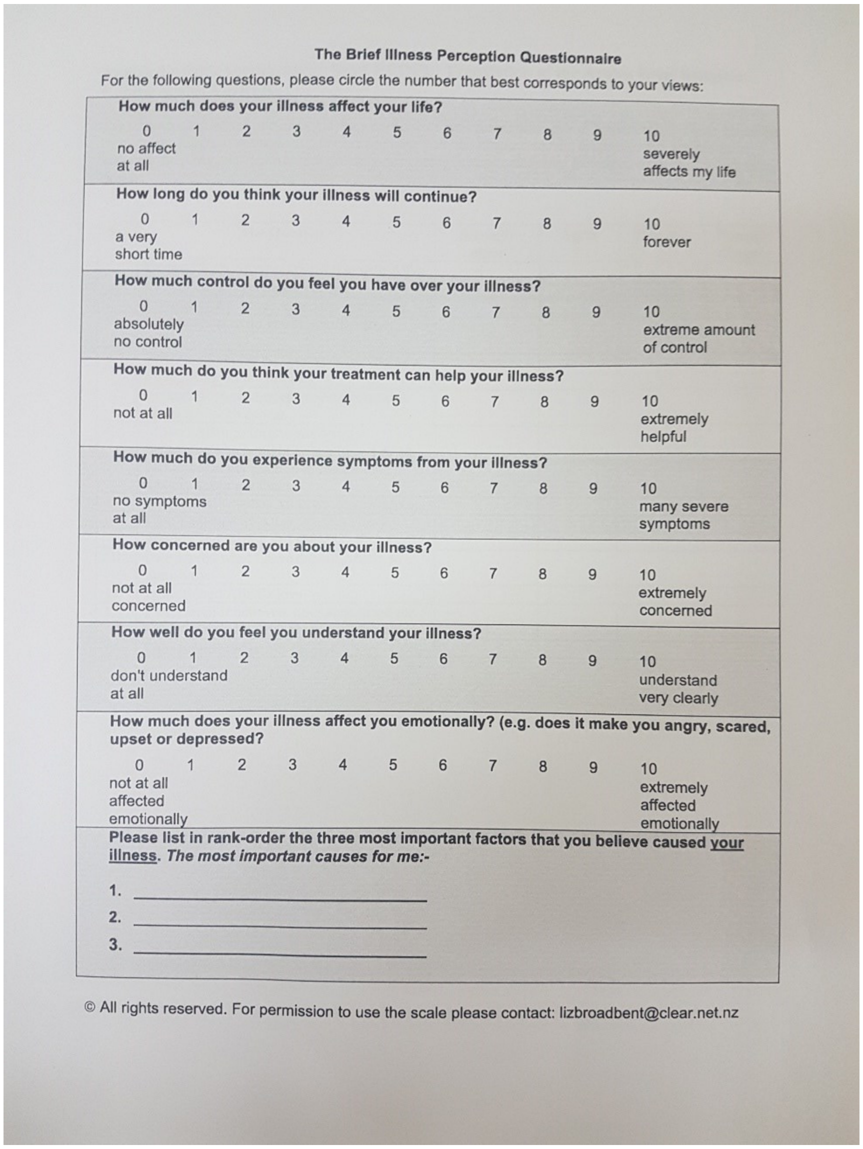
12أتطلع الى الاستمتاع بالاشياء
☐ مثلما كنت دائما
☐ اقل مما كنت سابقا
☐ بالتأكيد أقل كثيرا
☐ لا أتطلع لذلك على الاطلاق

13.تنتابني نوبات مفاجئة من الخوف و الرعب و الهلع
☐ كثيرا جدا
☐ كثيرا
☐ أحيانا قليلة
☐ لا اطلاقا

14استطيع ان استمتع بقراءة كتاب جيد او الاستماع للراديو او مشاهدة التلفزيون
☐ دائما
☐ أحيانا
☐ قليلا
☐ نادرا

(English Version)

Brief Illness Perceptions Questionnaire



The Brief Illness Perception Questionnaire

For the following questions, please circle the number that best corresponds to your views:

How much does your illness affect your life?

0 1 2 3 4 5 6 7 8 9 10

0 no affect at all — 10 severely affects my life

How long do you think your illness will continue?

0 1 2 3 4 5 6 7 8 9 10

0 a very short time — 10 forever

How much control do you feel you have over your illness?

0 1 2 3 4 5 6 7 8 9 10

0 absolutely no control — 10 extreme amount of control

How much do you think your treatment can help your illness?

0 1 2 3 4 5 6 7 8 9 10

0 not at all — 10 extremely helpful

How much do you experience symptoms from your illness?

0 1 2 3 4 5 6 7 8 9 10

0 no symptoms at all — 10 many severe symptoms

How concerned are you about your illness?

0 1 2 3 4 5 6 7 8 9 10

0 not at all concerned — 10 extremely concerned

How well do you feel you understand your illness?

0 1 2 3 4 5 6 7 8 9 10

0 don't understand at all — 10 understand very clearly

How much does your illness affect you emotionally? (e.g. does it make you angry, scared, upset or depressed?

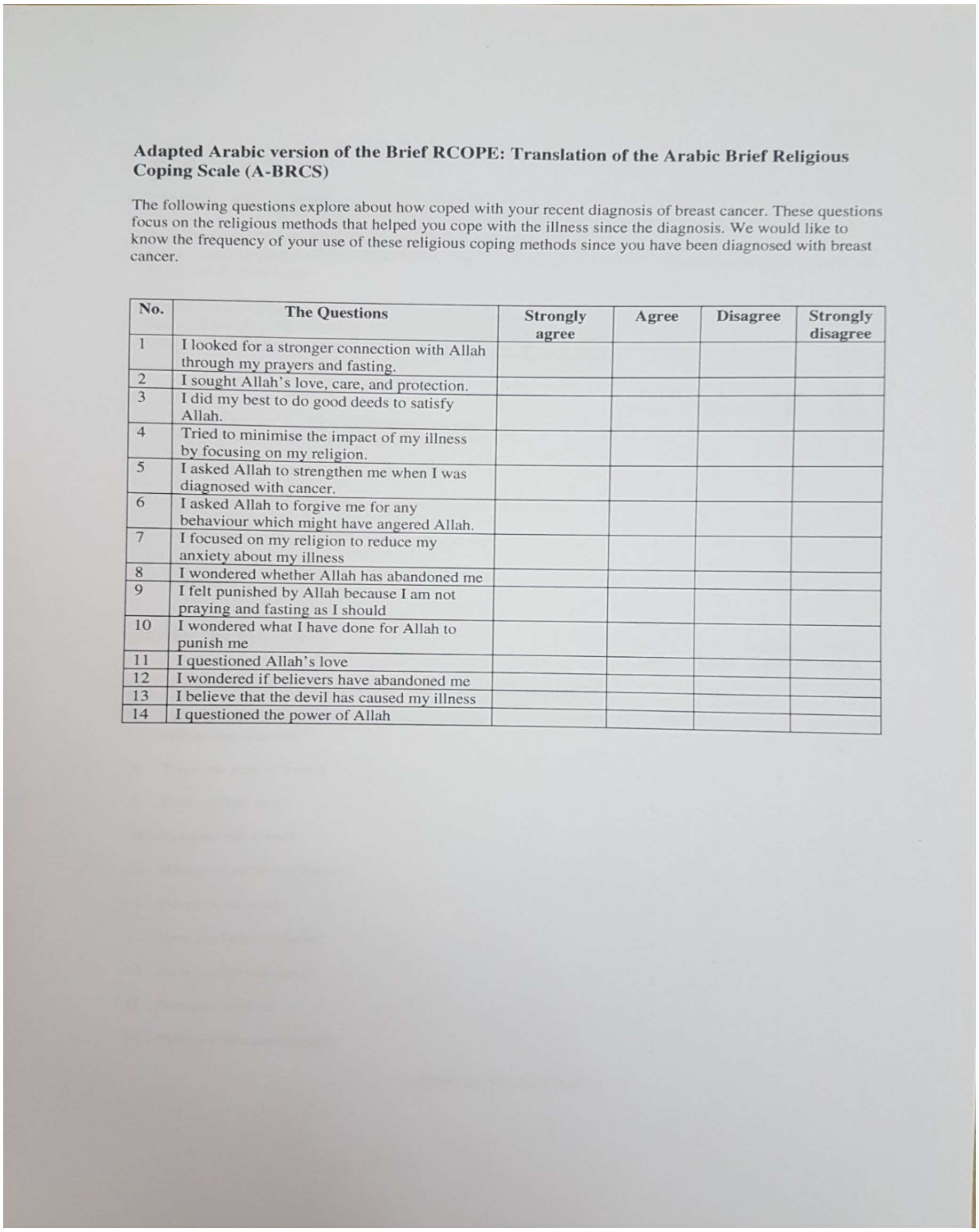
0 1 2 3 4 5 6 7 8 9 10

0 not at all affected emotionally — 10 extremely affected emotionally

Please list in rank-order the three most important factors that you believe caused <u>your illness</u>. *The most important causes for me:-*

1. ______________________________
2. ______________________________
3. ______________________________

Arabic version of the Brief RCOPE (the Arabic Brief Religious Coping Scale)

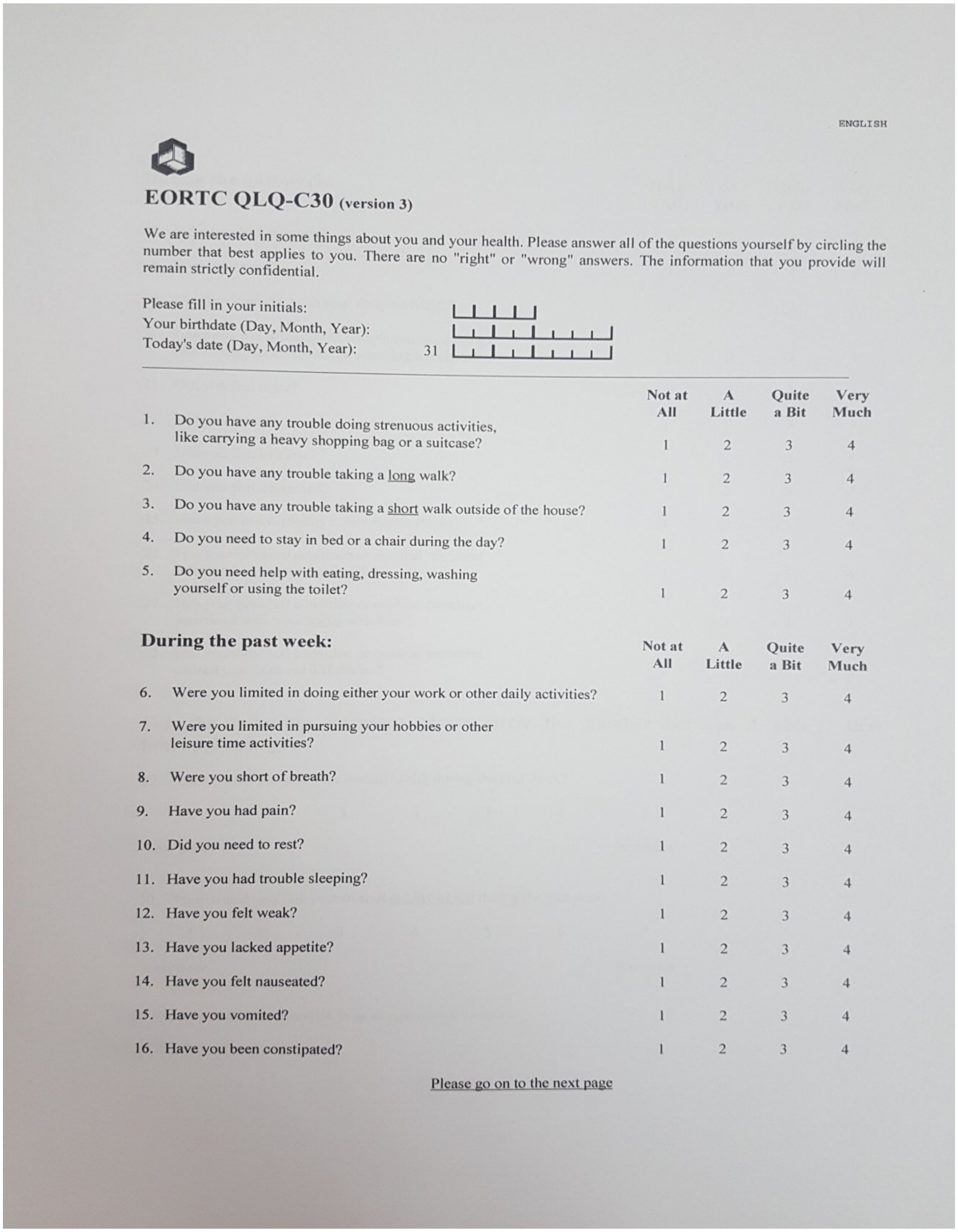


Adapted Arabic version of the Brief RCOPE: Translation of the Arabic Brief Religious Coping Scale (A-BRCS)

The following questions explore about how coped with your recent diagnosis of breast cancer. These questions focus on the religious methods that helped you cope with the illness since the diagnosis. We would like to know the frequency of your use of these religious coping methods since you have been diagnosed with breast cancer.

No.	The Questions	Strongly agree	Agree	Disagree	Strongly disagree
1	I looked for a stronger connection with Allah through my prayers and fasting.				
2	I sought Allah's love, care, and protection.				
3	I did my best to do good deeds to satisfy Allah.				
4	Tried to minimise the impact of my illness by focusing on my religion.				
5	I asked Allah to strengthen me when I was diagnosed with cancer.				
6	I asked Allah to forgive me for any behaviour which might have angered Allah.				
7	I focused on my religion to reduce my anxiety about my illness				
8	I wondered whether Allah has abandoned me				
9	I felt punished by Allah because I am not praying and fasting as I should				
10	I wondered what I have done for Allah to punish me				
11	I questioned Allah's love				
12	I wondered if believers have abandoned me				
13	I believe that the devil has caused my illness				
14	I questioned the power of Allah				

European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (version 3) (Page 1)



ENGLISH

EORTC QLQ-C30 (version 3)

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

Please fill in your initials:
Your birthdate (Day, Month, Year):
Today's date (Day, Month, Year): 31

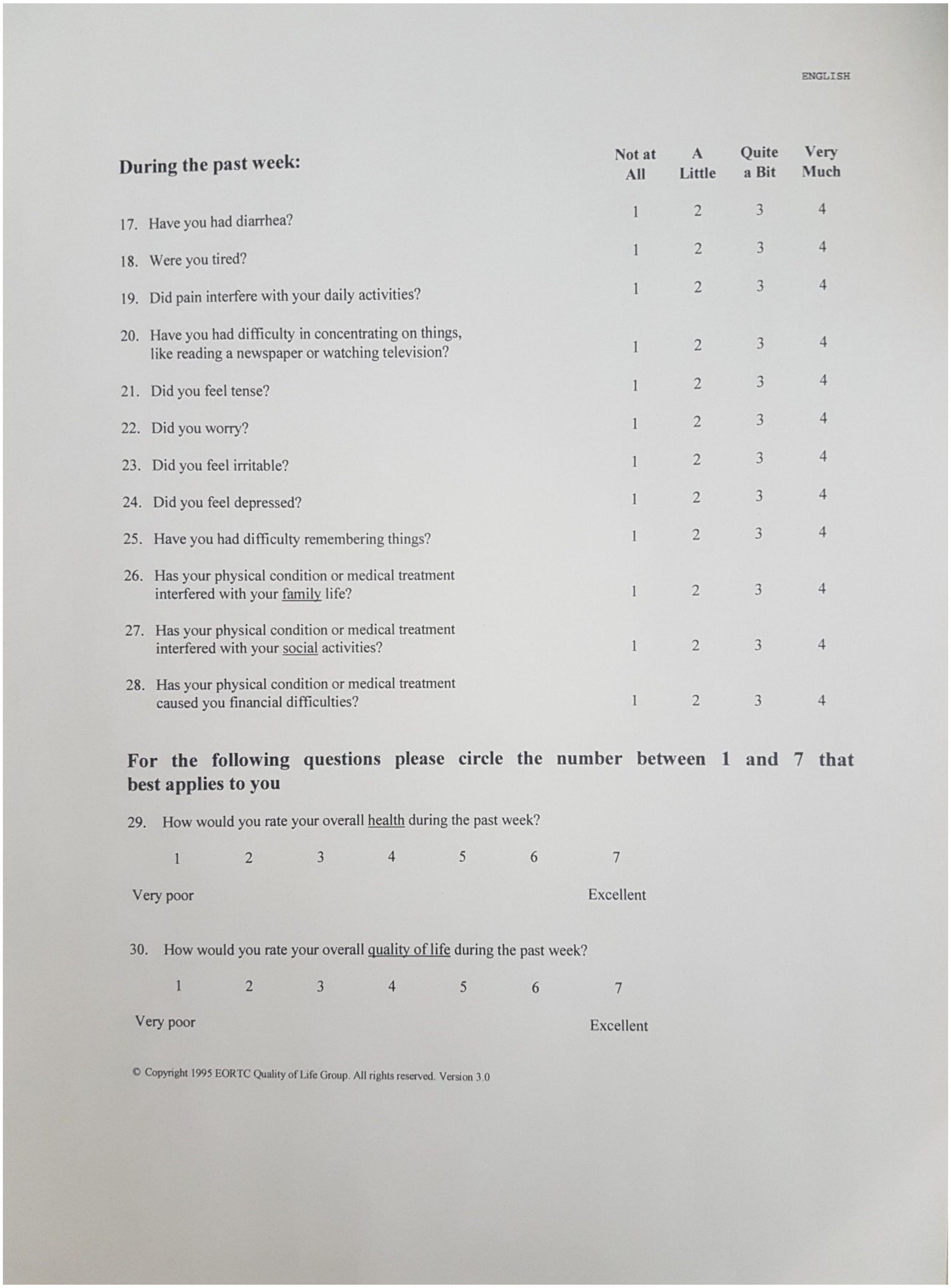
		Not at All	A Little	Quite a Bit	Very Much
1.	Do you have any trouble doing strenuous activities, like carrying a heavy shopping bag or a suitcase?	1	2	3	4
2.	Do you have any trouble taking a long walk?	1	2	3	4
3.	Do you have any trouble taking a short walk outside of the house?	1	2	3	4
4.	Do you need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

During the past week:

		Not at All	A Little	Quite a Bit	Very Much
6.	Were you limited in doing either your work or other daily activities?	1	2	3	4
7.	Were you limited in pursuing your hobbies or other leisure time activities?	1	2	3	4
8.	Were you short of breath?	1	2	3	4
9.	Have you had pain?	1	2	3	4
10.	Did you need to rest?	1	2	3	4
11.	Have you had trouble sleeping?	1	2	3	4
12.	Have you felt weak?	1	2	3	4
13.	Have you lacked appetite?	1	2	3	4
14.	Have you felt nauseated?	1	2	3	4
15.	Have you vomited?	1	2	3	4
16.	Have you been constipated?	1	2	3	4

Please go on to the next page

European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (version 3) (Page 2)



ENGLISH

During the past week:	**Not at All**	**A Little**	**Quite a Bit**	**Very Much**
17. Have you had diarrhea?	1	2	3	4
18. Were you tired?	1	2	3	4
19. Did pain interfere with your daily activities?	1	2	3	4
20. Have you had difficulty in concentrating on things, like reading a newspaper or watching television?	1	2	3	4
21. Did you feel tense?	1	2	3	4
22. Did you worry?	1	2	3	4
23. Did you feel irritable?	1	2	3	4
24. Did you feel depressed?	1	2	3	4
25. Have you had difficulty remembering things?	1	2	3	4
26. Has your physical condition or medical treatment interfered with your <u>family</u> life?	1	2	3	4
27. Has your physical condition or medical treatment interfered with your <u>social</u> activities?	1	2	3	4
28. Has your physical condition or medical treatment caused you financial difficulties?	1	2	3	4

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

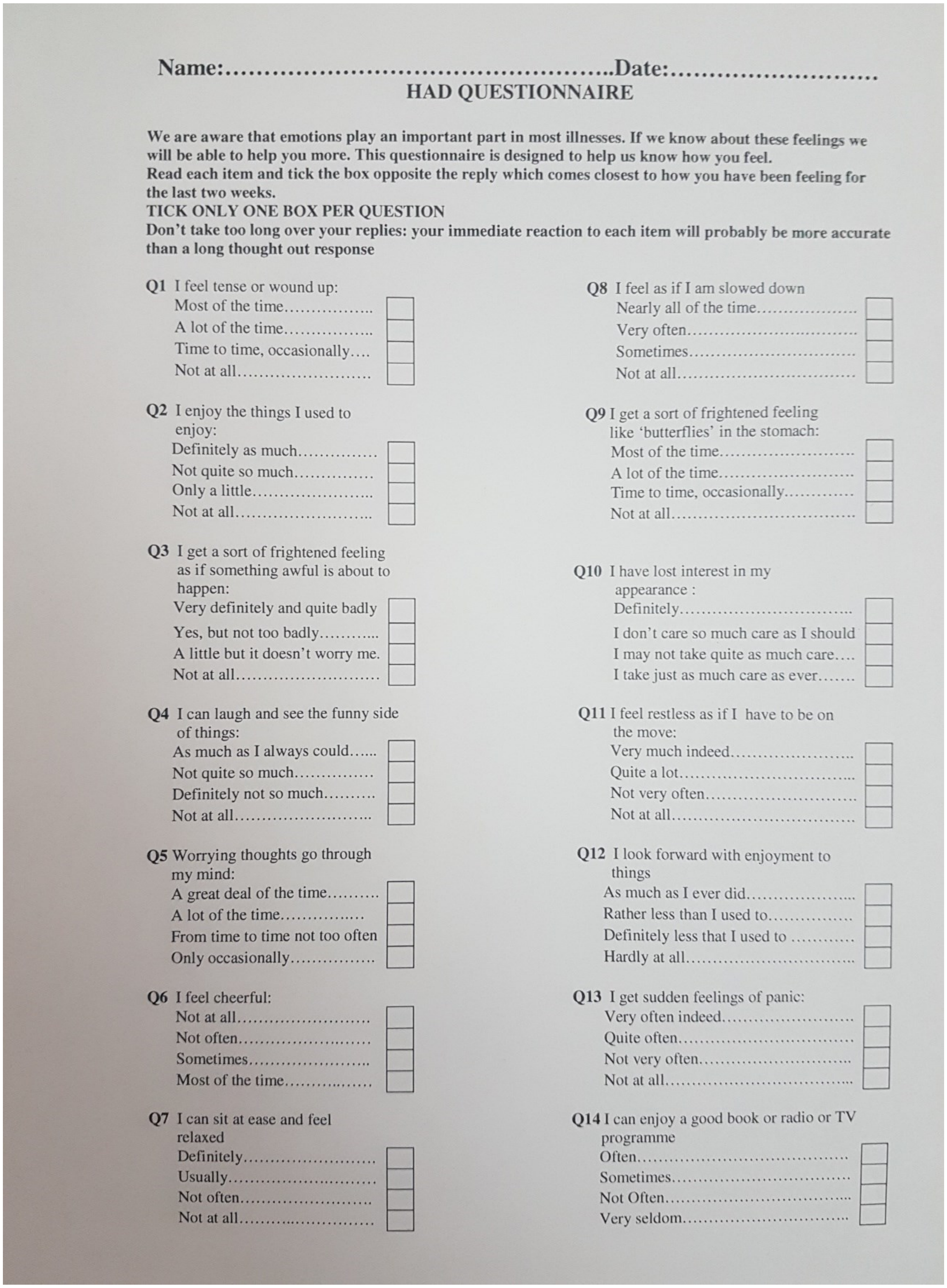
29. How would you rate your overall health during the past week?

1	2	3	4	5	6	7
Very poor						Excellent

30. How would you rate your overall quality of life during the past week?

1	2	3	4	5	6	7
Very poor						Excellent

The Hospital Anxiety and Depression Scale



Name:………………………………………..Date:………………………

HAD QUESTIONNAIRE

We are aware that emotions play an important part in most illnesses. If we know about these feelings we will be able to help you more. This questionnaire is designed to help us know how you feel.
Read each item and tick the box opposite the reply which comes closest to how you have been feeling for the last two weeks.
TICK ONLY ONE BOX PER QUESTION
Don't take too long over your replies: your immediate reaction to each item will probably be more accurate than a long thought out response

Q1 I feel tense or wound up:
- Most of the time…………….. ☐
- A lot of the time…………….. ☐
- Time to time, occasionally…. ☐
- Not at all……………………. ☐

Q2 I enjoy the things I used to enjoy:
- Definitely as much…………… ☐
- Not quite so much…………… ☐
- Only a little………………….. ☐
- Not at all…………………….. ☐

Q3 I get a sort of frightened feeling as if something awful is about to happen:
- Very definitely and quite badly ☐
- Yes, but not too badly……….. ☐
- A little but it doesn't worry me. ☐
- Not at all……………………… ☐

Q4 I can laugh and see the funny side of things:
- As much as I always could…... ☐
- Not quite so much…………… ☐
- Definitely not so much………. ☐
- Not at all…………………….. ☐

Q5 Worrying thoughts go through my mind:
- A great deal of the time………. ☐
- A lot of the time…………….. ☐
- From time to time not too often ☐
- Only occasionally……………. ☐

Q6 I feel cheerful:
- Not at all……………………. ☐
- Not often……………………. ☐
- Sometimes………………….. ☐
- Most of the time……………. ☐

Q7 I can sit at ease and feel relaxed
- Definitely……………………. ☐
- Usually………………………. ☐
- Not often……………………. ☐
- Not at all……………………. ☐

Q8 I feel as if I am slowed down
- Nearly all of the time………………. ☐
- Very often………………………….. ☐
- Sometimes………………………… ☐
- Not at all…………………………… ☐

Q9 I get a sort of frightened feeling like 'butterflies' in the stomach:
- Most of the time……………………. ☐
- A lot of the time……………………. ☐
- Time to time, occasionally………… ☐
- Not at all……………………………. ☐

Q10 I have lost interest in my appearance :
- Definitely………………………….. ☐
- I don't care so much care as I should ☐
- I may not take quite as much care…. ☐
- I take just as much care as ever……. ☐

Q11 I feel restless as if I have to be on the move:
- Very much indeed………………….. ☐
- Quite a lot………………………….. ☐
- Not very often……………………… ☐
- Not at all……………………………. ☐

Q12 I look forward with enjoyment to things
- As much as I ever did……………….. ☐
- Rather less than I used to……………. ☐
- Definitely less that I used to ……….. ☐
- Hardly at all………………………….. ☐

Q13 I get sudden feelings of panic:
- Very often indeed……………………. ☐
- Quite often……………………………. ☐
- Not very often……………………….. ☐
- Not at all…………………………….... ☐

Q14 I can enjoy a good book or radio or TV programme
- Often…………………………………. ☐
- Sometimes……………………………. ☐
- Not Often…………………………….. ☐
- Very seldom………………………….. ☐

APPENDIX 7 Debriefing form for the quantitative study

(Arabic Version)

<u>بيان المعلومات</u>

دور التأقلم الديني و تأثيره على المزاج و جودة الحياة لدى النساء العمانيات التي تم تشخيصهن بسرطان الثدي

نحن نشكر مشاركتك القيمة في البحث الحالي حول دور التأقلم الديني و تأثيره على جودة الحياة لدى النساء العمانيات المصابات بسرطان الثدي. تهدف هذه الدراسة الى اختبار دور التأقلم الديني في العلاقة بين تصور المرض و علامات القلق و الاكتئاب و جودة الحياة لدى النساء العمانيات المصابات بسرطان الثدي. نحن نكشر مشاركتك القيمة في هذا البحث. نحن نعتقد ان للتعامل الديني دورا مهما في المزاج و جودو الحياة عند هذه الفئة.
اذا كانت لديك أي أسئلة فيمكنك طرحها الان على الباحثة, او بامكانك الاتصال بزينة الشربتي على الرقم: 24144367zenam@squ.edu.om, او التواصل معها عبر الايميل:

في حال كانت لديك أي اعراض ضيق او ضغط نفسي نتيجة مشاركتك في هذه الدراسة, فنحن نشجعك ان تتواصل مع قسم الطب السلوكي العيادة الخارجية, على الرقم 24144410

نحن نشكرك مرة أخرى على مشاركتك القيمة في هذه الدراسة.

(English Version)

Debriefing Form

The role of religious coping strategies on mood and quality of life among Omani women newly diagnosed with breast cancer

Thank you for your participation as a research participant in the present study concerning the role of religious coping strategies on mood and quality of life among Omani women diagnosed with breast cancer. The present study aims to examine the role of religious coping between illness perceptions and symptoms of anxiety, depression, and quality of life among Omani women newly diagnosed with breast cancer. Again, we thank you again for your participation in this study. We expect that religious coping might have a role in influencing the symptoms of anxiety, depression, and quality of life among our population. If you have any questions about this study, please feel free to talk to the researcher at this time, or you can alternatively call Zena Al-Sharbati at 241444367, or email her at: zenam@squ.edu.om

In the event that you feel psychologically distress as a result of your participation in this study, we encourage you to call Behavioual Medicine OPD, SQUH at 24144410.

We thank you again for your participation

APPENDIX 8 Mediation analyses without the inclusion of the emotional items

Direct effects predicting positive religious coping

Path	**B (SE)**	**LLCI, ULCI**	**P**	**R^2**
Consequences	0.34 (0.16)	0.02, 0.66	.004	0.20*
Timeline	-0.69 (0.17)	-1.02, -0.36	0.000	
Personal Control	0.15 (0.15)	-0.14, 0.44	.310	
Treatment Control	0.08 (0.23)	-0.38, 0.53	.740	
Identity	-0.08 (0.15)	-0.38, 0.22	.594	
Coherence	-0.08 (0.17)	-0.41, 0.25	.629	

Direct effects predicting negative religious coping

Path	**B (SE)**	**LLCI, ULCI**	**P**	**R^2**
Consequences	0.22 (0.19)	-0.16, 0.59	0.252	0.13
Timeline	-0.02 (0.19)	-0.41, 0.37	0.914	
Personal Control	-0.16 (0.17)	-0.50, 0.18	0.356	
Treatment Control	-0.19 (0.27)	-0.72, 0.35	0.487	
Identity	0.21 (0.17)	-0.14, 0.56	0.237	
Coherence	-0.06 (0.19)	-0.44, 0.33	0.778	

Mediation analysis predicting anxiety

Path	**Effect**	**B (SE)**	**LLCI, ULCI**	**P**	**R^2**
Positive religious coping	Direct	-0.05 (0.09)	-0.24, 0.13	0.575	0.43 *
Negative religious coping	Direct	0.28 (0.08)	0.12, 0.44	0.000	
Consequences	Direct	0.67 (0.15)	0.37, 0.98	0.000	
Timeline	Direct	0.08 (0.16)	-0.24, 0.40	0.618	
Personal Control	Direct	-0.21 (0.14)	-0.49, 0.07	0.140	
Treatment Control	Direct	-0.12 (0.22)	-0.55, 0.32	0.600	
Identity	Direct	-0.05 (0.14)	-0.33, 0.24	0.750	
Coherence	Direct	0.22 (0.16)	-0.10, 0.53	0.180	

Path	**Indirect effects**	**Effect (SE)**	**LLCI, ULCI**
Consequences	*Via negative religious coping*	0.06 (0.05)	-0.03, 0.17
	Via positive religious coping	-0.02 (0.04)	-0.12, 0.04
Timeline	*Via negative religious coping*	-0.01 (0.07)	-0.15, 0.11
	Via positive religious coping	0.04 (0.07)	-0.06, 0.23
Personal Control	*Via negative religious coping*	-0.05 (0.06)	-0.18, 0.06
	Via positive religious coping	-0.01 (0.02)	-0.09, 0.02
Treatment Control	*Via negative religious coping*	-0.05 (0.10)	-0.25, 0.14
	Via positive religious coping	-0.00 (0.03)	-0.09, 0.03
Identity	*Via negative religious coping*	0.06 (0.05)	-0.03, 0.19
	Via positive religious coping	0.00 (0.02)	-0.01, 0.09
Coherence	*Via negative religious coping*	-0.02 (0.06)	-0.15, 0.09
	Via positive religious coping	0.00 (0.02)	-0.02, 0.07

Mediation analysis predicting depression

Path	Effect	B (SE)	LLCI, ULCI	P	R^2
Positive religious coping	Direct	-0.00 (0.09)	-0.19, 0.18	0.978	0.41*
Negative religious coping	Direct	0.24 (0.08)	0.078, 0.40	0.000	
Consequences	Direct	0.55 (0.15)	0.25, 0.85	0.000	
Timeline	Direct	-0.05 (0.16)	-0.36, 0.26	0.760	
Personal Control	Direct	-0.20 (0.14)	-0.48, 0.07	0.150	
Treatment Control	Direct	-0.10 (0.22)	-0.52, 0.33	0.640	
Identity	Direct	0.37 (0.14)	0.09, 0.65	0.010	
Coherence	Direct	0.20 (0.16)	-0.11, 0.51	0.210	

Path	Indirect Effect	Effect (SE)	LLCI, ULCI
Consequences	*Via negative religious coping*	0.01 (0.02)	-0.01, 0.05
	Via positive religious coping	-0.00 (0.01)	-0.03, 0.02
Timeline	*Via negative religious coping*	-0.01 (0.06)	-0.16, 0.08
	Indirect via positive religious coping	0.00 (0.06)	-0.11, 0.16
Personal Control	*Via negative religious coping*	-0.04 (0.05)	-0.18, 0.04
	Via positive religious coping	-0.00 (0.02)	-0.05, 0.04
Treatment Control	*Via negative religious coping*	-0.04 (0.09)	-0.24, 0.10
	Via positive religious coping	-0.00 (0.02)	-0.06, 0.05
Identity	*Via negative religious coping*	0.05 (0.05)	-0.02, 0.17
	Via positive religious coping	0.00 (0.02)	-0.04, 0.04
Coherence	*Via negative religious coping*	-0.01 (0.05)	-0.13, 0.07
	Via positive religious coping	0.00 (0.02)	-0.04, 0.04

Mediation analysis predicting social functioning

Path	Effect	B (SE)	LLCI, ULCI	P	R^2
Positive religious coping	Direct	0.18 (0.74)	-1.28, 1.65	0.805	0.24*
Negative religious coping	Direct	0.16 (0.63)	-1.10, 1.41	0.806	
Consequences	Direct	-3.07 (1.19)	-5.43, -0.72	0.010	
Timeline	Direct	0.46 (1.30)	-2.11, 3.04	0.720	
Personal Control	Direct	0.48 (1.06)	-1.63, 2.60	0.650	
Treatment Control	Direct	0.03 (1.65)	-3.24, 3.30	0.987	
Identity	Direct	-2.73 (1.08)	-4.87, -0.58	0.010	
Coherence	Direct	1.30 (1.19)	-1.07, 3.67	0.280	

Path	Indirect Effects	Effect (SE)	LLCI, ULCI
Consequences	*Via negative religious coping*	0.02 (0.16)	-0.16, 0.58
	Via positive religious coping	0.06 (0.36)	-0.57, 0.94
Timeline	*Via negative religious coping*	-0.00 (0.13)	-0.30, 0.24
	Via positive religious coping	-0.13 (0.65	-1.70, 0.94
Personal Control	*Via negative religious coping*	-0.03 (0.14)	-0.59, 0.13
	Via positive religious coping	0.03 (0.22)	-0.30, 0.59
Treatment Control	*Via negative religious coping*	-0.03 (0.20)	-0.67, 0.22
	Via positive religious coping	0.01 (0.25)	-0.43, 0.66
Identity	*Via negative religious coping*	0.03(0.14)	-0.16, 0.46
	Via positive religious coping	-0.01 (0.19)	-0.48, 0.20
Coherence	*Via negative religious coping*	-0.01 (0.11)	-0.41, 0.14
	Via positive religious coping	-0.01 (0.20)	-0.48, 0.31

Mediation analysis predicting role functioning

Path	Effect	B (SE)	LLCI, ULCI	P	R^2
Positive religious coping	Direct	-0.81 (0.88)	-2.55, 0.94	0.362	0.20
Negative religious coping	Direct	-0.50 (0.75)	-2.00, 0.99	0.506	
Consequences	Direct	-1.96 (1.37)	-4.67, 0.75	0.155	
Timeline	Direct	-1.34 (1.41)	-4.15, 1.47	0.345	
Personal Control	Direct	0.56 (1.25)	-1.92, 3.05	0.653	
Treatment Control	Direct	4.61 (1.95)	0.74, 8.48	0.02	
Identity	Direct	-1.35 (1.27)	-3.87, 1.18	0.292	
Coherence	Direct	-0.96 (1.42)	-3.77, 1.85	0.500	

Path	Indirect Effects	Effect (SE)	LLCI, ULCI
Consequences	*Via negative religious coping*	-0.11 (0.22)	-0.87, 0.13
	Via positive religious coping	-0.27 (0.35)	-1.18, 0.24
Timeline	*Via negative religious coping*	0.01 (0.19)	-0.30, 0.51
	Via positive religious coping	0.56 (0.63)	-0.45, 2.11
Personal Control	*Via negative religious coping*	0.08 (0.19)	-0.13, 0.80
	Via positive religious coping	-0.12 (0.25)	-0.98, 0.16
Treatment Control	*Via negative religious coping*	0.09 (0.30)	-0.23, 1.17
	Via positive religious coping	-0.06 (0.31)	-1.00, 0.36
Identity	*Via negative religious coping*	-0.10 (0.20)	-0.78, 0.14
	Via positive religious coping	0.06 (0.25)	-0.18, 0.92
	Via negative religious coping	0.02 (0.16)	-0.17, 0.61
Coherence	*Via positive religious coping*	0.07 (0.26)	-0.23, 0.90

Mediation analysis predicting emotional functioning

Path	Effect	B (SE)	LLCI, ULCI	P	R^2
Positive religious coping	Direct	0.41 (0.58)	-0.74, 1.56	0.486	0.23*
Negative religious coping	Direct	-0.75 (0.50)	-1.74, 0.23	0.131	
Consequences	Direct	-2.36 (0.91)	-4.16, -0.56	0.011	
Timeline	Direct	-1.37 (0.94)	-3.24, 0.50	0.147	
Personal Control	Direct	0.22 (0.83)	-1.43, 1.87	0.800	
Treatment Control	Direct	1.18 (1.30)	-1.39, 3.75	0.364	
Identity	Direct	0.71 (0.84)	-0.97, 2.39	0.403	
Coherence	Direct	-1.72 (0.94)	-3.58, 0.15	0.071	

Path	Indirect Effects	Effect (SE)	LLCI, ULCI
Consequences	*Via negative religious coping*	-0.01(0.01)	-0.04, 0.01
	Via positive religious coping	0.01 (0.01)	-0.58, 0.71
Timeline	*Via negative religious coping*	0.02(0.22)	-0.34, 0.53
	Via positive religious coping	-0.28 (0.51)	-1.63, 0.46
Personal Control	*Via negative religious coping*	0.12(0.20)	-0.16, 0.74
	Via positive religious coping	0.06 (0.17)	-0.10 (0.66)
Treatment Control	*Via negative religious coping*	0.14 (0.33)	-0.31, 1.03
	Via positive religious coping	0.03 (0.19)	-0.22, 0.68
Identity	*Via negative religious coping*	-0.16 (0.18)	-0.66, 0.09
	Via positive religious coping	-0.03 (0.13)	-0.47, 0.08
Coherence	*Via negative religious coping*	0.03 (0.20)	-0.24,0.62
	Via negative religious coping	-0.03 (0.14)	-0.48, 0.14

Mediation analysis predicting global health status

Path	Effect	B (SE)	LLCI, ULCI	P	R^2
Positive religious coping	Direct	-0.22 (0.47)	-1.16, 0.71	0.636	0.29*
Negative religious coping	Direct	-0.29 (0.40)	-1.09, 0.51	0.479	
Consequences	Direct	-1.91 (0.73)	-3.36, -0.46	0.010	
Timeline	Direct	-0.75 (0.76)	-2.26, 0.75	0.322	
Personal Control	Direct	1.40 (0.67)	0.07, 2.73	0.04	
Treatment Control	Direct	0.63 (1.04)	-1.44, 2.70	0.547	
Identity	Direct	-0.44(0.68)	-1.79, 0.91	0.519	
Coherence	Direct	-0.35 (0.76)	-1.85, 1.15	0.644	

Path	Indirect Effects	Effect (SE)	LLCI, ULCI
Consequences	*Via negative religious coping*	-0.06 (0.14)	-0.52, 0.10
	Via positive religious coping	-0.08 (0.19)	-0.55, 0.23
Timeline	*Via negative religious coping*	0.01 (0.12)	-0.19, 0.37
	Via positive religious coping	0.15 (0.34)	0.38, 1.07
Personal Control	*Via negative religious coping*	0.05(0.12)	-0.09, 0.48
	Via positive religious coping	-0.033 (0.12)	-0.54, 0.08
Treatment Control	*Via negative religious coping*	0.05(0.19)	-0.14, 0.79
	Via positive religious coping	-0.02 (0.14)	-0.44, 0.17
Identity	*Via negative religious coping*	-0.06 (0.14)	-0.50, 0.90
	Via positive religious coping	0.02 (0.10)	-0.09, 0.39
	Via negative religious coping	0.02(0.11)	-0.12, 0.37
Coherence	*Via positive religious coping*	0.02 (0.1)	-0.11, 0.40

APPENDIX 9 Consent form for the qualitative study

(Arabic Version)

معلومات الدراسة و إقرار المشاركة بالدراسة (التسجيل الصوتي)

عنوان الموضوع: فهم التجربة الشخصية لدى المرضى المصابين بسرطان الثدي.

اسماء الباحثين : أ.زينة الشربتي , د.سوزان راسموسين, د.سايمون هانتر.

المكان: قسم الباطنية, مركز العناية اليومية و العيادة الخارجية, مستشفى جامعة السلطان قابوس.

السلام عليكم و رحمة الله و بركاته

اختي المواطنة,

تهدف هذه الدراسة استطلاع تجربتك الشخصية مع المرض منذ تشخيصك به. ستستغرق هذه المقابلة حوالي الساعة و التي ستحتوي على اسئلة مفتوحة حول تجربتك الشخصية في التأقلم مع المرض و العوامل الاخرى التي اثرت على صحتك بشكل عام . نحن نقدر مشاركتك في هذه المقابلة عن طريق مشاركتنا رأيك في هذا الموضوع. ان هناك فوائد جمة للمشاركة حيث سوف تمكننا من مساعدة قسم الباطنية فهم احتياجات المرضى النفسية لتقديم افضل الخدمات النفسية لهم. و لنجعل المعلومات العلمية اكثر دقة, نستأذنك في تسجيل هذه المقابلة صوتيا. ان هذا التسجيل لن يطلع عليه احد باستثناء فريق البحث و سنحافظ على خصوصيتك بشكل مطلق عن طريق مسح اي معلومات قد تشير اليك. سنقوم بتدمير هذا التسجيل فورا بعد تحليل المعلومات دون الاشارة الى بياناتك الشخصية. سنستعمل أجوبتك ضمن المادة المقروءة دون الاشارة الى اي معلومات قد تشير اليك. سيكون لك حق الانسحاب من الدراسة في اي وقت كان اذا أحببت و بدون ذكرك لأي أسباب, و لن يؤثر انسحابك على الخدمات المقدمة اليك. نحيطك علما ان بامكانك الانسحاب من الدراسة او رفض الاجابة على أي سؤال بدون ذكر اي سبب.

في حال وافقت على المشاركة في هذه المقابلة، سيبقى إسمك طي الكتمان . لن يكون لأي شخص، حق الإطلاع على ملفك الطبي باستثناء المذكورة اسماءهم اعلاه. الرجاء الانتباه الى ان هذا التسجيل الصوتي سيدمر بعد ثلاث أشهر من تاريخ المقابلة.

موافقة المشترك:

لقد قرأت استمارة القبول هذه وفهمت مضمونها. تمت الأجابة على أسئلتي جميعها. وبناء عليه فأنني، حرا مختارا، أجيز إجراء هذا التسجيل الصوتي و أوافق على الإشتراك فيه، وإني أعلم ان ____________________ و مساعديه سيكونون مستعدين للإجابة على أسئلتي و يمكنني الاتصال بهم على المحول (4367, 1150) . كما أعرف تمام المعرفة بانني حر في الإنسحاب من هذه المقابلة متى شئت حتى بعد التوقيع على الموافقة دون ان يؤثر ذلك على العناية الطبية المقدمة لي.

إسم المشترك ______________________ توقيع المشترك ______________________

التاريخ

(English Version)

Information sheet and consent form

Study Title: Understanding the lived illness experience of patients diagnosed with breast cancer

Researchers: Ms. Zena Al-Sharbati, Dr. Susan Rusmussen, Dr. Simon Hunter.

Location: Dept. of Medicine, Day Care Unit and OPD, Sultan Qaboos University Hospital

Alsalam Alaikum

Dear Citizen,

This study aims to explore your illness experience since the diagnosis of breast cancer. This interview will take approximately one hour, and it will involve open-ended questions about your experience with coping and the factors influencing your well-being related to your illness. We appreciate your participation in this study by allowing me to interview you. This study will help us improve the services we provide for patients with breast cancer. We ask your permission to audio record this interview, which will not be heard by anyone except the research team. We will maintain your confidentiality at all times by deleting all identifying information. We will destroy this tape after transcribing the interview without referring to your identifying information. We will use parts of the written interview in a strictly confidential manner. Relevant anonymised sections of the data will be looked at by the research team. These information will only be used for research purposes. We will remove all identifying information when using the data. Please remember that your participation is entirely voluntarily, you can always change your mind about participating at any time throughout the study and this can be done without providing any reason. Please remember that you are free to withdraw from the study or refuse to answer any question at any time. Again you do not need to provide a reason for that. Your withdrawal will not have any negative consequences on the medical services provided to you.

If you agreed to participate in this interview, your identity will always be kept confidential. Please remember that this audiotape will be destroyed three months from the date of the interview.

If you would like, I can provide you with a copy of the findings, when it is completed. If you have any questions or concerns about the study then please contact us:

Zena Al-Sharbati – 2414-4367

Participant consent

I have read the consent form and I understood its content. All of my questions have been answered. I consent to taking part in this interview and I allow audiotaping, and I am aware that I can contact the study researchers at anytime to answer my questions. I am aware that I can withdraw from the research at any time even after signing this consent form without any negative personal or medical consequences to me.

Name of participant:___________________

Signature of participant:__________________

Date:___________

APPENDIX 10 Debriefing form for the qualitative study

(Arabic Version)

بيان المعلومات

فهم و ادراك تجربة المرض عن قرب لدى النساء العمانيات التي تم تشخيصهن بسرطان الثدي

نحن نشكر مشاركتك القيمة في البحث الحالي حول فهم تجربة المرض عن قرب لدى النساء العمانيات المصابات بسرطان الثدي. تهدف هذه الدراسة الى اختبار دور تصور المرض لدى النساء العمانيات المصابات بسرطان الثدي و التأقلم الديني و وسائل التأقلم الأخرى في هذه التجربة. نحن نشكر مشاركتك القيمة في هذا البحث. نحن نعتقد ان للتعامل الديني دورامهما في فهم تجربة المرض عند هذه الفئة. اذا كانت لديك أي أسئلة فيمكنك طرحها الان على الباحثة, او بامكانك الاتصال بزينة الشربتي على الرقم: 24144367, او التواصل معها عبر الايميل: zenam@squ.edu.om

في حال كانت لديك أي اعراض ضيق او ضغط نفسي نتيجة مشاركتك في هذه الدراسة, فنحن نشجعك ان تتواصل مع قسم الطب السلوكي العيادة الخارجية, على الرقم 24144410

نحن نشكرك مرة أخرى على مشاركتك القيمة في هذه الدراسة.

(English Version)

Debriefing Form

Understanding the lived illness experience of Omani women diagnosed with breast cancer

Thank you for your participation as a research participant in the present study concerning the lived illness experience of Omani women with breast cancer. The present study aims to examine the contribution of illness perceptions, religious coping, and other coping skills in the illness experience of these women. We expect that illness perceptions and coping are essential factors to help us understand the research phenomenon. Again, we thank you again for your participation in this study. If you have any questions about this study, please feel free to talk to the researcher at this time, or you can alternatively call Zena Al-Sharbati at 241444367, or email her at: zenam@squ.edu.om

In the event that you feel psychologically distress as a result of your participation in this study, we encourage you to call Behavioual Medicine OPD, SQUH at 24144410.

We thank you again for your participation