Factors Influencing Nurses' Intention to Work in the Oncology Specialty: A Mixed-Methods Study in Riyadh, Saudi Arabia

Submitted by

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This thesis is dedicated

My PhD is dedicated to my mom, Sabha, and my dad, Awadh. For my wife Ahlam Alqaladi, for everything, especially her love, patience, kindness, support, understanding and her tolerance of my work and studies over the years. Truly without her support this thesis would not have been possible. To my children, Awadh, and Alya thoughts of whom gave me the strength to complete this study.

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Publications and conference presentations from this thesis

Peer-reviewed journal article

1. Alrasheedi, O, Schultz, TJ & Harvey, G 2021, 'Factors influencing nurses' intention to work in the oncology specialty: multi-institutional cross-sectional study', *BMC Palliative Care*, vol. 20, no. 1, pp. 1-12.

Conference presentations

1. Alrasheedi, O, Schultz, TJ & Harvey, G, **Adelaide Nursing School Research Conversazione**, University of Adelaide, Adelaide, September 2019
    - **Oral presentation:** 'Factors influencing nurses' intention to work in the oncology specialty: a cross-sectional study in Saudi Arabia'
2. Alrasheedi, O, Schultz, TJ & Harvey, G, **14th Florey Postgraduate Research Conference**, University of Adelaide, Adelaide, September 2020
    - **Poster presentation**: 'Factors influencing nurses' intention to work in the oncology specialty'
3. Alrasheedi, O, Schultz, TJ & Harvey, G, **The 5th Saudi Scientific Symposium,** Saudi Arabian Cultural Mission, Sydney, September 2020
    - **Oral presentation**: 'Factors influencing nurses' intention to work in the oncology specialty: a mixed-method study in Riyadh, Saudi Arabia'
4. Alrasheedi, O, Donnelly, F, Davies, E & Harvey, G, **Adelaide Nursing School Research Conversazione**, University of Adelaide, Adelaide, September 2021
    - **Oral presentation:** 'Barriers and facilitators to working in oncology nursing in Saudi Arabia'

5. Alrasheedi, O, Donnelly, F, Davies, E & Harvey, G, **Adelaide Nursing School NGADLUKU TAIKURINGKA NGUTU**, University of Adelaide, Adelaide, September 2022
    - **Oral presentation:** ‘Integration of two studies results investigating the barriers and enablers of working in the specialty of oncology nursing’

Abstract

Background: In Saudi Arabia, there is an identified problem with attracting and retaining oncology nurses. Specifically, there is a shortage of Saudi nationals in the specialty, negative attitudes toward caring for dying patients and a lack of palliative care knowledge amongst clinical staff. Development of the nursing workforce is a particular focus of the Saudi Arabian government, which is seeking to address the Saudi nursing shortage through the Saudisation policy and more recently through 'Saudi Vision 2030'. These initiatives are designed to improve the number of Saudi national nurses in all areas of nursing and especially in specialty fields such as oncology and palliative care.

Aim: The overall aim of this study was to explore the factors that influence nurses' intentions to work in the oncology specialty in Saudi Arabia.

Methods: The study used an explanatory, sequential mixed-methods design comprising surveys with three nursing groups: 178 undergraduate nursing students (UNSs), 263 oncology registered nurses (ORNs), and 33 postgraduate oncology nursing students (PONSs), and 19 semi-structured interviews with two groups of nurses, 10 ORNs and 9 registered nurses from other hospital departments. The survey included a range of previously validated instruments to assess palliative care knowledge, attitudes towards caring for dying patients, general self-efficacy, job satisfaction and intention to work in oncology. Data from the interviews were analysed using thematic analysis. The results from the quantitative and qualitative components were integrated using the 'following the thread' technique.

Findings: The survey findings indicated that 28.6% (n = 51) of UNSs and 81% (n = 27) of PONSs surveyed reported an intention to work in oncology, and 49.4% (n = 130) of ORNs to stay in the oncology speciality. A nurse's attitude was the only consistent and significant predictor of intention to work in oncology across all three groups. Higher levels of palliative care knowledge and self-efficacy were significantly associated with increased intention to work

in oncology among PONSs, whereas general self-efficacy was a significant predictor among UNSs. The job satisfaction of ORNs was a significant predictor of their intent to stay in oncology. The qualitative study findings identified four major themes: advantages of working in oncology, psychological difficulties in oncology, structural barriers hindering oncology nursing, and workplace conditions reducing job satisfaction.

Conclusions: The study identified the factors that influence nurses' intention to work in the oncology speciality. It also highlighted the barriers and enablers of nurses working in the oncology speciality. This study offers important insights for policymakers and nursing leaders when planning to improve the oncology nursing speciality in Saudi Arabia. The thesis, the first of its kind undertaken in Saudi Arabia, has contributed to the body of knowledge about Saudi oncology nursing, and can serve as the basis for future recruitment and retention initiatives.

Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint award of this degree.

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Omar Alrasheedi

Date: 29 November 2022

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Abbreviations

CBAHI	Central Board for Accreditation of Healthcare Institutions
CCL	Cardiac catheterisation laboratory
DNR	Do not resuscitate
EOL	End of life
ER	Emergency room
FATCOD	Frommelt Attitude Toward Care of the Dying Scale
GSE	General self-efficacy scale
IARC	International Agency for Research on Cancer
ICU	Intensive care unit
IRB	Institutional review board
KAMC	King Abdullah Medical City
KASRP	Knowledge and Attitudes Survey Regarding Pain
KFMC	King Fahad Medical City
KFSHRC	King Faisal Specialist Hospital & Research Centre
KSUMC	King Saud University Medical City
MMAT	Mixed Methods Appraisal Tool
MME	Muslim Middle East
MOH	Ministry of Health
MSQ	Minnesota Satisfaction Questionnaire
OPD	Outpatient department
ORN	Oncology registered nurse – experienced nurses working in the oncology setting
ORT	Oncology and radiotherapy
OT	Operating theatre
PCQN	Palliative Care Quiz for Nursing
PONS	Postgraduate oncology nursing student – experienced nurses learning to work in the oncology specialty
PSMMC	Prince Sultan Military Medical City
RN	Registered nurse
SCFHS	Saudi Commission for Health Specialties
UNS	Undergraduate nursing student
WHO	World Health Organization

1. Chapter One: Introduction and background

1.1 Introduction

In Saudi Arabia, the oncology nursing specialty has encountered several challenges, including a shortage of Saudi nurses in the field (Abudari et al. 2014; Alqahtani & Jones 2015), language and cultural barriers among expatriate oncology nurses (Abudari, Hazeim & Ginete 2016; Wazqar et al. 2017a), negative attitudes towards caring for dying patients (Abudari et al. 2014), lack of palliative care knowledge (Abudari et al. 2014), and lack of pain management knowledge (Aboshaiqah 2020; Ismaile, Alshehri & Househ 2017; Khraisat, Hamdan & Ghazzawwi 2017). These compounding issues present a serious concern for the Saudi population, due to the growing demand for oncology care services in the kingdom. To address this increasing demand, the Saudi government has placed a particular emphasis on developing the local nursing workforce and is seeking to address the Saudi nursing shortage through the Saudisation policy and through 'Saudi Vision 2030'. These initiatives are designed to improve the number of Saudi national nurses in all areas of nursing and especially in speciality fields such as oncology and palliative care nursing. Historically, the specialty of oncology nursing in Saudi Arabia has been particularly affected by a shortage of Saudi nurses – a problem that has not significantly improved over time (Abudari et al. 2014; Al-Dossary 2018; Alqahtani & Jones 2015; Alqahtani, Jones & Holroyd 2016). Therefore, the purpose of this research is to explore the factors influencing the intention of nurses to work in the oncology specialty from various perspectives in Saudi Arabia.

To provide context for this research, Chapter One provides background information on cancer in Saudi Arabia and globally, culture and Islam and cancer care, the healthcare system in the country, oncology facilities, oncology care services, policy on oncology and palliative

care nursing, nursing and oncology nursing education and the nursing workforce in Saudi Arabia.

1.2 Background

1.2.1 Cancer in Saudi Arabia and globally

Cancer is a global health problem. In 2012, there were approximately 14.1 million new cancer diagnoses (Torre et al. 2016). This number increased to 19.3 million in 2019 (Sung et al. 2021), an increase of over 30%. The number of worldwide deaths from cancer increased from 8.2 million in 2012 to 10 million in 2019 (Torre et al. 2016), making it the world's leading cause of death (Sung et al. 2021). As population and life expectancy increase, global deaths linked to cancer are expected to rise to 21.4 million a year by 2030 (World Health Organization (WHO) 2018).

In 2020, the Saudi population was estimated to be 35 million (World Bank 2020) with life expectancy at birth for a Saudi individual approximately 75 years (World Bank 2019). Critically, while 65% of the population is currently aged between 15 and 64 years of age, only 4% of the population is over the age of 65 (Saudi MOH 2018). Given the relationship between age and the likelihood of developing cancer it is imperative that Saudi Arabia accelerates the development of a robust and capable oncology nursing workforce (Wazqar et al. 2017a).

In Saudi Arabia, the annual incidence of cancer rose from 24,500 cases to 28,000 cases between 2018 and 2020, an increase of 14.3% (Bray et al. 2018; WHO IARC 2020). In 2020, the most frequently occurring cancers in Saudi for all genders and ages were colorectal cancer (14.4%), breast cancer (14.2%), thyroid cancer (10.2%), non-Hodgkin lymphoma (6.1%), and leukaemia (6%) (WHO International Agency for Research on Cancer (IARC) 2020). A recent systematic review of the epidemiology of cancer in Saudi Arabia found that the incidence of

some cancers had increased threefold in the period 2010 to 2019 (Alqahtani et al. 2020). The review also made a compelling argument that the increase in cancer rates is likely related to the increase in wealth amongst the Saudi population, which has led to lifestyle changes, including sedentary habits, tobacco use, unhealthy diets and obesity (Alqahtani et al. 2020).

From 2018 to 2020, the number of cancer-related deaths in Saudi Arabia increased from 10,200 to 13,150, an increase of 25.4% (Bray et al. 2018; WHO IARC 2020). Several factors contributed to this increase, including the increase in the incidence of cancer over the past decade, the lack of cancer screening and early detection programs, and cultural barriers that hinder the management of cancer (Alqahtani et al. 2020). Clearly this emerging challenge will require an oncology workforce that is sufficiently resourced and educated to meet the growing population's need for cancer and palliative care services.

1.2.2 Culture and Islam in Saudi Arabia and cancer care

Saudi culture is considered to be conservative and traditional (Al-Shahri 2002). The definition of culture is a combination of knowledge, beliefs, art, law, morals, customs, and any other abilities and habits acquired by a member of a society (Tylor 1924). Islam is the dominant religion in Saudi Arabia, which has a profound impact on society, influencing the social, familial, political and legal aspects of people's lives (Al-Shahri 2002). Saudis, like other Muslims, believe that health, disease and death are determined by Allah (God) (Abudari, Hazeim & Ginete 2016). It is common for patients to seek guidance and comfort from their imams (religious leaders) (Al-Shahri 2002). In Islam, the family is considered the core of Muslim society and culture (Abudari, Hazeim & Ginete 2016). The nature of family relationships is highly influenced by Islamic teaching (Abudari, Hazeim & Ginete 2016). Saudi patients are considered to be members of an extended family and their families are responsible for protecting and caring for them (Abudari, Hazeim & Ginete 2016). Saudi families are

socially and emotionally integrated, and the members participate in all aspects of family life (Al-Shahri 2002). Usually, the male extended family members are involved in the critical decision-making process or consent related to a patient's treatment, in order to reduce any emotional distress on the part of the patient (Wazqar et al. 2017a). Thus, Saudi family members have a substantial influence on the decision-making regarding patient care.

Some Saudi families are unwilling to inform their relatives about a cancer diagnosis they have or to provide details if the cancer has advanced to an incurable stage, for fear of causing further harm or suffering (Al Mutair et al. 2020; Wazqar et al. 2017a). Also, some Saudi families believe that their relatives are insufficiently educated or unable to understand their health condition; as a result, they ask the physicians and the nurses to withhold or limit the cancer-related information provided to their patient (Al-Amri 2010). This withholding of information about the cancer patient has resulted in communication difficulties with oncology nurses, effectively preventing them from providing the patient with appropriate psychological care (Wazqar et al. 2017a). The practice of withholding information about diagnoses and prognoses to patients has resulted in ethical issues among oncology nurses and an associated sense of moral distress (Al-Amri 2010; Wazqar et al. 2017a).

Women who experience breast cancer are particularly at risk, with a number of cultural barriers existing in Saudi Arabia that negatively affect breast cancer management. Among Saudi women, breast cancer diagnosis is associated with stigma, due to the sensitivity of this part of the body in Saudi culture, which is usually not freely discussed (Almegewly, Gould & Anstey 2019). In his explanation, Odeh Yosef (2008) attributes this stigma to the modesty principle in Islamic culture that mandates that Muslim women do not expose their breasts and other parts of their body. Furthermore, other studies have found that some Muslim women refuse to undergo early cancer screenings due to their belief that male healthcare practitioners should not touch their breasts due to their religious beliefs (Banning et al. 2010; Kucukkaya

2010). As a result of this cultural barrier, many women refrain from participating in early breast cancer screening and treatment, resulting in progression of the disease to an incurable stage of cancer for many women (Almegewly, Gould & Anstey 2019; Banning et al. 2010; Kucukkaya 2010). Further, a recent study by Almegewly, Gould and Anstey (2019) found that a breast cancer stigma still exists among Saudi women, manifesting in various ways, such as failure to monitor a woman's fertility after breast cancer treatment, a perceived link between cancer and death, and a belief that the 'devil's eye' caused her illness (Almegewly, Gould & Anstey 2019). Thus, cultural factors play a major role in the early detection and treatment of breast cancer in Saudi Arabia.

The religious and cultural beliefs of Saudi oncology patients may interfere with their treatment plan and their belief in that plan. Among Saudi oncology patients, the use of complementary therapies was found to be highly prevalent and strongly influenced by their religious beliefs (Al-Awamer & Downar 2014; Jazieh et al. 2012). Furthermore, many Saudi patients seek the help of religious people to treat the impact of the devil's eye, envy or black magic, which may contradict or be incompatible with the patient's therapeutic treatment plans (Abudari, Hazeim & Ginete 2016; Al-Yousefi 2012; Al Mutair et al. 2020; Jazieh et al. 2012). Some of these phenomena have been attributed to the belief of Saudi patients that this disease is the result of a religious factor such as the devil's eye, envy or black magic, and that an effective treatment can be achieved with religious people and traditional remedies (Abudari, Hazeim & Ginete 2016; Al Mutair et al. 2020; Jazieh et al. 2012). As the majority of Saudi Arabian nurses are expatriates, the cultural beliefs of patients have been found to largely hinder the ability of nurses and patients to communicate with each other effectively, thereby compromising the quality of care provided (Alshammari, Duff & Guilhermino 2019).

1.2.3 The healthcare system in Saudi Arabia

The Saudi Ministry of Health (MOH) is the central governmental agency responsible for managing and regulating healthcare services, providing 60% of healthcare services, with the remaining 40% being provided by the private sector and other governmental entities (Wazqar et al. 2017a). The MOH is responsible, not only for delivering health care, but also for regulating health policies (Saudi MOH 2018). Moreover, the Saudi MOH provides free health care services to Saudi citizens and it organises the process of referring patients from general health centres to advanced specialised health services (Wazqar et al. 2017a). The other governmental entities also have their own health facilities and provide health care to their employees, such as the Ministry of Defence, the National Guard, the Ministry of Interior and the Ministry of Education via teaching hospitals (Abusanad et al. 2022).

Public healthcare services are provided by the MOH through eighteen health regions, which are each coordinated by a regional director, who is directly connected to the ministry (Saudi MOH 2018). The Saudi healthcare system is comprised of three levels of health care services: primary, secondary and tertiary. Primary healthcare services are provided by family physicians and community health centres, while secondary health care is provided by regional referral hospitals. Tertiary care is provided by national specialised hospitals (Saudi MOH 2018). The MOH established the patient referral system to manage the flow of patients from the first level, which is primary care, to secondary or tertiary care as needed. The primary care physician requests a referral when there is an available medical professional with the appropriate resources to treat the clinical condition at a specific level in the healthcare system (Senitan et al. 2017).

In Saudi Arabia, the primary care system comprises 2259 primary health facilities, while the secondary care level consists of 268 general hospitals: these form the major component of the Saudi healthcare system (Saudi MOH 2018). At the tertiary care level there are 56 referral

hospitals providing healthcare services. These are larger hospitals with specialised areas for more complex cases that are usually referred from secondary hospitals (Senitan et al. 2017). Private healthcare services are mainly located in major cities, and include 125 hospitals and 2218 clinical facilities (Saudi MOH 2018). The availability of certain specialty services, such as oncology care, is somewhat limited in rural areas (Wazqar et al. 2017a).

1.2.4 Oncology facilities and services in Saudi Arabia

In Middle Eastern countries, more than 70% of people with cancer visit a physician for the first time at the incurable stage of cancer when the only treatment option is palliative care (Silbermann et al. 2015), a phenomenon that is similarly reported in Saudi Arabia (Wazqar et al. 2017a). The lack of early cancer screening programs in rural areas is strongly associated with a late-stage cancer diagnosis (Al-Ahmadi, Al-Zahrani & Al-Ahmadi 2013).

The Saudi government has established 15 specialised oncology facilities, located predominantly in major cities (Wazqar et al. 2017a). The MOH has a strategy to increase the number of oncology care institutions and cancer screening programs in small cities (Abusanad et al. 2022). However, there is a shortage of healthcare professionals, especially in the rural areas of Saudi Arabia (Wazqar et al. 2017a), and most of the patients in these areas receive oncology care from medical professionals who do not specialise in oncology. As a result, patients with cancer experience delays to diagnosis and timely referral (Wazqar et al. 2017a). Patients with cancer receive specialised oncology care only when they are referred to oncology centres in major cities. Unfortunately for many, their cancer is usually at an advanced stage, resulting in a poor prognosis and a high mortality rate (Wazqar et al. 2017a).

1.2.5 Oncology care services in Saudi Arabia

For terminally ill patients, Saudi Arabia lacks specialised palliative care services (Abudari et al. 2014; Abusanad et al. 2022; Khraisat, Hamdan & Ghazzawwi 2017). As the speciality of palliative care is still in its infancy in Saudi Arabia, terminally ill oncology patients receive palliative care from oncology nurses (Abudari et al. 2014; Abusanad et al. 2022; Khraisat, Hamdan & Ghazzawwi 2017). In contrast, developed countries have effectively integrated palliative care into their healthcare systems and provide specialised palliative care nursing to not only patients with cancer, but also patients with any type of terminal illness (Centeno & Rhee 2018).

The term ‘palliative care’ was first introduced in 1974 by Dr Balfour Mount at the Royal Victoria Hospital in Montreal, Canada (Gómez-Batiste et al. 2019). Palliative care services have been developed to assess and meet the multidimensional needs of terminally ill patients and their families, with respect to physical, psychological, social, spiritual and practical concerns to relieve their suffering (Gómez-Batiste et al. 2019). Modern palliative care services emerged in the 1990s, with the WHO and several countries having made palliative care a public health topic by developing palliative care programs that included systematic planning and ensuring equity and coverage criteria in implementation (Gómez-Batiste et al. 2019). In the 1990s, palliative care education and research in many countries expanded: undergraduate and postgraduate medical and nursing training education was integrated, and palliative medicine was established as a specialty (Gómez-Batiste et al. 2019).

The WHO describes palliative care as

> an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial, and spiritual. (WHO 2002)

Alternatively, Gómez-Batiste et al. (2017) provide a shorter definition of palliative care as 'comprehensive and integrated care of persons with advanced chronic conditions and limited life prognosis and their families' (p. 45). The key principle of palliative care is to provide comprehensive care that meets the physical, psychological, spiritual and social needs of a terminally ill patient and their family (Gómez-Batiste et al. 2019; Khraisat, Hamdan & Ghazzawwi 2017). The goal of palliative care is to improve the quality of life for patients diagnosed with life-threatening illnesses and their families (WHO 2020). In fact, human rights law considers palliative care to be an integral part of the right to health (Barros de Luca et al. 2017).

Palliative care must be provided through integrated and patient-centred health services that consider the patient's specific needs and preferences (WHO 2020). In the past, palliative care services were only provided to patients with incurable cancer, but the WHO now takes a more comprehensive approach and explains that palliative care should be provided to patients with all types of terminal illnesses, such as severe heart failure, chronic obstructive pulmonary disease, Alzheimer's, Parkinson's, amyotrophic lateral sclerosis and multiple sclerosis (WHO 2020).

The delivery of palliative care differs significantly among countries, and the quality of care provided to terminally ill patients reflects these differences (Centeno & Rhee 2018). Lynch, Connor and Clark (2013) conducted a research review to evaluate the development of palliative care worldwide and assign countries to one of four broad categories (see Figure 1). The criteria for the four categories were developed using several factors, such as palliative care coverage, policy, public awareness, opioid availability and education/training of healthcare professionals (Lynch, Connor & Clark 2013). The study categorised Saudi Arabia as a 'Group 3a country' that provides 'isolated palliative care', which means palliative care is 'patchy' in

scope and not well supported (Lynch, Connor & Clark 2013). The lower the country's categorisation in the level of palliative care, the more negative the implications for the quality of health care for terminally ill patients (Lynch, Connor & Clark 2013). Therefore, the Saudi MOH must strive to reach the optimal level of palliative care delivery to maximise healthcare quality for terminally ill patients.

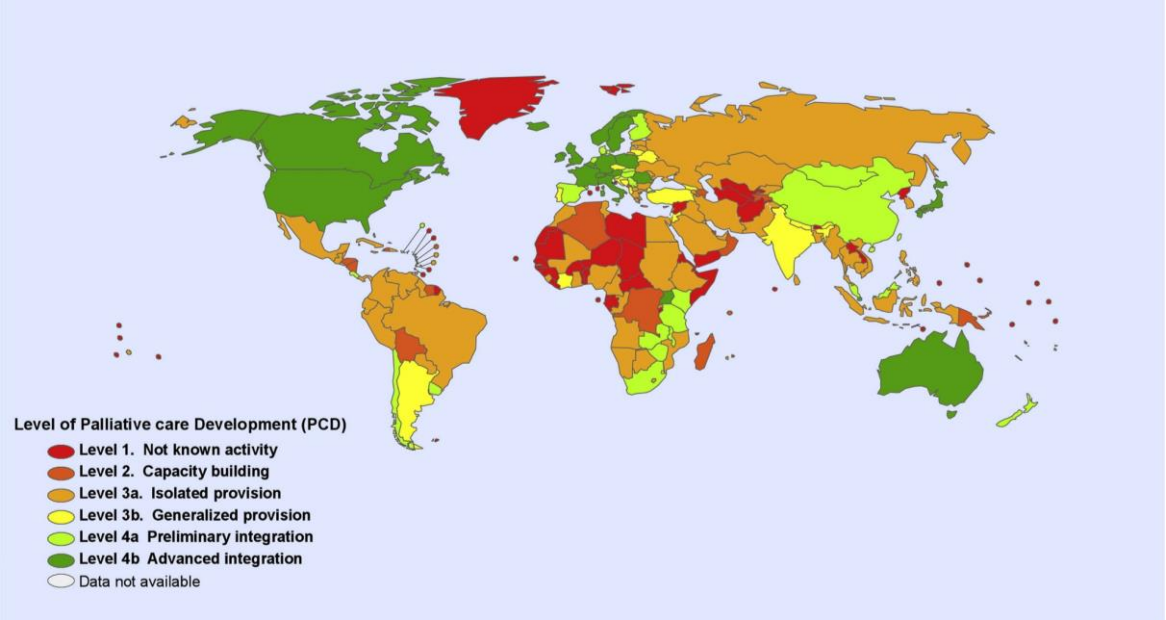

Figure 1: Level of palliative care development according to Lynch, Connor and Clark (2013)

Al-Awamer and Downar (2014) conducted semi-structured interviews among physicians and nurses who had experience with palliative care in both Western and Muslim Middle East (MME) countries, including Saudi Arabia. The study participants explained that palliative care services in MME countries are exclusively provided to terminally ill oncology patients, but the services are provided to both terminally ill oncology and non-oncology patients in Western countries (Al-Awamer & Downar 2014). In other words, palliative care in developing countries is provided mainly for people who are terminally ill with cancer, rather than as a specialised palliative care service (Centeno & Rhee 2018). Furthermore, according to Omran and Obeidat's (2015) review study, palliative care in Jordan is similarly limited to oncology

patients and not available for other terminally ill patients. Together, these studies indicate a lack of specialised palliative care services in MME countries.

1.2.6 Policy on oncology and palliative care nursing

In Saudi hospitals, all oncology nurses are required to be competent with palliative care practices. However, the national nursing scope of practice for nurses has not yet been developed, resulting in a lack of appropriate job descriptions for nurses in each nursing specialty (Aldossary 2013). Furthermore, all healthcare facilities must be accredited by the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) to be eligible to operate (CBAHI 2015). In relation to oncology nursing and palliative care policies, CBAHI Standard Number Six governs the staffing and management of oncology and radiotherapy (ORT) departments and states: ORT.6.1 'the unit must have policies and procedures, guidelines and protocols for the palliative care' and ORT.6.2 'Staff are well trained on palliative care practices' (CBAHI 2015, p. 157). This standard clarifies the role of oncology nurses in delivering palliative care for oncology patients in the Saudi healthcare system.

1.2.7 Nursing and oncology nursing education

In Saudi Arabia nursing education is provided through several colleges that offer a bachelor's degree, a postgraduate diploma, a master's degree in several specialties and a PhD in nursing degree (Saudi Commission for Health Specialties (SCFHS) 2018). The SCFHS is a scientific commission that is responsible for regulating and accrediting all aspects of health care in Saudi Arabia, including nursing practice. In total there are 39 nursing colleges, 25 of which are government-operated and 14 are private. In 2018, the total number of Saudis pursuing a bachelor's degree in nursing was 17,085 (4084 males and 13,001 females) (SCFHS 2018).

Approximately 3400 nurses are expected to graduate each year over the next five years (SCFHS 2018).

Despite the fact that the incidence of cancer is expected to increase significantly in Saudi Arabia over the next five to ten years, nursing programs at Saudi universities are not integrating or including oncology nursing education in the curriculum, nor providing training on managing cancer and terminally ill patients (Aboshaiqah 2020; Abudari et al. 2014). One of the key components of oncology nursing education is palliative care education (Aboshaiqah 2020). Palliative care education is not yet a mandatory component of the nursing school curricula in Middle Eastern countries including Saudi Arabia (Abusanad et al. 2022). Countries such as Egypt and Kuwait have included oncology and palliative care education in their undergraduate curricula as part of their cancer medicine modules (Osman et al. 2017).

In Saudi Arabia, nurses who work outside the oncology nursing specialty are generally not familiar with the concept of palliative care (Abudari et al. 2014). This lack of familiarity can be attributed to insufficient academic preparation and poor exposure to palliative care education during undergraduate nursing studies (Abudari et al. 2014). The concept of palliative care receives little attention in the nursing curriculum in Saudi Arabia (Youssef et al. 2015). A study assessing Saudi nursing students' knowledge of palliative care found that most were unaware of concepts regarding palliative care nursing. In fact, 42% of nursing students reported that they did not receive any education about palliative care (Ismaile, Alshehri & Househ 2017). At postgraduate level, palliative care and oncology nursing education has recently been provided to nurses through a postgraduate diploma in oncology nursing under the supervision of the Saudi Commission for Health Specialties (SCFHS) (Alnasr, Mahmood & Alrowaili 2022; SCFHS 2018). The SCFHS developed the postgraduate diploma in oncology nursing to prepare Saudi nurses with the necessary oncology-related knowledge, skills and attitudes to provide high-quality nursing care for oncology patients (Alnasr, Mahmood & Alrowaili 2022).

Additionally, the program is intended to achieve uniform practice standards and quality of care across all oncology care facilities in Saudi Arabia. It is a full-time two-year academic program consisting of a classroom component and a practical component in which students rotate through different oncology units (Alnasr, Mahmood & Alrowaili 2022). However, only four hospitals have been approved by SCFHS to provide the postgraduate programs in Saudi Arabia (SCFHS 2018).

1.2.8 The nursing workforce in Saudi Arabia

Nursing shortages and high levels of workforce turnover continue to challenge Saudi Arabia and many other countries (Abudari et al. 2014; Alqahtani & Jones 2015). Currently, Saudi Arabia's healthcare system relies heavily on expatriate nurses. This presents a major obstacle to the improvement of health care in the country because the high turnover among expatriate nurses leads to unstable healthcare quality (Al-Dossary 2018). Expatriate nurses tend to relocate to their home countries after a specific period of time. This requires recruitment and training that financially burdens the Saudi MOH (Almutairi & McCarthy 2012). In 2016, there were a total of 180,821 nurses in Saudi Arabia, 36.5% of whom were Saudis (n = 65,999). The representation of Saudi nurses in the private sector was significantly lower, where Saudi nurses comprised only 5.3% of the 42,638 nurses (n = 2,259) (Saudi MOH 2018). In terms of oncology specialty, several previous studies have highlighted the lack of Saudi nurses working in the oncology nursing specialty (Abudari et al. 2014; Alqahtani & Jones 2015; Alqahtani, Jones & Holroyd 2016). It has been reported that Saudi oncology nurses represent approximately 9% of the oncology nursing workforce in the country (Abudari et al. 2014; Alqahtani & Jones 2015; Miligi, Alshutwi & Alqahtani 2019). In light of these data, it is apparent that there is a substantial gap between the percentages of Saudi nurses in oncology specialties and in the

general nursing workforce. Together, these studies may indicate a reluctance among Saudi nurses to work in the oncology specialty.

Development of the nursing workforce is a particular focus of the Saudi Arabian government which is seeking to address the Saudi nursing shortage through the Saudisation policy and more recently through 'Saudi Vision 2030' (Al-Dossary 2018). These initiatives were directed to improving the number of Saudi national nurses in all areas of nursing and especially in speciality fields such as oncology and palliative care (Al-Dossary 2018; MOH 2020). The Saudisation policy aimed to promote a reduction in reliance on expatriate labour and an increase in the number of Saudi citizens available to work in needed specialities (Al-Hanawi, Khan & Al-Borie 2019). Furthermore, as part of the Saudi Vision 2030 plan, there is a strategic objective to fill 100,000 nursing positions by the year 2030, which means about 7000 additional nurses need to be hired each year (Al-Hanawi, Khan & Al-Borie 2019). However, the current number of Saudi nurses expected to graduate each year is approximately 3400, which is likely not sufficient to achieve the target number by 2030 (SCFHS 2018).

1.3 Summary

Saudi Arabia has seen an increase in the incidence and prevalence of cancer over the past few years, with many cancer patients presenting with late stage or terminal cancer. Late presentation to health services often results in limitations on treatment options, with palliative care services remaining as the only treatment pathway for many. The speciality of palliative care is still in its infancy in Saudi Arabia. As a result, oncology nurses provide a broad range of oncology services, including palliative care for patients with terminal cancer diagnoses. The Saudi hospital environment is complicated by a shortage of Saudi nurses, the predominance of an expatriate workforce and the culturally conservative nature of the patients. The nursing workforce shortage is even more pronounced for Saudi nurses who work in oncology. Among

the oncology nursing workforce, Saudi citizens make up less than 9% of the total. The substantial gap between the percentages of Saudi nurses in the oncology specialty and those in general nursing raises questions regarding why there are so few Saudi nurses who choose to specialise in oncology, which is what this thesis was designed to examine.

1.4 Research question

Considering the need to recruit and retain Saudi nurses into the oncology nursing workforce, the overarching question that is explored in this thesis is: 'What are the factors influencing the intentions of current and prospective oncology nurses to work in the oncology specialty?'

1.5 Thesis structure

The overall structure of the thesis takes the form of seven chapters: (1) introduction and background, (2) literature review, (3) methodology and methods, (4) results of Phase One (quantitative study), (5) results of Phase Two (qualitative study), (6) integration of results, and (7) discussion and conclusions. The literature review chapter provides a detailed review of the literature related to the oncology nursing specialty, specifically in Saudi Arabia and broadly internationally, and it identifies gaps in the literature. Chapter Three details the research methods adopted in this project, including a discussion of the selected research paradigm, the type of mixed-methods approach employed, participant sampling and the data analysis plan for this research, and the research methods for the separate phases of the study. Chapter Four then provides detailed information about the results of Phase One and explains the analysis used for the quantitative study, including descriptive and inferential data analysis. Chapter Five details the qualitative study conducted in Phase Two, describing the analysis process, and presenting the thematic findings. Chapter Six addresses the research question with integrated findings

from Phases One and Two. The final chapter presents a discussion of the results in the context of the broader body of relevant literature and draws conclusions from the project. The limitations of the research and recommendations are presented in this final chapter.

2. Chapter Two: Literature review

2.1 Introduction

The previous chapter outlined the deficits present in the oncology nursing workforce in Saudi Arabia and highlighted some of the challenges in attracting and retaining Saudi nurses to this field of practice. The purpose of this chapter is to provide a synthesis and evaluation of national and international literature related to the factors that influence nurses working in the speciality of oncology. According to Grove, Burns and Gray (2013), the purpose of a literature review 'is not to list all the material published but, rather, to synthesize and evaluate it on the basis of the phenomenon of interest' (p. 97). This chapter consists of the following sections: 'The oncology nursing specialty in the Saudi literature', 'The oncology nursing specialty in the international literature', 'Gaps in the literature', 'Research objectives' and 'The potential significance of the study'.

2.2 The oncology nursing specialty in the Saudi literature

2.2.1 Search strategy

This literature review followed the best practices for conducting systematic searches as guided by Bramer et al. (2018). An important step in a systematic search strategy is to ensure that the databases included are relevant to the research problem (Bramer et al. 2018). For this review, a search across a range of databases was conducted, including PubMed, CINAHL, Embase and Scopus; these databases were considered the most relevant (and accessible) for the research topic.

The researcher developed a logic grid based on the purpose statement for the review, and the keywords identified through the preliminary search (see Table 1). The word 'palliative'

was included in addition to 'oncology' as palliative care is part of oncology nursing services in Saudi Arabia (Central Board for Accreditation of Healthcare Institutions (CBAHI) 2015).

Table 1: Search strategy – logic grid and keywords

Nurses	Oncology nursing	Saudi Arabia
'nurse*':ti,ab OR 'nurses*':ti,ab OR 'nursing*':ti,ab OR 'nursing care*':ti,ab OR 'nurse student*':ti,ab OR 'nursing student*':ti,ab OR 'undergraduate nurse*':ti,ab OR 'undergraduate nursing student*':ti,ab	'oncology':ti,ab OR 'cancer ':ti,ab OR 'chemotherapy':ti,ab OR 'radiotherapy':ti,ab OR 'palliative'	'saudi arabia':ti,ab OR 'kingdom of saudi arabia':ti,ab OR 'ksa' :ti,ab

Prior to developing the search strategy, the researcher became familiar with different syntaxes, rules and symbols specific to each database, which define how a correctly constructed search must be formulated (Bramer et al. 2018; Polit & Beck 2016). In most database interfaces, parentheses and Boolean operators such as 'AND', 'OR' and 'NOT' are common syntax elements (Bramer et al. 2018). During the search process, truncations (*) were applied to the keywords as required. The keywords and databases were reviewed and revised for suitability with the university's academic health librarian.

The inclusion criteria were as follows: articles published in peer-reviewed journals, including qualitative, quantitative and mixed-methods studies; systematic reviews; integrative reviews; scoping reviews and literature reviews, including discussion, policy and editorial reviews. In terms of search strategy, only oncology registered nurses (ORNs) and undergraduate nursing students (UNSs) were included. The search included English- and Arabic-language articles as the researcher is fluent in both languages. To facilitate the inclusion of the broadest range of relevant literature, no date limiters were applied. Only full-text articles were included, with conference abstracts and study protocols excluded. Systematic searches were conducted for each database using the above logic grid.

The initial search identified fifty-seven articles in PubMed, fifty-one in Scopus, thirty-four in CINAHL, and forty-one in Embase. The titles and abstracts of each reference were reviewed against the inclusion criteria. Duplicate articles were excluded, and forty-three articles that did not meet the inclusion criteria were removed. A review of the included articles' reference lists was performed to identify additional relevant primary sources; no additional articles were found through this citation search. Overall, fourteen articles were included in the review, as shown in Figure 2.

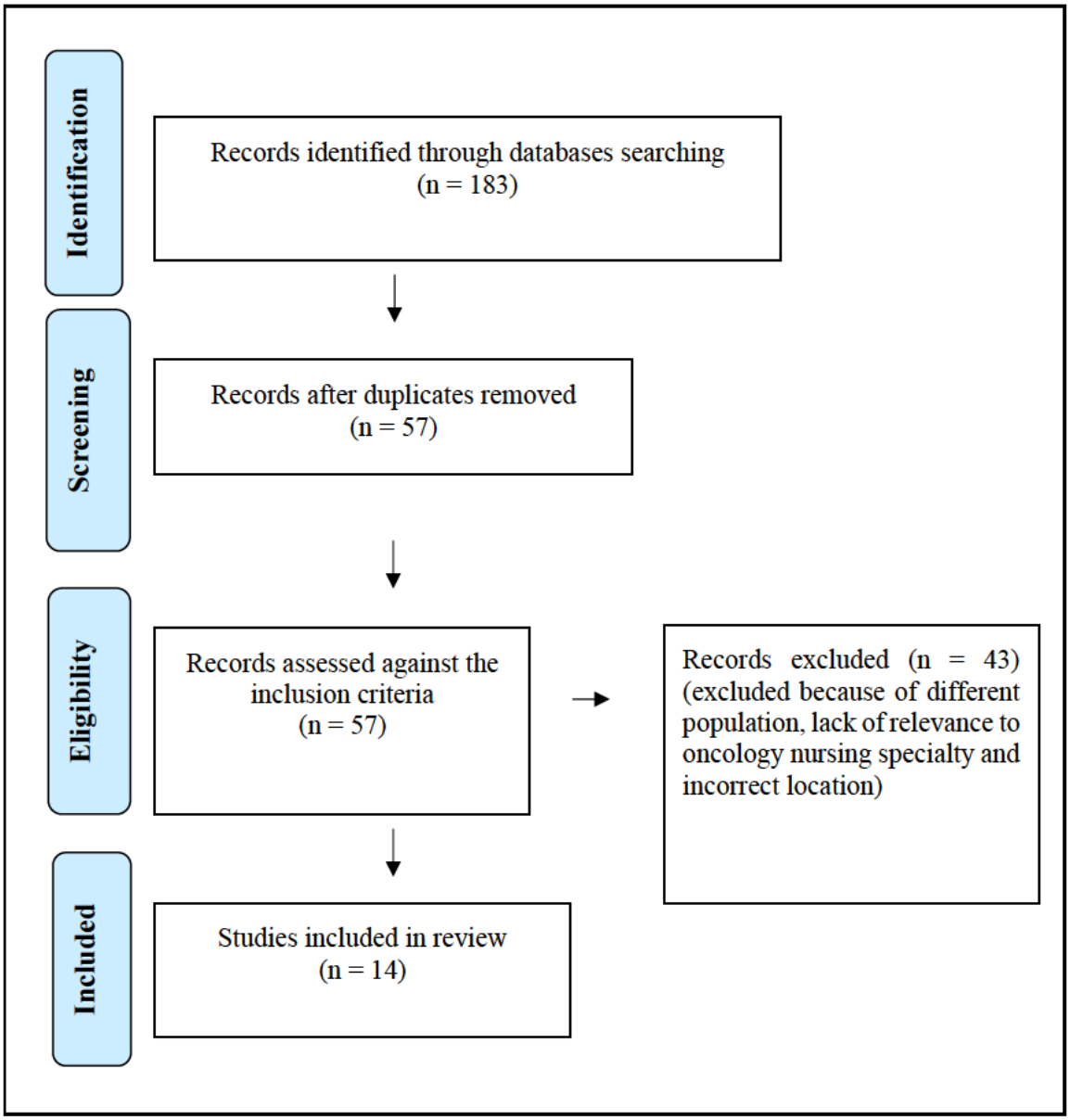

Figure 2: Summary of the screening process for the included articles

2.2.2 Critical appraisal of the articles

In this review, all 14 studies were evaluated for quality using the Mixed Methods Appraisal Tool (MMAT) (see Appendix 1). The MMAT is a validated instrument that is widely used to assess the quality of scientific research (Pace et al. 2012). MMAT consists of four criteria. For each article, a score is calculated by adding the criteria that have been satisfied; 25% for one criterion, and 100% if all four criteria have been satisfied. The quality scores in MMAT are divided into three categories: low (scores below 25%), medium (scores between 50% and 75%) and high (scores above 75%). The methodological rigour and relevance of the data were verified for all the studies included in this review (Table 2). The quality assessment found that the majority of the articles (n = 8; 57.1%) were considered of high quality, while the remaining articles (n = 6; 42.9%) were of medium quality. No articles were removed from the review as a result of the quality assessment process.

2.2.3 Data extraction and analysis

Data were extracted from each included article and organised into a table (Table 2). The extraction table included the following data: author details and year of publication, title, study methods, study aims, types of participants and sample size, study settings and key findings. In this study, comprehensive narrative synthesis was used to analyse the articles included in this review (Baker 2016). The purpose of comprehensive narrative synthesis is to critique and summarise the included articles, draw conclusions about the topic, identify gaps in the research and, finally, formulate a research question, aims and objectives that are clear and focused (Aveyard 2014; Baker 2016). Following the analysis and summary of each of the included

articles, the researcher develops themes based on the findings and the purpose of the literature review (Baker 2016).

2.2.4 The big picture with a Saudi focus

The first observation to be made in this literature review is that there is a relatively small body of literature related to the oncology nursing specialty in Saudi Arabia. Table 2 shows that the focus of the studies varies and is generally confined to three topics: UNSs' and ORNs' oncology-related knowledge, UNSs' and ORNs' attitudes towards caring for dying patients, and ORNs' work-related issues.

Five quantitative studies have been conducted to examine the oncology and palliative care–related knowledge of UNSs and ORNs. Among them, four looked at palliative care knowledge, with one focusing on ORNs (Abudari et al. 2014) and three on UNSs (Aboshaiqah 2020; Ismaile, Alshehri & Househ 2017; Khraisat, Hamdan & Ghazzawwi 2017), while one study investigated pain management knowledge among ORNs (Alqahtani & Jones 2015).

Two studies assessed ORNs' attitudes. The first one examined their attitudes towards caring for dying patients (in addition to palliative care knowledge as mentioned above) (Abudari et al. 2014), while the second one analysed participants' attitudes towards do-not-resuscitate (DNR) orders (AbuYahya et al. 2021).

Eight studies have been conducted on oncology nursing work-related issues; of these four are quantitative. Wazqar et al. (2017b) examined the relationship between job strain, coping strategies and work performance. Haddad and Dagamseh (2016) investigated the influence of demographic characteristics on ORNs' intention to leave the profession and job satisfaction. Khraisat, Alkhawaldeh and Abuhammad (2019) evaluated ORNs' perception of the best facilitators for providing spirituality and spiritual care at the end of life for paediatric patients.

Hamdan et al. (2019) assessed the prevalence of burnout and psychosocial distress among oncology healthcare workers.

Four qualitative studies have been conducted among ORNs in Saudi Arabia. The first study investigated the experiences of non-Muslim ORNs caring for terminally ill Muslim oncology patients (Abudari, Hazeim & Ginete 2016). The second one investigated the sources of work stress among ORNs (Wazqar 2018). The third study investigated ORNs' perceptions of the barriers to effective pain management for oncology patients (Alqahtani, Jones & Holroyd 2016). The fourth one identified the recommended solutions to minimise medication errors in an adult oncology department in Saudi Arabia from the perspectives of healthcare professionals, including ORNs (Khraisat, Alkhawaldeh & Abuhammad 2019).

Table 2: Characteristics and ley findings of the studies related to oncology nursing in Saudi Arabia

#	Author/ year	Article title	Methodology and study design	Study aim	Participants	Settings	Quality of the article	Key findings related to literature review
1	Abudari et al. (2014)	Knowledge of and attitudes towards palliative care among multinational nurses in Saudi Arabia	Quantitative – cross-sectional survey	To evaluate palliative care knowledge and attitudes using the Palliative Care Quiz for Nursing (PCQN) and Frommelt Attitude Toward Care of the Dying (FATCOD) assessment tools	395 ORNs; the results were split based on Saudi and non-Saudi participants	Referral hospital in Riyadh (King Faisal Specialist Hospital and Research Centre [KFSHRC])	High	- The mean results of the PCQN assessment tool were 9.06 (SD 3.07), indicating poor palliative care knowledge. (The Saudi ORNs scored 7.06 [SD 2.96].) - The mean results of the FATCOD assessment tool were 111.66 (SD 13.97), indicating moderate attitudes towards caring for dying patients. (The Saudi ORNs scored 101.69 [SD 14.96].) - Nurses' nationality (participants came from 19 countries) and the degree to which palliative care has been integrated in those countries had significant effects on their knowledge and attitudes related to caring for dying patients. - Saudi ORNs scored lower on both the PCQN and FATCOD tools than other study participants from 19 countries, which was attributed to the absence of palliative care education in Saudi nursing universities.
2	Alqahtani and Jones (2015)	Quantitative study of oncology nurses' knowledge and attitudes towards pain management in Saudi Arabian hospitals	Quantitative – cross-sectional survey	To evaluate nurses' knowledge and attitudes regarding pain management using the Knowledge and Attitudes Survey Regarding Pain (KASRP) assessment tool	320 ORNs	Five hospitals in Saudi Arabia with bed capacities of more than 500 beds	High	- The overall mean KASPR results were 45.1% (95%, CI = 43.9%, 46.2%) correct answers, indicating that ORNs had poor knowledge of pain management. - It was found that the mean KASRP scores varied significantly according to nurses' nationalities, suggesting that cultural differences may contribute to the variability in competence.

#	Author/ year	Article title	Methodology and study design	Study aim	Participants	Settings	Quality of the article	Key findings related to literature review
3	Alqahtani, Jones and Holroyd (2016)	Organisational barriers to effective pain management amongst oncology nurses in Saudi Arabia	Qualitative – focus group discussions	To investigate nurses' perceptions of barriers to effective pain management for oncology patients	35 ORNs participated in five focus group discussions of six to eight nurses in each group.	Five hospitals in Saudi Arabia with bed capacities of more than 500 beds	High	- As perceived by ORNs, the high workload and a lack of cooperation among healthcare providers were the main obstacles to achieving effective pain management. - Many ORNs were dissatisfied and distressed due to their inability to deliver pain management to their patients on time due to their heavy workload.
4	Abudari, Hazeim and Ginete (2016)	Caring for terminally ill Muslim patients: lived experiences of non-Muslim nurses	Qualitative – descriptive semi-structured interviews	To investigate non-Muslim nurses' experiences in caring for Muslim terminally ill patients and their families in relation to physical, social, cultural, spiritual and religious practices, along with the context and circumstances that influence their experiences as described by the nurses.	10 ORNs (non-Muslim)	Referral hospital in Riyadh (King Faisal Specialist Hospital and Research Centre [KFSHRC])	High	- Most participants reported their lack of cultural knowledge regarding several cultural and religious practices, which left them feeling frustrated. - Most participants reported language barriers as major obstacles to establishing efficient communication. - Non-Muslim nurses in Saudi Arabia were mainly impacted by cultural practices and religious beliefs, as well as a family-centred approach to the care process. Other factors, including family preparedness and fear of opioids, palliative care integration and hospital structure contributed to this experience.
5	Haddad and Dagamseh (2016)	Nurses intent to leave and job satisfaction in hematology/oncology areas: implications for policy and practice	Quantitative – cross-sectional survey	To identify the influence of demographic characteristics on the intent to leave and job satisfaction of ORNs using McCloskey-Mueller Satisfaction Scale (MMSS) questionnaire.	223 ORNs	Oncology department in referral hospital in Riyadh	Medium	- Around 47% of the surveyed ORNs intend to leave their current jobs within the next three years. - There was significant negative correlation between the job and the intention to leave decisions.

#	Author/ year	Article title	Methodology and study design	Study aim	Participants	Settings	Quality of the article	Key findings related to literature review
6	Ismaile, Alshehri and Househ (2017)	Knowledge of palliative care among nursing students	Quantitative – cross-sectional survey	To evaluate the palliative care knowledge using the PCQN assessment tool	204 UNSs from years 2, 3 and 4	University of Princess Nourah Bint Abdulrahman nursing college, Riyadh, Saudi Arabia	Medium	- The mean results of the PCQN assessment tool were 7 (SD 2.8), indicating a deficit of palliative care knowledge among UNSs. - The study found that 42.1% of surveyed UNSs had not received any palliative care education during their undergraduate nursing program.
7	Khraisat, Hamdan and Ghazzawi (2017)	Palliative care issues and challenges in Saudi Arabia: knowledge assessment among nursing students	Quantitative – cross-sectional survey	To evaluate palliative care knowledge using the PCQN assessment tool	154 UNSs	College of Nursing, Riyadh, Saudi Arabia	Medium	- The mean results of the PCQN assessment tool were 7.3 (SD 0.56), indicating a deficit of palliative care knowledge among UNSs. - The study found that 77% of UNSs reported that they did not receive any palliative care education during their undergraduate nursing program.
8	Wazqar et al. (2017b)	Relationships between job strain, coping strategies, and work performance among oncology nurses working in Saudi oncology care settings	Quantitative – cross-sectional survey	To investigate the potential mediating effects of coping strategies on the relationship between job strain and work performance using the Job Content Questionnaire (JCQ), Revised Ways of Coping Questionnaire (RWCQ) and Six-Dimension Scale of Nursing Performance (6-DSNP)	241 ORNs	Five large hospitals in Makkah and Jeddah in Saudi Arabia	Medium	- Job strain had a significant negative relationship with work performance. - ORNs who reported having adopted more effective coping strategies were more likely to report higher levels of work performance.
9	Wazqar (2018)	Oncology nurses' perceptions of work stress and its sources in a	Qualitative – descriptive semi-structured interviews	To identify and understand the sources of work stress among ORNs	14 ORNs	Oncology Department, University Teaching	High	- Most ORNs expressed high levels of stress in the workplace. - The stress source was identified as being a result of workload and staff shortages, emotional demands, a lack of social support,

#	Author/ year	Article title	Methodology and study design	Study aim	Participants	Settings	Quality of the article	Key findings related to literature review
		university-teaching hospital: a qualitative study				Hospital, Saudi Arabia		language barriers and poor treatment of patients and family members, as well as cultural differences.
10	Aboshaiqah (2020)	Predictors of palliative care knowledge among nursing students in Saudi Arabia: a cross-sectional study	Quantitative – cross-sectional survey	To identify the predictors of palliative care knowledge among UNSs	409 UNSs	Two academic institutions, one public and one private, located in Riyadh.	High	- The mean results of the PCQN assessment tool were 5.23 (SD 3.24), indicating a poor of palliative care knowledge - The following variables were identified as significant predictors of palliative care knowledge: type of university, the year of study, attending an educational session on palliative care outside of the university, and taking a university course
11	AbuYahya et al. (2021)	The do not resuscitate order (DNR) from the perspective of oncology nurses: A study in Saudi Arabia	Quantitative – cross-sectional survey	To evaluate ORNs' attitudes towards the do not resuscitate order (DNR) using a questionnaire designed by Dunn (2000)	156 ORNs	Referral hospital in Riyadh (King Fahad Medical City [KFMC])	Medium	- Approximately 80% of the participants expressed a desire to know more about patients' rights regarding end-of-life decisions and the use of the DNR order. - A typical ORN implements a paternalistic approach to treating patients and family members when they understand the patient's needs. - Being from Muslim countries has a profound impact on nurses' attitudes towards DNR because of their faith and backgrounds.
12	Khraisat, Hamdan and Ghazzawi (2017)	Spirituality-focused end-of-life care among paediatric patients: evidence from Saudi Arabia?	Quantitative – cross-sectional survey	To assess the greatest facilitators that would help to provide spirituality for paediatric end of life	250 ORNs	Oncology hospital located in Riyadh	High	-Approximately 79% of ORNs had not received education on spiritual care - ORNs reported that the main facilitators of spirituality were: belief in the effect of spirituality, a willingness to listen and to allow patients to discuss their fears, using art, creativity and self-expression, and

#	Author/ year	Article title	Methodology and study design	Study aim	Participants	Settings	Quality of the article	Key findings related to literature review
								respecting patients' privacy, dignity, and religious and cultural beliefs.
13	Alharbi, Cleland and Morrison (2019)	Addressing medication errors in an adult oncology department in Saudi Arabia: a qualitative study	Qualitative – focus group discussions	To identify recommended solutions to minimise medication errors in an adult oncology department in Saudi Arabia from the perspectives of healthcare professionals.	A total of 27 participants participated in seven single-profession focus groups, including 16 ORNs, eight doctors and three pharmacists.	Adult oncology department in a hospital located in Saudi Arabia	High	- Communication barrier was one of the factors responsible for medication errors in oncology department - ORNs reported that supportive policies and nurse leaders were lacking in relation to reporting medication errors and a non-blame culture in the workplace - Participants stated that there was a shortage of staff and a high workload in the oncology department that contributed to medication errors
14	Hamdan et al. (2019)	Burnout Among healthcare providers in a comprehensive cancer center in Saudi Arabia	Quantitative – cross-sectional survey	To assess the prevalence of burnout, psychosocial distress, on oncology healthcare workers.	85 ORNs, 55 physicians and 17 allied health professionals	Oncology department in referral hospital in Riyadh	Medium	- Burnout was prevalent in 29% of ORNs. - 37% of participants reported experiencing high to very high psychological disturbances - The majority of participants reported that job burnout is mainly due to stressors related to the work environment, followed by issues related to the leadership style of the hospital management

After reviewing all fourteen articles, a set of themes was developed based on the purpose of this review, namely to identify the key problems and challenges facing the oncology nursing specialty in Saudi Arabia. The following four themes were identified: language- and culture-related issues, work-related stress, educational preparation and ORNs' attitudes towards selected nursing practices. These themes are discussed in more detail in the following sections.

2.2.5 Language- and culture-related issues

The cultural and linguistic differences between ORNs and patients in Saudi hospitals can affect the quality of health care and create stress for ORNs. Several studies have reported that ORNs have problems related to communication in Saudi oncology settings (Abudari, Hazeim & Ginete 2016; Alharbi, Cleland & Morrison 2019; Haddad & Dagamseh 2016; Wazqar 2018). These problems are primarily attributed to the fact that most ORNs in the country are expatriates who are not proficient in Arabic and come from cultures that differ from those of Saudi Arabia (Haddad & Dagamseh 2016; Wazqar 2018). For instance, a study based on in-depth interviews investigated the source and nature of work-related stress among fourteen ORNs working in Saudi hospitals (Wazqar 2018). The language barrier was identified as a major source of work-related stress for expatriate ORNs, since not being able to understand patients resulted in feelings of helplessness and frustration. Furthermore, expatriate ORNs were found to be unable to provide appropriate emotional support for their oncology patients and their families due to the language barrier, which negatively affected the quality of care. Alharbi, Cleland and Morrison (2019) found that communication difficulties were one of the factors contributing to medication errors in oncology settings, which could have serious consequences for patients and hospitals. Overall, language barriers appear to have a negative impact on patient outcomes, worker satisfaction, and the overall quality of the therapeutic relationship between expatriate ORNs, oncology patients and their families.

Cultural and religious differences were also found to create stress for expatriate ORNs and to compromise the quality of patient care (Abudari, Hazeim & Ginete 2016; Wazqar 2018). For example, Abudari, Hazeim and Ginete (2016) conducted a qualitative study among ten expatriate non-Muslim ORNs working at a referral hospital in Riyadh to explore their experiences of caring for terminally ill Muslim cancer patients and their families. Their findings revealed that one of the greatest concerns for non-Muslim ORNs was the lack of local cultural and religious understanding, which hindered their ability to communicate with patients and their families effectively and address their needs, especially in terms of end-of-life care. Furthermore, non-Muslim ORNs were found to experience stress and frustration due to cultural and religious barriers as a result of their inability to understand their patients' needs and provide the required care (Abudari, Hazeim & Ginete 2016).

Another cultural issue causing moral distress for ORNs is the decision by some patients' families not to disclose the cancer diagnosis to their relatives (Abudari, Hazeim & Ginete 2016; Wazqar 2018). Furthermore, in Abudari, Hazeim and Ginete's (2016) study, expatriate ORNs reported that patients' families sometimes made decisions or followed practices based on religion and tradition, which conflicted with therapeutic and hospital practices. As a result, the ORNs were hindered by family interference in their efforts to provide the best care to patients, creating additional stress (Abudari, Hazeim & Ginete 2016). Moreover, some oncology patients and their families prefer to use traditional herbal wound dressings, which is against hospital policy and interferes with the nurse's responsibilities, causing ORNs additional stress (Wazqar 2018). Overall, these studies highlight the negative impacts of factors related to cultural differences on oncology patients' quality of care and stress levels among ORNs.

2.2.6 Work-related stress

The experience of stress was found to be exacerbated by working conditions. ORNs in Saudi Arabia are exposed to a variety of work-related stressors that adversely affect their job satisfaction (Hamdan et al. 2019; Wazqar 2018; Wazqar et al. 2017b). For instance, Wazqar et al. (2017b) surveyed 241 ORNs in five healthcare facilities to explore the relationships between their coping strategies, job strains and work performance. They found that most ORNs experienced disproportionate levels of work stress, which negatively impacted their work performance and impeded their ability to effectively carry out their duties. The qualitative study by Wazqar (2018) concluded that ORNs faced high work-related stress due to a number of factors, including high workload expectations, nurse shortages, psychological demands, lack of social support, language and cultural barriers, and poor treatment by patients and family members. Hamdan et al. (2019) obtained similar results in their study of eighty-five ORNs, fifty-five physicians and seventeen allied health professionals working in an oncology department of a referral hospital in Riyadh. The authors found a high rate of the signs and symptoms linked to worker burnout among ORNs (29% of respondents), who experienced feelings of emotional exhaustion, depersonalisation and a low level of accomplishment. Most participants, including ORNs, reported that job burnout was mainly due to stressors related to the work environment, followed by issues with the leadership style of the hospital management. Furthermore, approximately 37% of participants (including ORNs) reported experiencing high to very high psychological morbidity, with symptoms including anxiety and depression within the previous few weeks. In this study, the authors did not differentiate or explain the study results separately for ORNs, physicians and other allied health professionals (e.g. the prevalence of psychological disturbances, participants' perceptions of the stressors), and it may be that the factors influencing outcomes were different for each group. Overall, the above-mentioned studies provide important insights into the work-related stressors experienced by

ORNs in Saudi hospitals. However, this study did not include information regarding the nationality of the participants particularly the ORNs, which could have added insight into the burnout among ORNs working in Saudi hospital.

Scholars have also identified factors that can contribute to a reduction of the impact of work stress on ORNs. Wazqar et al. (2017b), for instance, found that ORNs who had advanced training and education in oncology were less likely to experience job strain than those who did not have any training in oncology nursing. Moreover, ORNs who used effective coping strategies achieved higher levels of work performance and less work-related stress. It is noteworthy that only twenty-four of the 241 Saudi ORNs participated in this study, and the results may not be representative of the challenges faced by this population. The authors also did not report the descriptive results of the research instruments or the results of the Saudi ORNs separately.

ORNs tend to leave their jobs as a result of unsatisfactory working conditions. Haddad and Dagamseh (2016) surveyed 223 expatriate ORNs working in a referral hospital in Riyadh to determine the relationship between demographic characteristics, intention to leave and job satisfaction. They found a high rate of intention to leave among expatriate ORNs, with approximately 47% of them planning to leave their job within the next three years. The study also uncovered a negative correlation between job satisfaction and intention to leave, which indicates that ORNs who are more satisfied are less likely to leave their position. Regarding demographic characteristics, ORNs' nationality and marital status had a significant effect on their intention to leave the job, with nurses who had never been married being more likely to leave than married ORNs. However, this study provided no adequate justification for why the inclusion criteria were limited to expatriate ORNs. Including Saudi ORNs could have offered more insights into oncology nursing in Saudi Arabia.

The reviewed studies found that ORNs experience a high workload, which negatively impacts their job satisfaction and the quality of nursing care provided (Alqahtani, Jones & Holroyd 2016; Hamdan et al. 2019; Wazqar 2018). In a qualitative study conducted in five Saudi referral hospitals, five focus groups were conducted to explore the perceptions of ORNs regarding the barriers to providing effective pain management to cancer patients (Alqahtani, Jones & Holroyd 2016). The study found that the lack of cooperation among healthcare providers and the high workload were the main obstacles for ORNs trying to provide effective pain management. The high workload meant that many ORNs were unable to provide appropriate pain management to their patients, which left them feeling dissatisfied and distressed. The excessive workload was primarily due to a shortage of nurses and a high rate of nursing turnover. The authors also argued for the need to identify and address the factors contributing to nursing shortages in oncology in order to recruit and retain more staff. Hamdan et al. (2019) identified high workloads as one of the causes of burnout among ORNs in Saudi Arabia. Wazqar (2018) also found that ORNs were unable to deliver appropriate care due to nurse shortages and high workloads. The latter problem negatively impacted their satisfaction with the role. However, there was only one Saudi ORN included in the cohort of 12 participants in this qualitative study, which makes it difficult to appreciate the challenges of the Saudi staff. Furthermore, all the ORN participants in the study reported that they had received advanced preparation (specialised education) in oncology nursing, so the results are likely not representative of the challenges faced by ORNs who do not receive such preparation.

Lack of leadership support is another factor that has been found to contribute to ORNs' dissatisfaction with working conditions (Alharbi, Cleland & Morrison 2019; Wazqar 2018). Alharbi, Cleland and Morrison (2019) conducted a qualitative study with twenty-seven participants (sixteen ORNs, eight doctors and three pharmacists), who took part in seven single-profession focus groups aimed at identifying recommendations for reducing medication errors

among healthcare professionals. The study revealed that ORNs complained about a lack of leadership support and a 'blame workplace culture', which contributed to the occurrence of medication errors. In another study (Wazqar 2018), ORNs expressed their dissatisfaction with the way the nursing leader treated them, claiming that this person did not appear to care about the nurses and exhibited blaming rather than supportive behaviour. Overall, these studies indicate that there is a lack of leadership support for ORNs, which can affect the safety of patients and the job satisfaction of nurses.

Some oncology patients' families and visitors have been found to negatively impact both patient quality of care and ORNs' work satisfaction (Abudari, Hazeim & Ginete 2016; Wazqar 2018). In several studies, ORNs have reported experiencing disrespectful treatment from patients' families and visitors and feeling that their contribution to improving the health of patients was underestimated (Abudari, Hazeim & Ginete 2016; Haddad & Dagamseh 2016; Wazqar 2018). Some ORNs considered the families and visitors of their patients as sources of stress in their working environment (Haddad & Dagamseh 2016; Wazqar 2018). Hamdan et al. (2019) noted that language and cultural barriers contribute to job dissatisfaction and intentions to leave the workplace among expatriate ORNs. The findings of these studies suggest that managing patients' families and visitors can be challenging and demanding, particularly for expatriate ORNs, due to cultural and language barriers.

2.2.7 Educational preparation

A lack of academic preparation in palliative care theory and practice in undergraduate nursing programs contributes to inadequate academic knowledge and a poor skills base for clinical practice when nurses are working with patients who are dying from cancer (Khraisat, Hamdan & Ghazzawwi 2017). Three studies have evaluated palliative care knowledge among UNSs by using the Palliative Care Quiz for Nursing (PCQN) (Aboshaiqah 2020; Ismaile, Alshehri &

Househ 2017; Khraisat, Hamdan & Ghazzawwi 2017). All three studies found that UNSs possess poor knowledge of palliative care nursing. They also revealed that more than half of the participants had not received any formal palliative care training at university. In Aboshaiqah's (2020) study, four variables were identified as significant predictors of palliative care knowledge: type of university, year of study, attending an educational session on palliative care outside university and receiving palliative care–related education at university. Ismaile, Alshehri and Househ (2017) and Khraisat, Hamdan and Ghazzawwi (2017) argued that palliative care was given little attention in the nursing curriculum in Saudi universities and should be integrated into the nursing bachelor's program. However, in both Ismaile, Alshehri and Househ's (2017) and Khraisat, Hamdan and Ghazzawwi's (2017) studies, the study participants were UNSs from different academic levels, and the results were presented without splitting them based on student academic year levels, which may not reflect the knowledge level of students in advanced years.

Palliative care and pain management knowledge among ORNs is considered unsatisfactory due to a lack of appropriate nursing education preparation (Aboshaiqah 2020; Ismaile, Alshehri & Househ 2017; Khraisat, Hamdan & Ghazzawwi 2017). Only two studies have evaluated this aspect. The first one examined ORNs' palliative care knowledge using the PCQN (Abudari et al. 2014). The second study assessed pain management knowledge using the Knowledge and Attitudes Survey Regarding Pain (KASRP) tool (Alqahtani & Jones 2015). In a cross-sectional study, Abudari et al. (2014) investigated the palliative care knowledge of 395 ORNs working in the main referral hospital in Riyadh. They found that ORNs had poor levels of palliative care knowledge. Saudi ORNs scored substantially lower than the mean score of all the participants in the hospital, who came from nineteen countries. The study's findings indicated that palliative care knowledge was influenced by the degree of integration of palliative care into the healthcare system in the nurses' countries of origin. The authors

attributed the low PCQN scores among Saudi participants to the lack of palliative care education in Saudi universities. In terms of pain management knowledge, Alqahtani and Jones (2015) conducted a study among 320 ORNs across five referral hospitals in Saudi Arabia and revealed that most nurses exhibited poor knowledge of pain management. Furthermore, ORNs' knowledge varied significantly according to nationality, suggesting that culture may contribute to differences in knowledge level since the participants came from several countries. In this study, there were twenty-three Saudi ORNs; however, no detailed information about them was provided in the results. Presenting the results of Saudi ORNs separately may provide further insight into the curriculum related to pain management in Saudi nursing colleges.

2.2.8 ORNs' attitudes towards selected nursing care

In the Saudi context, ORNs perceive some oncology nursing care negatively and some neutrally such as providing nursing care to terminally ill oncology patients and patients with 'do not resuscitate' (DNR) orders (Abudari et al. 2014; AbuYahya et al. 2021). Only two studies examined this aspect. The first one looked at attitudes towards care for dying patients using the Frommelt Attitude Toward Care of the Dying (FATCOD) scale (Abudari et al. 2014). The second study investigated oncology nurses' attitudes towards DNR orders using the twenty-five statements developed by Dunn (2000) (AbuYahya et al. 2021). Abudari et al.'s (2014) results showed neutral attitudes towards caring for dying patients among ORNs. However, the Saudi participants scored substantially lower than the mean score of the participants from nineteen other countries working in the same hospital, indicating a negative attitude towards caring for dying patients. This finding was attributed to a lack of palliative care education in Saudi nursing schools. AbuYahya et al. (2021) conducted a cross-sectional study among 190 ORNs working in a referral hospital in Riyadh and found that the majority of participants had a neutral attitude towards DNR orders. The authors also discovered that most

ORNs were concerned about being sued by patients' families as a result of complying with the DNR request. The authors attributed this issue to the absence of an explicit medical law addressing this matter. Furthermore, the majority of participants reported the need to learn more about their patients' rights to end-of-life care. However, this study did not include information regarding the nationality of the participants, which could have added insight into the attitudes of Saudi ORNs. The authors did report that around 70% of participants were Christians and 20% were Muslims, without including this information in their analysis, despite its potentially important impact on ORNs' attitudes.

2.2.9 Summary of the key issues concerning ORNs in Saudi Arabia

This literature review focused on published research related to the specialty of oncology nursing in Saudi Arabia. It identified a number of challenges that confront the specialty. Language and cultural barriers are major concerns for expatriate ORNs. They create stress and limit nurses' ability to communicate effectively and provide emotional support; they also contribute to medication errors. In Saudi Arabia, most ORNs have reported feeling dissatisfied with their work environment due to a variety of stressors, including workload, shortages of nurses, psychological demands, lack of social support, lack of leadership support, and poor treatment from patients and their families. The results of the review also show a weakness in the academic preparation of nursing students and ORNs in some areas, such as palliative care (among nursing students) and palliative care and pain management (among ORNs). Moreover, Saudi ORNs exhibit a more negative attitude towards caring for dying patients than expatriate ORNs. Saudi ORNs also possess substantially lower knowledge of palliative care compared to expatriate ORNs.

In the following section, the international literature is reviewed to understand the possible factors affecting oncology nurses' intention to work in the speciality, the issues surrounding

retention and staff turnover, and UNSs' attitudes towards working in the oncology nursing specialty.

2.3 The oncology nursing specialty in the international literature

Since there is little published research on oncology nursing in Saudi Arabia, a broader search was conducted to include international articles. The purpose of this extended review was to discuss the literature on UNSs' attitudes towards working in oncology and ORNs' retention/turnover in order to understand the factors influencing these phenomena.

2.3.1 Search strategy

To retrieve relevant literature concerning both ORNs and UNSs, two searches were conducted. The first was limited to international articles related to ORNs and the factors affecting their decision to continue working in or resign from their position. The second search was limited to UNSs and their experiences and attitudes towards working in the specialty of oncology.

A literature search was conducted using the online databases PubMed, CINAHL, Embase and Scopus, as these were the most relevant databases for the search. The researcher developed a logic grid based on the problem and the keywords identified through the preliminary search for content related to both ORNs (see Table 3) and UNSs (see Table 4). During the search, truncations (*) were applied to the keywords as required. The search was limited to English- and Arabic-language articles as the researcher is fluent in both languages. To facilitate the inclusion of the broadest range of relevant literature, no date limiters were applied. Only full-text articles were included, with conference abstracts and study protocols excluded.

Table 3: Oncology nurse search strategy logic grid

Nurses	Oncology nursing	Intention to work in oncology
'nurse*':ti,ab OR 'nurses*':ti,ab OR 'nursing*':ti,ab OR 'nursing care*':ti,ab	'oncology':ti,ab OR 'cancer ':ti,ab OR 'chemotherapy':ti,ab OR 'radiotherapy':ti,ab OR 'palliative'	'intent to leave':ti,ab OR 'intention to leave':ti,ab OR 'retention' :ti,ab OR 'turnover' :ti,ab OR 'intent to quit' :ti,ab OR 'retention' :ti,ab

Table 4: Nursing students search strategy logic grid

Students	Related to oncology
'nurse student*':ti,ab OR 'nursing student*':ti,ab OR 'undergraduate nurse*':ti,ab OR 'undergraduate nursing student*':ti,ab	'oncology':ti,ab OR 'cancer ':ti,ab OR 'chemotherapy':ti,ab OR 'radiotherapy':ti,ab OR 'palliative' OR 'oncology experience' OR 'oncology placement' OR 'Specialty preference'

The inclusion criteria were as follows: articles published in peer-reviewed journals, including qualitative, quantitative and mixed-methods studies; systematic reviews; integrative reviews; scoping reviews; and literature reviews, including discussion, policy and editorial reviews. In terms of population, the inclusion criteria were limited to ORNs and UNSs. Regarding the former, articles were excluded if the study population was not ORNs or if the studies did not measure the intention to leave or stay in the oncology specialty.

The initial search identified 362 potential articles. The abstract of each article was reviewed against the inclusion criteria. Duplicate articles were excluded (n = 178), after which 158 articles that did not meet the inclusion criteria were removed. A review of the included articles' reference lists was performed to identify additional relevant primary sources; no new articles were found through this citation search. In the end, twenty-six articles were included in the review. Two main themes emerged from reviewing the international literature: nursing students' experience and educational preparation, and factors influencing ORNs' turnover intentions. The following two subsections discuss these two themes.

2.3.2 UNSs' experience and educational preparation

A number of problems have been identified in the specialty of oncology nursing at the undergraduate level. Several studies have demonstrated that UNSs tend to have a negative attitude towards cancer and care for oncology patients (Hedenstrom et al. 2021; Ifanti et al. 2009; Kapucu & Bulut 2018; Komprood 2013; Sharour et al. 2017). A cross-sectional study of 105 Greek UNSs revealed that more than half of the participants expressed feelings of fear and insecurity when caring for oncology patients (50%), and 77% believed that a cancer diagnosis would result in patient fatality (Ifanti et al. 2009). Kapucu and Bulut (2018) conducted a mixed-methods study consisting of focus groups and cross-sectional designs to evaluate the experiences of Turkish UNSs training in an oncology department. They found that UNSs' negative attitudes were influenced by a number of emotional factors, such as sadness caused by the patient's suffering, fear of the patient's rapid deterioration, regret at being unable to help terminally ill patients, and fear of cancer itself, as death and suffering are always associated with the disease. Sharour et al. (2017) carried out a cross-sectional study of one hundred Jordanian UNSs to assess their feelings towards death and caring for dying cancer patients during their placement. The study identified that UNSs' age and experience significantly influenced their attitudes concerning cancer and care for oncology patients, as younger and less experienced students exhibited more negative feelings. In New Zealand, Wilkinson et al. (2016) conducted a study with 287 newly graduated nurses to investigate the factors that affected their desire to work in different nursing areas. The authors found that the oncology specialty was the least preferred and that most nurses preferred to work in surgery, medical, mental health and emergency settings. In addition, Komprood (2013) and Hedenstrom et al. (2021) found that the lack of academic preparation and exposure to the oncology field may contribute to UNSs' negative attitude towards cancer and care for oncology patients. Overall,

these studies indicate that there is a relationship between UNSs' feelings towards working in oncology nursing and their undergraduate education.

Alongside educational preparation, UNSs' oncology clinical experience is an important factor in their attitudes towards cancer and care for oncology patients. Previous studies have reported that oncology clinical experience improves nursing students' feelings in this domain (Dedeli, Daban & Pakyuz 2016; Hedenstrom et al. 2021; Komprood 2013; Sharour et al. 2017). Other scholars have noted that the majority of UNSs have not been exposed to or received any training in oncology clinical settings, which negatively impacted their attitude towards working in the oncology nursing specialty (Flynn Jr 2015; Hedenstrom et al. 2021; Komprood 2013). Mooney (2000) pointed out that recruitment and retention of registered nurses in the oncology nursing specialty are highly affected by UNSs' opportunities to access oncology content and clinical experiences. Furthermore, UNSs' preclinical observation in an oncology setting has been found to have a positive influence on their attitudes towards cancer and oncology patients (Powell, Cooke & Brakke 2019). A supportive nurse mentor has been indicated as one of the most beneficial factors in promoting learning and comfort during clinical oncology placement (Kav et al. 2013; Komprood 2013). Collectively, these studies outline the critical role of oncology clinical experience in UNSs' feelings regarding cancer and care for oncology patients and, ultimately, the future recruitment and retention of registered nurses in this specialty.

UNSs' competency and confidence in providing nursing care for oncology patients have been linked to improved nursing education and training in oncology settings. In several studies, oncology clinical training and education have been shown to enhance students' confidence, competence and attitudes towards providing nursing care for oncology patients (Edwards et al. 2017; Edwards et al. 2016; Hedenstrom et al. 2021; Komprood 2013; Mohan et al. 2005; Powell, Cooke & Brakke 2019; Sanford et al. 2011). Edwards et al. (2016) used a pre-test–post-test experimental study design with 175 British UNSs divided into two groups to

investigate the effects of an oncology education program on the knowledge, attitudes and confidence of the students regarding the delivery of cancer care. The UNSs in the intervention cohort group were exposed to a new three-and-a-half-day oncology education program that included engagement with patients, hospital workers and health professionals, while the comparison group was exposed to a two-day didactic oncology lecture. The authors found that the participants who received the new oncology education program (intervention cohort) showed good overall oncology knowledge, more positive attitudes, and more confidence in their ability to provide nursing care to oncology patients. Likewise, Hsu, Ueng and Hsieh (2019) conducted a pre-test–post-test survey of 213 Taiwan UNSs divided into two groups to compare the effectiveness of a simulation-based oncology education program and a traditional lecture-based one. Their findings showed that UNSs who received simulation-based oncology education (intervention cohort) showed higher overall oncology nursing knowledge, had higher learning satisfaction, and had more confidence in their abilities to provide nursing care to oncology patients. However, using a mixed-methods design (surveys and focus groups), Kapucu and Bulut (2018) found that Turkish UNSs who trained in the oncology department experienced significant emotional stress due to their self-perceived lack of competency regarding oncology nursing knowledge and experience. Overall, in their review study, Hedenstrom et al. (2021) concluded that a lack of oncology training and education among UNSs is responsible for their fear, lack of confidence and negative attitudes towards patients with cancer.

2.3.3 Factors influencing ORNs' intentions to leave the oncology setting

In the oncology nursing specialty, ORNs are considered at high risk of experiencing job dissatisfaction, stress, burnout and compassion fatigue due to their exposure to patients who are going through multiple and repeated traumas related to cancer, such as the side effects of

chemotherapy and radiotherapy, particularly when dealing with terminally ill individuals (Macintyre, Brown & Schults 2022). ORNs' level of job satisfaction is one of the main factors influencing their intention to leave the profession (Barrett & Yates 2002; Gillet et al. 2018; Lagerlund et al. 2015; Toh, Ang & Devi 2012). Several factors determine ORNs' job satisfaction. Lagerlund et al. (2015) surveyed 7,412 Swedish registered nurses caring for oncology patients in an inpatient unit, and identified that almost 33% of respondents said that they intended to leave their workplace within the next year due to job dissatisfaction. Four factors were significantly associated with nurses' intention to leave: oncology education, experience, burnout and perception of leadership. Nurses who perceived themselves as having adequate oncology nursing education, had more nursing experience, reported more favourable perceptions of leadership and had lower burnout scores were found to have less intention to leave their workplace. The authors argued that leadership in oncology nursing is a crucial factor in improving nurses' job satisfaction and has the potential to be improved. Barrett and Yates (2002) surveyed 243 Australian oncology/haematology nurses working in oncology/haematology care facilities in Queensland. They found that approximately half of the participants intended to leave the specialty within a year. Furthermore, approximately 40% indicated that they experienced excessive workloads, and 48% reported unsatisfactory professional support and pay. However, the study consisted only of a descriptive analysis; an inferential analysis (e.g. correlation or regression) of the relationship between the variables and the outcome (turnover intention) could have provided further insight into the phenomenon.

ORNs are particularly vulnerable to burnout due to repeated and prolonged emotional stress, which results in both mental and physical exhaustion. Several previous studies have reported a high prevalence of burnout among ORNs (Barrett & Yates 2002; Bourdeanu et al. 2020; Davis, Lind & Sorensen 2013; Lagerlund et al. 2015; Wells-English, Giese & Price 2019). Four out of five of these studies utilised the Maslach Burnout Inventory to evaluate

nursing burnout in three subscales: emotional exhaustion, depersonalisation and personal achievement (Barrett & Yates 2002; Bourdeanu et al. 2020; Davis, Lind & Sorensen 2013; Lagerlund et al. 2015). Furthermore, burnout was significantly associated with ORNs' turnover intentions in several studies (Bourdeanu et al. 2020; Lagerlund et al. 2015; Wells-English, Giese & Price 2019). Barrett and Yates (2002) found that ORNs with moderate to high levels of burnout were more likely to consider leaving the oncology specialty. In Davis, Lind and Sorensen's (2013) survey of seventy-four ORNs working in four major medical facilities in the United States, almost 22% of the nurses had high emotional exhaustion. This emotional state was inversely correlated with job satisfaction and positively related to the intention to leave the oncology nursing specialty. ORNs working in paediatric oncology units were significantly less satisfied with their personal accomplishment than ORNs working in adult oncology units. According to the authors, the nurses perceived children's suffering and death as more traumatising than older people's pain and passing. By surveying 201 haematology/oncology nurses recruited from the database of the Oncology Nursing Society of the United States, Bourdeanu et al. (2020) found that nearly 31% of nurses exhibited high levels of emotional exhaustion, 9% reported high levels of depersonalisation, and 21% showed low levels of personal accomplishment. Nurses' emotional exhaustion was found to be a significant predictor of their intention to leave (Bourdeanu et al. 2020). The authors noted that addressing issues related to emotional exhaustion could be an effective way of improving ORNs' retention. Relevant actions include promoting rewards and a feeling of being valued, more flexibility in giving days off for personal reasons and implementing stress management interventions, such as mindfulness-based stress reduction. Overall, these studies reveal the critical role of burnout in ORNs' turnover intentions and the need to address this issue to improve ORNs' retention.

A number of other factors have been found to affect ORNs' intentions regarding their job and specialty, including co-worker relationships (Hinds et al. 2003), leaders' support,

nursing experience and oncology care education (Lagerlund et al. 2015), and workplace rewards and feeling valued (Bourdeanu et al. 2020). In a survey of ninety-three ORNs working in inpatient oncology units in the southern United States, Wells-English, Giese and Price (2019) showed that turnover intentions were inversely related to compassion satisfaction and positively related to secondary traumatic stress and burnout. The term 'secondary traumatic stress' refers to the stress that is caused by helping a traumatised or suffering individual. Compassion satisfaction is the 'antidote' to compassion fatigue as it consists of the satisfaction that comes from helping others (Figley 2002). Similarly, burnout, secondary traumatic stress and anxiety were positively correlated with turnover intention among ORNs working in eight Spanish hospitals (Arimon-Pagès et al. 2019). Furthermore, in Gillet et al.'s (2018) survey of 144 nurses (n = 83) and certified nursing assistants (n = 61) in eleven oncology units in France, turnover intentions were inversely related to supervisor support, staffing, need satisfaction, job satisfaction and quality of care. However, the study did not present separate results for nurses and nursing assistants, making it difficult to draw conclusions based on the findings since the roles and the scope of the services in question differ. According to Toh, Ang and Devi (2012), the shortage of ORNs is an important factor in leaving the specialty. The authors claimed that oncology nursing settings might be vulnerable to a vicious circle where ORN shortages result in inadequate staffing, which can lead to increased workloads and job dissatisfaction, thereby causing turnover and more staff shortages.

2.4 Gaps in the literature

The specialty of oncology nursing in Saudi Arabia is experiencing a shortage of Saudi nurses. Several problems have been identified that confront both UNSs and ORNs in the field of oncology nursing in the country. Educational preparation and training related to oncology nursing appear to be one of the most prominent challenges confronting UNSs, with under-

preparation contributing to poor rates of interest in working in this field and transitioning into employment in oncology units. The issues of significance for ORNs include job dissatisfaction, a shortage of nurses, heavy workloads, psychological burdens, a lack of leadership support and insufficient oncology educational preparation, and for expatriate ORNS there are additional challenges relating to language and cultural differences. Interestingly, Saudi ORNs demonstrate substantially inadequate knowledge about palliative care and more negative attitudes towards caring for dying patients compared to expatriate ORNs.

The international research cited above has identified several factors that influence nurses' dissatisfaction with their jobs and their intention to leave the workplace, such as emotional exhaustion, compassion fatigue, job burnout, high workloads, shortages of nurses, co-worker and leadership relationships, and workplace rewards and feeling valued. UNSs face several issues, such as an inadequate education and training program related to oncology nursing and a lack of confidence in practising this form of nursing. Opportunities for UNSs to receive training in oncology settings are rare. It also appears that oncology nursing is less attractive to UNSs than other specialties.

Overall, the literature discussed above identifies the challenges of working in the oncology speciality. However, the specific factors that impact nurses working in Saudi Arabia require further investigation.

2.5 Research objectives

Considering the identified factors and the gaps in the academic literature, this review has informed the development of the five research objectives. These are foundational to the overall research project and inform the approaches to data collection, analysis and integration. The five objectives of this research project are:

1) To determine the palliative care knowledge, attitudes towards caring for dying patients, self-efficacy and intention to work in the oncology speciality of UNSs, and postgraduate oncology nursing students (PONSs) and ORNs training and working in Saudi hospitals.
2) To determine the job satisfaction of ORNs.
3) To compare the palliative care knowledge, attitudes towards caring for dying patients, self-efficacy, intention to work in the oncology specialty and job satisfaction of Saudi and expatriate ORNs.
4) To identify the predictors of intention to work in oncology nursing for UNSs, PONSs and ORNs.
5) To identify the barriers and enabling factors for working in the oncology specialty from the perspectives of ORNs and registered nurses (RNs) in other specialties.

2.6 The potential significance of the research

To the candidate's knowledge, no previous study has explored the factors that influence nurses' intention to work in oncology in Saudi Arabia, and therefore this study will provide baseline data regarding the factors affecting both oncology nurses' and nursing students' intention to work in this specialty. The findings from this study will assist with identifying and understanding specific factors that may improve oncological working conditions, thereby enhancing nurses' job satisfaction, and reducing nursing turnover. Improving the work conditions and competency of oncology nurses will have a positive effect on the patient experience and raise the quality of nursing care provided. Understanding these factors will help the government achieve its goal of increasing the proportion of Saudis in advanced nursing specialties, including oncology nursing. Also, the increase in the number of Saudis in the specialty of oncology nursing may help in addressing communication difficulties resulting

from language and cultural differences between expatriate nurses and Saudi oncology patients. Identifying the barriers that prevent nursing students from selecting this specialty will assist policymakers in addressing these barriers, ultimately increasing the number of Saudi nurses pursuing careers in oncology nursing. Overall, gaining insight from the perspectives of students and oncology nurses about these factors is anticipated to assist with the development and implementation of successful strategies to attract and retain Saudi nurses to the specialty. Further, due to the lack of research related to oncology nursing in Saudi Arabia, the results of this study will provide baseline data for other researchers in Saudi Arabia and the region to conduct future research.

3. Chapter Three: Methodology and methods

3.1 Introduction

The aim of this study was to explore the factors that influence nurses' intention to specialise in oncology from the perspectives of students, registered nurses (RNs), and oncology registered nurses (ORNs) in Saudi Arabia. In Chapter One, background information was presented regarding the incidence and prevalence of cancer, the healthcare system and services, specifically oncology care services, and the status of the oncology nursing specialty in Saudi Arabia. Of significance, it highlighted the model of care that is used in Saudi Arabia, where oncology and palliative care services are delivered by the same nurse and in the same unit. Furthermore, it outlined the deficits present in the oncology nursing workforce in Saudi Arabia and highlighted some of the challenges in attracting Saudi nurses and retaining them in this field of practice. Chapter Two presented a synthesis and evaluation of national and international literature related to the factors that influence nurses working in the speciality of oncology. Specifically, Chapter Two highlights the challenges and the factors that may affect the intention of both ORNs and undergraduate nursing students (UNSs) to work in the specialty of oncology nursing. The purpose of Chapter Three is to describe the methodology selected for this research project and to provide the rationale to support the adoption of each approach used. This chapter is subdivided into the following four sections: the research paradigm, quantitative methods used in Phase One, qualitative methods used in Phase Two, and chapter summary.

3.2 Research paradigm

According to Creswell (2014), there are three main components of an appropriate research framework: the researcher's philosophical worldview, the research design and the research methods (Figure 3). The foundation of any research study is the researcher's philosophical

worldview, which reflects the researcher's assumptions and beliefs regarding the topic of inquiry. In nursing research, this is also known as the researcher's position (Creswell 2014; Polit & Beck 2016). As Polit and Beck (2016) explain, a researcher's worldview is determined by the philosophical questions that reflect their ontological and epistemological perspectives. The concept of ontology is concerned with the nature of reality and human knowledge (Al-Saadi 2014). The nature of reality depends on individuals' perceptions and varies based on where they live and when they experience a particular moment or event (Creswell & Clark 2017; Halcomb 2018). Epistemology refers to the process through which knowledge is obtained to interpret reality (Halcomb 2018; Polit & Beck 2016). The importance of epistemology lies in the central role it plays in how researchers formulate research questions and research designs, and conduct studies to obtain knowledge (Al-Saadi 2014; Moon & Blackman 2014). In social and human research studies, a researcher's ontological and epistemological positions are crucial for understanding the research process as well as the relationship between the researcher and the phenomenon being studied (Creswell 2014). Thus, these two terms represent the worldview and beliefs that guide a researcher's actions and choice of a suitable research methodology (Creswell 2014; Polit & Beck 2016). The ontological and epistemological positions underlying the present study are explained below.

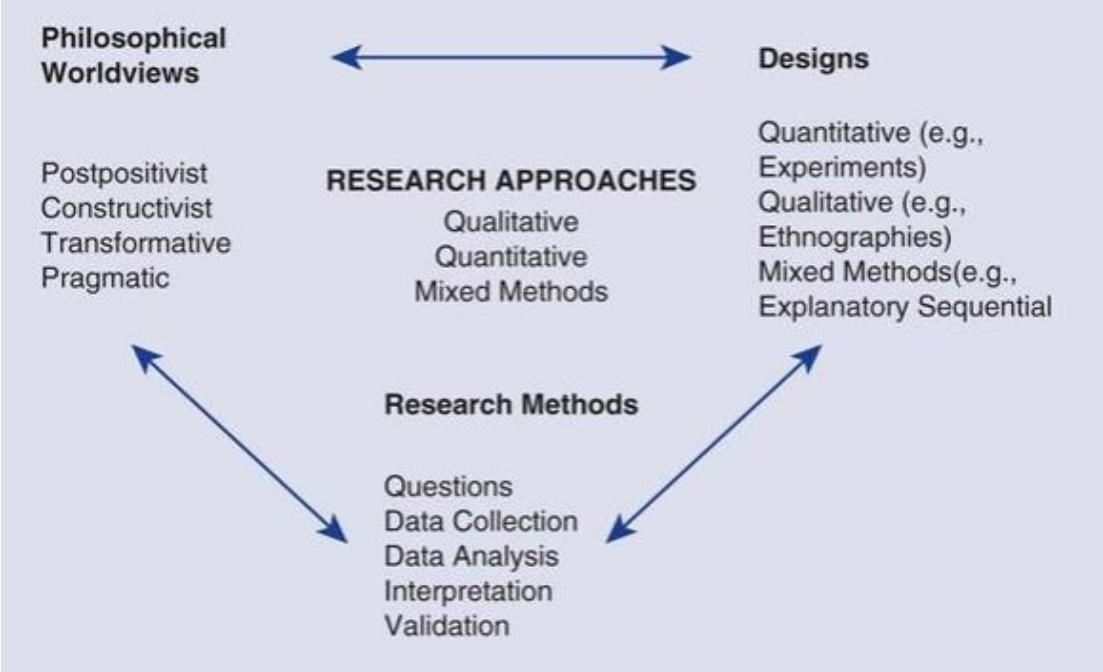

Figure 3: Interconnected framework for research (Creswell 2014)

3.2.1 The researcher's ontological and epistemological positions

The phenomenon investigated in this project was nurses' intention to work in the oncology specialty, the influencing factors for which were explored from the perspectives of students, RNs and ORNs. The researcher's clinical, training, administrative and academic roles throughout his professional career have informed his knowledge of and perspectives on this phenomenon. The researcher is a qualified RN with a background in oncology nursing and is interested in exploring the factors that influence nurses' intention to work in the oncology nursing specialty. The researcher has worked in a variety of nursing environments in different countries, including Kuwait, Jordan, Australia and Saudi Arabia. He completed his nursing diploma in Kuwait, after which he worked as an RN at a hospital for one year. He then attained his bachelor's degree in nursing in Jordan and worked as an RN at the university hospital for one year after graduation.

In 2015, the researcher graduated from the University of Melbourne in Australia with a Master's Degree in advanced palliative care and oncology nursing. His assignments and Master's thesis during this degree program provided him with an understanding of the research related to oncology nursing in Saudi Arabia. He noted that the primary challenges in this specialty area were related to the nursing workforce; specifically, the majority of nurses working in the oncology setting were expatriates who faced linguistic and cultural barriers, with Saudi ORNs being a small percentage (9%) of the workforce. Following this, he worked in several Saudi hospitals and held various positions, from a practising nurse to a leader in nursing administration, which included the field of oncology. As the nursing leader, the researcher participated in multiple workshops and meetings conducted by the Saudi Ministry of Health which focused on addressing nursing workforce challenges and issues. The researcher was also involved in one hospital's nursing retention and turnover committee; his role involved meeting with nurses who voluntarily resigned and collecting their feedback. Afterwards, he worked at a university as a lecturer and supervised UNSs during their clinical placement and internship programs.

All these clinical and educational experiences gave the researcher opportunities to observe diverse groups of nursing students and RNs and to understand their intention to work in different nursing specialties, including oncology. The researcher also started questioning why Saudi ORNs were particularly underrepresented in the oncology specialty, what factors affected nurses' intention to work in oncology, and what barriers and enabling factors were relevant to this area of work. In doing so, the researcher realised that there was a knowledge gap in research regarding these questions. Thus, the researcher's background knowledge and experiences influenced the ontological and epistemological positioning and methodology employed to address the research question in the present study. The following section explains the mixed-methods approach adopted in this research project.

3.2.2 Mixed-methods approach

The researcher used a sequential explanatory mixed-methods design for the investigation. A mixed-methods study design incorporates philosophical assumptions as well as multiple methods of inquiry to meet the research aims (Tashakkori & Creswell 2007). Tashakkori and Creswell (2007) define mixed-methods research as 'research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry' (p. 4). However, the definition of mixed-methods research varies across published studies. Johnson, Onwuegbuzie and Turner (2007) analysed 19 different definitions provided by 21 highly published researchers in the field and formulated the following composite definition:

> Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration. (p. 123)

There has been a considerable level of disagreement among scholars regarding how worldviews pertain to mixed-methods research. Some scholars have argued that a mixed-methods approach is informed by one particular worldview, such as pragmatism, the transformative paradigm or critical realism (Creswell & Clark 2017; Doyle, Brady & Byrne 2009; Halcomb 2018). In contrast, other scholars have claimed that this research design can incorporate a plurality of philosophical worldviews, in line with a dialectical pluralist worldview (Creswell & Clark 2017; Ghiara 2020). The mixed-methods approach has predominantly been associated with the pragmatic philosophical worldview (Creswell 2014; Creswell & Clark 2017), which emphasises the importance of the question being asked rather

than the study method adopted. In addition, this worldview focuses on the use of multiple methods for data collection to obtain insights into the research problem being studied. In contrast to post-positivism and constructivism, the pragmatic worldview typically involves the use of both quantitative and qualitative approaches to understand participants' subjective and objective perspectives of the phenomenon under study (Creswell & Clark 2017; Polit & Beck 2016). For the present study, the mixed-methods approach and pragmatic worldview were deemed to be the most appropriate paradigm to comprehensively investigate real-world issues related to the oncology nursing field in Saudi Arabia.

As outlined by Polit and Beck (2016), a mixed-methods approach offers a number of advantages, including complementarity, practicality, incrementality, enhanced validity and collaboration. With regard to complementarity, it gives researchers access to both qualitative and quantitative data, allowing for a more precise and comprehensive view of the studied phenomenon. Furthermore, it is practical because it involves the use of multiple methodological approaches that are suitable for addressing the research questions and is not restricted to only one approach (Creswell & Clark 2017; Polit & Beck 2016). This enables researchers to investigate research topics that cannot be adequately addressed by a single method (Creswell & Clark 2017). A mixed-methods design also offers incremental value, as the study findings are connected by a feedback loop between the first and second stages of the research process (Ghiara 2020; Halcomb 2018). For example, a qualitative study may be conducted to examine the results of a quantitative study in greater depth, or a hypothesis generated in a qualitative study may be tested by conducting a quantitative study. Furthermore, a mixed-methods design – such as one that involves triangulation – is capable of and appropriate for enhancing the validity of a study hypothesis or model that involves multiple, complementary types of data (Creswell & Clark 2017). It also promotes and facilitates

collaboration among qualitative and quantitative researchers working on similar research issues, which leads to enhanced quality of the research outcome (Ghiara 2020).

Despite its advantages, mixed-methods research can be challenging in certain situations. Conducting both quantitative and qualitative studies is a time-consuming process and requires experience and skill in both areas (Creswell & Clark 2017; Tashakkori & Creswell 2007). Furthermore, the researcher may face challenges in deciding whether to integrate the results in a single mode of presentation, highlight them separately, or combine them in multiple phases (Tariq & Woodman 2013). Using a mixed-methods design involves gathering, analysing and integrating multiple types of data and can, therefore, be quite costly and require additional funds from the sponsor of the study (Polit & Beck 2016). As a PhD student, the researcher had sufficient time for mixed-methods research, and the sponsor provided sufficient funding for the project.

3.2.2.1 The design of a mixed-methods study

Three core types of research design can be used with the mixed-methods approach: convergent, explanatory sequential and exploratory sequential (see Figure 4) (Creswell 2014). These design types can be further distinguished as concurrent or sequential based on the time at which they are conducted (Creswell & Clark 2017; Doyle, Brady & Byrne 2009). A convergent design applies concurrent timing, with both quantitative and qualitative methods conducted in parallel. This implies that both methods of gathering, analysing and interpreting data occur simultaneously (Creswell & Clark 2017; Tariq & Woodman 2013). Sequential methods, on the other hand, are conducted separately and in sequential order; the purpose of this design is to collect and analyse one type of data before collecting the other type of data for further study (Creswell 2014; Polit & Beck 2016).

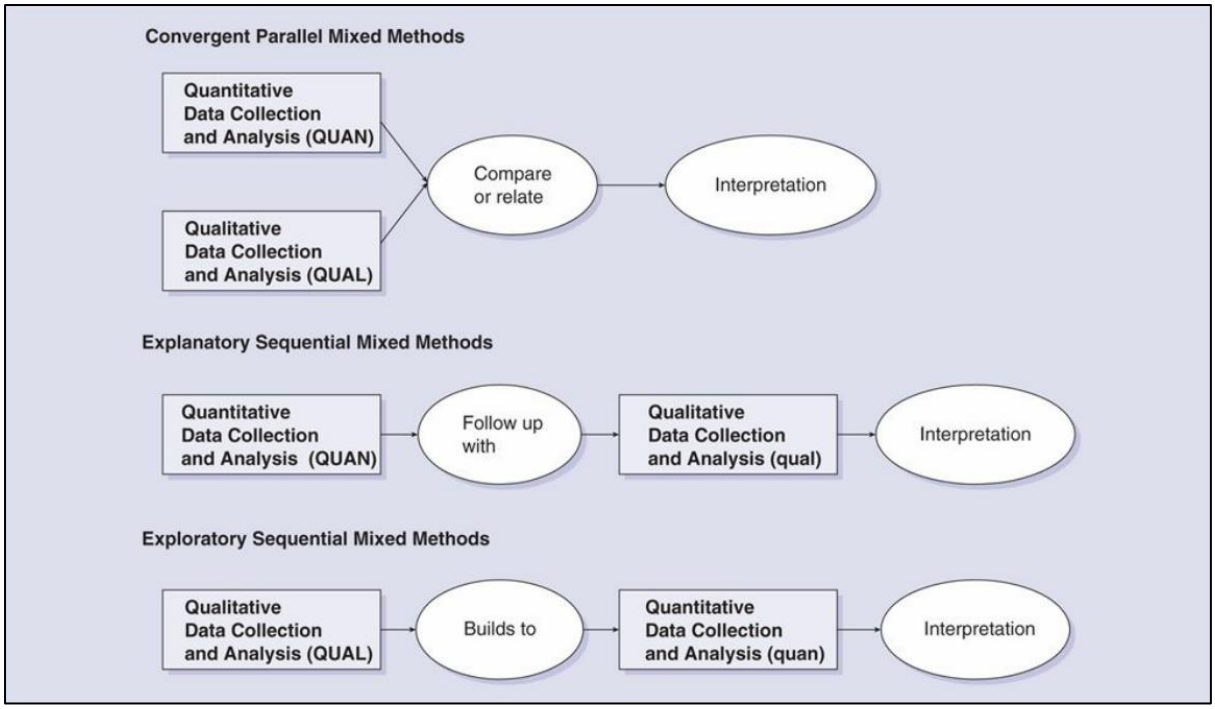

Figure 4: General diagrams of the three core designs (Creswell 2014)

A researcher's choice of a mixed-methods research design (convergent, explanatory or exploratory) depends on several factors, including the nature of the study, the researcher's skills in quantitative and qualitative methods, the purpose of the study, and the availability of resources (Creswell 2014; Polit & Beck 2016). The use of a convergent design is appropriate when the researcher has experience in both quantitative and qualitative research methods and/or when the researcher has limited resources (including time) and is required to collect data for both components of the study simultaneously (Creswell & Clark 2017; Doyle, Brady & Byrne 2009). An exploratory sequential design is appropriate when the study variables are unknown and/or when the researcher aims to develop and validate a research instrument for evaluating a certain phenomenon (Creswell & Clark 2017; Polit & Beck 2016). To this end, the researcher first qualitatively explores the topic of research and develops a research instrument based on the findings; then, the developed instrument is quantitatively validated in a separate research phase (Creswell 2014; Creswell & Clark 2017). Finally, an explanatory sequential design provides a significant quantitative orientation and is appropriate when there

is insufficient published research on the phenomenon being studied. The quantitative and qualitative components need to be conducted separately in this approach, requiring the researcher to have sufficient resources and time to conduct the second round of data collection (Doyle, Brady & Byrne 2009; Grove, Burns & Gray 2013). Quantitative data is first collected and analysed, and then qualitative data is collected to explain and expand on the quantitative findings (Creswell 2014; Polit & Beck 2016). As very little research on oncology nursing in Saudi Arabia has been conducted, a quantitative approach and orientation were determined to be suitable for understanding the scope and scale of the phenomenon in the present study. Accordingly, an explanatory sequential mixed-methods design was adopted for this study and is represented in Figure 5.

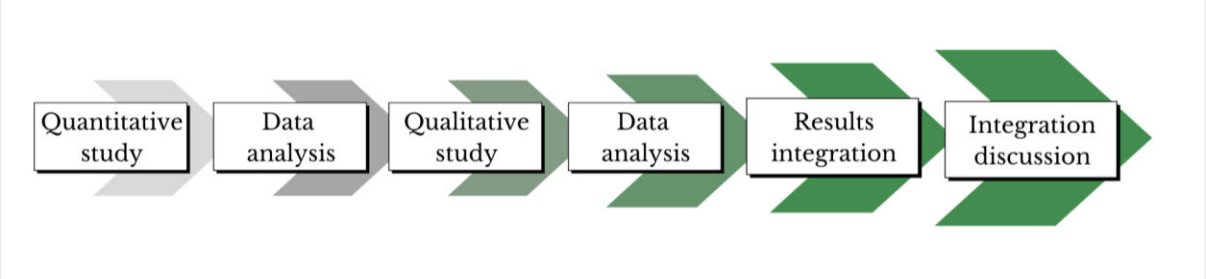

Figure 5: Phases of the explanatory sequential mixed-methods design

3.2.2.2 Sampling for mixed-methods research

Various strategies and creative approaches to sampling can be used in mixed-methods research and must be selected based on their suitability for addressing the research objectives (Polit & Beck 2016). Based on the components of a mixed-methods study, Onwuegbuzie and Collins (2007) classified sampling strategies into four categories: identical, parallel, nested and multilevel. Identical sampling is when the same participants are used in both quantitative and qualitative studies. Using the same sample in the quantitative and qualitative studies provides

the advantages of data convergence and comparison during analysis. Parallel sampling involves choosing different sets of participants from the same population or similar ones, whereas nested sampling involves samples drawn from the same population or similar ones. Finally, multilevel sampling involves samples from different hierarchy levels, typically from different but related populations. Kemper, Stringfield and Teddlie (2003) highlight three important conditions that sampling must meet: the ability to generate information through the two studies to explain the phenomenon under consideration and the ability to provide credible explanations and make the findings transferable/generalisable to other groups and/or settings.

To generate the required data and meet the research objectives, two sampling strategies were utilised in the present mixed-methods study: nested and multilevel. Certain considerations affected the sampling plan. First, the plan was expanded to include the maximum number of participating hospitals to ensure that sufficient data as determined through the statistical power analysis would be obtained for the quantitative research, considering that the number of Saudi oncology nurses in Saudi Arabia is very low. Second, the timing of the second phase – that is, the qualitative phase – coincided with the peak of the COVID-19 pandemic, a factor that caused universities and hospitals to refrain from approving research involving students; therefore, UNSs and PONSs could not be included in the second study. Third, due to the pandemic, the second study had to be limited to just one hospital, as there were restrictions preventing other hospitals from providing research ethics approval. Thus, Phase One of the research included three nursing groups – UNSs, ORNs, and PONSs – while Phase Two included two groups – RNs and ORNs (see Figure 6).

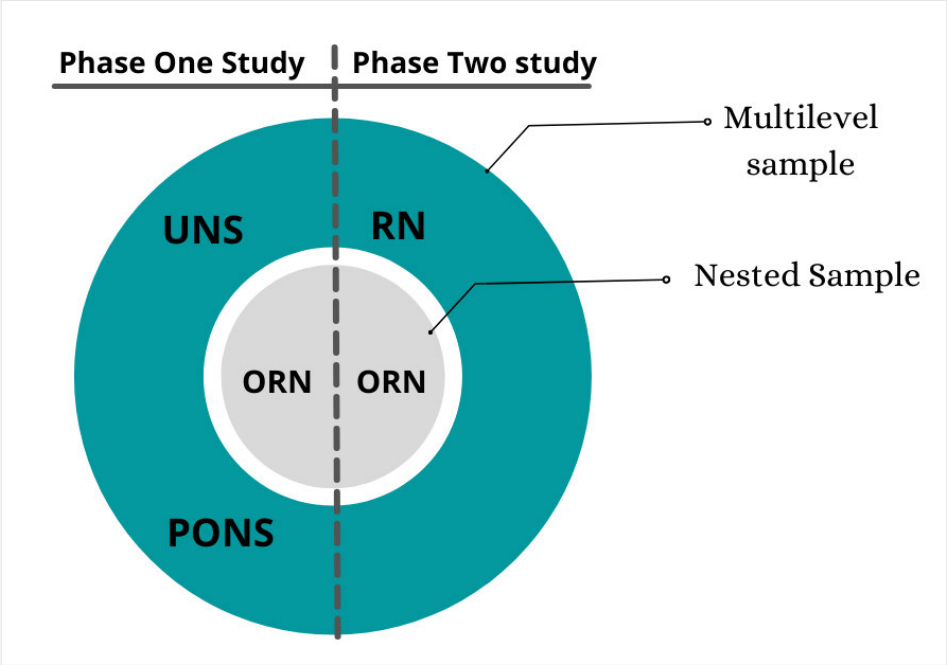

Figure 6: Sampling strategies and studied participants for the present mixed-methods study

3.2.2.3 Analysis of mixed-methods research (integration method)

In a mixed-methods study, planning the data analysis is one of the most critical steps, as it reflects the purpose of the research. According to O'Cathain, Murphy and Nicholl (2010), several studies have claimed to follow a mixed-methods design when, in fact, they did not, with the data analyses and discussions for the quantitative and qualitative studies conducted and reported separately. Omitting the integration of data may significantly limit the knowledge output compared to combining quantitative and qualitative outcomes (Polit & Beck 2016). In line with O'Cathain, Murphy and Nicholl's (2010) recommendations, mixed-method study findings can be integrated with one of three techniques: a triangulation protocol, the 'following a thread' approach, or a mixed-methods matrix. Moran-Ellis et al. (2006) explain the 'following a thread' technique as an approach that involves researchers conceptually placing the quantitative and qualitative study results side by side and performing an initial analysis with key paradigm parameters to identify analytical themes or questions that need to be explored

further. Based on the original research question and existing literature, researchers then follow the thread of analytical themes or questions from one study to the other to generate a multifaceted picture of the phenomenon (Dupin & Borglin 2020; Moran-Ellis et al. 2006). In essence, this is an analysis based on inductive and/or deductive approaches, and it develops through an iterative interrogation process aimed at combining the findings from the quantitative and qualitative studies (Dupin & Borglin 2020). Any new concepts identified from one study's results are followed back to the other study's results in order to generate further information. Moran-Ellis et al. (2006) state that this analysis technique relies on 'allowing an inductive lead to the analysis, preserving the value of the open, exploratory, qualitative inquiry but incorporating the focus and specificity of the quantitative data' (p. 54). The technique has been used successfully to integrate the findings of other peer-reviewed mixed-methods studies (Brennan, Hugh-Jones & Aldridge 2013; Goodman et al. 2012; King et al. 2014; Kinley, Preston & Froggatt 2018; Klinke et al. 2016; Soo et al. 2016). Therefore, the 'following a thread' technique was selected for integrating the quantitative and qualitative data and research questions in the present research project.

3.2.2.4 Quantitative methodology

Quantitative research is an objective approach used to identify individual behaviours, opinions and attitudes, among other variables, and generalise the results to a larger population (Creswell & Clark 2017; Polit & Beck 2016). This methodology involves the use of measurable data to clarify facts and reveal patterns in the phenomenon under study. Specific, focused questions are asked, and participants' answers are collected in an algorithmic manner to find an answer, and then the data is statistically analysed to obtain unbiased results that can be generalised to the population studied (Grove, Burns & Gray 2013; Polit & Beck 2016). The basis of

quantitative research is positivist epistemology, a philosophy that stresses the preference for objectivity in truth and reality (Polit & Beck 2016).

The principal objective of quantitative research is to collect and analyse data using rigorous scientific methods and to ensure that the findings are generalisable outside of the specific study setting (Polit & Beck 2016). However, quantitative research is often criticised for its inflexibility and inability to capture the full breadth of the human experience (Creswell 2014; Polit & Beck 2016). Using a mixed-methods design that includes a qualitative component can minimise this limitation of a quantitative study (Polit & Beck 2016).

A cross-sectional design is the most commonly used quantitative design in the health research field (Omair 2015). This design involves data on a phenomenon based on observations during a single period of time (Omair 2015; Polit & Beck 2016). The purpose of a cross-sectional design is to describe the status of a phenomenon or the relationship between phenomena at a particular point in time (Grove, Burns & Gray 2013; Omair 2015). For instance, this design has been used to estimate a sample's knowledge on a particular topic, such as job satisfaction or a health issue, at a fixed point in time (Polit & Beck 2016). In the case of the present study, a cross-sectional design was deemed appropriate to gather data, describe the population, generalise the sample's results to the general population, and cost-effectively derive statistical inferences regarding the study variables (Omair 2015). Accordingly, a quantitative cross-sectional design involving a questionnaire was employed as the initial method for exploring nurses' intention to work in the oncology specialty and the factors that influence that intention.

3.2.2.5 Qualitative methodology

Qualitative research involves a methodological approach to studying individual experiences and perspectives that emphasises the subjective nature of human experiences (Grove, Burns &

Gray 2013). The qualitative approach is rooted in the naturalistic worldview and emphasises the 'dynamic, holistic, and individual aspects of human life and attempts to capture those aspects in their entirety, within the context typically grounded in the real-life experiences of people with first-hand knowledge of a phenomenon' (Polit & Beck 2016, p. 15). Qualitative research analysis involves flexible and inductive processes that enable researchers to generate findings about the phenomenon being investigated (Grove, Burns & Gray 2013). There are five commonly used qualitative approaches in the nursing literature: ethnography, grounded theory, phenomenology, exploratory descriptive and historical research. For the present study, the researcher evaluated the phenomenological, ethnographic, grounded theory and exploratory descriptive approaches to select the most appropriate one.

First, the phenomenological approach involves studying how an individual perceives or experiences specific phenomena and the meanings assigned to those experiences (Matua & Van Der Wal 2015). Phenomenologists consider the individual as being integrated into the environment: 'The world shapes the person, and the person shapes the world' (Grove, Burns & Gray 2013, p. 69). Phenomenological research attempts to answer the questions: 'What is the meaning of one's lived experience?' and 'What is the meaning of the phenomenon to those who experience it?' (Grove, Burns & Gray 2013, p. 69). The approach is based on the idea that an individual's subjective perceptions of their experiences determine their understanding of a specific phenomenon (Polit & Beck 2016, p. 494). In other words, the only way to understand an individual's experience is through their own self-interpretation, making the individual the source of information on a phenomenon (Grove, Burns & Gray 2013; Polit & Beck 2016). The phenomenological approach is particularly helpful for studying phenomena that are poorly conceptualised or defined (Polit & Beck 2016).

Phenomenology has several variants and methods for interpreting data. Descriptive phenomenology and interpretive phenomenology (hermeneutics) are the two main schools of

thought (Polit & Beck 2016). Husserl was the founder of descriptive phenomenology, while his student Heidegger was the founder of interpretive phenomenology. Husserl's philosophy is concerned with descriptions of human experiences, while Heidegger's approach focuses on interpreting and understanding human experiences (Polit & Beck 2014). Matua and Van Der Wal (2015) reviewed the differences between descriptive and interpretive/hermeneutic phenomenological research and found that the former has commonly been used to clarify aspects of experiences that are poorly understood, while the latter has mostly been employed to investigate the contextual aspects of an experience in relation to factors such as nationality, ethnicity and education level of individuals or populations experiencing the phenomenon (Matua & Van Der Wal 2015). The phenomenological approach was not appropriate for the present study, as the purpose was not to deeply explore any aspect of participants' lived experiences of oncology nursing but, instead, to evaluate their intention to work in oncology nursing and the factors influencing their decisions.

Ethnography is a field of social research that aims to describe the culture, behavioural patterns, practices, customs, beliefs or practices of a specific group (Creswell et al. 2011; Grove, Burns & Gray 2013). The ethnographic method falls under the qualitative interpretive paradigm (Creswell & Clark 2017; Creswell et al. 2011). An ethnographic study is concerned with people's interactions and activities as well as their utilisation of symbols, rites and traditions (Grove, Burns & Gray 2013). In ethnography, the aim is not only to observe and describe the details but also to analyse and explain the meanings of those details (Grove, Burns & Gray 2013; Polit & Beck 2016). Researchers who conduct ethnographic studies typically engage with and immerse themselves in the group being observed, thus gaining insights into the group's behaviours and identifying both implicit and explicit cultural patterns (Grove, Burns & Gray 2013). In light of the description above, the ethnographic approach was also

deemed unsuitable for the present study, since the aim was not to describe people's behavioural or cultural patterns.

Grounded theory research is an inductive research approach designed to facilitate the development of theory from the perspective of conceptual density, that is, having many empirical conceptual patterns and connections (Grove, Burns & Gray 2013; Wuest 2012). In this type of research, researchers rely on actual observations to develop conceptualisations of phenomena that are empirically based (Grove, Burns & Gray 2013). The data analysis stage is a crucial component of the process by which researchers integrate and interpret phenomena, moving from specific data points to abstract generalisations which synthesise and structure observations (Polit & Beck 2016; Wuest 2012). In order to develop a theoretical foundation for building the theory, the researcher explores, proposes, formulates and validates relationships between concepts through data collection and analysis (Polit & Beck 2016). A grounded theory can be particularly valuable for a study in which little information about the area to be studied is available or when what is known is not sufficient to explain the phenomenon (Grove, Burns & Gray 2013; Polit & Beck 2016). Despite the lack of sufficient research on the topic examined in this study, the aim of the study was not to develop a new theory. Therefore, grounded theory was not used as the method for present study.

The exploratory descriptive approach falls under the interpretative approach, and it focuses on describing and exploring a studied phenomenon to generate meaning (Grove, Burns & Gray 2013; Polit & Beck 2016). In adopting this approach, researchers may state that they have carried out qualitative research or followed a naturalistic worldview, or they may indicate that they have conducted a thematic or content analysis of qualitative data (Polit & Beck 2016). This approach has been widely used in nursing and midwifery research and is one of the most common methods used in nursing literature (Grove, Burns & Gray 2013). The descriptive exploratory approach was determined to be the most appropriate approach to meet the

objectives of the present study, as it would allow for exploration of the factors influencing nurses' intention to work in the specialty of oncology nursing.

3.2.3 Methodology section summary

In this methodology section, the researcher's ontological and epistemological positions were discussed, and the suitability of the mixed-methods approach was demonstrated. Specifically, an explanatory sequential mixed-methods approach was selected, which involved collecting and analysing quantitative and qualitative data from a series of validated questionnaires and semi-structured interviews (see Figure 7). Two sampling strategies – nested and multilevel – were chosen for this study to gain a comprehensive understanding of the research problem and meet the study objectives. For the research analysis, the 'following a thread' technique was adopted to integrate the qualitative and quantitative findings. Phase One of the research project (quantitative approach) followed a cross-sectional design, which was found to be suitable as an initial way to explore the study problem and gain broader insights into the study phenomenon. Finally, a descriptive exploratory qualitative study design was adopted because it was found to be appropriate for achieving the study's objectives.

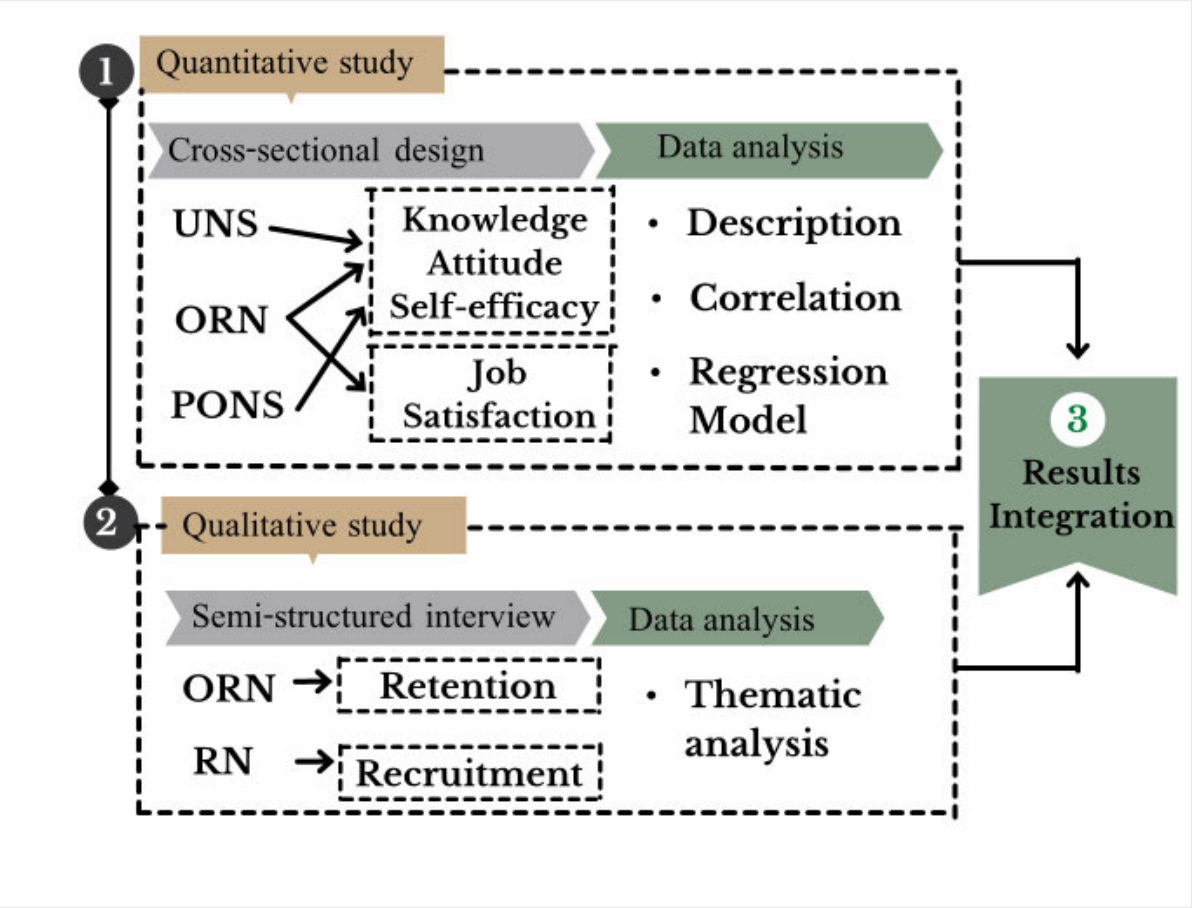

Figure 7: Structure of the mixed-methods study

3.3 Methods for Phase One (quantitative)

3.3.1 Introduction

A cross-sectional study design was employed to collect data from three different levels of nursing professional groups – UNSs, ORNs and PONSs – to analyse the association between: individual characteristics, job-related factors, palliative care knowledge, attitude towards caring for dying patients, general self-efficacy, job satisfaction and nurses' intention to work in oncology. Specifically, Phase One aimed to identify intention predictors across three nursing groups: UNSs, ORNs and PONSs.

3.3.2 Study sample

The sample of the UNSs group included nursing students who had completed their internship program within the previous two months at the main referral hospitals in Riyadh, Saudi Arabia. A nursing internship is a hospital-based clinical training program that takes place in the final year of the four-year bachelor's degree program. The sample of ORNs were currently working in inpatient oncology settings. The PONSs group included registered nurses enrolled in a postgraduate diploma of oncology nursing. All PONSs had a bachelor's degree in nursing and were full-time students with a patient load, but under the supervision of the clinical instructor as mandated by the Saudi Commission for Health Specialties (SCFHS), which is the responsible authority for postgraduate nursing education in Saudi Arabia. SCFHS is the scientific commission that regulates healthcare-related practices and accreditation at all levels in Saudi Arabia including nursing practice. The UNSs and PONSs groups take their oncology training at the same department as the ORNs group. Therefore, the recruitment procedures were the same for the three studied groups.

3.3.3 Study settings

Oncology services are primarily provided in the main referral hospitals in Riyadh, the capital city of Saudi Arabia (Saudi MOH 2018). Data were collected from five main referral hospitals: four hospitals in Riyadh and one in Makkah, which include King Fahad Medical City (KFMC), King Saud University Medical City (KSUMC), King Faisal Specialist Hospital and Research Centre in Riyadh (KFSHRC), Prince Sultan Military Medical City (PSMMC), and King Abdullah Medical City (KAMC) in Makkah (see Table 5). The hospitals have a capacity of between 1000 and 1500 beds each. All the postgraduate oncology nursing diploma programs in Saudi Arabia are provided through three hospitals in Riyadh and Makkah, with a total

number of 36 PONSs enrolled at the time the research was conducted. In order to capture as large a PONSs sample as possible, all three hospitals providing the postgraduate oncology program were included in the sample.

Table 5: Participant hospitals and target populations for Phase One

Hospitals	Target populations		
	UNSs	ORNs	PONSs
King Fahad Medical City (KFMC)	√	√	-
King Saud University Medical City (KSUMC)	√	√	-
King Faisal Specialist Hospital and Research Centre (KFSHRC)	√	√	√
Prince Sultan Military Medical City (PSMMC)	√	√	√
King Abdullah Medical City (KAMC)	-	-	√

3.3.4 Sampling

The study used convenience non-probability sampling as this allows the researcher to recruit easily accessible or reachable targeted study participants. Convenience sampling is the most common method used for quantitative research (Grove, Burns & Gray 2013). Based on the information provided by the hospitals included in this study, the total accessible population who met the inclusion criteria there were approximately 231 UNSs, 866 ORNs and 36 PONSs. To maintain the validity of the logistic regression model, Peduzzi et al. (1996) recommend the inclusion of at least 10 events (participants) per variable analysed. The present study included 14 predictor levels; thus, the minimum required sample size was estimated at 140 for each of UNSs and ORNs.

For the ORNs group, proportional sampling was used to select participants in proportion to the size of the population stratum (Polit & Beck 2016). Therefore, the number of

questionnaire packages in each setting was distributed based on the number of oncology nurses in each setting, as explained in the formulae in Table 6 which consists of a two-step calculation to identify the targeted number for each nominated hospital. From Table 6, the first step is 'Formula A', which is used to calculate the sampling percentage for each setting from the included hospitals based on the following formula: total accessible population / setting accessible population. Information obtained from the hospitals included in this study was used to calculate the total accessible population and the accessible population in each setting (see Table 7). After determining the sampling percentage, step two is to calculate the setting sampling (target populations (400) multiplied by the sampling percentage). In other words, the researcher allocated a specific number of questionnaire packages for the ORN participants in each nominated hospital according to the result of 'Formula B' for each setting, as shown in Table 7.

Table 6: The formulae used to calculate the proportional sample required from each targeted hospital

Formula A	**Formula B**
$\frac{\boldsymbol{x}}{\boldsymbol{n}} \times \mathbf{100} = \boldsymbol{p}$ **Where:** **x = Total accessible population** **n = Setting accessible population** **p = Sampling percentage**	$d \times p =$ y Where: d = Target population p = Sampling percentage y = Setting sampling

Table 7: The number of ORN participants targeted in each nominated hospital

Name of setting	Accessible population	Sampling percentage	Setting sampling
King Fahad Medical City (KFMC)	300 staff	34.6%	138 staff
King Faisal Specialist Hospital and Research Centre (KFSHRC)	300 staff	34.6%	138 staff
King Saud University Medical City (KSUMC)	118 staff	13.6%	54 staff
Prince Sultan Military Medical City (PSMMC)	148 staff	17.1%	68 staff
Total	866	100%	398

3.3.4.1 Inclusion/exclusion criteria

Inclusion criteria for study participants in the selected hospitals included:

- For the UNSs group: nursing students who had completed the internship program for the Bachelor of Nursing degree within the previous two months.
- For the ORNs group: registered nurses who were working in inpatient oncology settings in the selected hospitals at the time of recruitment.

3.3.5 Data collection

The researcher constructed the questionnaire for the present study using the findings of the literature review. In particular, the most appropriate research instruments were chosen to assess the factors related to nurses' intention to work in the field of oncology nursing. The questionnaire comprised a demographic component and four validated instruments to measure knowledge, attitude, self-efficacy and job satisfaction, and an additional question regarding their intention to work (or stay working) in the oncology setting. The first three of these

instruments were used with all three groups, whilst the job satisfaction measure was used with the ORNs group only (see Appendices 2, 3 and 4).

3.3.5.1 *Demographic items and intention to work in oncology*

Demographic-related questions were based on previous studies that were designed to collect information about age, gender, marital status and nationality, as well as job-related information regarding whether participants had received palliative care education during their undergraduate nursing program (Abudari et al. 2014; Alsaraireh et al. 2014). For the ORNs and PONSs questionnaires, three further questions were added: one regarding the participants' highest education level in nursing and two questions about participants' years of nursing experience overall and years of nursing working specifically in an oncology context. For the ORNs questionnaire, a question was added to determine how often oncology nurses cared for terminally ill oncology patients and used a five-point Likert scale ranging from 'Never' to 'Always'.

There was a slight variation in the measurement of intention to work in oncology between the three participant groups to reflect their different situations. UNS participants were asked to report their future intention to work in oncology and 13 other nursing specialties to understand their preference for oncology when compared with other specialties (Hafner & Proctor 1993; Wilkinson et al. 2016). The 13 different nursing specialties were added according to the current nursing work specialties in Saudi Arabian healthcare facilities. For ORN participants, a single item assessed their intention to stay in oncology nursing in the next three years and for PONS participants, a single item assessed their intention to work in oncology after completing their degree (Abualrub et al. 2016; Al-Ahmadi 2014). For all three participant groups the question used a five-point Likert scale ranging from very unlikely to very likely.

3.3.5.2 Palliative Care Quiz for Nursing (PCQN)

The Palliative Care Quiz for Nursing (PCQN) research instrument, developed and validated by Ross, McDonald and McGuinness (1996) was used to evaluate palliative care knowledge among both qualified nurses and nursing students (Karacsony et al. 2015). PCQN consists of 20 dichotomous questions in the form of 'true' or 'false' or 'don't know the answer' with higher scores (out of 20) indicating better knowledge. The internal consistency of the PCQN in this study was acceptable (Kuder–Richardson 20 = 0.70). The PCQN has been used in several studies to evaluate palliative care knowledge among both registered nurses and nursing students (Abudari et al. 2014; Iranmanesh et al. 2014; Ismaile, Alshehri & Househ 2017; Khraisat, Hamdan & Ghazzawwi 2017). Several studies have demonstrated that PCQN is an effective instrument for measuring nurses' and nursing student level of knowledge and for identifying misconceptions in palliative care (Abudari et al. 2014; Iranmanesh et al. 2014; Ismaile, Alshehri & Househ 2017; Khraisat, Hamdan & Ghazzawwi 2017). Studying the validity of several versions of the PCQN, in Korean, Dutch, French and Persian (Farsi), revealed that the internal consistency was appropriate across all versions (Brazil et al. 2012; Choi et al. 2012; Iranmanesh et al. 2014; Kim, B-H et al. 2012; Kim, HS et al. 2011). As determined by the KR-20 test (indicative of homogeneity), this questionnaire has an internal consistency of 0.78 in a heterogeneous group of student nurses and registered nurses with varying degrees of training in palliative care and nursing experience (Kim, HS et al. 2011). It has also demonstrated correlation coefficients above 0.5 in pre-test/post-test assessment designs developed in several contexts, which the authors consider to be appropriate correlation coefficients (Kim, B-H et al. 2012; Ross, McDonald & McGuinness 1996). Permission to use PCQN was obtained and it was not modified (see Appendix 5).

3.3.5.3 Frommelt Attitude Toward Care of the Dying Scale (FATCOD)

Nurses' attitudes towards caring for dying patients were measured using the Frommelt Attitude Toward Care of the Dying Scale (FATCOD) version A (Frommelt 1991). The FATCOD scale consists of 30 statements, and participants are asked to rate each statement on a 5-point Likert scale from strongly disagree to strongly agree. The FATCOD statements are divided into 15 positive and 15 negative statements, with a total score ranging from 30 to 150 (see Table 8). A high score overall indicates a positive attitude towards caring for dying patients (Frommelt 1991). The internal consistency of the FATCOD in this study was found to be good (Cronbach's alpha = 0.81). The content validity for FATCOD is 1.00 (Frommelt 1991). FATCOD has been used in several studies to evaluate nurses' attitude towards caring for dying patients (Abudari et al. 2014; Braun, Gordon & Uziely 2010; Dunn, Otten & Stephens 2005; Lange, Thom & Kline 2008). Permission to use FATCOD was obtained to conduct this research study (see Appendix 6).

Table 8: FATCOD positive and negative statements numbers

FATCOD statements	Number of the items in the questionnaire
Positive	1,2,4,10,12,16,18,20,21,22,23,24,25,27,30
Negative	3,5,6,7,8,9,11,13,14,15,17,19,26,28,29

3.3.5.4 General Self-Efficacy (GSE) Scale

The General Self-Efficacy (GSE) Scale developed and validated by Schwarzer and Jerusalem (1995) was used to assess the strength of an individual's belief in their ability to respond to novel or difficult situations and to deal with any associated barriers. The GSE Scale has 10 items with a 4-point choice scale ranging from '1 = not at all true' to '4 = exactly true'

(Schwarzer & Jerusalem 1995). A high score overall indicates a high self-efficacy in relation to participants' daily nursing practice. GSE has been validated and used in several studies among undergraduate nursing students (Allari, Atout & Hasan 2020; Bodys-Cupak et al. 2016) and among registered nurses (Cheng et al. 2020; Soudagar, Rambod & Beheshtipour 2015; Yao et al. 2018). The internal consistency of the GSE in this study was good (Cronbach's alpha = 0.85). There is no need to gain permission to use GSE for non-commercial and development purposes, as indicated in the GSE user manual.

3.3.5.5 Minnesota Satisfaction Questionnaire (MSQ)

The Minnesota Satisfaction Questionnaire (MSQ) Short-Form was used to evaluate employees' feelings towards their job (Cook et al. 1981; Weiss et al. 1967). The MSQ short form comprises 20 statements and participants are asked to rate their feeling on each statement on a range from 'Very Satisfied = score 5' to 'Very Dissatisfied = score 1'. As shown in Table 9, MSQ evaluates three groups of factors: intrinsic, extrinsic and two extra statements related to work conditions and co-workers. The term 'intrinsic factors' refers to internal factors that influence job satisfaction, such as advancement, the work itself, achievement, a possibility for growth, recognition and responsibility (Herzberg, Mausner & Snyderman 1959). These factors are generated inside the individual and are responsible for creating motivation and influencing job satisfaction. The term 'extrinsic factors' refers to contextual factors, including interpersonal relations, compensation, company policies and administration, supervisory relationship, and working conditions (Herzberg, Mausner & Snyderman 1959).

The internal consistency of the MSQ in this study was good (Cronbach's alpha = 0.92). The construct validity of MSQ has been confirmed through data from various occupational groups at the 0.001 significance level on all scales (Weiss et al. 1967). MSQ has been validated and used in several studies among nurses (Al-Ahmadi 2009; Alsaraireh et al. 2014; Mahmoud

2008; Negussie & Demissie 2013; Saleh, Darawad & Al-Hussami 2014). The overall MSQ score ranges in total from 100 to 20, with a lower score indicating less satisfaction (Cook et al. 1981). There was no requirement to gain permission to use MSQ, as indicated in the MSQ user manual which notes it is freely available for use in nursing research.

Table 9: MSQ categories and facets from the MSQ manual (Weiss et al. 1967)

Category	**Facets**	**#**	**Question**
Intrinsic	Activities	1	Being able to keep busy all the time
	Independent	2	The chance to work alone on the job
	Variety	3	The chance to do different things from time to time
	Social status	4	The chance to be somebody in the community
	Moral value	7	Being able to do things that don't go against my conscience
	Security	8	The way my job provides for steady employment
	Social service	9	The chance to do things for other people
	Authority	10	The chance to tell people what to do
	Ability utilisation	11	The chance to do something that makes use of my abilities
	Responsibility	15	The freedom to use my own judgment
	Creativity	16	The chance to try my own methods of doing the job
	Achievement	20	The feeling of accomplishment I get from the job
Extrinsic	Supervision relationship	5	The way my boss handles his/her workers
	Supervision technical	6	The competence of my supervisor in making decisions
	Company policies	12	The way company policies are put into practice
	Compensation	13	My pay and the amount of work I do
	Advancement	14	The chances for advancement on this job
	Recognition	19	The praise I get for doing a good job
Extra	Work conditions	17	The work conditions
	Co-workers	18	The way my co-workers get along with each other

3.3.5.6 Summary of the research instruments used

Overall, Table 10 provides an overview of the research instruments used with each participant group as well as the number of items. The MSQ tool for measuring job satisfaction was used only with the ORNs group, since UNSs and PONSs are students, and the tool is not relevant to use with them.

Table 10: Research instruments used for each study

Research instruments	Number of items	UNSs	ORNs	PONSs
Palliative Care Quiz for Nursing (PCQN)	20	√	√	√
Frommelt Attitude Toward Care of the Dying Scale (FATCOD)	30	√	√	√
General Self-Efficacy Scale (GSE)	10	√	√	√
Minnesota Satisfaction Questionnaire (MSQ)	20	_	√	_

3.3.6 Variables

In quantitative research, concepts are typically described as variables since they are subject to change and are not constant. There are two types of variables involved in any quantitative study: dependent variables (outcomes) and independent variables. Dependent variables refer to the causes of phenomena, and independent variables refer to the effects of those phenomena (Polit & Beck 2016).

Independent variables. Demographic and work information data such as age, gender, work experience, palliative care knowledge, attitudes towards caring for the dying patient and

self-efficacy are the independent variables for all group participants. An additional independent variable for the ORNs group was job satisfaction.

Dependent variables. Intention to work in the oncology nursing specialty is the dependent variable.

3.3.7 Data collection procedure

All required ethical approvals were obtained prior to beginning the data collection process. As email is not widely used in some Saudi hospitals, a paper-based survey was used to collect the data for this study. Data were collected from 30 June to 14 August 2019. An advertising flyer was used to recruit participants from the selected hospitals (see Appendix 7). Flyers were posted on the staff noticeboard of each oncology unit/ward in each selected hospital to promote the study recruitment process. As explained in the flyer, the questionnaire and participant information sheets were placed on the nursing reception desk with instructions to return completed questionnaires to a co-located secure collection box (see appendices 8, 9 and 10). The boxes were locked by the researcher and emptied at weekly intervals from 30 June to 14 August 2019. An invitation letter was included with the questionnaire package that provided further information about the study aim and potential benefits or risks associated with the study, as well as the contact information for the researcher and supervisor.

The questionnaire was piloted with a small group of five of the target participants in order to collect feedback from participants regarding any difficulties, unclear sections or repetition. As a result of the piloting process, the suggested changes were discussed with the supervisory team, and small modifications were made as appropriate without revisiting the validated research instruments. For the PONSs group, questionnaires were piloted with postgraduate nursing students in a critical care specialty other than oncology due to the low number of students enrolled in the oncology diploma. Informed consent was obtained from all study

participants. Completion and return of the questionnaire by the participants indicated their consent to participate in the study as explained in the participation information sheet and the flyer. Participants were informed that they were free to withdraw from the study at any time and that anonymity and confidentiality would be maintained through not using personal identifiers or reporting potentially identifiable information.

3.3.8 Data analysis

SPSS (IBM, v 25.0) was used to analyse data collected from all surveys. Data cleaning, variable coding and computation and test assumption evaluations were performed. Eleven incomplete surveys were excluded from the data analysis. No out of range data or outliers were detected. The types of data variables used in the study are displayed in Table 11.

Table 11: Types of data variables

Names of variables	Type of data variable	Participant groups		
		UNSs	ORNs	PONSs
Individual characteristics				
1. Age	Continuous	✓	✓	✓
2. Gender	Binary	✓	✓	✓
3. Marital status	Binary	✓	✓	✓
4. Nationality	Binary	✓	✓	✓
Job-related factors				
5. Received undergraduate palliative care education	Binary	✓	✓	✓
6. Received palliative care education after graduating	Binary	–	✓	✓
7. Years of nursing experience as a registered nurse	Continuous	–	✓	✓
8. Years of nursing experience as an oncology nurse	Continuous	–	✓	✓
9. Level of nursing education	Ordinal	–	✓	–
10. Years of nursing experience in the current hospital	Continuous	–	✓	–
11. Years of nursing experience in the current unit	Continuous	–	✓	–

Names of variables	Type of data variable	Participant groups		
		UNSs	ORNs	PONSs
12. Time caring for the terminally ill	Ordinal	–	✓	–
13. Type of patient (paediatric/adult)	Binary	–	✓	–
14. Intention to stay in current hospital	Binary	_	✓	_
Study outcomes				
15. PCQN (knowledge) score (10–20)	Continuous	✓	✓	✓
16. FATCOD (attitude) score (30–150)	Continuous	✓	✓	✓
17. GSE (self-efficacy) score (10–40)	Continuous	✓	✓	✓
18. MSQ (job satisfaction) score (20–100)	Continuous	–	✓	–
19. Intention to work in oncology (main outcome)	Binary	✓	✓	✓

Descriptive statistics (frequency analyses of the categorical variables and means and standard deviations for the continuous variables) were used to summarise both the individual characteristics and the job-related factors of the participants. The descriptive statistics involved frequency analyses of the categorical variables and means and standard deviations for the continuous variables. Furthermore, preliminary analyses examined the individual predisposing factors that influenced the nurses' palliative care knowledge, their attitude towards caring for dying patients and their self-efficacy for each participant group separately. A correlation matrix was used to describe the relationship between study variables.

Preliminary analysis chi-square for categorical outcomes and t-tests for continuous outcomes were used to identify variables ($p < 0.20$) for subsequent multivariate analysis. Chi-square tests were used to determine whether the proportions for each variable were significantly different between the study variables and the intention to work in oncology nursing. Independent sample t-tests were used to determine the effect of individual characteristics and job-related factors on intention to work in oncology nursing. Levene's statistic was used to test the assumption of the homogeneity of variances for continuous variables, but no significant violation was found. Histograms and normality plots were used to assess the distribution of the dependent variables. All of the variables were approximately normally distributed. Finally,

bivariate correlations were used to explore the relationship between knowledge (PCQN), attitude (FATCOD), self-efficacy (GSE) and age.

Main analysis. A multilevel logistic regression model was used to assess the effect of individual characteristics, job-related factors, PCQN, FATCOD and GSE on intention to work in oncology nursing. Logistic regression was the appropriate analysis to run since the intention to work in oncology nursing involves dichotomous data. A backward elimination method was used to fit the regression model, which excluded variables in stepwise fashion in which $p > 0.5$ (Frank 2015). Scatterplots were used to test the assumption of linearity. A histogram and a q–q plot were reviewed, which demonstrated normality, to ensure that the errors between the observed and the predicted values were normally distributed. Collinearity was tested, indicating the absence of multicollinearity. A scatterplot of residuals versus predicted values was used to test the assumption of homoscedasticity, which showed no clear pattern in the distribution, thus meeting the assumption of homoscedasticity.

3.3.9 Ethical considerations

This study complied with the ethical standards established by the Australian Research Council and the National Health and Medical Research Council (2018). Prior to requesting ethics approval from the participating hospitals, the researcher obtained preliminary approval from the Saudi Ministry of Health (Appendix 11). This was approved by The University of Adelaide, Australia Human Research Ethics Committee (no. H-2019-078) (Appendix 12), KFMC Institutional Review Board (IRB) (no. 19-250E) (Appendix 13), KSUMC IRB (no. E-19-4107) (Appendix 14), KFSHRC-R IRB (no. 2191205) (Appendix 15), PSMMC IRB (no. HP-01-R079) (Appendix 16), and KAMC IRB (no. 19–553) (Appendix 17). Informed consent was obtained from all study participants. Completion and return of the questionnaire by the participants indicated their consent to participate in the study as explained in the participation

information sheet and the flyer (National Health and Medical Research Council 2018, p. 16). Participants were informed that they were free to withdraw from the study at any time and that anonymity and confidentiality would be maintained through not using personal identifiers or reporting potentially identifiable information.

3.4 Methods for Phase Two (qualitative)

This section provides information about the qualitative study, which was undertaken as Phase Two of the present sequential explanatory mixed-methods research studying factors influencing nurses' intention to work in the speciality of oncology. The importance of qualitative research has been discussed previously in the context of mixed-methods research, as well as its value in this research project (Section 3.2.2.5). Since Phase Two aimed to identify the barriers and enabling factors for working in the oncology specialty from the perspectives of ORNs and registered nurses (RNs) in other specialties, an exploratory descriptive qualitative approach was selected to guide data collection and analysis.

3.4.1 In-depth interviews

In-depth interviews can either take the form of unstructured or semi-structured interviews (Grove, Burns & Gray 2013). An unstructured interview has no pre-developed questions, so the researcher has no clear expectation of what information or content will be shared by the participant. This means that the researcher's questions often will be broad in scope, open-ended and with minimal interruption by the researcher to allow the participant to speak in depth and generate further information on a particular topic (Grove, Burns & Gray 2013; Polit & Beck 2016). A semi-structured interview, on the other hand, includes pre-developed open-ended questions that serve as topic guides, allowing the researcher to target specific topics in order to

ensure that they are included in the data collection process (Polit & Beck 2016). In this situation, the researcher may be able to anticipate what will be discussed but cannot anticipate the participant's responses (De Chesnay 2014; Polit & Beck 2016). The researcher's role is to help the participant share their story in a way that is comfortable for them, and to facilitate the participant speaking freely and deeply about their experiences (Grove, Burns & Gray 2013; Polit & Beck 2016). Interview questions should be arranged logically to facilitate a smooth transition from one topic to another, allowing the interviewee to share detailed information that is important to the study (Grove, Burns & Gray 2013; Polit & Beck 2016). A researcher should use some probing words during an interview to encourage participants to discuss information that is relevant to the study in more detail, such as 'Then what happened?' and 'How were you feeling during that time?' (Polit & Beck 2016, p. 537). Semi-structured interviews were chosen as the most appropriate method for data collection, so that specific topics relevant to the overarching aim of this project could be explored in each interview.

3.4.2 Study participants and setting

The timing of the second phase of the present mixed-methods study coincided with the peak of the COVID-19 pandemic, a factor that caused universities and hospitals to refrain from approving research involving students; therefore, the planned interviews with UNSs and PONSs could not be undertaken in Phase Two. Also, due to the pandemic, the second phase had to be limited to just one hospital, as there were restrictions preventing other hospitals from providing research ethics approval. Thus, participants were recruited from King Saud University Medical City (KSUMC) in Riyadh, Saudi Arabia. KSUMC is a multidisciplinary academic medical centre providing tertiary care, with a bed capacity of approximately 1500. Two groups of participants were involved in this study: ORNs and RNs working in other specialties. The inclusion criteria for the ORNs group included both Saudi and expatriate nurses

to obtain their different perspectives on their experiences and perceptions of working in oncology nursing in Saudi Arabia. For the RN group, the criteria for inclusion for participation was to be Saudi and to have experience caring for oncology patients, which was important for gathering their perspectives regarding obstacles and facilitators related to working in the field of oncology nursing in Saudi Arabia.

In qualitative research, the sample size is determined by the purpose and philosophical underpinning of the study, as well as the level of detail required to understand a phenomenon, explore an idea, describe a cultural element, develop a theory or describe a historical event (Polit & Beck 2016). Data that lack sufficient depth or richness can result from a small, superficial sample size. An insufficient sample size can reduce the quality and credibility of a research study (Grove, Burns & Gray 2013). Researchers justify sufficient participation when a saturation of information has been achieved. Thematic saturation occurs when further sampling does not provide any new information but only redundant data that repeats what was previously collected (Charmaz 2006; Creswell 2014). In the current study, Thematic saturation was achieved after the tenth interview in the ORNs group and the ninth in the RN group.

3.4.3 Topic guide

This project used a sequential explanatory mixed-methods design in which findings from Phase One informed Phase Two. The interview guide questions were developed based on the research project aims, objectives, findings of Phase One and relevant previous literature. In Phase Two, there were two groups of participants – ORNs and RNs – and the interview guide questions were slightly different for each group. Question 2 was only asked to ORNs and question 3 was only asked to RNs, whereas questions 1, 4 and 5 were asked to both RNs and ORNs. These questions sought to explore the participants' perceptions of the specialty of oncology nursing,

their impressions of it, their experiences as well as what attracts them or hinders them from considering and working in this specialty.

The interview questions used with both groups of participants were:

1) How would you describe oncology nursing? What are the first things that come to your mind?
2) For ORN participants
    a) Can you tell me a bit about the ward or unit that you are working in now?
    b) Did you specifically choose to work in oncology? And if so, why?
    c) What are the aspects of working in oncology that you particularly enjoy?
    d) Are there aspects of working in oncology that you find difficult or challenging?
3) For RN participants
    a) Can you tell me a bit about the specialty that you are working in now?
    b) Can you tell me what experiences you've had working in oncology?
    c) Have you ever considered working in oncology? Can you tell me more about that?
4) Do they have any thoughts or insights as to why relatively few Saudi nurses choose to work in oncology?
5) Is there anything further you would like to add about the role of nurses in the oncology specialty?

3.4.4 Data collection

The data collection plan for this study was impacted by the COVID-19 pandemic in 2021, as the original plan was to collect data in person rather than online, but due to the restrictions imposed by COVID-19, it was not feasible to collect data in person. Consequently, an online meeting tool (Zoom) was selected to conduct the interviews, an approach that other researchers have found sufficient to conduct in-depth interview studies (Archibald et al. 2019).

Ethics approval for Phase Two was obtained from the Human Research Ethics Committee at The University of Adelaide, Australia (no. H-2019-078) (Appendix 11) and the IRB of KSUMC (no. E-19-4107) (Appendix 18). After confirmation of the ethics approval, the nursing department at the selected hospital emailed eligible participants with written information about the study including a participant information sheet (Appendix 19), an advertising flyer to recruit participants (Appendix 20), and a consent form (Appendix 21). In appreciation for their contribution, participants received a voucher of 100 Saudi riyals (approximately 36 Australian dollars) at the conclusion of their interview.

Data were collected between January and April 2021 by the researcher. Online interviews were conducted and recorded with the permission of the participants. At the beginning of each interview, the participants were informed about the study, and each interview session lasted 30 to 40 minutes.

A pilot test interview, which is considered an important quality measure in interview research (Grove, Burns & Gray 2013; Polit & Beck 2016), was conducted with the first ORN participant and involved a member of the researcher's PhD supervisory team. Data from the pilot test interview were not included in Phase Two's analysis. No substantive changes were made to the interview guide questions after the pilot test as the questions were found appropriate for obtaining the data required to achieve the aim of the research.

The majority of Saudi nurses are not fluent in English, which could affect their ability to discuss and communicate their intent during an interview (Albloushi et al. 2019). In contrast, most expatriate nurses are not fluent in the Arabic language (Salvador et al. 2021). Therefore, interviews were conducted in English with non-Arabic speakers and in Arabic with Arabic speakers. The researcher adhered to the recommended practice outlined by Van Nes et al. (2010) regarding translating qualitative research data in order to ensure the integrity of the translation and the meaning of the findings. No participants withdrew from the study during data collection.

Audio files were transcribed into text documents in Arabic (the original language) for Saudi nurses and in English for expatriate nurses. The researcher transcribed the interviews, and a copy of the transcript was sent to each participant for validation; all participants verified their versions. After that, the Arabic texts were translated into English prior to the stage of data analysis since the supervisory team of the researcher was not proficient in Arabic. As recommended by Van Nes et al. (2010), the translation process was conducted by a bilingual academic with the assistance of the researcher who acted as a translator-moderator, as the researcher is familiar with both languages. In order to ensure the integrity of the translation and meaning, the researcher met regularly with the translator.

3.4.5 Data analysis

The transcribed interviews were imported, managed and analysed using the qualitative data analysis software NVivo version 12.6. The thematic analysis approach outlined by Braun and Clarke (2006) was used for the data analysis phase. According to Braun and Clarke (2006), the process of thematic analysis involves six stages: become familiar with the data, generate initial codes, search for themes, review themes, define and label themes, write the report. Braun and Clarke (2019) published a reflexive commentary regarding some of the unspoken assumptions

that influenced the development of and changes to the thematic analysis method over the years, as well as some conceptual misunderstandings they observed in published thematic analysis studies. This reflexive commentary is intended to assist the researcher to better understand and practise the thematic analysis method for data analysis and was used to support the process of analysing qualitative data in this study.

The researcher followed the thematic analysis guide illustrated in Table 6 precisely throughout the entire data analysis process. The researcher initiated the data analysis process by carefully reading each transcript while listening to the interview audio recording to write up initial ideas and to ensure the accuracy of the transcribed content. The researcher then developed initial codes by identifying interesting coding features relevant to each code across the entire dataset.

The researcher created potential themes by gathering all codes relevant to the potential theme. To ensure appropriateness, each theme was evaluated in relation to quotations from the participants. A table containing each theme and subtheme was generated and is presented in Chapter Five. Throughout the data analysis process, there was a guided discussion with supervisors, and reflection took place during the regular supervision meetings. The first four interview transcripts were cross-coded by the supervisory team and the researcher at the beginning of the data analysis process to secure the credibility and dependability of the study results. The supervisory team also reviewed and discussed the accuracy and logic of the subthemes' connectivity with the major themes, as well as the interconnectivity of the major themes with each other.

Table 6: Thematic analysis step-by-step guide (Source: Braun & Clarke 2006)

Phase	Description of the process
1. Familiarising yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

3.4.6 Establishing the rigour of the qualitative study

According to Polit and Beck (2016), trustworthiness refers to the level of confidence readers can place in the data, interpretation and methods used to ensure the integrity and quality of the qualitative study. To assess the trustworthiness of a qualitative study, Lincoln and Guba (1985) determined that the following four criteria need to be considered: credibility, dependability, confirmability and transferability. Due to numerous criticisms and their own evolving concepts, they later added a fifth criterion, authenticity, which is predominantly constructivist in nature

(Guba & Lincoln 1994). In this present qualitative study, the researcher sought to adhere to the five criteria of trustworthiness in order to maintain the rigour and quality of this study as detailed below.

3.4.6.1 Credibility

The credibility of a study refers to the extent to which the findings reported by the researchers are consistent with the data that the participants report (Schwandt, Lincoln & Guba 2007). Credibility shows that the researcher accurately interpreted the study context (Polit & Beck 2016). Two elements can enhance the study's credibility: conducting the research in a way that makes the findings believable and demonstrating credibility in the written report (Schwandt, Lincoln & Guba 2007). In the present study, each participant received a transcript of their interview and was asked to verify that it accurately reflected what they said in the interview. Moreover, the researcher reviewed each translated transcript carefully to ensure the accuracy of the translated version. Through the data analysis process, the researcher maintained transparent reporting of the process, and careful interpretation of the data. The researcher's supervisory team confirmed the accuracy of the study findings with the primary data.

3.4.6.2 *Dependability*

In the Lincoln-Guba framework, dependability is the second criterion that determines the reliability of the research and stability of the findings over time and conditions (Lincoln & Guba 1985). In other words, would the study's findings be repeated if the study were replicated in a similar study setting with similar participants? Credibility cannot be achieved in the absence of dependability. Dependability can be enhanced by having a different investigator conduct an audit (Polit & Beck 2016). In the present study, as discussed earlier, the first four

transcripts of the interviews were cross-coded by the researcher's supervisory team and the researcher at the beginning of the data analysis process to secure the credibility and dependability of the study results.

3.4.6.3 Confirmability

The concept of confirmability corresponds with objectivity, the notion that the findings are rooted in, and reflect, the perceptions and experiences of the participants. It is, therefore, expected that the researcher distinguishes between their own values and the participants' interpretations, values and reflections. For findings to be confirmable, the researcher must reflect the participants' views and the circumstances of the inquiry rather than the researcher's own perspective, which may create bias. Through regular supervisory meetings, the supervisory team provided assistance in checking the confirmability of the data by confirming that the findings and conclusions were supported by the original data.

3.4.6.4 Transferability

Transferability refers to the degree to which the findings can be used in other contexts or groups – that is, the extent to which findings can be generalised (Lincoln & Guba 1985). To enable transferability, the researcher is responsible for providing sufficient descriptive information for consumers to evaluate the data's relevance to other contexts (Polit & Beck 2016). In the present study, the researcher has supplied detailed information about the research approach, the participants and the setting to assist the reader to have a deep understanding of the context. Thus, the reader should be able to evaluate the likely transferability of the study findings to another context.

3.4.6.5 Authenticity

The authenticity of a study can be defined as the extent to which the researcher accurately represents a range of different realities and realistically describes the experience of the participants (Guba & Lincoln 1994). For a study to meet this criterion, researchers should choose appropriate participants and provide a rich, detailed data description for the consumer. Authenticity appears when the text captures the tone of life experienced by the participants. For a text to be considered authentic, it must induce readers into a sense of vicarious participation in the lives of those portrayed, allowing them to develop greater sensitivity to the issues described (Polit & Beck 2016). As part of this study, authenticity was taken into consideration at the time of developing the eligibility criteria for this study to ensure the appropriate participants were recruited to provide rich, detailed data.

3.5 Chapter summary

In this chapter, the methods and methodology that were adopted to address the research questions and objectives were outlined. It has outlined the rationale behind the selection of a mixed-methods design, underpinned by a pragmatic research paradigm, as an appropriate approach to address the research question that informed the development and conduct of the present study. The methods selected include an explanatory sequential mixed-methods approach, which involved collecting and analysing quantitative and qualitative data from a series of validated questionnaires and semi-structured interviews. Additionally, the chapter has explained the technique used to integrate the quantitative and qualitative results. In addition to describing the strategies used to enhance the data quality, the ways in which validity, reliability and rigour were considered were also described in this chapter. Overall, from the planning stage to the completion, the study adhered to strict ethical standards. The following chapter

(Chapter Four) provides the results of the Phase One (the quantitative phase) of this mixed-methods study.

4. Chapter Four: Results of Phase One – survey

The present chapter provides the findings of the survey, which was the first phase of the sequential mixed-methods study. The relationships between individual characteristics, job-related factors, palliative care knowledge, attitude towards caring for dying patients, general self-efficacy, job satisfaction and intention to work in oncology across three nursing groups – undergraduate nursing students (UNSs), oncology registered nurses (ORNs) and postgraduate oncology nursing students (PONSs) – were evaluated using various statistical methods. Furthermore, the predictors of an intention to work in oncology nursing for UNSs, PONSs and ORNs were determined. This chapter starts by outlining the overall response rate of the study participants. Next, the descriptive and inferential results are presented for the three groups of nursing participants, UNSs, ORNs and PONSs, each in separate sections.

The results of the first phase of this mixed-methods study were published in a peer-reviewed journal article: Alrasheedi, O, Schultz, TJ & Harvey, G 2021, 'Factors influencing nurses' intention to work in the oncology specialty: multi-institutional cross-sectional study', *BMC Palliative Care*, vol. 20, no. 1, pp. 1-12 (see Appendix 22). The article has already been cited by 5, Altmetric (Metrics) 25.

4.1 Data results

A convenience sample of 477 respondents working in five referral hospitals who completed and returned the questionnaire were included in the data analysis. This represents an overall response rate of 71.2%. Results of univariate and bivariate analysis for each of the three sub-populations groups – UNSs, ORNs and PONSs – are summarised in Table 7 and will be discussed separately. The results of the multivariate analysis will then be presented for each of the three subpopulations.

4.1.1 Univariate and bivariate analysis

4.1.1.1 Undergraduate nursing students (UNSs) group

The UNSs group consisted of 178 out of 231 participants (77% response rate); the mean age was 23.6 (SD ± 1.2) (Table 7). The majority (73%, n = 130) were female, and most of the UNSs were single (90.4%, n = 161). The nationality of the UNS participants was almost entirely Saudis (99.4%, n = 176). Most (79.2%, n = 141) UNS participants reported that they did not receive education about palliative care during their undergraduate program.

In terms of their future intention to work in oncology and other nursing specialities, emergency nursing, surgical nursing and perioperative nursing were the most preferred whilst oncology nursing, aged care nursing, midwifery and orthopaedic nursing were the least preferred nursing specialities (Table 7). Only 51 (28.6%) of UNSs reported that they were likely (i.e. a score of 4 or 5 on the Likert scale) to work in oncology nursing. All nursing specialities were dichotomised (i.e. a score of 4 or 5 on the Likert scale) in Figure 8 to facilitate comparison (Jeong & Lee 2016).

As shown in Table 7, UNS participants achieved a mean total score of 7.1 out of 20 (SD = 2.1) on the 20-item Palliative Care Quiz for Nursing (PCQN) tool, indicating a low level of palliative care knowledge (Achora & Labrague 2019). The total mean score for the 30-item Frommelt Attitude Toward Care of the Dying (FATCOD) tool was 98.2 out of 150 (SD = 8.1) indicating a negative attitude towards caring for dying patients (Achora & Labrague 2019). UNS participants reported a mean score of 31.8 out of 40 (SD = 5.1) on the 10-item General Self-Efficacy Scale (GSE) tool indicating UNSs had a high sense of self-efficacy in relation to their daily nursing practice in the clinical placement (Schwarzer & Jerusalem 1995).

An independent t-test was performed on the continuous variables, to determine any differences in the mean total scores for age, PCQN, FATCOD and GSE in relation to intention to work in the oncology nursing specialty (whether likely or unlikely to select oncology nursing as a future career) (Table 7). As shown in Table 7, UNSs who were likely to work in oncology had a significantly more positive attitude (FATCOD) ($t = 3.96$, $p < 0.001$) and higher perceived self-efficacy (GSE) ($t = 2.14$, $p = 0.03$) than students who were unlikely to work in oncology.

A chi-squared test and Fisher's exact test were conducted on the categorical variables, to determine any association between gender, marital status, nationality and palliative care education in relation to intention to work in the oncology nursing specialty. As indicated in Table 7, there was a statistically significant association between gender and student intention to work in oncology nursing ($\chi 2 = 6.363$, $p = 0.012$), indicating that female students were more likely to intend to work in oncology nursing than male students.

Table 7: Univariate and bivariate analysis of the study variables for the UNSs, ORNs and PONSs N or M ± SD

Variables		Nurses' intention to work in oncology nursing											
		UNSs				ORNs				PONSs			
		Total N=178	Likely N=51	Unlikely N=127	*P-value*	Total N = 263	Likely N=130	Unlikely N=133	*P-value*	Total N=33	Likely N=27	Unlikely N=6	*P-value*
Age		23.6±1.2	23.6±1.63	23.6±0.99	0.88[c]	35.3±7.6	36.5±8.1	34.1±7	0.01[c]	30.7±2.7	30.7±2.7	30.3±2.7	0.74[c]
Gender	Female	130	44	86		233	112	121		25	21	4	
	Male	48	7	41	0.012[a]	30	18	12	0.21[a]	8	6	2	0.56[b]
Marital status	Single	161	46	115		115	56	59		12	10	2	
	Married	17	5	12	0.94[a]	148	74	74	0.83[a]	21	17	4	0.86[b]
Nationality	Saudi	177	51	126		9	4	5		33	27	6	
	Non-Saudi	1	0	1	0.52[b]	254	126	128	0.76[b]	0	0	0	n/a
Received undergraduate	Yes	37	7	30		75	42	33		2	2	0	
palliative care education	No	141	44	97	0.14[a]	188	88	100	0.17[a]	31	25	6	0.49[b]
Received palliative care	Yes	n/a				92	60	32		17	15	2	
education after graduating	No	n/a				171	70	101	< 0.001[a]	16	12	4	0.32[b]
Level of nursing education	Diploma	n/a				37	23	14		n/a			
	Bachelor	n/a				215	101	114		n/a			
	Postgraduate	n/a				11	6	5	0.22[a]	n/a			
Years as registered nurse*		n/a				12.1±7.3	13.3±7.8	10.9±6.5	0.007[c]	6.7±4	6.63±4.04	6.79±4.35	0.93[c]
Years as oncology nurse*		n/a				7.6±6	8.4±6.3	6.9±5.7	0.04[c]	1.6±2.7	1.68±2.97	1.29±0.84	0.75[c]
in the current hospital*		n/a				6.3±5.6	6.9±6.1	5.6±5	0.62[c]	n/a			
Years in the current unit*		n/a				4.9±5.2	5.4±5.6	4.4±4.6	0.13[c]	n/a			
Times caring for the	Never	n/a				0(0 %)	-	-		n/a			
terminally ill	1-2 times/month	n/a				48	26	22		n/a			
	1-2times/week	n/a				84	36	48		n/a			
	3-5 times/week	n/a				78	42	36		n/a			
	> 5 times/week	n/a				53	26	27	0.47[a]	n/a			
Type of patient	Paediatric	n/a				74	30	44		n/a			
	Adult	n/a				189	100	89	0.07[a]	n/a			
Intention to stay in the	Unlikely	n/a				143	37	106		n/a			
current hospital	Likely	n/a				120	93	27	< 0.001 [a]	n/a			
Research instruments	PCQN (0-20)	7.1±2.1	7.3±1.6	7.1±2.2	0.48[c]	9.6±1.9	10.1±2.11	9.2±1.8	0.001[c]	11±2.1	11.3±2.1	9.8±1.8	0.13[c]
	FATCOD (30-150)	98.2±8.1	102±7.6	97±7.9	<.001[c]	108.7±11.2	113±11.6	104.5±9.1	< 0.001[c]	100.3±8.1	101±8	95.6±7.8	0.12[c]
	GSE (10-40)	31.8±5.1	33.1±4.3	31.3±5.3	0.03[c]	30.8±4.9	32±4.8	29.6±4.6	< 0.001[c]	28.3±3.3	28.7±3.4	26.7±2.8	0.17[c]
	MSQ (20-100)	n/a				69.38±11.5	73.2±10.2	65.7±11.5	< 0.001[c]	n/a			

* Years of nursing experience, a = Chi-square, b = Fisher's exact, c = independent t-test, n/a = not applicable

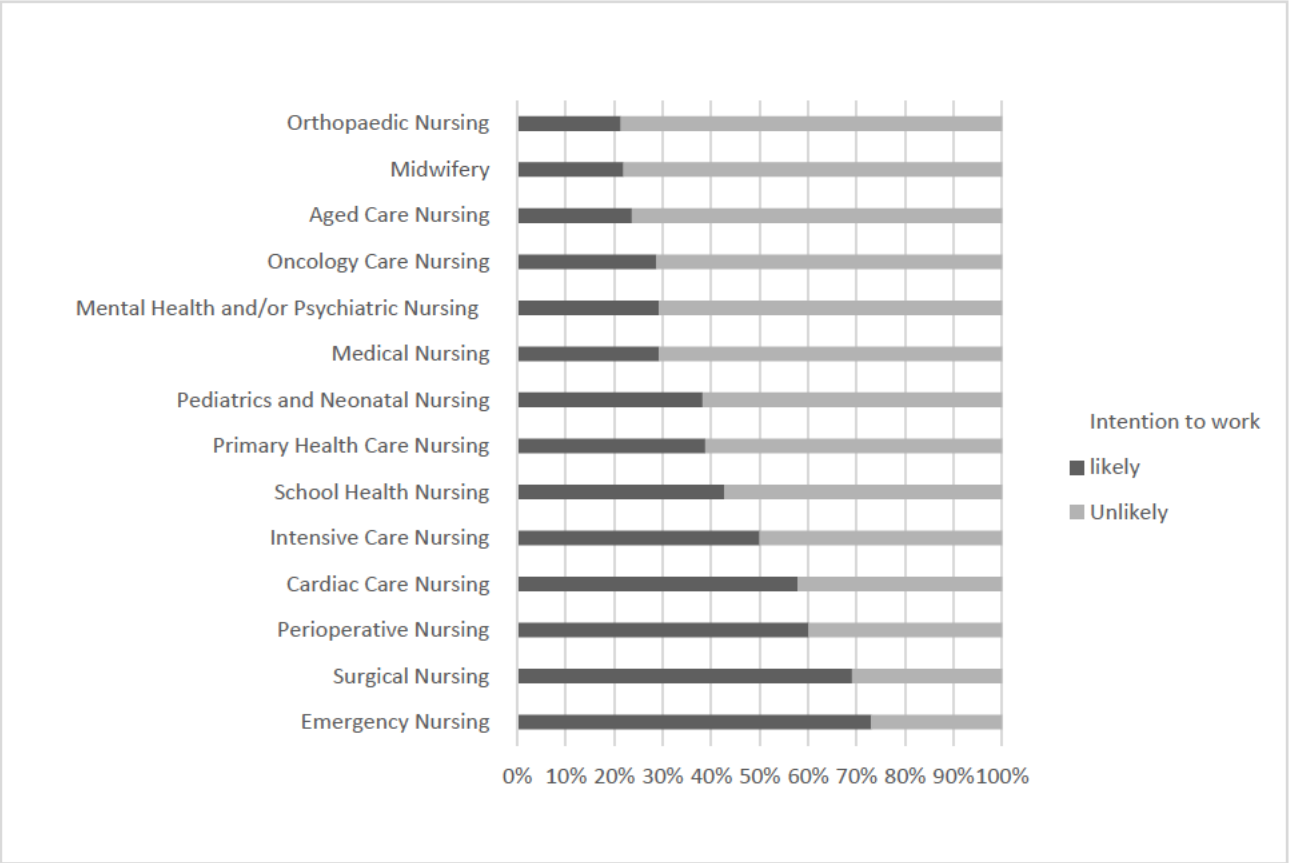

Figure 8: Intention of UNSs regarding their future nursing career speciality

The Pearson correlation coefficient was used to examine the relationship between students' preferences towards different nursing specialities, as shown in Table 8. There was a significant positive relationship between midwifery and oncology and between the orthopaedic and the oncology speciality.

Table 8: Pearson's correlation between students' preferences towards different nursing specialities

Nursing specialities	Aged care	Cardiac care	Emergency	Intensive care	Medical	Mental health and/or psychiatric	Midwifery	Oncology care	Orthopaedic	Paediatrics and neonatal	Perioperative	Primary health care	School health	Surgical
Aged care	1	0.045	0.099	-0.053	.196**	0.050	0.121	-0.001	0.001	.162*	0.128	0.047	0.109	0.114
Cardiac care	0.045	1	.328**	.193**	0.098	-0.002	-0.071	-0.088	-0.139	.203**	0.118	0.118	-0.045	.242**
Emergency	0.099	.328**	1	.152*	0.112	-0.027	.169*	0.077	0.008	0.139	.229**	.198**	0.115	.251**
Intensive care	-0.053	.193**	.152*	1	0.049	-0.049	-0.068	-0.062	0.055	-0.116	-0.011	0.012	-0.068	0.012
Medical	.196**	0.098	0.112	0.049	1	0.131	0.138	0.139	.178*	.181*	0.044	-0.055	-0.030	0.135
Mental health and/or psychiatric	0.050	-0.002	-0.027	-0.049	0.131	1	0.018	0.085	.178*	0.131	0.145	.174*	.220**	0.055
Midwifery	0.121	-0.071	.169*	-0.068	0.138	0.018	1	.325**	0.022	.366**	.182*	.192*	0.147	0.090
Oncology care	-0.001	-0.088	0.077	-0.062	0.139	0.085	**.325****	1	**.216****	0.064	0.059	-0.071	0.031	0.128
Orthopaedic	0.001	-0.139	0.008	0.055	.178*	.178*	0.022	.216**	1	0.127	0.060	.148*	.160*	0.111
Paediatrics and neonatal	.162*	.203**	0.139	-0.116	.181*	0.131	.366**	0.064	0.127	1	.286**	.300**	.233**	0.100
Perioperative	0.128	0.118	.229**	-0.011	0.044	0.145	.182*	0.059	0.060	.286**	1	.366**	.378**	.448**
Primary health care	0.047	0.118	.198**	0.012	-0.055	.174*	.192*	-0.071	.148*	.300**	.366**	1	.595**	.208**
School health	0.109	-0.045	0.115	-0.068	-0.030	.220**	0.147	0.031	.160*	.233**	.378**	.595**	1	.258**
Surgical	0.114	.242**	.251**	0.012	0.135	0.055	0.090	0.128	0.111	0.100	.448**	.208**	.258**	1

** $p < 0.01$, * $p < 0.05$

The Pearson correlation coefficient was used to examine the relationship between age, knowledge, attitude and self-efficacy, as shown in Table 9. There was a significant positive relationship between attitude and self-efficacy, indicating that students who had a better attitude towards caring for dying patients also had better self-efficacy. The relationship between self-efficacy and palliative care knowledge was also a significant positive relationship, suggesting that students with better palliative care knowledge also had higher self-efficacy.

Table 9: Pearson's correlation between UNSs study variables and outcomes.

Variable	Age	Knowledge (PCQN)	Attitude (FATCOD)	Self-efficacy (GSE)
Age	_	-0.12	-0.04	0.02
Knowledge (PCQN)	-.012	–	0.10	0.17*
Attitude (FATCOD)	-0.04	0.10	–	0.15*
Self-efficacy (GSE)	0.02	0.17*	0.15*	–

* $p < 0.05$.

4.1.1.2 Oncology registered nurses (ORNs) group

The ORNs group consisted of 263 out of 398 participants (66% response rate), with a mean age of 35.3 (SD ± 7.6) (Table 7). The majority of the participants were female (88.6%, n = 233), and almost half of the ORNs were married (56.2%, n = 148). The majority of ORN participants were non-Saudis (96.6%, n = 254) and only 3.3% (n = 9) were Saudis. Only 28.5% (n = 75) of participants reported that they received palliative care education before graduation, and 35% (n = 92) reported that they received education after graduation. The majority of ORN respondents (81.7%, n = 215) were educated to a bachelor's degree. The ORN participants had a mean experience of 12.1 (SD = 7.3) years as a registered nurse (RN) and 7.6 (SD = 6) as an oncology nurse. Further, among ORN respondents, the mean number of years of their nursing

experience at the current hospital was 6.3 (SD = 5.6), and 4.9 (SD = 5.2) at their current unit. All ORN participants reported that they delivered nursing care for terminally ill patients at least once per month, and 81.7 % (n = 215) at least once per week. The majority of the ORNs were from adult wards (71.9%, n = 189), compared to 28.1% (n = 74) from a paediatric ward. About half 49.4% (n = 130) reported an intention to stay in the oncology nursing specialty, and 45.6% (n = 120) intended to stay working in their current hospital.

As shown in Table 7, ORN participants achieved a mean total score of 9.6 out of 20 (SD = 1.9) on the PCQN tool, indicating a low level of palliative care knowledge (Achora & Labrague 2019). The ORNSs' total mean score for the FATCOD tool was 108.7 out of 150 (SD = 11.2), indicating a negative attitude towards caring for dying patients (Achora & Labrague 2019). ORN participants reported a mean score of 30.8 out of 40 (SD = 4.9) on the GSE tool, indicating the ORNs had a high sense of self-efficacy in relation to their daily oncology nursing practice (Schwarzer & Jerusalem 1995). The total mean score for the 20-item Minnesota Satisfaction Questionnaire (MSQ) tool was 69.3 out of 100 (SD = 11.5), indicating that ORNs were generally unsatisfied with their jobs (Sharp 2008).

A comparison between Saudi and non-Saudis ORNs was conducted to determine any differences in the mean total scores from the PCQN, FATCOD, GSE and MSQ in relation to participants' nationality (Table 10). There was a statistically significant difference in FATCOD scores between Saudi and non-Saudi ORNs, with Saudi ORNs having a more negative attitude than non-Saudi ORNs ($t = 261$, $p < 0.001$). Overall, Saudi ORNs' results show lower scores for all study outcomes.

Table 10: PCQN, FATCOD and GSE mean scores for Saudi and expatriate ORNs

Research instruments	ORN by nationality	
	Saudi $\underline{M} \pm SD$	Non-Saudi $M \pm SD$
PCQN (*M*)	8.44 (1.81)	9.68 (1.98)
FATCOD (*M*)	96.78 (11.04)	109.1 (11.01)
GSE (*M*)	30.77 (5.72)	30.77 (4.83)
MSQ (*M*)	66.66 (13.21)	69.48 (11.37)

To provide more in-depth results, a comparison analysis of Saudi and non-Saudi ORNs in relation to job satisfaction elements (MSQ facets) was conducted (Table 10). It can be seen from Table 10 that the Saudi ORNs expressed more dissatisfaction with the supervisory relationship, company policy, compensation, creativity, work conditions, co-workers and recognition than expatriate ORNs.

Table 11: MSQ (job satisfaction) scores, mean of Likert scale out of five

Category	#	Facets	ORNs Saudi (*M*)	ORNs expatriate (*M*)
Intrinsic	1	Activities	3.3	3.1
	2	Independent	3.1	3.0
	3	Variety	3.9	3.3
	4	Social status	3.4	3.4
	7	Moral value	3.7	3.4
	8	Security	3.3	3.5
	9	Social service	3.6	3.8
	10	Authority	3.7	3.5
	11	Ability utilisation	4.0	3.7
	15	Responsibility	3.6	3.5
	16	Creativity	3.1	3.4
	20	Achievement	4.1	3.9
Extrinsic	5	Supervision relationship	2.5	3.4
	6	Supervision technical	3.6	3.5
	12	Company policies	2.7	3.5
	13	Compensation	2.5	3.3
	14	Advancement	3.7	3.5
	19	Recognition	3.0	3.5
Extra	17	Work conditions	2.3	2.9
	18	Co-workers	3.1	3.6

An independent t-test was conducted on the continuous variables to determine any differences in the mean scores for age, years of experience as an RN or ORN, years of experience in current hospital and unit, PCQN, FATCOD, GSE and MSQ in relation to intention to work in the oncology nursing specialty (Table 7). As shown in Table 7, nurses who were likely to stay in oncology had significantly higher palliative care knowledge (PCQN) (t = 3.42, p = 0.001), a more positive attitude (FATCOD) (t = 6.56, $p < 0.001$), greater self-efficacy (GSE) (t = 4.06, p <0.001) and higher job satisfaction (MSQ) (t = 5.51, $p < 0.001$) than nurses who had an intention to leave oncology nursing. Also, nurses who were likely to stay in oncology were older (t = 2.54, p = 0.012), and more experienced as an RN (t = 2.71, p = 0.007), and as an oncology registered nurse (t = 2.03, p = 0.043).

A chi-squared test and Fisher's exact test were conducted on the categorical variables to determine any association between gender, marital status, nationality and receiving palliative care education before or after graduation, the nursing level, the frequency of caring for terminally ill patients, the type of patient, and the intention to stay in the current hospital in relation to the intention to work in oncology nursing. As shown in Table 7, there was a statistically significant association between the intention to stay in the oncology speciality and receiving palliative care education after graduation ($\chi 2 = 14.1$, $p < 0.001$), and intention to stay in the current hospital ($\chi 2 = 69.5$, $p < 0.001$).

Pearson correlation coefficients were used to examine the relationship between age, years of nursing experience as an RN and as an oncology nurse, years of nursing experience in the current hospital and current unit, knowledge, attitude, self-efficacy and job satisfaction (Table 12). There was a significant positive relationship between self-efficacy and age, years of nursing experience as an RN and as an oncology nurse, years of nursing experience in the current hospital and current unit, and job satisfaction. Palliative care knowledge was significantly correlated with attitude, age and years of nursing experience as an RN. In addition,

job satisfaction was significantly correlated with nursing experience in the current unit, attitude and self-efficacy.

Table 12: Pearson's correlation between ORNs' study variables and outcomes

Variable	Age	As a registered nurse***	As an oncology nurse***	In current hospital***	In current unit***	Knowledge (PCQN)	Attitude (FATCOD)	Self-efficacy (GSE)	Job satisfaction (MSQ)
Age	1	.85**	.64**	.73**	.59**	.18**	.05	.17**	.07
As a registered nurse***	.85**	1	.72**	.78**	.66**	.14*	.06	.19**	.10
As an oncology nurse***	.64**	.72**	1	.74**	.66**	.05	-.01	.21**	.09
In current hospital***	.73**	.78**	.74**	1	.81**	.09	-.08	.20**	.11
In current unit***	.59**	.66**	.66**	.81**	1	.06	-.06	.26**	.15*
Knowledge (PCQN)	.18**	.14*	.05	.09	.06	1	.37**	.08	.01
Attitude (FATCOD)	.05	.06	-.01	-.08	-.06	.37**	1	.09	.13*
Self-efficacy (GSE)	.17**	.19**	.21**	.20**	.26**	.08	.09	1	.41**
Job satisfaction (MSQ)	.07	.10	.09	.11	.15*	.01	.13*	.41**	1

* $p < 0.05$, ** $p < 0.01$, *** Years of nursing experience

4.1.1.3 Postgraduate oncology nursing students (PONSs) group

The PONSs group consisted of 33 out of 36 (91.6% response rate), and the mean age was 30.7 (SD ± 2.7) (Table 7). The majority of the participants were female (76%, n = 25), more than half of the PONSs were married (63.6%, n = 21), and all were Saudi. Most PONSs (93.9%, n = 31) did not receive education about palliative care during their undergraduate program and 51.5% (n = 17) reported that they received education after graduation. PONS participants had a mean experience of 6.7 (SD = 4) years as an RN and 1.6 (SD = 2.7) years as an oncology nurse. The majority of PONSs (81.8%, n = 27) intended to work in oncology nursing following the completion of their current oncology postgraduate degree.

As shown in Table 7, PONS participants achieved a mean total score of 11 out of 20 (SD = 2.1) on the PCQN tool, indicating an average level of palliative care knowledge (Achora & Labrague 2019). The FATCOD mean score was 100.3 (SD = 8.1), which indicates a low to moderate attitude towards dealing with dying patients. The mean score for the GSE was 28.3 (SD = 3.3).

An independent t-test, chi-squared test and Fisher's exact test were conducted to determine any association between the study variables in relation to the intention to work in oncology nursing. As shown in Table 7, there were no significant associations between the study variables and the PONSs' intention to work in oncology nursing.

The Pearson correlation coefficient was used to examine the relationship between age, years of nursing experience as an RN and as an oncology nurse, knowledge, attitude and self-efficacy (Table 13). The only significant relationship of interest was a positive relationship between attitude and age.

Table 13: Pearson's correlation between PONSs' study variables and outcomes

Variable	Age	As a registered nurse***	As an oncology nurse***	Knowledge (PCQN)	Attitude (FATCOD)	Self-efficacy (GSE)
Age	1	.74**	.21	-.15	.41*	.18
As a registered nurse***	.74**	1	.58**	-.16	.05	.003
As an oncology nurse***	.21	.58**	1	-.03	-.07	.03
Knowledge (PCQN)	-.15	-.16	-.03	1	.33	.01
Attitude (FATCOD)	.41*	.05	-.07	.33	1	.18
Self-efficacy (GSE)	.18	.003	.038	.018	.182	1

* $p < 0.05$, ** $p < 0.01$, *** years of nursing experience

4.1.2 Multivariate analysis

Multilevel logistic regression was conducted to determine the predictive factors of the UNSs', ORNSs' and PONSs' intention to work in oncology. The final model of the logistic regression is presented in Table 14. Only one variable was a significant predictor of intention to work in oncology across all three groups studied: a more positive attitude towards caring for dying patients (odds ratio (OR) = 1.09 [95% confidence interval (CI) 1.04–1.16]), (OR = 1.08 [95% CI 1.04–1.12]), (OR = 1.078 [95% CI 1.053–1.103], with $p \leq 0.001$ for UNSs, ORN and PONSs, respectively. Separate multivariate regressions for each participant group follow.

4.1.2.1 UNSs regression model

Gender, FATCOD and GSE scores for UNSs were significant predictors of UNSs' intention to work in oncology nursing (Table 14). Specifically, in terms of gender, the odds of intending to work in oncology nursing were 3.5 times greater for females than they were for males. Regarding FATCOD, every unit increase in the FATCOD score increased the likelihood of working in oncology by 9%, whilst every unit increase in the GSE score increased the intention

to work in oncology by 6%. Palliative care knowledge and other study variables were not significant.

Table 14: Multilevel logistic regression examining the effects of UNSs', ORNs' and PONSs' demographic, job-related factors, PCQN, FATCOD, GSE and MSQ on their intention to work in oncology

Outcome	Predictors		UNSs		ORNs		PONSs	
			Odds Ratio (CI 95%)	*P*- value	Odds ratio (95% CI)	*P*-value	Odds ratio (95% CI)	*P*-value
Intention to work in oncology speciality	Age		e		e		e	
	Gender	Male	REF		e		e	
		Female	3.53 (1.84 - 6.75)	<0.001	e		e	
	Marital status	Married	e		REF		e	
		Single	e		1.43 (1.25 - 1.63)	<0.001	e	
	Nationality	Saudi	n/a		REF		n/a	
		Non-Saudi	n/a		0.336 (0.05 - 2.43)	0.280	n/a	
	Received undergraduate palliative care education	No	REF		REF		e	
		Yes	3.47 (0.58 - 20.70)	0.171	1.71 (0.69 - 4.23)	0.249	e	
	Received palliative care education after graduate	No	n/a		REF		e	
		Yes	n/a		1.56 (0.87 - 2.77)	0.129	e	
	Type of patient	Paediatric	n/a		REF		n/a	
		Adult	n/a		1.95 (1.60 - 2.36)	<0.001	n/a	
	Intention to stay in current hospital	Unlikely	n/a		REF		n/a	
		Likely	n/a		8.49 (3.72 - 19.34)	<0.001	n/a	
	Years as registered nurse		n/a		e		e	
	Years as oncology nurse		n/a		1.03 (1.00 - 1.075)	0.043	e	
	PCQN (0-20)		e		1.10 (0.89 - 1.37)	0.353	1.272 (1.061 - 1.525)	0.009
	FATCOD (30-150)		1.09 (1.04 - 1.16)	0.001	1.08 (1.04 - 1.12)	<0.001	1.078 (1.053 - 1.103)	<0.001
	GSE (10-40)		1.06 (1.03 - 1.09)	<0.001	1.05 (0.99 - 1.11)	0.102	1.222 (1.044 - 1.430)	0.013
	MSQ (20-100)		n/a		1.03 (1.02 - 1.03)	<0.001	n/a	

n/a = not applicable, e = eliminated as the p-value above 0.5

4.1.2.2 *ORNs regression model*

For ORNs, marital status, type of ward (paediatric versus adult), intention to stay in the current hospital, years of experience in oncology, and FATCOD and MSQ scores were significant predictors of an intention to remain working in oncology (Table 14). Specifically, the odds of staying in oncology were 1.43 times greater for single compared to married nurses. The odds of staying in oncology were 1.95 times greater for nurses working in adult wards compared to paediatrics and 8.5 times greater for staff who reported an intention to stay in the hospital.

Regarding experience in oncology, every year's increase in the experience of the nurse in oncology increased the likelihood of staying in oncology by 3%, whilst every unit increase in the FATCOD score increased the likelihood of working in oncology by 8%. Regarding job satisfaction (MSQ), every unit increase in the MSQ score increased the likelihood of working in oncology by 3%. Palliative care knowledge, self-efficacy and other study variables were not significant.

4.1.2.3 *PONSs regression model*

In the PONSs sample, the PCQN, FATCOD and GSE scores were significant predictors of intention to work in oncology (Table 14). Specifically, every unit increase in the PCQN scores increased the odds of working in oncology by 27%, whilst every unit increase in the FATCOD score increased the odds of working in oncology by 8%. Regarding self-efficacy (GSE), every unit increase in the GSE scores increased the odds of working in oncology by 22%.

4.2 Chapter summary

This chapter has presented the results from the Phase One (quantitative) study. It has explored the individual characteristics, job-related factors, palliative care knowledge, attitude towards

caring for dying patients, general self-efficacy and job satisfaction in relation to nurses' intention to work in oncology across three nursing groups: UNSs, ORNs and PONSs. The intention to work in oncology varied across the three groups studied from a relatively low level in the UNSs group to a high level in the PONSs. In all three groups, the majority of participants reported that they did not receive any education about palliative care during their undergraduate studies. All ORN participants reported providing nursing care to terminally ill cancer patients at least once a month. As shown in Table 15, across all three groups studied, a more positive attitude towards caring for dying patients was a significant indicator of an intention to work in oncology. At the postgraduate level, higher levels of palliative care knowledge and general self-efficacy were also significantly associated with increased intention, whilst at the undergraduate level, general self-efficacy was a significant predictor of intention. Job satisfaction was a significant predictor of intention amongst the ORNs sample.

Table 15: A summary of the significant predictors across the three groups studied, UNSs, ORNs and PONSs

Group	Knowledge (PCQN)	Attitude (FATCOD)	Self-efficacy (GSE)	Other			
UNSs	-	✓	✓	Gender	-	-	-
ORNs	-	✓	-	Job Satisfaction (MSQ)	Years of experience as oncology nurse	Type of ward (paediatric or adult)	Marital status
PONSs	✓	✓	✓	-	-	-	-

In the subsequent phase of the present sequential mixed-methods study, these issues were explored in qualitative interviews in order to gain deeper insight into these key results and to provide an explanation for them. The next chapter, Chapter Five, presents the findings from the interviews and a thematic analysis of the qualitative data.

5. Chapter Five: Results of Phase Two

5.1 Introduction

This chapter presents the findings of the qualitative analysis, which was conducted in the second phase of the present sequential mixed-methods study. In this qualitative study, semi-structured interviews were used to identify the barriers and enabling factors for working in the oncology specialty from the perspectives of ORNs and RNs in other specialties.

A total of 19 interviews were conducted with two groups of participants: ten ORNs from oncology departments, and nine RNs from other hospital departments. All interviewed RNs from the non-oncology hospital departments had experience of caring for people with cancer. This experience with oncology patients was often more transitory such as during admission through the emergency department or in high acuity settings such as the intensive care unit where the primary focus of the patient's care may have been respiratory support.

As per the methodology outlined in Chapter Three, the interviews were transcribed, and a copy of each transcript was sent to participants for validation prior to analysis; all participants verified their versions. The Arabic transcripts were then translated into English by a bilingual academic translator prior to the data analysis stage. Thematic analysis was used based on the six phases outlined by Braun and Clarke (2006, 2019).

5.2 Participants' demographic information

A total of 19 interviews were conducted. Ten interviews were conducted with Saudi and non-Saudi RNs who worked in an oncology department and nine with Saudi RNs who worked in non-oncology clinical departments. The participant demographics are presented in Table 16.

Table 16: Characteristics of interview participants (N = 19) for the Phase Two qualitative study

Category	**Interview participants (n = 19)**	
Profession	ORN n = 10 (%)	Non-oncology RN n = 9 (%)
Gender		
Male *N*	4 (40)	5 (56)
Female *N*	6 (60)	4 (44)
Age (*M)*	30.9	27.9
Marital status		
Single *N*	5 (50)	4 (45)
Married *N*	5 (50)	5 (55)
Highest level of nursing education		
Bachelor degree *N*	10 (100)	9 (100)
Nationality		
Saudi *N*	7 (70)	9 (100)
Non-Saudi *N*	3 (30)	0 (0)
Nursing experience (years) *M*	7.5	4.5
Oncology experience (years) *M*	4.6	0

5.3 Interview findings

Following the data analysis process described in Chapter Three, four major themes were identified: advantages of working in oncology, psychological difficulties in oncology, structural barriers hindering oncology nursing, and workplace conditions reducing job satisfaction (Table 17).

Table 17: Summary of major themes and subthemes from the qualitative study results

Major themes	Subthemes
1. Advantages of working in oncology	1.1 Sense of achievement and fulfilment 1.2 Feeling valued as a Saudi nurse 1.3 Development opportunities
2. Psychological difficulties in oncology	2.1 Perceptions about oncology 2.2 Emotional exhaustion 2.3 Insufficient psychological support for staff
3. Structural barriers that hinder oncology nursing	3.1 Education and training in oncology nursing were not available 3.2 Lack of a formal pathway to work in oncology 3.3 Salary scale issue
4. Workplace conditions that reduce job satisfaction	4.1 Communication barriers 4.2 Team-related issues 4.3 Workload-related issues 4.4 Length of shift preference

5.3.1 Advantages of working in oncology

This major theme described the ORN participants' positive impression of their experience working in oncology nursing. The interview data showed that participating oncology nurses were attracted to, and subsequently remained in, this specialty for various reasons, such as psychological benefits and potential career advancement. This major theme had three subthemes: sense of achievement and fulfilment, feeling valued as a Saudi nurse and development opportunities.

5.3.1.1 Sense of achievement and fulfilment

This sub-theme focused on the ORN participants' feelings of fulfilment and satisfaction when addressing oncology patients' needs such as psychological support and understanding the treatment plan. The ORN participants expressed a sense of achievement resulting from using

communication skills effectively. For instance, when a patient is in a negative psychological state, a nurse can help improve the patient's mood: '*My experience has been very excellent, especially if I feel at the end of the day that I have improved the patient's psychological condition or convinced him to follow the treatment plan*' (Participant 11, ORN). Some ORN participants expressed a feeling of fulfilment when the patient's treatment plan resulted in a positive outcome as a consequence of their influential role: '*patients are fighting, and you are part of their recovery from cancer and as result they will be discharged or recover … It is a great achievement for me specifically and personally*' (Participant 15, ORN).

5.3.1.2 Feeling valued as a Saudi nurse

The fact that the Saudi nurses had a shared culture and a shared language had a positive effect on them, and it made them feel valued. Furthermore, the shortage of Saudi nurses in oncology made Saudi nurses feel distinguished and highly requested by Saudi patients: '*I feel that the patient relaxes psychologically if he sees a Saudi person around him. I consider it a wonderful thing. We consider our role supportive*' (Participant 6, ORN).

Nurses who had demonstrated altruism felt particularly valued as a Saudi nurse. Despite the challenges mentioned by participants in the oncology specialty, some Saudi participants felt obligated to continue in the oncology specialty to better serve patients who are going through intensive treatment, especially addressing the language and culture barrier: '*Thank God we stayed in oncology. No matter how challenging some days are, we get stronger for the parents and the patient*' (Participant 8, ORN). Also, there were some participants who expressed their commitment to taking part in developing an oncology service in their hometown:

> *I knew there was a new oncology centre to be built in [name of the city], and I know there are only two staff nurses who specialise in oncology, so I felt like I had to do something for our people.* (Participant 12, ORN)

5.3.1.3 Development opportunities

This sub-theme focuses on the positive impacts of working in the oncology speciality on ORNs' learning and career development. Most ORNs found oncology science attractive as the field is continuously evolving:

> *Even after years of exposure to patients with different diagnoses and cases, there is still a lot that I am not aware of, so there are still many things I need to discover … [it] provides me with something that I am very eager to learn*. (Participant 13, ORN)

Furthermore, several participants expressed their great enthusiasm when they discussed the need to learn more about oncology, such as types of cancer, pathophysiology and treatment: '*When there is something "unknown", I see it as fun, and I'm trying to understand it. I enjoy learning something new, I feel like I'm taking a new course now!*' (Participant 12, ORN).

Some ORN participants realised the advantage of career advancement, as the field of oncology nursing is relatively new and the lack of Saudi nurses provided them with more chances for career promotion and development:

> *I can participate in developing the oncology department in my hometown hospital. I will have an opportunity to form good relationships with my colleagues there, and I will have a role in transferring the experience I have gained from this hospital to my hometown hospital and increasing it.* (Participant 11, ORN)

For some participants the reason behind choosing oncology as a career path was the availability of a postgraduate scholarship: '*I chose to work in oncology after I saw the oncology specialty among the postgraduate nursing diploma programs offered by the Saudi*

Commission for Health Specialties' (Participant 12, ORN). Likewise, some Saudi RN participants stated that the availability of postgraduate scholarship opportunities in the field of oncology nursing will attract them to this specialty: '*availability of a continuing education opportunity in oncology such as a scholarship will motivate me to pursue a specialty in oncology*' (Participant 6, RN working in operation theatre).

5.3.2 Psychological difficulties in oncology

This major theme is concerned with both the ORNs' and RNs' negative emotional responses to situations encountered in the oncology working environment. This major theme was subdivided into three subthemes: perceptions about oncology, emotional exhaustion and insufficient psychological support.

5.3.2.1 Perceptions about oncology

This subtheme describes the participants' perceptions about oncology. There was a noticeable difference between the two groups of participants – ORNs and RNs – in the way they described their concerns and challenges in working in oncology. The RNs often described their experience with oncology patients at the end stage of cancer, either in the intensive care unit (ICU) or the emergency room (ER): *'We see patients with cancer in the ER sometimes … who usually come at the end stage, and their condition has deteriorated'* (Participant 9, RN working in the ER). It was also notable that some nurses thought of cancer as an incurable illness that begins with chemotherapy, progresses to case deterioration, and ends with death: *'Patients get chemotherapy and get tired and hurt and die; this is the information we have about it'* (Participant 17, RN working in the cardiac catheterisation laboratory (CCL)).

Some RN participants expressed a fear of managing patients with cancer. In some cases, their fear was due to the complexity of oncology patients' conditions and their patients' need for psychological support, especially at the end of their life: '*It's difficult to deal with patients with cancer, both mentally and physically, especially with terminally ill cases. They may go through a bad psychological state that affects us as well*' (Participant 18, RN working in the medical ward).

The RN participants also reported a fear of or a taboo in the community around cancer due to misconceptions, and stated that this fear deterred them from choosing oncology as a career path:

> *Our families do not have enough information about this disease, and they ask, 'Why do you work in a place like this, you might get infected?' The perception of the community is 'She works in oncology, try to get away from her'.* (Participant 3, RN working in the neonatal ICU)

Both groups of participants expressed a strong concern about occupational hazards. Among most of the participant RNs, a lack of knowledge about oncology nursing in general and chemotherapy treatment specifically was the underlying cause of their fear:

> *I was so scared. I just saw the IV chemotherapy medication, how the chemo bag was covered. I walked out of the room … and the idea that patients' relatives were not allowed to enter the room during chemo. The matter was a little frightening to me as an intern.* (Participant 9, RN working in the ER)

The nurses also expressed a fear of getting hurt by handling chemotherapy treatment: '*dealing with patients who have chemo and these things, it may hurt me as a nurse. This is what crossed my mind, I mean*' (Participant 6, RN working in operating theatres (OT)). Some of the ORNs also expressed fears for their future health as a result of handling cancer

treatments such as chemotherapy and radiation: '*We are risking our lives, we are risking our fertility, and we are taking a chance that we might get a cancer at the end of our life*' (Participant 13, ORN). Some nurses expressed a belief that pregnant nurses should not work near chemotherapy or radiation since this could lead to serious health complications for both mother and baby: '*The female nurses, especially those planning to get pregnant, should stay away from chemo and radiation and move to clinic work … there is a fear of deformities in the baby*' (Participant 8, ORN).

5.3.2.2 Emotional exhaustion

This subtheme focuses on the emotional exhaustion that ORN participants expressed after going through a traumatic event as result of their therapeutic relationship with oncology patients. ORN participants described their relationship with patients in the unit as close relationships, which increases the intensity of the nurse's emotional response, especially when the patient's condition deteriorates:

> *Imagine the patient in front of me for 40 days with his son or daughter or his wife … and when the time comes to sit with them at the same table and tell them that their son has been moved from the primary team to the palliative team. Can you imagine how they reacted? That certainly affects us!!* (Participant 12, ORN)

This type of therapeutic relationship led to ORN participants being strongly affected by a sudden change in a patient's condition:

> *The worst feeling is when your patient's condition improves and you expect a good prognosis and that the patient will recover and be discharged soon, but suddenly and without warning, the patient's condition deteriorates and they are shifted to the palliative care team*. (Participant 11, ORN)

Some ORNs described this type of emotional distress as being more difficult when they were also confronted with a critical ethical consideration:

> *There are other things that might hurt when some families do not believe in chemotherapy at all. They believe in other things, such as a keto diet or herbal medicine. They withdraw from the treatment, and we try to convince them, but they continue to reject the treatment! Then the tumour keeps growing, and then later the patient comes to the ER at the end stage of cancer for palliative care, sadly.* (Participant 8, ORN)

Furthermore, some ORNs have found themselves in situations that result in high levels of emotional stress when the oncology patient had a medical order by the oncology consultants to 'do not resuscitate' (DNR), and the patient's family refused to follow the decision and asked the nurse to resuscitate the patient in the event of an arrest:

> *For example, when a patient has the 'do not resuscitate' code and is suffering from an advanced stage of cancer. The patient's family refuses to follow this command, even when we explain that the decision was made by a committee composed of several consultants. As a result, we see patients suffering through every arrest and painful resuscitation process, then surviving for only a few days, and then suffering again the same way with every arrest. This issue can only be resolved by convincing the families to accept the DNR decision, so it is one of the obstacles that distresses us a lot.* (Participant 12, ORN)

The nurses expressed their sadness when watching patients suffer from the adverse effects of chemotherapy, such as nausea, vomiting and pain:

> *The difficult part is having to see patients suffer ... during chemotherapy where you can see the side effects … nausea, vomiting and pain; nobody likes the feeling of nausea and vomiting … it's very hard to look at them … nurses are the ones who are caring, assessing and attending the patients during all their sufferings.* (Participant 13, ORN)

The nurses also reflected on scenarios that were particularly difficult, such as when the patient was a child and terminally ill cancer, and how witnessing the patient family's sadness affected nurses emotionally:

> *The hardest thing is when you tell the family that their child is at the end stage of cancer and will die in a limited number of months or weeks … it is difficult for us as well. When we see an old man walking on his stick and coming to the clinic frequently for chemo sessions for a hairless child, it affects our feelings badly*. (Participant 12, ORN)

The participants also described the negative effect of post-traumatic stress on their daily lives:

> *The memory remains stuck with me the whole day when something bad happens to my patient, especially a patient death. Sometimes, I still have the same feeling at home, especially when I'm thinking about the situation. You can see the sadness on my face and in my mood.* (Participant 8, ORN)

The details of certain patients' stories can increase the intensity of a nurse's emotional response:

> *A young patient in their early life, this leaves a horrible psychological effect on me. The patient told me details about his life and his children and then he cried! After his death, you will remember the position he mentioned and the future of his children ... it's very difficult to think about it, and it remains stuck in my mind for a long time*. (Participant 11, ORN)

Some RNs and ORNs believed that the ability to cope with emotional burdens in oncology settings depends on the nurse's personality type, as some nurses may not be suited to working in this field and handling situations such as pain and suffering, end-of-life care and dying:

> *Really, the oncology department is a challenging, stressful and unusual nursing area. Not every nurse can tolerate the psychological tension there*. (Participant 1, ORN)

> *In oncology nursing, I believe that all nurses have experienced psychological stress; however, I am sure that some nurses are able to handle this stress and cope with it while others are not, as it is mainly about their personality*. (Participant 5, RN working in an outpatient department (OPD))

Most of the ORN participants agreed that an oncology nurse must have emotional resilience to keep working there: '*The emotional tension is very high there and requires a person with a strong heart to keep working*' (Participant 16, ORN). Some ORNs expressed their belief that coping ability comes with training and experience: '*The more experience I gain – I won't say my heart will die – but the patients' reactions become more familiar*' (Participant 12, ORN). On the other hand, some RNs reported their intolerance for oncology work: '*I have the passion, but I do not have the courage because I tried dealing with relatives who have cancer, and it was painful, so I made the decision not to specialise in this field*' (Participant 5, RN working in OPD). Some RN participants held the belief that the working environment in oncology is not attractive to Saudi nurses in general, as there are significant challenges and difficulties associated with high levels of emotional distress, especially when caring for terminally ill patients or seeing patients experience severe pain as a result of chemotherapy or radiotherapy:

> *seeing patient and their family receiving bad news about cancer or watching patient suffering from chemotherapy and radiotherapy side effects … if a patient is cringing or depressed, we feel it as well. Due to this, I am sure most Saudi nurses do not like to be exposed to these events on a regular basis. It's not normal for me, and for most of the Saudi nurses I've met. I want to work in the comfort department and receive a light load of patients. That's the point of view of a lot of Saudi nurses.* (Participant 19, RN working in the endoscopy department)

5.3.2.3 Insufficient psychological support for staff

This subtheme is concerned with the psychological support that the nurses wanted to help them deal with their psychological challenges while working in oncology. Some participants expressed their dissatisfaction with the hospital mental health and wellbeing services:

> *Not every nurse has the courage to express their sadness … if I feel depressed as a result of what I have observed in oncology, I would prefer someone from the same field who had the same difficulties would be able to understand me, not someone else who would not give me the reaction I want. In some instances, hospital psychological services can make the situation worse when you begin communicating with them, but they cannot understand me and cannot provide me with the support I need.* (Participant 12, ORN)

Some ORN participants expressed a preference for psychological support from nurses in the same speciality who could understand their feelings and could help them to debrief:

> *I'm not aware of any oncology nursing association here in Saudi; if we had one, we could encourage everybody to come to do activities yearly or every six months. That would make life happier because we could debrief and talk about our challenges working in oncology.* (Participant 13)

5.3.3 Structural barriers that hinder oncology nursing

This major theme describes the structural barriers that hinder oncology nursing from the perspectives of RN and ORN participants. Three subthemes emerged from this major theme: education and training in oncology nursing were not available, lack of a formal pathway to work in oncology and the salary scale issue.

5.3.3.1 Education and training in oncology nursing were not available

Most of the RNs and ORNs who were interviewed stated that no education or training in oncology nursing was provided during their undergraduate nursing studies: '*To be honest with you, throughout my five-year bachelor's degree, I don't remember studying oncology*' (Participant 12, ORN). Similarly, one of the ORN participants stated that there was not even a lecture about oncology: '*Honestly, we didn't take any oncology classes during our undergrad*' (Participant 12, ORN). The RN participants reported the same issue of not having been trained or educated in oncology nursing during their undergraduate education: '*There were no oncology lectures in our bachelor's program and no training in oncology either*' (Participant 19, RN working in the endoscopy department). Some of the RNs stated that the information regarding oncology was very superficial and was part of a lecture that was not even about oncology: '*The university did not prepare us on the theoretical side of oncology nursing, and there were no lectures about oncology nursing; however, oncology was a small part of other lectures*' (Participant 9, RN working in the ER).

Most participants in both groups agreed that hospitals have no university policy mandates to include oncology nursing training within the internship training program. There were also no oncology training opportunities available for some intern students due to nursing or hospital policy: '*at the beginning of my training in the hospitals, the oncology department was not on the options list*' (Participant 3, RN working in the neonatal ICU). Some participants stated that some hospitals explicitly prohibit students training in the oncology department: '*During the internship, each section was distributed over approximately seven weeks. You were allowed to choose any department for seven weeks but not allowed to choose oncology*' (Participant 17, RN working in the CCL). Furthermore, some students chose to complete their internship programs in small hospitals that did not have an oncology department: '*I was in a city that did*

not have an oncology department, so I did not have a chance to train in oncology during the internship year' (Participant 12, ORN).

5.3.3.2 Lack of a formal pathway to work in oncology

This theme discusses the obstacles associated with the lack of a formal pathway to work in oncology for newly hired nurses from the perspective of both Saudi RNs and Saudi ORNs. In most cases, the job advertisements to recruit newly graduated nurses typically contain no details about the specific department or speciality that the nurse will work in. Saudi hospitals require newly hired nurses to undergo a three-month rotation program to assess their nursing competence before being assigned to specific departments. Nurses' speciality path preferences are usually discussed with them during their three months of rotation by one of the nursing managers. Some RN participants stated that their specialty preferences were not discussed during the rotation:

> *After I completed my three-month oncology rotation, I went to the nursing office and told them that I would like to continue in the same department … But they refused, and the nursing director office assigned me to the operating theatre department*. (Participant 6, RN working in the OT)

Alternatively, some participants discussed the lack of adequate preparation before working in the oncology department, especially related to patient communication skills:

> *In the beginning, for example, during a job interview, they should explain to the nurses about what they will face, including the psychological aspects of patients like sadness and tears, and the types of difficult questions that patients might ask … I was not prepared, so I was shocked every day and had a bad experience. They should train us for such situations*. (Participant 7, ORN)

5.3.3.3 Salary scale issue

The lack of financial benefits was the dominant obstacle mentioned by most participants regarding working in oncology. The salaries of nurses in Saudi governmental hospitals follow a fixed salary scale system that increases based on the number of years of experience but is unaffected by the speciality of the nurse (with the exception of psychiatric nurses) (Saudi MOH 2012). Many participants from both groups reported feeling disappointed by the lack of appropriate remuneration for those working in advanced speciality departments: '*Saudi nurses in all nursing departments have the same salary rate; it's unfair. I see those who work in outpatient clinics relaxed while the other departments work very hard*' (Participant 6, RN working in the OT). Most of the participants compared the financial benefits to the workload in different nursing departments:

> *I work in oncology, and someone in the OPD [outpatient department] gets the same salary? In the OPD, you get a two-hour break! And someone can cover you. But in oncology, you cannot even ask for a break. You cannot! You can take a bite and come back.* (Participant 4, ORN)

Alternatively, some participants compared the financial benefits with the psychological pressure:

> *take it from the perspective of why would I work in a department that is so difficult when I can get the same salary if I work in a department that is not psychologically tiring for me … The financial allowance: I expected it to make a difference*. (Participant 9, RN working in the ER)

On the other hand, some ORN participants believed that a financial incentive would be a good way to attract Saudi nurses to the oncology specialty: '*If there were a specialty allowance, the nurses would be convinced to work in oncology*' (Participant 8, ORN).

5.3.4 Workplace conditions that reduce job satisfaction

This major theme describes the workplace conditions that would reduce job satisfaction in oncology from the perspectives of RNs and ORN participants. This major theme was subdivided into four subthemes: communication barriers, team-related issues, workload-related issues, and their preference regarding lengths of shifts.

5.3.4.1 Communication barriers

Communication barriers was the topic that was most frequently discussed by the participants because of the importance of the communication skills while dealing with oncology patients and their families. Among the participants, all of the expatriate ORNs reported having difficulty communicating with patients because of their limited Arabic and the inability of patients to communicate in English: '*I only know some medical terms in Arabic but not conversational Arabic*' (Participant 13, ORN). This issue was more complex with patients from rural areas:

> *Those from the city can understand English. They know that we can communicate half in English, half in Arabic, and something like that. But those from the rural areas really do not understand English, or sometimes their Arabic dialect is also different and very hard to understand. Then we really face difficulty in communicating with them, even in Arabic. And that's why we do not ask them more questions*. (Participant 14, ORN)

Some Saudi ORNs also found that the communication barrier with speakers of different dialects could not be addressed even after years of work experience. Only native speakers knew how to deal with it: '*Many nurses, even if they were working in Riyadh for 20 years and are in contact with Saudis, may not understand the patient as much as the native of the same language*' (Participant 2, ORN).

Therefore, most Saudi ORN participants discussed the unwanted situation of being used as interpreters in the department:

> *Yes, I work as an interpreter ... You work, for example, with an American doctor or a Pakistani doctor or a doctor from the UK, and someone from anywhere who cannot speak Arabic. He needs someone to explain to the patient, which takes our time … It is a burden because it is not our job.* (Participant 4, ORN)

Some participants stated this not only because of the time consumed but also because of the associated anxiety, such as when they were forced to translate devastating news to patients:

> *It is a burden because it is not your job; you may be stressed or afraid … You are afraid that you will not deliver the accurate information stated by the doctor or you misunderstood the doctor, especially devastating news. I mean, after 3 or 4 years, a doctor wants you to tell the patient that their cancer has come back!* (Participant 4, ORN)

5.3.4.2 Team-related issues

The oncology nurses discussed conflicts resulting from the inadequacy of the work of other healthcare professionals, such as physicians and allied health specialties, which increase nurses' workload:

> *The doctors didn't explain; they were supposed to explain to the patient at the time of diagnosis before the treatment started. They should give the patients a sufficient explanation. But patients always asked me for an explanation and disease progression details, which increased our workload.* (Participant 7, ORN)

Some ORNs reflected that they sometimes felt frustrated by physicians' failure to communicate with their oncology patients and their families and to explain their illness status

and progress. This has a negative impact on the nurses' daily work as they have to do this role:

> *I face a lot of palliative patients who are in denial and ignoring their illness, and that adversely affects the staff. I believe part of the problem is due to the doctor not explaining enough to patients and families. Why are the families not satisfied? Then I discovered and told the consultant: 'You are improperly approaching the family; you are not giving them a clear explanation; it's too brief. And you are talking to them in front of the door with a coffee. They are standing! And this is not an appropriate way to speak with them: while they are standing for a few minutes. You are supposed to be in a private room, at a suitable time.'* (Participant 1, ORN)

Some ORN participants discussed the unavailability of spiritual services: '*We don't have a spiritual team. Most of the time, we referred patients to the social worker or the psychological/psychiatric therapist*' (Participant 1, ORN).

5.3.4.3 Workload-related issues

This subtheme focuses on workload-related issues in the oncology department. Most ORN participants expressed dissatisfaction with their current nurse-to-patient ratio:

> *Each nurse is responsible for four patients, so they are overloaded. Not all oncology patients' conditions are stable. You may find that three or two of your assigned patients are critically ill or have severe symptoms. This is a high load on us*. (Participant 11, ORN)

Furthermore, some ORN participants pointed out that inappropriate nurse-to-patient ratios negatively affect the quality of nursing care due to the limited time available: '*shortages will increase the pressure on each nurse and possibly lead to poor patient service; the service will not be 100% bad but will reduce in quality*' (Participant 7, ORN).

Some ORN participants expressed their frustration with the fact that sometimes the work extended past their working hours:

> *even after we reach our homes, the doctors used to call us: 'What happened to that patient?' We don't accept that, but sometimes we may be forced to do it; that is, you want to help and don't have any other choice.* (Participant 8, ORN)

On the other hand, several RN participants reported that they would not consider working in the oncology nursing specialty due to the high workload and the shortage of nurses in the department, and the impact of this shortage on their annual leave:

> *I did not like this specialty, because of the staff shortage, as well as difficulties in taking regular annual leave. Another negative aspect of this is that it is difficult to cover the shortage in oncology by nurses from other departments. It is not possible to bring staff from a normal ward to a critical area like oncology; it is hard to cover. It also affects us in terms of vacations, for example, if your vacation time is starting soon, the hospital administration says no. Why? Because of the lack of staff, we can't give you a vacation because there is no staff covering the department*. (Participant 3, RN working in the neonatal ICU)

5.3.4.4 Length of shift preference

Since the hospital had two working shifts determined by local hospital policy, some inpatient oncology departments had a 12-hour shift system (4 days per week), and some had 8-hour shifts (5 days per week) depending on the local hospital policy. The study findings revealed that the type of shift had a great impact on ORNs' wellbeing. A majority of ORN participants expressed their preference for an 8-hour shift system, rather than a 12-hour shift system: '*I would prefer 8-hour shifts; yes. It is better than working 12 hours because it's very exhausting in oncology*' (Participant 11, ORN). This concern was also reported by RN participants who had been exposed to oncology practice: '*to work a 12-hour shift with oncology patients is very difficult,*

can't tolerate that' (Participant 18, RN working in the medical ward). Some ORN participants preferred 8-hour shifts in order to reduce the burden of coping with dying patients and their families: '*Yes, for 8 hours shift ... Daily, you are faced with dying patients; daily, you are faced with a lot of problems from the family, especially the family that is in denial. It is very hard work*' (Participant 1, ORN). Moreover, some RN participants stated that they would consider working in the oncology speciality if it had an 8-hour shift system: '*If there were 8-hour shifts, I would have chosen it from the beginning … I think even the number of Saudi nurses would increase*' (Participant 19, RN working in the endoscopy department).

5.4 Chapter summary

This chapter has presented the findings of the qualitative analysis, which was the second phase of the present sequential mixed-methods study. It has explored barriers and enablers to working in oncology nursing from the perspectives of ORNs and RNs who work in other specialties. A thematic analysis was used to analyse the data, and four major themes were identified: advantages of working in oncology, psychological difficulties in oncology, structural barriers hindering oncology nursing, and workplace conditions reducing job satisfaction.

The results of this qualitative data analysis indicate that there is a need for more effort to prepare nurses for work as oncology nurses with comprehensive skills and knowledge. In addition, there are many challenges associated with the work environment in oncology nursing that affect nurses' desire to work in this area, such as the shortage of nurses, heavy workloads, challenges with taking annual leave, lack of psychological support, issues related to teamwork, emotional exhaustion from patient care, and lack of financial incentives. Many of the Saudi nurses highlighted that the fixed salary scale and the lack of financial incentives to work in advanced specialties such as oncology led many of them to prefer working in a department with a lighter workload and a morning shift schedule. The communication barrier, particularly

with regards to language, culture and religion, was one of the most prominent problems reported by expatriate ORNs. The next chapter, Chapter Six, presents an integrated analysis of the results from the first and second phases of the present mixed-methods study in preparation for a discussion of the results.

6. Chapter Six: Results integration

6.1 Introduction

This research project explored the factors influencing nurses' intentions to work in the oncology speciality from the perspectives of undergraduate nursing students (UNSs), postgraduate oncology nursing students (PONSs), oncology registered nurses (ORNs) and registered nurses (RNs) in other specialities in Saudi Arabia. An explanatory sequential mixed-methods research approach that included collecting and analysing quantitative and qualitative data from a series of validated questionnaires and semi-structured interviews was adopted. As outlined in Chapter Three, this research employed two sampling strategies – nested and multilevel – to enable the researcher to gain an understanding of the study problem and achieve the project aims and objectives. The nested sample comprised ORNs, while the multilevel sample were UNSs, PONSs and RNs.

In the quantitative phase the relationships between individual characteristics, palliative care knowledge, attitudes towards caring for dying patients, general self-efficacy, job satisfaction and intention to work in oncology were analysed. Phase One (the quantitative study) specifically aimed to identify intention predictors across three nursing groups: UNSs, ORNs and PONSs. The UNS and PONS participant groups were included to gain an understanding of these factors from the perspective of prospective oncology nurses. Phase Two of this research project involved a qualitative study that explored influential factors in more depth through semi-structured interviews with two nursing groups: ORNs and RNs. RNs were specifically targeted to gain an understanding of influencing factors and barriers from the perspective of non-oncology nurses. The present chapter provides detailed information about the technique used to integrate the results of both the quantitative and qualitative studies, the

step-by-step integration process, and the final themes that emerged from the integration process.

6.2 Implementation of a mixed-methods findings integration process

As outlined in Chapter Three, this research project employed the 'following a thread' integration technique to analyse mixed-methods study data (Moran-Ellis et al. 2006). Guided by this methodology, the results from the first and second phases were initially compared side by side using a visual model, as shown in Figure 9. This visual model presents a summary of the quantitative and qualitative key findings without indicating how they are related. Following this, the results of the studies were compared using the visual model in order to identify overarching themes.

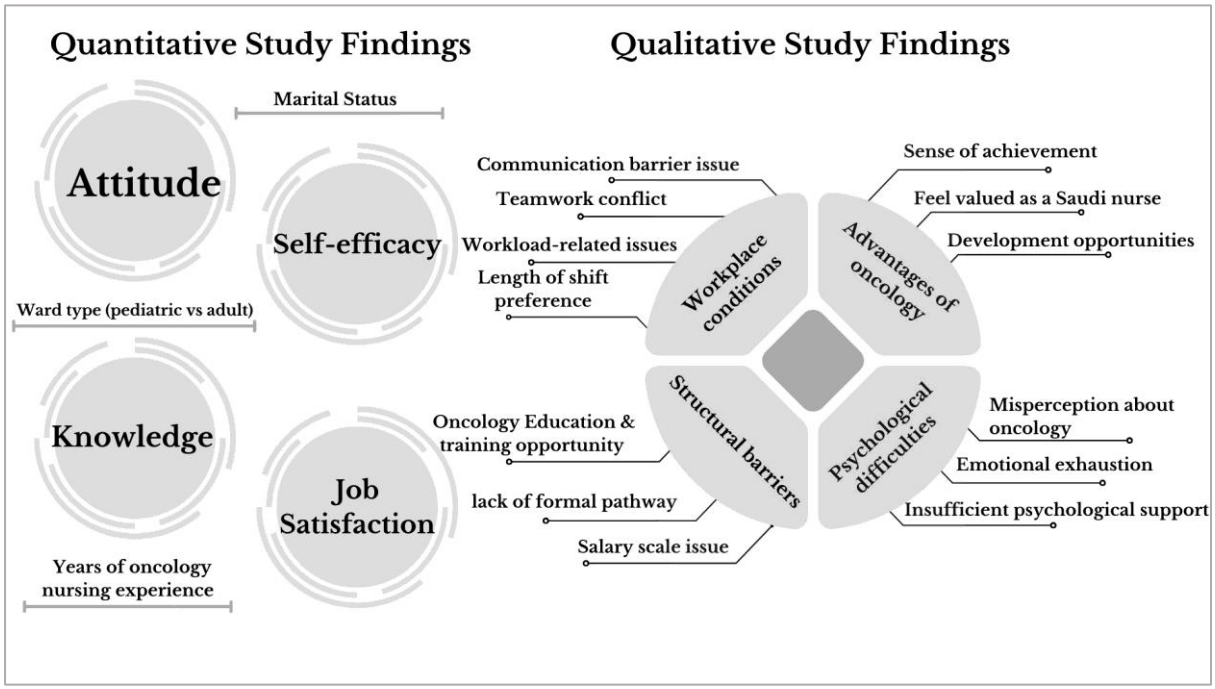

Figure 9: First visual model of the study findings without indicating the relationships between the findings

The concept of intrinsic and extrinsic factors was found to be the most appropriate way to combine the results of the present mixed-methods study. Due to the structure of the healthcare system in Saudi Arabia, it was necessary to further subdivide the extrinsic factors theme. Thus, three overarching key themes were identified: factors at the individual (intrinsic), institutional (extrinsic) and ministerial (extrinsic) levels. The first theme describes the individual-level intrinsic factors that influence nurses' intention to work in the oncology nursing speciality. The individual-level factors are factors identified within an individual, including attitudes, knowledge, skills, and personal characteristics that vary from one individual to another. In total, seven factors were identified: nurses' attitudes, emotional exhaustion, ward type (paediatric versus adult), marital status and perceptions about oncology, oncology experience, self-efficacy, and self-fulfilling/rewarding aspects of working in oncology nursing (sense of achievement, feeling valued as a Saudi nurse, development opportunities), as highlighted in green in Figure 10.

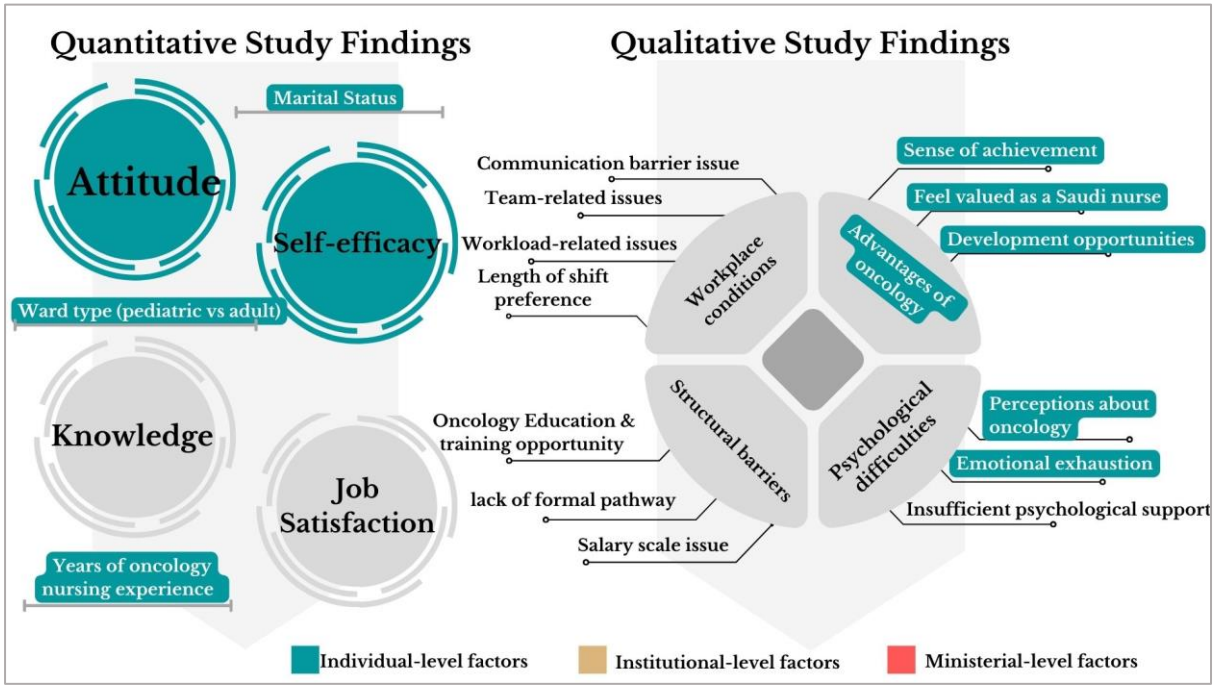

Figure 10: Visual model of individual-level factors in the integrated research findings

The second theme found was the institutional-level factors that represent some of the extrinsic factors that influence nurses' intention to work in the oncology nursing speciality. The institutional-level factors refer to the hospital-specific factors that are subject to change by hospital stakeholders and affect nurses' intentions. In total, six factors were identified: some elements of job satisfaction (extrinsic factor), workload-related issues, length of shift preference, communication barriers, team-related issues, and insufficient psychological support as showed in brown in Figure 11. Team-related issues, for example, were classified as an institutional-level factor because hospital authorities are responsible for resolving employee concerns and improving the cooperation between all the employees within a hospital.

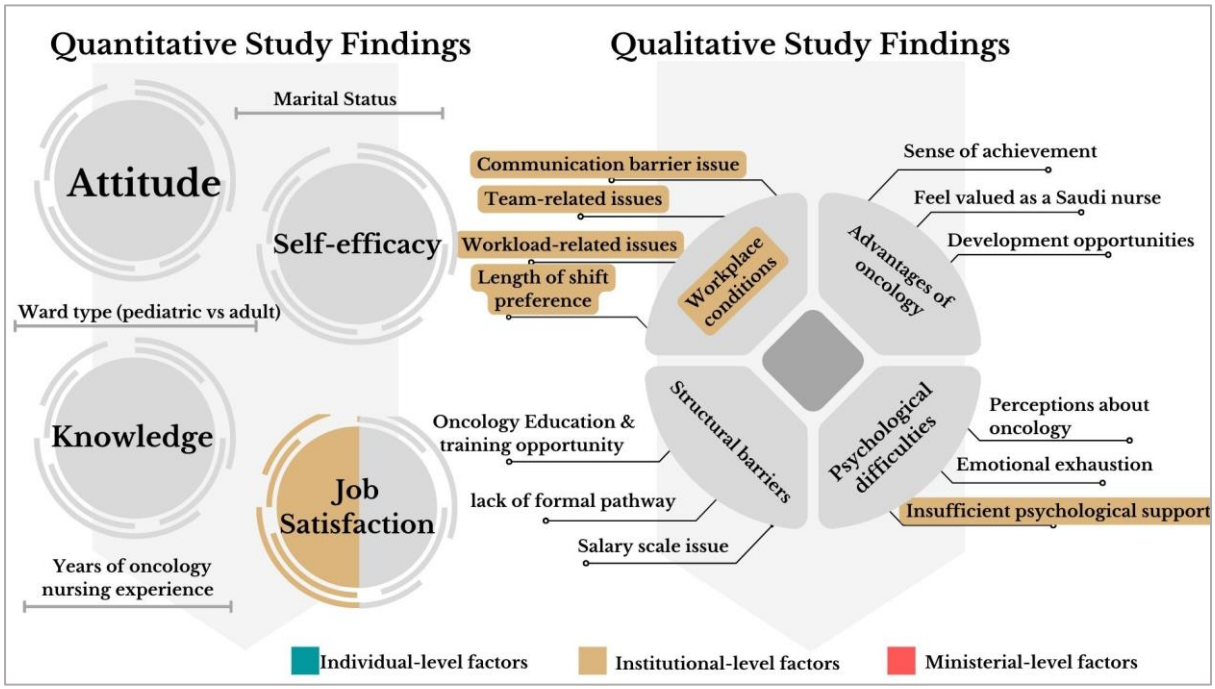

Figure 11: Visual model of institutional-level factors in the integrated research findings

The third theme found was the ministerial-level factors that represent some of the extrinsic issues that influence nurses' intention to work in the oncology nursing speciality.

The ministerial-level factors refer to governmental regulations and policies that go beyond the hospitals' capacity and affect the working intentions of nurses. In total, four factors were identified: oncology knowledge and education, oncology training, lack of a formal pathway, and the salary scale issue, as shown in red in Figure 12. For example, the issue of the fixed salary scale system was classified as a ministerial-level factor since it falls under the authority of the ministry rather than the hospital managers.

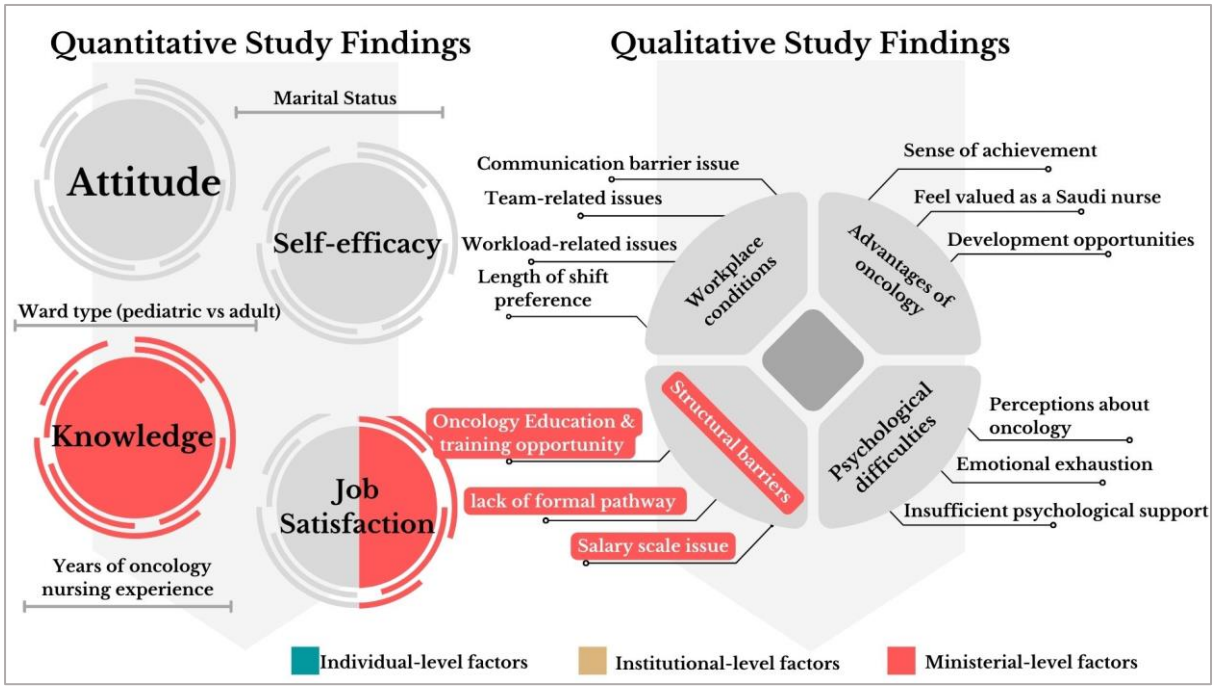

Figure 12: Visual model of ministerial-level factors in the integrated research findings

Overall, the visual model used in this integration technique assisted the researcher to manage and integrate the results from the two datasets, which ultimately assisted in writing the discussion chapter. The final visual model, presented in Figure 13, provides an overview of the link between the findings of the two studies and their position within the three levels of factors framework.

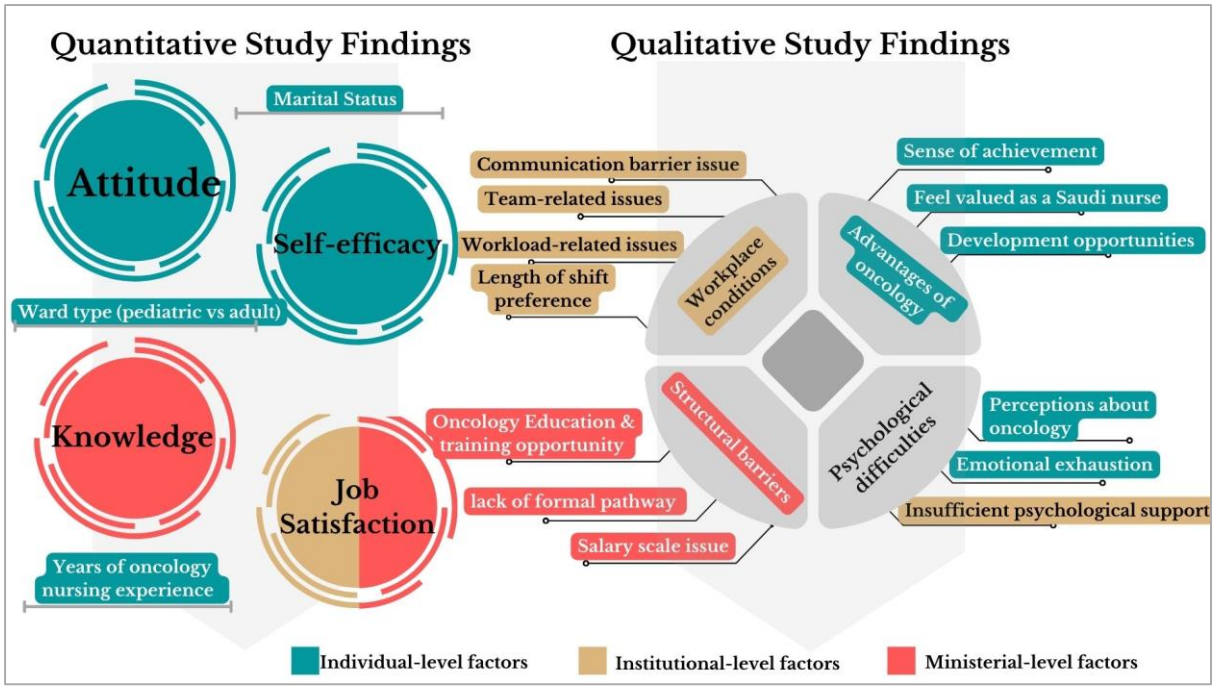

Figure 13: Visual model of the three-level factors framework of the integrated study findings

A summary of all the factors that have been identified at the three levels is presented in Figure 14 and a comprehensive exploration of each integrated theme is provided below.

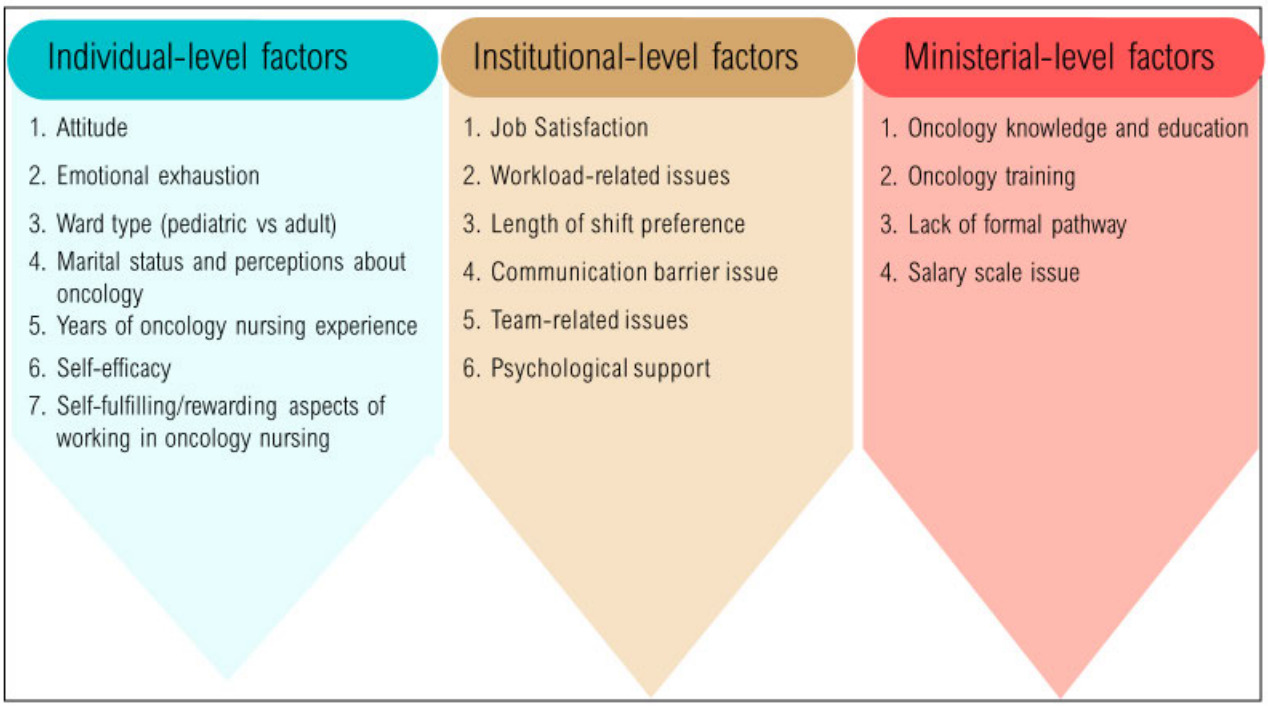

Figure 14: Summary of all identified factors in nurses' intention to work in the oncology speciality

6.3 Individual-level factors

Perceptions, feelings, preferences and attitudes have been identified as individual-level factors that affect nurses' intention to work in the speciality of oncology nursing. Based on the findings of the two studies, there were both positive and negative individual-level factors that influenced a nurse's intention. In the quantitative data, the overall FATCOD scores of the three studied groups, namely UNSs, ORNs and PONSs, were considered low and indicated a negative attitude towards caring for dying patients. In particular, the overall FATCOD scores of Saudi ORNs were lower than those of expatriate ORNs, which indicates that expatriate ORNs have a more positive attitude than Saudi ORNs in terms of dealing with terminally ill patients. Since palliative care is routinely provided by ORNs in Saudi Arabia, these findings may contribute to an understanding of the underlying cause of Saudi nurses' under-representation in the oncology nursing specialty.

The results of the logistic regression model indicate that attitudes towards caring for dying patients was the only consistent predictor of intention to work in oncology across all three studied groups: UNSs, ORNs and PONSs. The findings of the qualitative study revealed that the psychological difficulties resulting from emotional exhaustion and misperceptions about oncology nursing were the greatest difficulties facing the speciality of oncology nursing. ORNs suffer from emotional exhaustion, which has a major impact on their decision to remain in this clinical setting. The ORN participants attributed some of the emotional exhaustion to the close relationships that were formed with patients and then witnessing patients' clinical deterioration. As for RNs, their negative attitude towards working in oncology nursing appeared to be a result of misconceptions about cancer and oncology nursing, which strongly influenced their decision regarding working in this field.

The results of both phases indicated that nurses caring for children experienced greater emotional exhaustion than nurses caring for adults. Quantitative data indicated that ORNs

who worked with adult oncology patients reported an intention to remain in oncology almost twice that of paediatric ORNs. Qualitative data supported this finding, as some ORN participants reported that the most challenging psychological situation confronting them was when the oncology patient was a child accompanied by their family.

ORNs' perceptions of the occupational hazards associated with handling radiotherapy and chemotherapy were a significant reason for not wanting to work or to remain in oncology settings. Some female ORNs reported their concerns and their intention to leave the oncology speciality at the time of planning their pregnancy to avoid oncology-related pregnancy complications. The quantitative data findings showed that the marital status of ORN participants was a significant predictor of intention to remain in oncology, where nurses who were single had a greater likelihood of remaining in the speciality compared with married nurses. It is important to note that the concept of childbearing is directly linked to marriage in the Saudi context since it is illegal to have a sexual relationship outside of marriage or for an unmarried female to become pregnant (Mesleh, Al-Aql & Kurdi 2001).

In both studies, the results indicated that the length of time nurses had worked with oncology patients was an important factor in determining their willingness to continue working in oncology settings. Quantitative data indicated that years of nursing experience in oncology was a significant predictor for ORNs, with experienced nurses having a greater desire to remain in oncology than novice ORNs. Qualitative data revealed that both ORNs and RNs agreed that working in an oncology department requires effective coping skills, and believed that coping ability comes with nursing experience.

The findings of both studies indicate that nurses' perceptions of themselves play an important role in oncology nursing. The results of the quantitative study indicated that UNSs' and PONSs' perceived self-efficacy in relation to their daily nursing practice is a significant predictor of intention to work in the oncology speciality. Additionally, according to the findings

of the qualitative study, the language and culture barriers experienced by expatriate ORNs made them more dependent on Saudi nurses to solve this problem, which made Saudi ORNs feel satisfied and valued about their effective role in the department.

The findings of both studies agreed that working in the speciality of oncology nursing gives nurses a positive sense of achievement. The quantitative findings from the job satisfaction scale indicated that the ORNs were satisfied with the achievements that resulted from providing nursing care. The qualitative data supported this finding, with most ORNs reporting a positive feeling of accomplishment as a result of providing nursing care to oncology patients.

The qualitative research indicated that oncology nurses perceive that the opportunities for professional development are an incentive to work in this specialty, such as oncology being a constantly evolving field and offering greater opportunities for advancement as fewer Saudis work in this field.

6.4 Institutional-level factors

There were several institutional factors identified in this mixed-methods study that influenced the nurses' intention to work in the oncology specialty, including some of the extrinsic elements of job satisfaction, work-related issues, length of shift issues, communication barriers, team-related issues, and insufficient psychological support.

In the quantitative data, the overall MSQ scores of the ORN participants indicated that they were dissatisfied with their current employment. In particular, the extrinsic components of job satisfaction were the leading sources of nurse's dissatisfaction among Saudi and expatriate ORNs. However, the Saudi ORNs' results revealed greater dissatisfaction with the supervision relationship, company policies, work conditions and co-workers than expatriate ORNs. Moreover, the logistic regression model showed that job satisfaction was a significant predictor of ORNs' intentions to stay in the oncology speciality. The qualitative data were

consistent with these findings, revealing more information about the causes of job dissatisfaction experienced by oncology nurses. The ORNs expressed dissatisfaction with several work-related issues, including the current nurse-to-patient ratio, nursing shortages, workload, and expectations of working overtime. Thus, many ORNs stated that they would prefer to switch from 12-hour shifts (4 times per week) to 8-hour shifts (5 times per week) to manage workload stress.

The qualitative findings showed that communication and language problems were among the most prominent challenges confronting ORNs in oncology. Most Saudi ORNs have been informally used as interpreters, which has led to an increase in their workload. According to the qualitative findings, there was no interpreter for the department or a translation/interpretation service in the hospital. Due to language and cultural barriers, most of the expatriate ORNs were unable to communicate effectively with the patients, which they believed considerably affected the quality of care.

Additionally, team-related issues were reported in oncology nursing, such as the failure of physicians to adequately explain diseases and treatment plans to their patients, resulting in an increased workload for ORNs who were left to fulfil this role. The ORNs found that the hospital psychological support service was ineffective and failed to meet their needs, and they suggested some solutions to this problem.

6.5 Ministerial-level factors

Numerous factors related to government policies and regulations that affect oncology nursing were identified in both the qualitative and quantitative studies. Factors at the ministerial level included obstacles related to a lack of specialist oncology education and training opportunities, a lack of a formal oncology pathway, and a fixed salary scale.

In the quantitative data, the overall PCQN scores of the UNSs and ORNs were considered low, indicating low palliative care knowledge. In particular, the overall PCQN scores of Saudi ORNs were lower than those of expatriate ORNs, which may reflect the status of oncology nursing education in Saudi universities. However, the logistic regression model indicated that palliative care knowledge was not a significant predictor of nurses' intentions to work in oncology for UNSs and ORNs. Furthermore, the qualitative findings indicated that most RNs and ORNs had not received oncology nursing education during their undergraduate programs. Healthcare-related practices, hospital training, postgraduate practice diplomas and accreditation at all levels of Saudi Arabia are regulated by the Saudi Commission for Health Specialties (SCFHS), which is a scientific commission in Saudi Arabia (SCFHS 2018). The SCFHS has the authority to recommend that nursing colleges in Saudi universities include oncology nursing education and training within the university nursing program.

Regarding oncology nursing training during the internship program, most nurses stated that the university did not mandate that the hospital include oncology in the internship program for the students. Accordingly, most RNs and ORNs reported that during their internships they were not given the opportunity to train in the oncology department. Most RNs and ORNs argued that the main reason for the under-representation of Saudi nurses in oncology is the lack of oncology training during the internship year.

Both RNs and ORNs agreed that there were issues related to the lack of a formal path to the oncology specialty for newly hired nurses. The ORNs confirmed the lack of oncology nursing preparation for newly hired ORNs. According to some RNs, the nursing department does not consult newly hired nurses about their preferred speciality before or after they complete the three-month competency training period, and the nurses are assigned to a specific department without their knowledge or consent.

The fixed salary scale and the issue of adequate compensation was one of the main findings of the current mixed-methods study related to the policies and regulations of the Ministry of Health impacting the speciality of oncology nursing. Among nurses, there was a perception that oncology nurses should receive financial compensation due to the occupational risks and heavy workload involved compared to other nursing specialties. According to the quantitative data, the ORNs' MSQ findings revealed a greater score for dissatisfaction regarding compensation among Saudi ORNs than among expatriate ORNs. This could be due to the fact that expatriate nurses have a monetary allowance for specialisation, unlike Saudi nurses. The qualitative data were also consistent with this finding. One of the most prominent issues discussed was Saudi nurses' dissatisfaction with the lack of financial benefits in oncology nursing.

6.6 Chapter summary

This mixed-methods study was designed to explore the factors that influence nurses' intentions to work in oncology nursing from the perspectives of oncology and non-oncology nurses. Nurses representing different levels of nursing, including ORNs, UNSs, PONSs and RNs, have provided valuable insights into the factors that influence nurses to choose and stay working in oncology or to leave the specialty. In this mixed-methods study, several factors that influence the intention to work in the oncology specialty have been identified. The 'following a thread' technique was used to integrate the findings of the quantitative and qualitative studies. A visual model has been used to demonstrate and combine the relevant factors. Three overarching key themes have been identified, forming three levels of influencing factors: individual, institutional and ministerial.

Influential individual factors include perceptions, feelings, attitudes and preferences. For instance, emotional exhaustion was a contributing factor for some ORNs to leave the specialty

of oncology nursing. Institutional factors include workload-related issues, length of shift preference, commutation barriers, team-related issues, lack of psychological support and extrinsic aspects of job satisfaction. For instance, ORNs demonstrated dissatisfaction in their work. Communication barriers exacerbated the challenges faced by the expatriate ORNs in performing their duties effectively. Cultural and language barriers reduced their ability to communicate effectively with the patients, understand their issues and provide the required care. On the other hand, the ministerial-level factors constituting government policies and regulations that impact the oncology nursing speciality in Saudi Arabia include the lack of specialised education and oncology training, the fixed salary scale and the lack of a formal oncology pathway. Integrating the quantitative and qualitative data has provided a deeper understanding of the multiple factors that influence nurses' intention to work in the oncology nursing speciality. The following chapter discusses the major findings from this chapter.

7. Chapter Seven: Discussion and conclusion

7.1 Introduction

In Saudi Arabia, the healthcare sector is experiencing a chronic shortage of expatriate and Saudi nurses, which is exacerbated by a high turnover rate among expatriate nurses (Al-Dossary 2018; Alqahtani & Jones 2015). Expatriate nurses make up 63.5% of nursing employees in the healthcare sector in Saudi Arabia (Al-Dossary 2018). Over the past decade, nursing shortages in Saudi Arabia have been further impacted by the rapid expansion of the health sector and the establishment of new healthcare facilities (Al-Dossary 2018).

In oncology nursing, the shortage of Saudi nurses is even greater: Saudi nurses represent approximately 9% of the oncology nursing workforce, which is much lower than that found in the general nursing population in Saudi Arabia (36.5%) (Abudari et al. 2014; Al-Dossary 2018; Alqahtani & Jones 2015). The Saudi government has proposed significant changes to address the Saudi nursing shortage through the Saudisation policy and recently through 'Saudi Vision 2030', a strategic framework that includes targeted objectives such as increasing the number of Saudis in the nursing workforce (Al-Dossary 2018; Alluhidan et al. 2020; Vision Realization Office 2020).

This research project was designed to explore the factors that influence nurses' intention to work in oncology nursing from different perspectives including undergraduate nursing students (UNSs), postgraduate oncology nursing students (PONSs), oncology registered nurses (ORNs) and registered nurses (RNs) in other specialities in Saudi Arabia. The literature review in Chapter Two identified a gap in knowledge relating to this topic with no previous research in the Saudi context that directly addressed the influences on nurses' intentions to work in oncology. This is therefore the first study to investigate this specific topic intentionally. This chapter provides a discussion of the key findings from the integration chapter (Chapter Six)

and relates them to the broader literature relating to the oncology nursing workforce. The chapter is structured as follows: discussion of the key findings; implications of this research for education, policy, practice and future research; contribution of the thesis; study limitations; and conclusion.

7.2 Intention to work in the oncology nursing specialty

The findings from this study indicate that the intention to work in the oncology nursing specialty varies across different cohorts of nurses, ranging from a relatively low level in the UNSs group to a relatively high level in the PONSs group. The latter finding is not surprising given that the PONSs group has chosen to pursue a specialist diploma. One of the least preferred specialty choices among UNS participants was oncology nursing. This finding is somewhat consistent with studies conducted in Norway (Kloster, Høie & Skår 2007), Australia (Birks et al. 2014), and New Zealand (Wilkinson et al. 2016), and has been attributed to factors such as lack of exposure to oncology among student nurses and lack of clinical placement opportunities (Wilkinson et al. 2016).

Another important finding was that more than half of the current oncology registered nurses (ORNs) intend to leave the specialty of oncology nursing within the next three years. Similar findings have also been reported in a study conducted among hematology/oncology nurses in Saudi Arabia (Haddad & Dagamseh 2016). In other studies conducted among the general nursing population in Saudi Arabia, the intention to leave the nursing profession was between 17% and 23%, which contrasts with the higher percentage of nurses leaving the oncology specialty identified in this study (Suliman 2009; Zaghloul, Al-Hussaini & Al-Bassam 2008). These findings underscore the importance of understanding nursing workforce issues in the field of oncology in Saudi Arabia. In light of this, the following section discusses the factors that influence nurses' intentions to work in the oncology nursing profession.

7.3 Factors that influence nurses' intentions to work in oncology nursing

This mixed-methods study revealed that nurses' intentions to work in the oncology nursing specialty in Saudi Arabia are influenced by several factors. These factors can be categorised into intrinsic (personal, internal motivations) and extrinsic (workplace or regulatory) factors. In the proceeding discussion, these two categories are discussed in detail with respect to the broader literature regarding the oncology nursing workforce.

7.3.1 Intrinsic factors that influence nurses' intentions to work in oncology nursing

As presented in Chapter Six, several intrinsic factors were identified at the individual level that influenced nurses' intentions to specialise in oncology nursing. Intrinsic factors were found to have both positive and negative impacts on nurses' intentions to work in oncology nursing. After comparing both the results of this study and the findings reported in the existing literature, four subsets of intrinsic factors were identified:

- Attitudes and fears of nurses
- Managing emotional exhaustion
- Perception of self-efficacy and capabilities
- Rewarding aspects of working in oncology nursing.

7.3.1.1 Attitudes and fears of nurses

The results of this mixed-methods study indicate that nurses' attitudes towards caring for dying patients was the only consistent predictor of intention to work in oncology across UNSs, PONSs and ORNs. Nurses who had a more positive attitude towards caring for dying patients

were more likely to work and stay in the field of oncology nursing. Furthermore, UNSs, PONSs and ORNs mostly expressed negative attitudes towards the care of dying patients. Throughout the literature, individual attitudes have been found to be a key determinant of an individual's intention to stay and turnover behaviours (Liou 2009). Moreover, Achora and Labrague (2019) point out that, in order to establish an effective nurse–patient relationship, oncology nurses need to combine skills, knowledge and a positive attitude towards caring for dying patients. There have been several studies investigating ORNs' intentions to leave the specialty, but no study has examined the impact of ORNs' attitudes towards caring for dying patients on their intentions to remain or leave. A possible explanation may be that the scope of oncology nursing practice varies internationally as palliative care in most developed countries is provided through specialised palliative care services, not by ORNSs.

Interestingly, the FATCOD scores of Saudi ORNs were lower than those of expatriate ORNs, which indicates that Saudi ORNs had more negative attitudes towards caring for dying patients than expatriate ORNs. This finding is somewhat consistent with an earlier study, which found that among expatriate nurses from 19 different countries who worked in the same hospital, Saudi nurses had the most negative attitudes towards caring for dying patients (Abudari et al. 2014). The authors make an insightful finding that this negative attitude is due to the absence of palliative care education in Saudi universities (Abudari et al. 2014). Several studies have shown that nurses who have not received palliative care education are more likely to have a negative attitude towards caring for dying patients (Arestedt et al. 2014; Jafari et al. 2015; Kassa et al. 2014; Nguyen, Yates & Osborne 2014). The participants described that there is a lack of education pertaining to oncology and palliative care nursing at the undergraduate level. This study revealed that there is a significant positive relationship between ORNs' attitude and their palliative care knowledge, indicating that ORNs who have a better attitude towards caring for dying patients also have better palliative care knowledge. These finding may

partly explain why Saudi ORNs have negative attitudes towards oncology – even more so than expatriate nurses. Accordingly, the above discussion suggests that there may be a connection between oncology nursing education preparation, attitude and, ultimately, the intention to work in oncology.

Another important finding was that the intention to leave the oncology speciality was particularly high for married ORNs compared to single nurses. The root cause behind most married nurses' decisions was their fear and knowledge of the potentially harmful effects of chemotherapy and radiation on their unborn babies during pregnancy. However, in the wider literature the evidence regarding marital status and intention to leave is mixed. For example, another study conducted in Saudi Arabia on hematology/oncology nurses found that single nurses exhibited greater intentions to leave nursing than married nurses (Haddad & Dagamseh 2016). Haddad and Dagamseh (2016) attribute this finding to the fact that married nurses have more financial responsibilities and commitment to their dependents, which makes leaving a job more difficult than for single nurses. No studies have been conducted in Saudi Arabia that assess the extent to which oncology nurses are harmed by handling chemotherapy or radiotherapy treatments. A recent report by the National Institute for Occupational Safety and Health (2018) in the USA suggested that there is a risk of adverse health events associated with exposure to hazardous drugs by oncology nurses. Using personal protective equipment is strongly recommended for nurses who work in oncology because they may come into contact with hazardous drugs from indirect (e.g. surface contamination) and direct sources (e.g. spills) (Friese et al. 2020). However, the non-use of personal protective equipment by ORNs when handling hazardous drugs has been reported in several studies (Friese et al. 2020; Lawson et al. 2019; Polovich & Martin 2011). In the same vein, a recent review study revealed that healthcare workers exposed to hazardous drugs at low levels and on a chronic basis appear to be at an increased risk of adverse reproductive outcomes (Connor et al. 2014). From the

discussion above, it appears that the potential harm associated with dealing with cytotoxic drugs may cause fear amongst female ORNs, especially those who are pregnant or planning to become pregnant, which may influence their decision to leave oncology nursing.

7.3.1.2 Managing emotional exhaustion

The findings of this mixed-methods study showed that nurses working in oncology are at risk of emotional exhaustion, and this appears to be related to repeated exposure to patients suffering from numerous, repetitive, oncology-related complications and aggressive chemotherapy and radiotherapy treatments. Furthermore, ORNs' emotional exhaustion has been found to contribute to their job dissatisfaction and desire to leave the speciality. These results seem to be consistent with the findings of a recent meta-analysis in which 30% of the sample of 9959 oncology nurses reported experiencing emotional exhaustion (Cañadas-De la Fuente et al. 2018). Emotional exhaustion has also been identified as a significant predictor of nursing turnover among hematology and oncology nurses (Bourdeanu et al. 2020; Lagerlund et al. 2015; Wells-English, Giese & Price 2019). Barrett and Yates (2002) point out that emotional exhaustion is likely to adversely affect the quality of work and life of ORNs. Interestingly, a similar percentage of oncology physicians were found to experience emotional exhaustion, which might be because both groups of professionals have similar work-related stressors such as dealing with patients' deaths, bad news and exposure to oncology patients suffering repeatedly (Medland, Howard-Ruben & Whitaker 2004). Overall, these findings reveal the critical role of emotional exhaustion in ORNs' turnover intentions and the need to address this issue to improve ORNs' retention.

Another important study finding was that emotional exhaustion was particularly high in paediatric oncology nursing. Most significantly, the intention to leave the specialty of oncology nursing was found to be almost twice as high among paediatric ORNs as among adult

ORNs. In reviewing the literature, paediatric oncology nurses were found to encounter additional compassion fatigue as a result of their exposure to high relative volumes of stressors, such as ethical dilemmas related to treatment decisions, loss and grief, and the difficulty of maintaining professional boundaries regarding relationships with patients and families (Isikhan, Comez & Danis 2004; Solomon et al. 2005; Zander, Hutton & King 2010). It has been claimed that these stressors contribute significantly to burnout, emotional exhaustion and vicarious traumatisation (Jarrad & Hammad 2020; Sinclair & Hamill 2007). Vicarious trauma is defined as the process of negative change resulting from empathetic engagement with trauma survivors (Sinclair & Hamill 2007). Additionally, a study conducted among oncology nurses in Jordan indicated that nurses experience greater psychological distress when the patient is a child (Al Zoubi et al. 2020). In the general paediatric nursing population, a meta-analysis involving 1600 paediatric nurses indicated that 31% of nurses had experienced emotional exhaustion (Pradas-Hernandez et al. 2018). Thus, while paediatric nurses, in general, suffer from considerable emotional exhaustion, which negatively affects their quality of life, paediatric oncology nurses are even more vulnerable.

7.3.1.3 Perception of self-efficacy and capabilities

Nurses' perception of their self-efficacy was another factor influencing their intention to work in oncology nursing. Nurses' perception of their self-efficacy in performing nursing duties was a significant predictor of intention to work in oncology for UNSs and PONSs. Nurses who had a more positive perception of their self-efficacy in performing nursing duties were more likely to work in the field of oncology nursing. Significantly in the same vein, the UNSs' self-efficacy was positively correlated with their attitude towards caring for dying patients and their knowledge about palliative care nursing, indicating that UNSs who had a more positive attitude and greater palliative care knowledge also had more positive perceived self-efficacy. It has

been found in several studies that UNSs' perceived self-efficacy is an important factor in reducing the rate of attrition in the nursing profession (McLaughlin, Moutray & Muldoon 2008; Shorey & Lopez 2021). Furthermore, a study conducted by Bodys-Cupak et al. (2016) found that UNSs who had a higher sense of self-efficacy were significantly more likely to use active strategies in stressful situations, such as active coping, planning, positive revaluation, accepting and seeking emotional support. In a review study Shorey and Lopez (2021) found there are several factors that affect UNSs' perceived self-efficacy, including the relationship between faculty and hospitals, the lack of staff and training facilities, the level of knowledge of UNSs, and their interest and willingness to work in a particular nursing unit.

The length of ORNs' experience was found to be a key influential factor, as ORNs with more experience in oncology were less likely to leave their oncology specialty. Additionally, the in-depth interviews revealed that ORNs believe that nursing experience in oncology helps them develop their own coping mechanisms to handle stressful oncology-related situations in a way that minimises their psychological impact. In contrast novice ORNs have a high risk of leaving the specialty as they have not yet had the opportunity to develop their own effective coping strategies. These findings somewhat reflect those of prior studies that also found that novice nurses have a higher risk of experiencing psychological distress due to their less developed coping abilities (Latimer et al. 2017; Meyer et al. 2015). Furthermore, several studies have indicated that nurses with more experience in oncology nursing have more positive attitudes towards caring for dying patients (Abudari et al. 2014; Braun, Gordon & Uziely 2010; Lange, Thom & Kline 2008; Mohamed Ali & Ayoub 2010). It appears that experience in oncology nursing plays an important role in the development of coping strategies and ultimately the retention of ORNs in the field of oncology.

Among expatriate ORNs, a lack of perceived self-efficacy in communicating with patients and their families as a result of language, cultural and religious barriers was an

important contributor to their job dissatisfaction. This finding is somewhat consistent with several studies conducted in Saudi Arabia, which found that expatriate ORNs were often frustrated by a lack of understanding of the language and culture of patients, a situation that impeded effective communication (Abudari, Hazeim & Ginete 2016; Alharbi, Cleland & Morrison 2019; Haddad & Dagamseh 2016; Wazqar 2018). This problem is primarily attributed to the fact that most ORNs in the country are expatriates who are not proficient in Arabic and come from cultures that differ from those of Saudi Arabia (Haddad & Dagamseh 2016; Wazqar 2018). Several studies have found that low self-efficacy among nurses tends to lead to several psychological problems such as anxiety, negative emotions, frustration, compassion fatigue and burnout (Alidosti et al. 2016; Schwarzer & Hallum 2008; Yao et al. 2014; Yao et al. 2018). Thus, communication barriers among expatriate ORNs appear to have a negative impact on their perceived self-efficacy, satisfaction and the overall quality of the therapeutic relationship between expatriate ORNs, oncology patients and their families.

7.3.1.4 Rewarding aspects of working in oncology nursing

In contrast to the factors that reduced the intention to work in oncology, other findings emphasised the positive aspects of working as an oncology nurse. A sense of achievement, a sense of personal value and opportunities for development greatly influence nurses' job satisfaction and their intentions to stay in their jobs. Specifically, Saudi ORNs felt valued in their roles when addressing the department's and patients' cultural and linguistic needs. A previous systematic review study found that nurses' feelings of value were an important factor that influenced their intentions to stay at their job (Brown et al. 2013). This study found that both Saudi and expatriate ORNs had a positive sense of achievement that resulted from their experience in providing nursing care for oncology patients. In a previous study, Al-Ahmadi (2014) has shown that nurses who perceive a sense of accomplishment from their occupation

are likely to feel satisfied with their work. In addition, a study conducted with hematology/oncology nurses has shown that workplace rewards including a sense of achievement and sense of personal value had a significant positive impact on nurses' intentions to remain in their jobs (Bourdeanu et al. 2020). Also in this context, the findings of this study indicate that ORNs see the oncology specialty as an excellent opportunity for career development. This finding was also discussed by Challinor et al. (2020), who state that the availability of professional development opportunities is one of the main factors that affect the shortage and retention of oncology nurses. Several studies have shown that there is a positive association between a lack of opportunity for professional development and nurses' intentions to leave their jobs (Alexander et al. 1998; Rambur et al. 2003; Shader et al. 2001; Tzeng 2002). Overall, ORNs perceive several advantages of working in oncology nursing; these advantages have a positive influence on their job satisfaction and ultimately their intention to remain in their specialty.

7.3.2 Extrinsic factors that influence nurses' intentions to work in oncology nursing

As outlined in Chapter Six, several extrinsic factors have been identified at both the institutional and individual levels, that is, factors outside of nurses' direct control. Comparing these findings with the literature, three subsets of extrinsic factors were developed for discussion:

- Oncology nursing preparation and career paths
- Work conditions, workloads and nursing shortages
- Absence of supportive policies.

7.3.2.1 Oncology nursing preparation and career paths

One of the most important findings of this study was the lack of oncology and palliative care topics and subjects in the undergraduate education of nurses. The findings from the Palliative Care Quiz for Nursing (PCQN) indicate that both UNSs and ORNs possess poor knowledge regarding palliative care. However, ORNs' knowledge of palliative care was positively correlated with their intention to stay in the oncology nursing specialty, suggesting that education is a critical determinant of the development of the specialty. The PCQN scores of the UNS and ORN study participants were in line with those of previous studies conducted in Saudi Arabia (Aboshaiqah 2020; Abudari et al. 2014; Ismaile, Alshehri & Househ 2017). In comparison to other high-income countries, such as Ireland and Australia, ORNs in Saudi Arabia achieved a relatively low score (Ronaldson et al. 2008; Wilson, Avalos & Dowling 2016). One interesting result from the current study is that the mean PCQN of Saudi ORNs was lower than the mean PCQN of expatriates. This finding is also consistent with an earlier study, which found that, among expatriate nurses from 19 different countries who worked at the same hospital, Saudi nurses had the lowest level of palliative care knowledge (Abudari et al. 2014). The authors attributed these low PCQN scores among Saudi ORNs to the absence of palliative care education at Saudi universities (Abudari et al. 2014).

In relation to the quality of oncology care there is clear evidence from this study that most UNSs, ORNs, PONSs and RNs had not received any previous education about oncology and palliative care nursing during their undergraduate studies. These results agree with those of previous studies in Saudi Arabia (Aboshaiqah 2020; Abudari et al. 2014; Ismaile, Alshehri & Househ 2017). The relationship between nurses' intention to work in oncology and their undergraduate education in oncology and palliative care nursing has not been investigated previously. However, previous oncology nursing education has been found by several studies to be an important determinant of the quality of oncology patient care (Al Qadire 2014; Ismaile,

Alshehri & Househ 2017; Youssef et al. 2015). In a study investigating the quality of the oncology nursing workforce, Esplen et al. (2018) reported that current basic nursing education does not provide adequate preparation for providing quality oncology nursing care, and specialised oncology education is necessary. In addition, previous oncology nursing education has been found to have a significant positive relationship with nurses' attitudes towards caring for dying patients in several previous studies (Abudari et al. 2014; Arestedt et al. 2014; Kassa et al. 2014; Nguyen, Yates & Osborne 2014). This suggests that the preparation of nurses' knowledge and attitudes is an important driving factor of the intention to work in oncology nursing. The lack of oncology nursing education in Saudi universities is a major obstacle to the recruitment, retention and professional development of nurses in the field of oncology.

Clinical placement in oncology contexts was another factor influencing the intention of nurses to work in oncology nursing. The results of this study revealed that the majority of ORN and RN participants had not been provided with any field training in oncology departments during their undergraduate study. Furthermore, the study also found that field training in oncology plays an important role in attracting nursing students to this specialty. Previous studies have reported a positive effect of field training in oncology on nurses' attitudes towards caring for dying patients (Abudari et al. 2014; Chow et al. 2014; Henoch et al. 2017; Komprood 2013; Lippe & Becker 2015). Interestingly, findings from interviews with RNs and ORNs revealed that there is a lack of clear policy regarding UNSs' oncology training at both nursing schools and hospitals in Saudi Arabia. Consequently, nursing schools in Saudi Arabia do not mandate their students to complete oncology training as part of their internship program. Additionally, nursing authorities in the training hospitals restrict the training of students in oncology departments, arguing that oncology patients require advanced nursing skills. In a recent study conducted among UNSs in three countries, Jordan, Oman and Saudi Arabia, the authors claim that those countries lack of policies regarding oncology clinical placements (Al

Qadire et al. 2021). Hence, Al Qadire et al. (2021) suggest that the use of educational simulation to address the problem of lack of field training would be a beneficial and effective solution. Overall, it is apparent that these limitations in university and hospital policies would limit UNSs' exposure to oncology field training, which may hinder recruitment of Saudi nurses for careers in oncology nursing.

In terms of oncology training, previous research has indicated that educational simulation training is beneficial to UNSs as it offers them an opportunity to gain practice, explore their emotions and challenges, and develop problem-solving skills, critical thinking abilities and teamwork skills in a supportive and non-threatening environment (Hayden et al. 2014; Valen et al. 2022). In several studies, end-of-life (EOL) care simulation has been recommended as an approach for teaching and evaluating the EOL nursing care competence of UNSs (Hayden et al. 2014; Kirkpatrick, Cantrell & Smeltzer. 2019; Valen et al. 2022). A pre-/post-test study design conducted by Lippe and Becker (2015) aimed to evaluate the impact of EOL simulation training on UNSs. They found that EOL simulation training improves UNSs' attitudes to caring for dying patients, as well as their perceived competence in the care of dying patients (Lippe & Becker 2015). Similarly, a study conducted by Lewis et al. (2016) demonstrated that roleplay simulation training for EOL care has significant positive effects on nursing and medical students' attitudes to the care of dying patients. Even though some studies are of small scale and design, the case for simulation to help develop nursing oncology skills and knowledge is an important consideration for the Saudi context.

The lack of formal pathways for novice RNs was another important factor influencing Saudi RNs' recruitment into the oncology nursing specialty. Saudi hospitals lack a formal path for novice nurses to enter the field of oncology nursing. This study found that most nursing recruitment managers do not provide newly appointed junior nurses with the opportunity to select their nursing specialty preferences. In this study, ORNs suggested that hospital

orientation programs were ineffective in preparing nurses for dealing with the psychological demands associated with caring for oncology patients and hazardous work environments. These findings align with those of a study conducted in Jordan among ORNs (Al Zoubi et al. 2020). In their study, Al Zoubi et al. (2020) assert that the absence of an orientation program has contributed to the psychological burden experienced by ORNs. Challinor et al. (2020) also point out that the lack of appropriate pre-training for oncology nurses is attributable to the absence of official recognition of specialisation at the national level. In contrast, in Canada the oncology nursing specialty follows a model called the De Souza model, which is designed to build a high-quality workforce (Esplen et al. 2018). It is based on the novice-to-expert training framework, and has demonstrated several advantages, including increasing nurses' confidence and knowledge in managing grief and loss in oncology practice, improved cytotoxic drug safety practices, and enhancing nurses' understanding of factors that make them vulnerable to compassion fatigue (Esplen et al. 2018). One of the important elements of the success of the model is the formal recognition of the oncology specialty certificate (Esplen et al. 2018). In Saudi Arabia, nurses are not required to possess a formal specialty certificate in oncology; even the chemotherapy safety certificate is not recognised at the national level as a professional qualification. Therefore, these findings suggest that a clear policy or model that recognises nursing specialisation by the Saudi Commission for Health Specialties (SCHS) is essential for building an oncology workforce in Saudi Arabia.

The availability of postgraduate nursing education courses was found to have an influence on nurses' decision to pursue a career in oncology nursing. The results of this study indicate that Saudi nurses prefer nursing specialties that offer postgraduate studies in the same field. However, currently there is no master's program in oncology nursing offered at any Saudi university, even though many Saudi universities offer master's programs in a variety of nursing specialties (Aljohani 2020). Meanwhile, the number of postgraduate oncology nursing diploma

programs at hosted hospitals is substantially lower than the numbers for other nursing specialty diplomas (Aljohani 2020; SCFHS 2018). Esplen et al. (2018) assert that a postgraduate/specialised oncology nursing education program is essential to align with the growing demand for oncology care services globally as a result of increasing incidences and mortality rates for cancer. In Australia, postgraduate nursing education has been shown to have a number of positive effects on nursing practice, such as improved communication with patients and their families, increased work autonomy, increased motivation and improved patient advocacy skills (Pelletier, Donoghue & Duffield 2003; Summers 2020). At the same time, a systematic review study found that nurses with postgraduate qualifications are more likely to have greater career opportunities and are more satisfied with their jobs (Abu-Qamar et al. 2020). This finding is further supported by a study conducted among ORNs in Saudi Arabia which found a negative correlation between the level of education of nurses and their level of job strain (Wazqar et al. 2017b). Furthermore, the level of nursing education was found to have a positive impact on nurses' attitudes towards caring for dying patients (Achora & Labrague 2019; Kassa et al. 2014; Mohamed Ali & Ayoub 2010). Thus, it seems that the lack of a master's oncology program and the low number of hospital-based postgraduate oncology programs in Saudi Arabia present considerable barriers to improving the Saudi oncology nursing workforce.

7.3.2.2 Work conditions, workloads and nursing shortages

The results of this mixed-methods study indicate that there are several challenges associated with the working conditions in oncology nursing that adversely affect nurses' intentions to work in this specialty. Furthermore, this study indicated that ORNs' job satisfaction is a significant predicator of the intention to stay in their work specialty. Most ORNs in the study sample were dissatisfied with their current jobs. In particular extrinsic factors in the job

satisfaction scale such as work conditions, compensation, company policies and supervision relationship were the main causes of the ORNs' job dissatisfaction. In several studies, overall job satisfaction has also been identified as a significant predictor of intention to stay, including among haematology/oncology nurses in Saudi Arabia (Haddad & Dagamseh 2016), coronary care unit nurses in Bahrain (Ebrahim & Ebrahim 2017) and hospital RNs in Jordan (Abualrub et al. 2016), the Philippines (Labrague et al. 2018), South Africa (Mothoa 2016) and Korea (Yang & Kim 2016). In the current study's results, when compared to expatriate ORNs, the Saudi ORNs expressed even more dissatisfaction with these mentioned components. The different levels of dissatisfaction are attributable to several factors, discussed in more detail below.

A heavy workload and a shortage of nurses were found to be important influential factors for ORNs to stay in the oncology nursing specialty. The results of this study indicate that ORNs are experiencing a high workload due to a shortage of nurses. The oncology workload was one of the leading reasons for the ORNs' job dissatisfaction. A shortage of nurses and a heavy workload were found to create other difficulties and tensions for ORNs, such as issues with planning annual leave, unwanted overtime and a decline in the quality of patient care. In the same vein, the high workload in oncology nursing was one of the predominant issues reported by ORNs in several countries, including Saudi Arabia (Alqahtani, Jones & Holroyd 2016; Wazqar 2018), Australia (Barrett & Yates 2002) and the USA (Friese 2005). In a study conducted in Jordan, the researchers concluded that high workloads and a shortage of nurses were responsible for most of the stress and tension experienced by ORNs (Al Zoubi et al. 2020). These feelings of stress and tension were attributed to ORNs' feelings of guilt due to their inability to provide appropriate nursing care to their patients as a result of their heavy workload (Al Zoubi et al. 2020). The current study also found that most of the oncology nurses and the Saudi RNs cited high workloads in oncology departments as major factors in their decision to

avoid working in oncology nursing or to leave altogether. This finding is somewhat consistent with a systematic review that found a direct correlation between a shortage of nurses and the increasing number of oncology nurses leaving the field (Toh, Ang & Devi 2012). Thus, it is apparent that oncology nursing settings are vulnerable to a vicious circle where ORN shortages result in inadequate staffing, which can lead to increased workloads and job dissatisfaction, thereby causing turnover and more staff shortages.

From a practical viewpoint, communication barriers and a lack of interpreters in hospitals was a source of additional workload burden on Saudi ORNs. This study found that most expatriate ORNs were unable to communicate effectively with Saudi patients and their families due to cultural and linguistic differences. These differences made expatriate ORNs and other healthcare providers rely heavily on Saudi ORNs to interpret and communicate with oncology patients and their families. Due to the low numbers of Saudi ORNs, they are disproportionately affected by communication challenges, with ORNs who speak Arabic relied on to respond to the communication needs of patients who are not their direct responsibility, which increases their workload. This finding is somewhat in line with the literature, which revealed that language and cultural barriers were major obstacles for expatriate nurses in Saudi Arabia and negatively impacted their ability to communicate effectively (Abudari, Hazeim & Ginete 2016; Alshammari, Duff & Guilhermino 2019; Wazqar 2018; Wazqar et al. 2017a). The provision of interpreters in all hospitals in Saudi Arabia has been argued to be an important step towards improving communication (Alshammari, Duff & Guilhermino 2019). Thus, it is apparent that the lack of interpreters in hospitals indirectly contributes to the reluctance of Saudi nurses to work in oncology nursing by increasing their workload.

Several interprofessional issues were identified as obstacles causing ORNs to be burdened with additional work. For example, physicians failing to adequately explain diseases and treatment plans to their patients, resulting in an increased workload for ORNs, who were

left to fulfil this role. This finding has not previously been reported in Saudi nursing studies; however, a previous study reported that one of the major issues experienced by ORNs in Saudi Arabia was the lack of collaboration with physicians regarding the management of pain in patients with cancer (Alqahtani, Jones & Holroyd 2016). While Alqahtani, Jones and Holroyd's (2016) study did not clearly link the absence of collaboration with physicians with ORNs' workload, it did suggest that there are collaboration issues between physicians and ORNs. According to previous research, ORNs' relationships with physicians and managers have a major impact on their job satisfaction and turnover intentions (Cummings et al. 2008; Heinen et al. 2013). Thus, collaboration between ORNs and physicians plays an important role in retaining ORNs.

7.3.2.3 Absence of supportive policies

This study's results indicate that the absence of supportive policies in Saudi hospitals contribute further to problems associated with the oncology nursing workforce. The results revealed that the 12-hour shift system was a contributing factor to ORNs leaving the specialty, as well as discouraging RNs from choosing the oncology specialty especially among female nurses. In Saudi hospitals, it is usually the case that the inpatient ward operates on either a 12-hour or an 8-hour shift system, depending on the hospital authority. In this study, both the ORNs and the RNs preferred the 8-hour shift system to manage their work–life balance and to cope with the physical and psychological exhaustion associated with the oncology nursing workload. These findings are consistent with other research, which found that nurses working longer shifts reported the highest burnout scores and were least likely to be satisfied with their jobs (DiGiulio 2013). In discussing 12-hour shifts and work–life balance for female nurses, Alluhidan et al. (2020) suggest that hospitals provide 24/7 childcare to reduce the burden associated with finding babysitters. Recently, increasing the availability of childcare services was added to the

objectives of the National Transformation Program 2020 based on the Saudi Vision 2030 strategic framework to enhance the participation of Saudi women in the workforce (Human Resources Development Corporation 2022; Mitchell & Alfuraih 2018). Such initiatives could have a substantial impact on retaining ORNs in their specialty, although evaluating the effectiveness of these initiatives will be necessary.

Fixed salary scales was a major issue hindering Saudi RNs from joining the oncology specialty and decreasing the retention of Saudi ORNs, as there is no additional financial benefit for any nursing specialty. The salary scale issue was a major reason for the dissatisfaction of the Saudi ORNs. The absence of attractive financial rewards for Saudi nurses in any specialty (except for psychiatric nursing) made many nurses choose their nursing specialty mainly based on the workload and working hours/shift system. This finding was also reported by Alluhidan et al. (2020), who found that many Saudi nurses are attracted to jobs in primary care facilities because they do not have to work night shifts, have fewer responsibilities, receive less supervision and are on similar salary scales to hospital nurses. In addition, several studies have found that the lack of financial incentives for Saudi nurses has been identified as a barrier to nursing skills advancement and the retention of advanced professional nurses (Alluhidan et al. 2020; Alqahtani, Jones & Holroyd 2016). Alluhidan et al. (2020) point out the need to develop a regulatory framework for advanced nursing that includes the introduction of salary differentials. In Israel, the fixed salary offered by the Ministry of Health has been found to discourage nurses from seeking advancement in their careers and to make them less likely to change their workplace for better working conditions (DeKeyser Ganz & Toren 2014). There is also evidence suggesting that insufficient financial compensation is strongly associated with nursing burnout (Bakker et al. 2000). Furthermore, several studies have found a strong association between dissatisfaction with salary and turnover intention among nurses (El-Jardali et al. 2009; Larrabee et al. 2003; Rambur et al. 2003; Tzeng 2002). In light of this, it is apparent

that the solution to the shortage of Saudi ORNs in Saudi hospitals must begin by addressing the issue of financial compensation.

The results of this study indicate that effective psychological support is an important factor in retaining ORNs. Most of the ORNs in the study sample expressed their dissatisfaction with hospital psychological support services. A further interesting finding was that most ORNs preferred to debrief with someone familiar with the nature of oncology stressors rather than with a psychologist. According to a review of psychosocial wellness and burnout prevention in oncology nursing, ORNs' support for each other is a key factor in developing a supportive work environment, which in turn improves ORNs' retention (Medland, Howard-Ruben & Whitaker 2004). Another important finding from this study was that ORNs believed that the lack of a professional organisation for oncology nurses in Saudi Arabia negatively impacts the social and psychological support available to oncology nurses. The literature describes several organisational support programs that have been developed to support ORNs, such as for compassion fatigue (Houck 2014; Potter et al. 2013; Walton & Alvarez 2010), emotional support and group debriefing (Codier, Freitas & Muneno 2013; Edmonds et al. 2012). Thus, it appears that a lack of effective organisational psychological support could be a major contributing factor to ORNs' intention to leave the oncology field.

7.4 Implications of the study

This study is the first of its kind in Saudi Arabia, where there is a dire shortage of Saudi ORNs, and little is known about the reasons behind Saudi nurses' reluctance to specialise in oncology nursing. The present study comprehensively explains the factors that influence nurses' intentions to work in the field of oncology nursing. Accordingly, several recommendations are made in the following sections based on the interpretation of the study findings and in light of the related literature.

7.4.1 Policy

The specialty of oncology nursing lacks official recognition in Saudi Arabia, which has resulted in many obstacles that hinder Saudi nurse recruitment and retention in this profession. At the national level, nurse leaders should proactively engage with the relevant health authorities in designing policies to guide the establishment of oncology nursing as a recognised nursing specialty with accompanying licensing provisions. For an effective strategy of building the oncology nursing workforce, it is essential to develop a model that supports nurses at different stage such as the pre-entry, novice and expert stages. This model should be designed to include elements that assist nurses in working in this specialty, such as communication skills with oncology patients and their families, cytotoxic drug safety practices, emotional coping skills and stress management. For that activity to succeed the Saudi Commission for Health Specialties (SCFHS) should adopt or develop a program similar to the professional development program in Canada based on the 'De Souza model' that is concerned with developing the nurse from the beginner to the expert stage (Esplen et al. 2018). Nevertheless, as the current study results indicate, oncology nursing in Saudi Arabia has unique challenges, such as cultural and religious factors, as well as the fact that the majority of Saudi ORNs are novice and most expatriate ORNs have cultural and linguistic barriers to overcome. Therefore, such a model must be tailored to suit the Saudi context in order to be effective. Official recognition of the specialty of oncology nursing would help and would facilitate nursing students' access to appropriate oncology training.

This study revealed that nurses perceive a lack of policy regarding UNS training in oncology departments in Saudi Arabia. UNSs' training in the oncology specialty has been found to be one of the key factors in attracting Saudi nurses to work in this profession. The SCFHS should consider mandating and facilitating oncology nursing training in order to

increase the number of Saudi oncology nurses, since the SCFHS is the governing body responsible for assessing and issuing nursing licences in Saudi Arabia. Nevertheless, the training hospitals and nursing colleges should communicate and collaborate more effectively regarding UNSs' training in oncology in order to consider the critical need for a Saudi oncology nursing workforce in the country.

The existing fixed salary scale system for Saudi nurses is one of the obstacles to attracting and retaining Saudi nurses to the oncology nursing specialty. The absence of attractive financial benefits made many Saudi nurses choose their nursing speciality mainly based on the workload and working hours/shift system. Therefore, the Ministry of Health should develop a regulatory framework for advanced nursing specialties that includes the introduction of salary differentials to encourage Saudis to specialise in oncology nursing.

The SCFHS and the Saudi Ministry of Health should consider establishing palliative care as a distinct specialty, as the results of this study reveal that many of the challenges experienced by oncology nursing result from providing care for terminally ill cancer patients and include emotional exhaustion. In most developed countries, palliative care is provided by specialised health services, while in Saudi Arabia, it remains in its infancy in the form of 'patchy' services and is not fully supported (Abusanad et al. 2022; Lynch, Connor & Clark 2013). Several studies have established that specialised palliative care services have many positive benefits for caregivers, oncology patients and their families such as improved pain and symptom control, reduced hospital admissions and stays, increased patient and caregiver satisfaction, reduced anxiety and depression in patients, improved quality of life for patients, and being more cost-effective and efficient (Hughes & Smith 2014; Smith, Coyne & Cassel 2012; Zimmermann et al. 2008). For these reasons, the Saudi Ministry of Health should work to improve the level of palliative care development, which may in turn result in a reduction in the psychological burden on oncology nurses and an improvement in the quality of care for terminally ill patients.

7.4.2 Nursing education

According to ORNs and RNs, there is a lack of topics and subjects in the Bachelor of Nursing curriculum in Saudi universities related to oncology and palliative care nursing. Oncology education should be integrated into nursing undergraduate programs to provide students with an essential level of knowledge. In addition, it is imperative for ORNs to receive continuing education courses and classes related to oncology in order to improve their performance. Furthermore, Saudi universities should introduce a master's program in oncology nursing, similar to those offered in other nursing specialties. Postgraduate degree programs in oncology nursing are likely to attract more Saudi nurses to this profession and equip them with skills necessary to cope and succeed in the field.

The study's findings also show that improving Saudi UNSs' attitudes towards caring for dying patients is an essential step towards Saudisation of the oncology nursing specialty in Saudi Arabia. UNSs' attitudes towards caring for dying patients have been shown to improve as a result of their training in the field of oncology. Therefore, Saudi universities could mandate that internship programs should only be held in hospitals that have oncology services, primarily in the main cities such as Riyadh, Jeddah and Damam, in order to provide students with the opportunity for exposure to the field of oncology nursing. Furthermore, EOL simulation training has been proven to improve UNSs' attitudes towards caring for dying patients, as well as their perceived competence in the care of dying patients (Lippe & Becker 2015). EOL and oncology nursing scenarios within simulation training is beneficial to UNSs as it offers them an opportunity to gain practice, explore their emotions and challenges, and develop problem-solving skills and critical thinking abilities in a supportive and non-threatening environment (Hayden et al. 2014; Valen et al. 2022). Therefore, Saudi nursing universities should consider

incorporating EOL and oncology nursing simulations into the UNSs' internship training program.

7.4.3 Workforce and practice concerns

The high levels of reported intention to leave oncology nursing amongst the ORN sample reinforces the need for urgent planning to decrease nursing turnover and job dissatisfaction among ORNs in Saudi Arabia. Therefore, the director of the hospital, the director of the nursing department and the director of human resources together should take into consideration the results of the current study and relevant literature when designing a short-term and long-term plan in order to reduce ORNs' job dissatisfaction and increase their retention.

This study identified that some newly hired nurses were not asked about their preferred work specialty before being assigned to the oncology setting. It is important to allow newly hired novice nurses a choice of nursing specialties in accordance with the hospital's needs and to support their choices in order to improve the retention of Saudi nurses in advanced specialties. In addition, orientation programs prior to entering the oncology specialty are lacking in some Saudi hospitals, which has been shown to be a barrier to the retention of Saudi ORNs. Therefore, hospital nursing education departments need to design an effective orientation program tailored to the needs of nurses and their work requirements in this specialty. There should be a special emphasis on oncology-specific skills in the orientation program, such as communication skills, cytotoxic drug safety practices and emotional coping strategies.

The current study highlights nurses' frustration with a lack of interpreters in Saudi hospitals, a problem which has several negative consequences, such as increasing the workload of Saudi ORNs. The Ministry of Health needs to allocate enough interpreters to reduce the workload of Saudi ORNS and facilitate the work of expatriate ORNs, especially in

conversations requiring advanced Arabic proficiency, such as discussions with patients and their families about complex issues relating to oncology. Additionally, non-Arabic speaking expatriate ORNs should take intensive in-service Arabic fundamental language and cultural courses especially for day-to-day nursing care conversations with patients and their families. Language and cultural competence should be evaluated for non-Arabic-speaking ORNs to ensure the efficiency of those related courses.

This study found that oncology nurses suffer from a heavy workload, which negatively affects the quality of patient care and makes their work more challenging. A major contributing factor to this issue is the shortage of nurses. It is therefore essential to implement multiple strategies to ensure an appropriate patient-to-nurse ratio to improve ORNs' working conditions and ensure the retention of current ORNs. Among these strategies are the recruitment of more Saudi and expatriate ORNs, preparing specific numbers of nurses from the same hospital for unexpected ORN shortages by training them to be competent and ready to work in oncology departments. Furthermore, the nursing manager, the hospital director and the person responsible for transferring cases between government hospitals should work together to align hospitals' capacity to receive oncology patients with ORNs' staffing capacity.

ORNs' emotional exhaustion can be prevented, or reduced, by considering different interventions with positive outcomes, for example, scheduling group meetings for the purpose of improving communication and collaboration between team members, training and education in communication, debriefing in group meetings, and learning how to cope with difficult situations.

A number of recommendations have been made to improve the work–life balance of ORNs. First, it is recommended that Saudi hospitals provide day-care services for nurses' children during working hours by offering an in-service facility, or making arrangements with local private day-care services, or providing financial support to nurses who require such

services. Second, the working shift system could be changed from 12-hour into 8-hour shifts similar to those in inpatient departments of some hospitals. Third, hospital leaders should improve the existing annual leave system for ORNs by ensuring that their right to take scheduled annual leave is not interrupted by nurse shortages.

7.4.4 Future research

This thesis has identified several areas of research that are recommended for exploration in the future. First, it would be valuable to conduct a study to compare reported turnover intention and actual turnover among ORNs. Having this information will allow researchers and policymakers to gain a better understanding of the challenges of sustaining a nursing workforce of ORNs. Second, further studies regarding the impact of oncology nursing skills simulation such as end of life care, administration of cytotoxic drugs and nursing care post-radiotherapy on UNSs' and ORNs' intention to work in oncology nursing would be worthwhile. Third, further qualitative research should be conducted with the participation of oncology nursing leaders to gain a better understanding of the issues from their perspective and experience. Fourth, it would be beneficial to conduct an intervention study designed to reduce emotional exhaustion in ORNs. Fifth, a qualitative study is recommended to explore the barriers and enablers of working in oncology nursing in Saudi Arabia from Saudi UNSs' and PONs' perspectives. Finally, it is necessary to conduct further studies with a view to improving the working conditions of ORNs in the Saudi context, such as studying the effectiveness of interventions that seek to minimise ORNs' compassion fatigue or burnout, noting that several studies have been conducted on this topic in developed countries (Wentzel 2017).

7.5 Contribution of the thesis

This mixed-methods study has made several contributions in the field of oncology nursing in Saudi Arabia with implications for an international readership. The present study provides the first comprehensive exploration of the factors that influence nurses' intentions to work in the specialty of oncology nursing in Saudi Arabia. The use of mixed methods including the use of two sampling strategies, nested and multilevel, has offered a deeper understanding of nurses' intentions regarding working in oncology nursing and provided insight into the factors that influence nurses' intentions to work in the oncology specialty.

An important strength of this study is the large sample size in Phase One, as this is the largest study of its kind to be conducted with UNSs, ORNs and PONs in Saudi Arabia. This is also the first report on oncology nursing from a nationally representative cohort of PONs. Another strength of this study is the number of referral hospitals that participated in Phase One, which included four main referral oncology service providers in Riyadh, the most populous city in Saudi Arabia. The study provides baseline data on the level of palliative care knowledge, attitudes towards caring for dying patients, self-efficacy and intention to work in oncology nursing of UNSs, ORNs and PONs in Saudi Arabia. In addition, it provides baseline data on the job satisfaction of Saudi and expatriate ORNs in Saudi Arabia. Prior to this study it was difficult to make predictions about the factors that influence nurses' intention to work in the oncology nursing specialty. This study contributes to the body of knowledge about Saudi oncology nursing, which can serve as the basis for future recruitment and retention initiatives.

7.6 Study limitations

Phase One of the study has some limitations, particularly the fact that a cross-sectional study design does not establish a causal relationship between the dependent and independent

variables. According to Raphael (1987), the use of a self-administered questionnaire may have introduced recall and social desirability bias; however, the low levels of reported intention to work in the oncology speciality would suggest this was not the case. Furthermore, the timing of the Phase Two study coincided with the peak of the COVID-19 pandemic in 2021, which caused hospitals in Saudi Arabia to postpone sending both UNSs and postgraduate nursing students to hospital for clinical training; for that reason, they were not included in the Phase Two study. Interviews with UNSs and PONs may have provided additional insight into the findings from the Phase One study regarding their intentions to work in oncology nursing, attitudes towards care for dying patients and palliative care knowledge, as well as their experiences in oncology clinical placements. Also due to the pandemic, the Phase Two study was limited to just one participating hospital, as there were restrictions preventing other hospitals from providing research ethics approval.

7.7 Conclusion

Saudi Arabia has a recognised problem with recruiting, developing, attracting and retaining oncology nurses, and in particular Saudi national nurses. Identifying and improving the factors that influence the intention of current and prospective oncology nurses to work in the oncology specialty could contribute to strengthening and meeting Saudi Arabia's growing need for oncology nurses. For that reason, this study set out to explore and understand why this problem exists and what potential solutions might look like.

An explanatory sequential mixed-methods approach was adopted to answering the research question, and involved collecting and analysing quantitative and qualitative data from a series of validated questionnaires and semi-structured interviews. In particular, nurses' intentions to work in the field of oncology nursing were explored both quantitatively among UNSs, ORNs and PONSs, as well as qualitatively among ORNs and RNs in other specialties,

across five referrals hospitals in two regions of Saudi Arabia. An important aspect of this study is the exploration of the reasoning behind nurses' preference for working or not working in this nursing specialty. As this study is the first of its kind to listen to the voices of RNs and ORNs regarding working in oncology nursing in Saudi Arabia, the inspiration and insights gained from exploring this perspective will help decision-makers in planning future strategies for building the Saudi oncology nursing workforce.

Nurses' intentions to work in oncology varied across the UNSs, ORNs and PONS participants, from a relatively low level in the UNSs group, to a high level in the PONSs. Nurses' attitudes towards caring for dying patients was the only consistent predictor of intention to work in oncology across UNSs, PONSs and ORNs. Establishing a positive attitude to oncology nursing early in a nurse's career is critical to ensuring a developing workforce. Findings such as the lack of appeal of the oncology specialty to UNSs, the likely loss of existing ORNs and the importance of attitudes in shaping intention to work in oncology nursing should be taken into account when planning for the future Saudi oncology nursing workforce.

The findings highlight disparities between Saudi ORNs' and expatriate ORNs' experiences and attitudes, with Saudi ORNs demonstrating more negative results in regard to attitudes towards caring for dying patients, palliative care knowledge and job satisfaction, particularly in terms of compensation, supervision relationships, company policies and working conditions. To retain Saudi ORNs, the government and hospitals must adopt strategies that improve their working conditions and provide them with fair compensation. In the absence of fair compensation for advanced nursing specialties including oncology, it seems to be difficult to attract and retain Saudi ORNs in this specialty.

Intention to leave the oncology speciality was particularly high for married ORNs compared to single nurses as a result of their concern about the potential harm associated with dealing with cytotoxic drugs, especially those who are pregnant or planning to become

pregnant. Aside from this, the long working hours system (12 hours instead of 8 hours) was a contributing factor to ORNs leaving the specialty, as well as discouraging RNs from choosing the oncology specialty especially among female nurses due to cultural reasons. Providing and supporting 24/7 childcare was suggested to reduce the burden associated with finding babysitters, and ultimately retain female ORNs in their specialty.

Heavy workloads, shortages of ORNs and emotional exhaustion were the most prominent problems identified by ORNs and tended to adversely affect nurses' intentions to work in this specialty. It is therefore essential for decision-makers to implement multiple strategies to ensure an appropriate patient-to-nurse ratio and to improve ORNs' working conditions.

Alongside this, in nursing programs at the undergraduate level there was a substantial lack of clinical training and topics related to oncology and palliative care nursing, which was found to be an important factor in determining the likelihood of working in oncology. Therefore, oncology education foundations and clinical field training should be integrated into nursing programs to provide students with an essential level of knowledge, competence and skills. In addition, EOL and oncology nursing simulations were recommended for UNSs as they have been found to be beneficial. Furthermore, Saudi universities should introduce a master's program in oncology nursing as it would be likely to attract more Saudi nurses to this profession and equip them with skills necessary to cope and succeed in the field.

Overall, the thesis has contributed to the body of knowledge about Saudi oncology nursing, which can serve as the basis for future recruitment and retention initiatives. This thesis offers important insights for policymakers, academics and nursing leaders in building a sustainable and highly skilled oncology workforce for the future.

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9. Appendices

9.1 Appendix 1: Mixed Methods Appraisal Tool (MMAT) – Version 2011

PART I. MMAT criteria & one-page template (to be included in appraisal forms)

Types of mixed methods study components or primary studies	Methodological quality criteria (see tutorial for definitions and examples)	Responses			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	• Are there clear qualitative and quantitative research questions (or objectives*), or a clear mixed methods question (or objective*)?				
	• Do the collected data allow address the research question (objective)? E.g., consider whether the follow-up period is long enough for the outcome to occur (for longitudinal studies or study components).				
	Further appraisal may be not feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.				
1. Qualitative	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?				
	1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?				
	1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected?				
	1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants?				
2. Quantitative randomized controlled (trials)	2.1. Is there a clear description of the randomization (or an appropriate sequence generation)?				
	2.2. Is there a clear description of the allocation concealment (or blinding when applicable)?				
	2.3. Are there complete outcome data (80% or above)?				
	2.4. Is there low withdrawal/drop-out (below 20%)?				
3. Quantitative non-randomized	3.1. Are participants (organizations) recruited in a way that minimizes selection bias?				
	3.2. Are measurements appropriate (clear origin, or validity known, or standard instrument; and absence of contamination between groups when appropriate) regarding the exposure/intervention and outcomes?				
	3.3. In the groups being compared (exposed vs. non-exposed; with intervention vs. without; cases vs. controls), are the participants comparable, or do researchers take into account (control for) the difference between these groups?				
	3.4. Are there complete outcome data (80% or above), and, when applicable, an acceptable response rate (60% or above), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?				
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?				
	4.2. Is the sample representative of the population understudy?				
	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?				
	4.4. Is there an acceptable response rate (60% or above)?				
5. Mixed methods	5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?				
	5.2. Is the integration of qualitative and quantitative data (or results*) relevant to address the research question (objective)?				
	5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results*) in a triangulation design?				
	Criteria for the qualitative component (1.1 to 1.4), and appropriate criteria for the quantitative component (2.1 to 2.4, or 3.1 to 3.4, or 4.1 to 4.4), must be also applied.				

*These two items are not considered as double-barreled items since in mixed methods research, (1) there may be research questions (quantitative research) or research objectives (qualitative research), and (2) data may be integrated, and/or qualitative findings and quantitative results can be integrated.

9.2 Appendix 2: Undergraduate Nursing Students (UNSs) data collection tool

"Undergraduate Nursing Students Questionnaire"

Participation in this project is completely voluntary. Completion of the questionnaire will be considered to be consent.

Instructions: Please provide a response for each of the following questions:

Demographic Information

1) What is your age (in years)? …….

2) What is your gender?

□ Female □ Male

3) What is your marital status?

□ Single □ Married □ Divorced □ Widowed

4) What is your Nationality?

□ Saudi □ non-Saudi (please specify your country of origin) …….

5) Did you receive nursing education related to palliative care nursing during your undergraduate nursing program?

□Yes □No

6) Please write the likelihood of selecting each of the following nursing specialties as a future career

Nursing specialties	Very Unlikely	Unlikely	Undecided	Likely	Very Likely
1. Aged Care Nursing					
2. Cardiac Care Nursing					
3. Emergency Nursing					
4. Intensive Care Nursing					
5. Medical Nursing					
6. Mental Health and/or Psychiatric Nursing					
7. Midwifery					
8. Oncology Care Nursing					
9. Orthopaedic Nursing					
10. Pediatrics and Neonatal Nursing					
11. Perioperative Nursing					
12. Primary Health Care Nursing					
13. School Health Nursing					
14. Surgical Nursing					

Palliative Care Quiz for Nursing (PCQN)

Please Answer “True” or “False” or “Do Not Know” for each statement.

Questions	True	False	Do not know
1. Palliative care is appropriate only in situations where there is evidence of a downhill trajectory or deterioration.			
2. Morphine is the standard used to compare the analgesic effect of other opioids.			
3. The extent of the disease determines the method of pain treatment.			
4. Adjuvant therapies are important in managing pain.			
5. It is crucial for family members to remain at the bedside until death occurs.			
6. During the last days of life, the drowsiness associated with electrolyte imbalance may decrease the need for sedation.			
7. Drug addiction is a major problem when morphine is used on a long-term basis for the management of pain.			
8. Individuals who are taking opioids should also follow a bowel regime.			
9. The provision of palliative care requires emotional detachment.			
10. During the terminal stages of an illness, drugs that can cause respiratory depression are appropriate for the treatment of severe dyspnea.			
11. Men generally reconcile their grief more quickly than women.			
12. The philosophy of palliative care is compatible with that of aggressive treatment.			
13. The use of placebos is appropriate in the treatment of some types of pain.			
14. In high doses, codeine causes more nausea and vomiting than morphine.			
15. Suffering and physical pain are synonymous.			
16. Demerol is not an effective analgesic in the control of chronic pain.			
17. The accumulation of losses renders burnout inevitable for those who seek work in palliative care.			
18. Manifestations of chronic pain are different from those of acute pain.			
19. The loss of a distant or contentious relationship is easier to resolve than the loss of one that is close or intimate.			
20. The pain threshold is lowered by anxiety or fatigue.			

Frommelt Attitude Toward Care of the Dying Scale (FATCOD)

Please select a response following each statement which corresponds to your own personal feelings about the attitude or situation presented.

Statements	Strongly disagree	Disagree	Uncertain	Agree	Strongly Agree
1. Giving nursing care to the dying person is a worthwhile learning experience.					
2. Death is not the worst thing that can happen to a person.					
3. I would be uncomfortable talking about impending death with the dying person.					
4. Nursing care for the patient's family should continue throughout the period of grief and bereavement.					
5. I would not want to be assigned to care for a dying person.					
6. The nurse should not be the one to talk about death with the dying person.					
7. The length of time required to give nursing care to a dying person would frustrate me.					
8. I would be upset when the dying person I was caring for gave up hope of getting better.					
9. It is difficult to form a close relationship with the family of a dying person.					
10. There are times when death is welcomed by the dying person.					
11. When a patient asks, "Nurse am I dying?", I think it is best to change the subject to something cheerful.					
12. The family should be involved in the physical care of the dying person.					
13. I would hope the person I'm caring for dies when I am not present.					
14. I am afraid to become friends with a dying person.					
15. I would feel like running away when the person actually died.					
16. Families need emotional support to accept the behavior changes of the dying person.					

Statements	Strongly disagree	Disagree	Uncertain	Agree	Strongly Agree
17. As a patient nears death, the nurse should withdraw from his/her involvement with the patient.					
18. Families should be concerned about helping their dying member make the best of his/her remaining life.					
19. The dying person should not be allowed to make decisions about his/her physical care.					
20. Families should maintain as normal an environment as possible for their dying member.					
21. It is beneficial for the dying person to verbalize his/her feelings.					
22. Nursing care should extend to the family of the dying person.					
23. Nurses should permit dying persons to have flexible visiting schedules.					
24. The dying person and his/her family should be the in-charge decision makers.					
25. Addiction to pain relieving medication should not be a nursing concern when dealing with a dying person.					
26. I would be uncomfortable if I entered the room of a terminally ill person and found him/her crying.					
27. Dying persons should be given honest answers about their condition.					
28. Educating families about death and dying is not a nursing responsibility.					
29. Family members who stay close to a dying person often interfere with the professionals' job with the patient.					
30. It is possible for nurses to help patients prepare for death.					

General Self-Efficacy Scale (GSE)

Perceived self-efficacy is concerned with people's beliefs in their capabilities to produce certain achievements.
To complete this section, please rate how strong you agree or disagree with each of the following statements in relation to your daily nursing practice.

Statements	Not at all true	Barely true	Moderately true	Exactly true
1. I can always manage to solve difficult problems if I try hard enough.				
2. If someone opposes me, I can find the means and ways to get what I want.				
3. It is easy for me to stick to my aims and accomplish my goals.				
4. I am confident that I can deal efficiently with unexpected events.				
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.				
6. I can solve most problems if I invest the necessary effort.				
7. I can remain calm when facing difficulties because I can rely on my coping abilities.				
8. When I am confronted with a problem, I can usually find several solutions.				
9. If I am in trouble, I can usually think of a solution.				
10. I can usually handle whatever comes my way.				

9.3 Appendix 3: Oncology registered nurses (ORNs) data collection tool

"Registered Nurses Currently Working in Oncology Questionnaire"

Participation in this project is completely voluntary. Completion of the questionnaire will be considered to be consent.

Instructions: Please provide a response for each of the following questions:

Demographic Information

1) What is your age (in years)? …….

2) What is your gender?

□ Female □ Male

3) What is your marital status?

□ Single □ Married □ Divorced □ Widowed

4) What is your nationality?

□ Saudi □ non-Saudi (please specify your country of origin)

……

5) Did you receive any education related to palliative care nursing during your undergraduate nursing program?

□Yes □No

6) Since graduating, have you received any education related to palliative care nursing?

□Yes □No

7) What is your highest education level obtained in nursing?

□ diploma in nursing □ bachelor's degree in nursing

□ postgraduate/master's in nursing □ Other: please specify ……

8) How many years have you worked as a registered nurse?

- ……/year and ……/months.

9) How many years have you worked as a registered nurse in oncology specialty?

- ……/year and ……/months.

10) How long have you worked as a registered nurse in your current hospital? write

- ……/year and ……/months.

11) How long have you worked as a registered nurse in current unit? write

- ……/year and ……/months.

12) Please tick one option from each category to describe your current work unit/ward?

a. □Pediatric □Male adult □ Female adult

b. □Medical □Leukemia □Radiation □Chemotherapy

c. Other: please specify ……

13) How often do you look after terminally ill cancer patients?

□ Never □1-2 times per month. □ 1-2 times per week.

□ 3-5 times per week □ more than 5 times per week

14) What is the likelihood of staying in oncology nursing specialty for the next three years?

□ Very Unlikely □ Unlikely □Undecided □Likely □Very Likely

15) What is your likelihood of staying in your current work organization for the next three years?

□ Very Unlikely □ Unlikely □Undecided □Likely □Very Likely

Palliative Care Quiz for Nursing (PCQN)

Please Answer “True” or “False” or “Do Not Know” for each statement.

Questions	True	False	Do not know
1. Palliative care is appropriate only in situations where there is evidence of a downhill trajectory or deterioration.			
2. Morphine is the standard used to compare the analgesic effect of other opioids.			
3. The extent of the disease determines the method of pain treatment.			
4. Adjuvant therapies are important in managing pain.			
5. It is crucial for family members to remain at the bedside until death occurs.			
6. During the last days of life, the drowsiness associated with electrolyte imbalance may decrease the need for sedation.			
7. Drug addiction is a major problem when morphine is used on a long-term basis for the management of pain.			
8. Individuals who are taking opioids should also follow a bowel regime.			
9. The provision of palliative care requires emotional detachment.			
10. During the terminal stages of an illness, drugs that can cause respiratory depression are appropriate for the treatment of severe dyspnea.			
11. Men generally reconcile their grief more quickly than women.			
12. The philosophy of palliative care is compatible with that of aggressive treatment.			
13. The use of placebos is appropriate in the treatment of some types of pain.			
14. In high doses, codeine causes more nausea and vomiting than morphine.			
15. Suffering and physical pain are synonymous.			
16. Demerol is not an effective analgesic in the control of chronic pain.			
17. The accumulation of losses renders burnout inevitable for those who seek work in palliative care.			
18. Manifestations of chronic pain are different from those of acute pain.			
19. The loss of a distant or contentious relationship is easier to resolve than the loss of one that is close or intimate.			
20. The pain threshold is lowered by anxiety or fatigue.			

Frommelt Attitude Toward Care of the Dying Scale (FATCOD)

Please select a response following each statement which corresponds to your own personal feelings about the attitude or situation presented.

Statements	Strongly disagree	Disagree	Uncertain	Agree	Strongly Agree
1. Giving nursing care to the dying person is a worthwhile learning experience.					
2. Death is not the worst thing that can happen to a person.					
3. I would be uncomfortable talking about impending death with the dying person.					
4. Nursing care for the patient's family should continue throughout the period of grief and bereavement.					
5. I would not want to be assigned to care for a dying person.					
6. The nurse should not be the one to talk about death with the dying person.					
7. The length of time required to give nursing care to a dying person would frustrate me.					
8. I would be upset when the dying person I was caring for gave up hope of getting better.					
9. It is difficult to form a close relationship with the family of a dying person.					
10. There are times when death is welcomed by the dying person.					
11. When a patient asks, "Nurse am I dying?", I think it is best to change the subject to something cheerful.					
12. The family should be involved in the physical care of the dying person.					
13. I would hope the person I'm caring for dies when I am not present.					
14. I am afraid to become friends with a dying person.					
15. I would feel like running away when the person actually died.					
16. Families need emotional support to accept the behavior changes of the dying person.					

Statements	Strongly disagree	Disagree	Uncertain	Agree	Strongly Agree
17. As a patient nears death, the nurse should withdraw from his/her involvement with the patient.					
18. Families should be concerned about helping their dying member make the best of his/her remaining life.					
19. The dying person should not be allowed to make decisions about his/her physical care.					
20. Families should maintain as normal an environment as possible for their dying member.					
21. It is beneficial for the dying person to verbalize his/her feelings.					
22. Nursing care should extend to the family of the dying person.					
23. Nurses should permit dying persons to have flexible visiting schedules.					
24. The dying person and his/her family should be the in-charge decision makers.					
25. Addiction to pain relieving medication should not be a nursing concern when dealing with a dying person.					
26. I would be uncomfortable if I entered the room of a terminally ill person and found him/her crying.					
27. Dying persons should be given honest answers about their condition.					
28. Educating families about death and dying is not a nursing responsibility.					
29. Family members who stay close to a dying person often interfere with the professionals' job with the patient.					
30. It is possible for nurses to help patients prepare for death.					

General Self-Efficacy Scale (GSE)

Perceived self-efficacy is concerned with people's beliefs in their capabilities to produce certain achievements.
To complete this section, please rate how strong you agree or disagree with each of the following statements in relation to your daily nursing practice.

Statements	Not at all true	Barely true	Moderately true	Exactly true
1. I can always manage to solve difficult problems if I try hard enough.				
2. If someone opposes me, I can find the means and ways to get what I want.				
3. It is easy for me to stick to my aims and accomplish my goals.				
4. I am confident that I can deal efficiently with unexpected events.				
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.				
6. I can solve most problems if I invest the necessary effort.				
7. I can remain calm when facing difficulties because I can rely on my coping abilities.				
8. When I am confronted with a problem, I can usually find several solutions.				
9. If I am in trouble, I can usually think of a solution.				
10. I can usually handle whatever comes my way.				

Minnesota Satisfaction Questionnaire (MSQ)

Ask yourself: How satisfied am I with this aspect of my job?
In my present job, this is how I feel about……

Statements	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
1. Being able to keep busy all the time.					
2. The chance to work alone on the job.					
3. The chance to do different things from time to time.					
4. The chance to be “somebody” in the community.					
5. The way my boss handles his/her workers.					
6. The competence of my supervisor in making decisions.					
7. Being able to do things that don’t go against my conscience.					
8. The way my job provides for steady employment.					
9. The chance to do things for other people.					
10. The chance to tell people what to do.					
11. The chance to do something that makes use of my abilities.					
12. The way company policies are put into practice.					
13. My pay and the amount of work I do.					
14. The chances for advancement in this job.					
15. The freedom to use my own judgment.					
16. The chance to try my own methods of doing the job.					
17. The working conditions.					
18. The way my co-workers get along with each other.					
19. The praise I get for doing a good job.					
20. The feeling of accomplishment I get from the job.					

9.4 Appendix 4: Postgraduate oncology nursing students' (PONSs) data collection tool

"Postgraduate Nursing Students in Oncology Diploma Questionnaire"

Participation in this project is completely voluntary. Completion of the questionnaire will be considered to be consent.

Instructions: Please provide a response for each of the following questions:

Demographic Information

1) **What is your age (in years)?** …….
2) **What is your gender?**

□ Female □ Male

3) **What is your marital status?**

□ Single □ Married □ Divorced □ Widowed

4) **What is your nationality?**

□ Saudi □ non-Saudi (please specify your country of origin) …….

5) **Did you receive nursing education related to palliative care nursing during your undergraduate nursing program?**

□Yes □No

6) **Since graduating, have you received any education related to palliative care nursing?**

□Yes □No

7) **How many years have you worked as registered nurse?**

……/year and ……/months.

8) **How many years have you worked as registered nurse in oncology specialty?**

……/year and ……/months.

9) **Following completion of your postgraduate oncology nursing diploma program, please rate the likelihood of working in the oncology nursing specialty?**

□ Very Unlikely □ Unlikely □Undecided □Likely □Very Likely

Palliative Care Quiz for Nursing (PCQN)

Please Answer “True” or “False” or “Do Not Know” for each statement.

Questions	True	False	Do not know
1. Palliative care is appropriate only in situations where there is evidence of a downhill trajectory or deterioration.			
2. Morphine is the standard used to compare the analgesic effect of other opioids.			
3. The extent of the disease determines the method of pain treatment.			
4. Adjuvant therapies are important in managing pain.			
5. It is crucial for family members to remain at the bedside until death occurs.			
6. During the last days of life, the drowsiness associated with electrolyte imbalance may decrease the need for sedation.			
7. Drug addiction is a major problem when morphine is used on a long-term basis for the management of pain.			
8. Individuals who are taking opioids should also follow a bowel regime.			
9. The provision of palliative care requires emotional detachment.			
10. During the terminal stages of an illness, drugs that can cause respiratory depression are appropriate for the treatment of severe dyspnea.			
11. Men generally reconcile their grief more quickly than women.			
12. The philosophy of palliative care is compatible with that of aggressive treatment.			
13. The use of placebos is appropriate in the treatment of some types of pain.			
14. In high doses, codeine causes more nausea and vomiting than morphine.			
15. Suffering and physical pain are synonymous.			
16. Demerol is not an effective analgesic in the control of chronic pain.			
17. The accumulation of losses renders burnout inevitable for those who seek work in palliative care.			
18. Manifestations of chronic pain are different from those of acute pain.			
19. The loss of a distant or contentious relationship is easier to resolve than the loss of one that is close or intimate.			
20. The pain threshold is lowered by anxiety or fatigue.			

Frommelt Attitude Toward Care of the Dying Scale (FATCOD)

Please select a response following each statement which corresponds to your own personal feelings about the attitude or situation presented.

Statements	Strongly disagree	Disagree	Uncertain	Agree	Strongly Agree
1. Giving nursing care to the dying person is a worthwhile learning experience.					
2. Death is not the worst thing that can happen to a person.					
3. I would be uncomfortable talking about impending death with the dying person.					
4. Nursing care for the patient's family should continue throughout the period of grief and bereavement.					
5. I would not want to be assigned to care for a dying person.					
6. The nurse should not be the one to talk about death with the dying person.					
7. The length of time required to give nursing care to a dying person would frustrate me.					
8. I would be upset when the dying person I was caring for gave up hope of getting better.					
9. It is difficult to form a close relationship with the family of a dying person.					
10. There are times when death is welcomed by the dying person.					
11. When a patient asks, "Nurse am I dying?", I think it is best to change the subject to something cheerful.					
12. The family should be involved in the physical care of the dying person.					
13. I would hope the person I'm caring for dies when I am not present.					
14. I am afraid to become friends with a dying person.					
15. I would feel like running away when the person actually died.					
16. Families need emotional support to accept the behavior changes of the dying person.					

Statements	Strongly disagree	Disagree	Uncertain	Agree	Strongly Agree
17. As a patient nears death, the nurse should withdraw from his/her involvement with the patient.					
18. Families should be concerned about helping their dying member make the best of his/her remaining life.					
19. The dying person should not be allowed to make decisions about his/her physical care.					
20. Families should maintain as normal an environment as possible for their dying member.					
21. It is beneficial for the dying person to verbalize his/her feelings.					
22. Nursing care should extend to the family of the dying person.					
23. Nurses should permit dying persons to have flexible visiting schedules.					
24. The dying person and his/her family should be the in-charge decision makers.					
25. Addiction to pain relieving medication should not be a nursing concern when dealing with a dying person.					
26. I would be uncomfortable if I entered the room of a terminally ill person and found him/her crying.					
27. Dying persons should be given honest answers about their condition.					
28. Educating families about death and dying is not a nursing responsibility.					
29. Family members who stay close to a dying person often interfere with the professionals' job with the patient.					
30. It is possible for nurses to help patients prepare for death.					

General Self-Efficacy Scale (GSE)

Perceived self-efficacy is concerned with people's beliefs in their capabilities to produce certain achievements.
To complete this section, please rate how strong you agree or disagree with each of the following statements in relation to your daily nursing practice.

Statements	Not at all true	Barely true	Moderately true	Exactly true
1. I can always manage to solve difficult problems if I try hard enough.				
2. If someone opposes me, I can find the means and ways to get what I want.				
3. It is easy for me to stick to my aims and accomplish my goals.				
4. I am confident that I can deal efficiently with unexpected events.				
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.				
6. I can solve most problems if I invest the necessary effort.				
7. I can remain calm when facing difficulties because I can rely on my coping abilities.				
8. When I am confronted with a problem, I can usually find several solutions.				
9. If I am in trouble, I can usually think of a solution.				
10. I can usually handle whatever comes my way.				

9.5 Appendix 5: Permission to use PCQN for data collection in Phase One

Subject: Re: Approval to Use PCQN
Date: Thursday, 24 January 2019 at 1:07:50 am Australian Central Daylight Time
From: fbourbon@uottawa.ca <fbourbon@uottawa.ca>
To: Omar Awadh M Alrasheedi <omar.alrasheedi@adelaide.edu.au>

Hello Omar. Yes you are welcome to use the PCQN. I have looked after Dr. Ross correspondence for many years. Best wishes on your project. Frances

Dear Dr. Fothergill-Bourbonnais,

My name is Omar Alrasheedi and I am a Doctor of Philosophy nursing student at Adelaide University in South Australia. In my PhD project, I want to use Palliative care Quiz for nursing by Dr. Margaret Ross to measure knowledge of undergrad nursing students, postgrad oncology nursing diploma students and registered nurses work in the oncology area in Saudi Arabia. I would like to request permission to use the instrument.

appreciate your assistance

Best Regards
Omar Alrasheedi

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9.6 Appendix 6: Permission to use FATCOD for data collection in Phase One

Subject: Re: Request to use Frommelt Attitude Toward Care of the Dying (FATCOD)
Date: Wednesday, 23 January 2019 at 11:24:00 pm Australian Central Daylight Time
From: Katherine Frommelt <kay.frommelt@gmail.com>
To: Omar Awadh M Alrasheedi <omar.alrasheedi@adelaide.edu.au>

Dear Omar,

I am assuming that you have a copy of the instrument and the scoring instructions. Therefore I am hereby giving you permission to use the FATCOD, Form A in your research. Best of luck with your studies.

Katherine H Murray Frommelt, PhD, RN, PDE, CGC, FT

Sent from my iPad

On Jan 22, 2019, at 6:59 PM, Omar Awadh M Alrasheedi <omar.alrasheedi@adelaide.edu.au> wrote:

> Dear Dr. Frommelt,
>
> My name is Omar Alrasheedi and I am a Doctor of Philosophy nursing student at Adelaide University in South Australia. In my PhD project, I want to use Frommelt Attitude Toward Care of the Dying (FATCOD) Form A to measure attitudes about caring for dying patients among undergrad nursing students, postgrad oncology nursing diploma students and registered nurses work in the oncology area in Saudi Arabia. I would like to request permission to use the instrument.
>
> appreciate your assistance
>
> Best Regards
> Omar Alrasheedi
>
> PhD Student
> Adelaide Nursing School
> Level 5, Adelaide Health & Medical Sciences Building
> The University of Adelaide
> T: +61 478765996
> E: omar.alrasheedi@adelaide.edu.au
>
> <image001.png>
> <image002.png>

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9.7 Appendix 7: Advertising flyer to recruit participants from the participating hospitals

Nurses Invited to Participate in Research

Study title: **"Factors Influencing Nurses' Intention to Work in the Oncology Specialty"**

The purpose of the study is to explore the factors that influence nurses' intention to work in the oncology specialty in Saudi Arabia.

Eligibility criteria for participation in this study are:

- **An undergraduate nursing student** who has completed a rotation in an inpatient oncology unit as part of the internship program. OR

- **A registered nurse** who is working in an inpatient oncology unit. OR

- **A postgraduate nursing student** who is undertaking the oncology diploma program.

- If you are interested and willing to participate in the study, you need to complete a questionnaire, which is available at the reception desk in each oncology ward. There are three different questionnaire packages - please select the one that corresponds to your current role. Once completed, please place the questionnaire in the locked collection boxes located in the nursing reception desk.

Your participation may contribute to better understanding of the research topic

If you need more information, contact the researcher:

Omar Alrasheedi, PhD Student at University of Adelaide

Email: omar.alrasheedi@adelaide.edu.au

Phone; +966 599207791

Note: Complete anonymity cannot be guaranteed. However, the utmost care will be taken to ensure that no personal identifying details are revealed. The confidentiality and privacy of all participants will be upheld, and your views and opinions will not be publicly accessible in a personally identifiable manner.

9.8 Appendix 8: UNSs Participant Information Sheet

PARTICIPANT INFORMATION SHEET
Undergraduate Nursing Student

PROJECT TITLE: Factors Influencing Nurses' Intention to Work in The Oncology Specialty: A Mixed Method Study in Riyadh, Saudi Arabia.
HUMAN RESEARCH ETHICS COMMITTEE APPROVAL NUMBER: ****

PRINCIPAL INVESTIGATOR: Professor Gillian Harvey
STUDENT RESEARCHER: Omar Alrasheedi
STUDENT'S DEGREE: PhD Student

You are invited to participate in the research project described below.

What is the project about? This research project will explore the factors influencing nurses' intention to work in the oncology specialty in Saudi Arabian hospitals. Findings from this study may contribute to future planning and development of oncology nursing workforce. In turn, this could help to promote increased job satisfaction and reduce turnover of nursing staff.

Who is undertaking the project? The project is being conducted by Omar Alrasheedi. This research will form the basis for the degree of the Doctor of Philosophy at the University of Adelaide, South Australia under the supervision of Professor Gillian Harvey and Dr Timothy Schultz.

Why am I being invited to participate? You are being invited as you are a nursing student and you are completing your nursing internship program.

What am I being invited to do? You are being invited to complete a questionnaire that asks about your intention to working in the oncology specialty in the future. There are also some questions that ask about your knowledge and understanding of palliative care, attitudes toward caring for the dying patient and perceived self-efficacy (ability to respond to novel or difficult situations). Once completed, you can return the questionnaire to a secure collection box on the ward.

How much time will my involvement in the project take? The questionnaire should take about 15-20 minutes to complete.

Are there any risks associated with participating in this project? There are no foreseeable risks associated with participating in this research. Participants can withdraw from the interview until submission of the questionnaire without any negative consequences. Due to the small and discreet sample size there are potential limitations to anonymity, but all efforts will be made to ensure participants are not identifiable.

What are the potential benefits of the research project? While there will be no immediate benefit to you, this research may lead to a better understanding of the factors that influence nurses' decisions to work in the oncology speciality. This could help to inform future strategies

to recruit nurses to work the oncology specialty and promote job retention amongst current staff.

Can I withdraw from the project? Participation in this project is completely voluntary. Completion of the questionnaire will be considered as your consent to participate. However, you can choose to omit questions, or not proceed with the questionnaire at any point prior to submitting the questionnaire. Your participation or withdrawal from the research will not affect your position in any way, now or in the future.

What will happen to my information? Complete anonymity cannot be guaranteed due to the collection of some demographic data. However, the utmost care will be taken to ensure that no personal identifying details are revealed. The confidentiality and privacy of all participants will be upheld, and the views and opinions will not be publicly accessible in a personally identifiable manner.

Any information (data) you provide at any stage in this research study will be treated confidentially, and only the researcher and supervisors will have access to your data. All data will be retained in secure folders at the University of Adelaide for 5 years. The results of this study will be presented at public forums, conferences and will also be published in peer-reviewed Journals.

Who do I contact if I have questions about the project? You are free to discuss your participation, or for more information, please contact the researcher by email: omar.alrasheedi@adelaide.edu.au, or phone: (+966) 599207791 while I'm in Saudi Arabia from 15 May to 15 August 2019. Alternatively you can contact the researcher's principal supervisor, Professor Gillian Harvey by email: gillian.harvey@adelaide.edu.au.

What if I have a complaint or any concerns? The study has been approved by the Human Research Ethics Committee at the University of Adelaide (approval number ******). This research project will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research 2007 (Updated 2018). If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. If you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human participants, or your rights as a participant, please contact the Human Research Ethics Committee's Secretariat on:

Phone: +61 8 8313 6028
Email: hrec@adelaide.edu.au
Post: Level 4, Rundle Mall Plaza, 50 Rundle Mall, ADELAIDE SA 5000

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If I want to participate, what do I do? Please fill out the enclosed questionnaire and put your completed questionnaire in the secure box available on the ward. This box will be locked, with a key held only by the researcher.

Yours sincerely,

Omar Alrasheedi
PhD Student at University of Adelaide, South Australia
Adelaide Nursing School | Faculty of Health and Medical Sciences

9.9 Appendix 9: ORNs Participant Information Sheet

PARTICIPANT INFORMATION SHEET
Registered Oncology Nurse

PROJECT TITLE: Factors Influencing Nurses' Intention to Work in The Oncology Specialty: A Mixed Method Study in Riyadh, Saudi Arabia.
HUMAN RESEARCH ETHICS COMMITTEE APPROVAL NUMBER: ****
PRINCIPAL INVESTIGATOR: Professor Gillian Harvey
STUDENT RESEARCHER: Omar Alrasheedi
STUDENT'S DEGREE: PhD Student

You are invited to participate in the research project described below.

What is the project about? This research project will explore the factors influencing nurses' intention to work in the oncology specialty in Saudi Arabian hospitals. Findings from this study may contribute to future planning and development of oncology nursing workforce. In turn, this could help to promote increased job satisfaction and reduce turnover of nursing staff.

Who is undertaking the project? The project is being conducted by Omar Alrasheedi. This research will form the basis for the degree of the Doctor of Philosophy at the University of Adelaide, South Australia under the supervision of Professor Gillian Harvey and Dr Timothy Schultz.

Why am I being invited to participate? You are being invited as you are a registered nurse work in inpatient oncology speciality.

What am I being invited to do? You are being invited to complete a questionnaire that asks about your intention to working in the oncology specialty in the future. There are also some questions that ask about your knowledge and understanding of palliative care, attitudes toward caring for the dying patient and perceived self-efficacy (ability to respond to novel or difficult situations). Once completed, you can return the questionnaire to a secure collection box on the ward.

How much time will my involvement in the project take? The questionnaire should take about 15-20 minutes to complete.

Are there any risks associated with participating in this project? There are no foreseeable risks associated with participating in this research. Participants can withdraw from the interview until submission of the questionnaire without any negative consequences. Due to the small and discreet sample size there are potential limitations to anonymity, but all efforts will be made to ensure participants are not identifiable.

What are the potential benefits of the research project? While there will be no immediate benefit to you, this research may lead to a better understanding of the factors that influence nurses' decisions to work in the oncology speciality. This could help to inform future strategies

to recruit nurses to work the oncology specialty and promote job retention amongst current staff.

Can I withdraw from the project? Participation in this project is completely voluntary. Completion of the questionnaire will be considered as your consent to participate. However, you can choose to omit questions, or not proceed with the questionnaire at any point prior to submitting the questionnaire. Your participation or withdrawal from the research will not affect your position in any way, now or in the future.

What will happen to my information? Complete anonymity cannot be guaranteed due to the collection of some demographic data. However, the utmost care will be taken to ensure that no personal identifying details are revealed. The confidentiality and privacy of all participants will be upheld, and the views and opinions will not be publicly accessible in a personally identifiable manner.

Any information (data) you provide at any stage in this research study will be treated confidentially, and only the researcher and supervisors will have access to your data. All data will be retained in secure folders at the University of Adelaide for 5 years. The results of this study will be presented at public forums, conferences and will also be published in peer-reviewed Journals.

Who do I contact if I have questions about the project? You are free to discuss your participation, or for more information, please contact the researcher by email: omar.alrasheedi@adelaide.edu.au, or phone: (+966) 599207791 while I'm in Saudi Arabia from 15 May to 15 August 2019. Alternatively you can contact the researcher's principal supervisor, Professor Gillian Harvey by email: gillian.harvey@adelaide.edu.au.

What if I have a complaint or any concerns? The study has been approved by the Human Research Ethics Committee at the University of Adelaide (approval number ******). This research project will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research 2007 (Updated 2018). If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. If you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human participants, or your rights as a participant, please contact the Human Research Ethics Committee's Secretariat on:

Phone: +61 8 8313 6028
Email: hrec@adelaide.edu.au
Post: Level 4, Rundle Mall Plaza, 50 Rundle Mall, ADELAIDE SA 5000

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If I want to participate, what do I do? Please fill out the enclosed questionnaire and put your completed questionnaire in the secure box available on the ward. This box will be locked, with a key held only by the researcher.

Yours sincerely,

Omar Alrasheedi
PhD Student at University of Adelaide, South Australia
Adelaide Nursing School | Faculty of Health and Medical Sciences

9.10 Appendix 10: PONSs Participant Information Sheet

PARTICIPANT INFORMATION SHEET Postgraduate Nursing Student

PROJECT TITLE: Factors Influencing Nurses' Intention to Work in The Oncology Specialty: A Mixed Method Study in Riyadh, Saudi Arabia.
HUMAN RESEARCH ETHICS COMMITTEE APPROVAL NUMBER: ****
PRINCIPAL INVESTIGATOR: Professor Gillian Harvey
STUDENT RESEARCHER: Omar Alrasheedi
STUDENT'S DEGREE: PhD Student

You are invited to participate in the research project described below.

What is the project about? This research project will explore the factors influencing nurses' intention to work in the oncology specialty in Saudi Arabian hospitals. Findings from this study may contribute to future planning and development of oncology nursing workforce. In turn, this could help to promote increased job satisfaction and reduce turnover of nursing staff.

Who is undertaking the project? The project is being conducted by Omar Alrasheedi. This research will form the basis for the degree of the Doctor of Philosophy at the University of Adelaide, South Australia under the supervision of Professor Gillian Harvey and Dr Timothy Schultz.

Why am I being invited to participate? You are being invited as you are a postgraduate nursing student in oncology diploma program.

What am I being invited to do? You are being invited to complete a questionnaire that asks about your intention to working in the oncology specialty in the future. There are also some questions that ask about your knowledge and understanding of palliative care, attitudes toward caring for the dying patient and perceived self-efficacy (ability to respond to novel or difficult situations). Once completed, you can return the questionnaire to a secure collection box on the ward.

How much time will my involvement in the project take? The questionnaire should take about 15-20 minutes to complete.

Are there any risks associated with participating in this project? There are no foreseeable risks associated with participating in this research. Participants can withdraw from the interview until submission of the questionnaire without any negative consequences. Due to the small and discreet sample size there are potential limitations to anonymity, but all efforts will be made to ensure participants are not identifiable.

What are the potential benefits of the research project? While there will be no immediate benefit to you, this research may lead to a better understanding of the factors that influence nurses' decisions to work in the oncology speciality. This could help to inform future strategies

to recruit nurses to work the oncology specialty and promote job retention amongst current staff.

Can I withdraw from the project? Participation in this project is completely voluntary. Completion of the questionnaire will be considered as your consent to participate. However, you can choose to omit questions, or not proceed with the questionnaire at any point prior to submitting the questionnaire. Your participation or withdrawal from the research will not affect your position in any way, now or in the future.

What will happen to my information? Complete anonymity cannot be guaranteed due to the collection of some demographic data. However, the utmost care will be taken to ensure that no personal identifying details are revealed. The confidentiality and privacy of all participants will be upheld, and the views and opinions will not be publicly accessible in a personally identifiable manner.

Any information (data) you provide at any stage in this research study will be treated confidentially, and only the researcher and supervisors will have access to your data. All data will be retained in secure folders at the University of Adelaide for 5 years. The results of this study will be presented at public forums, conferences and will also be published in peer-reviewed Journals.

Who do I contact if I have questions about the project? You are free to discuss your participation, or for more information, please contact the researcher by email: omar.alrasheedi@adelaide.edu.au, or phone: (+966) 599207791 while I'm in Saudi Arabia from 15 May to 15 August 2019. Alternatively you can contact the researcher's principal supervisor, Professor Gillian Harvey by email: gillian.harvey@adelaide.edu.au.

What if I have a complaint or any concerns? The study has been approved by the Human Research Ethics Committee at the University of Adelaide (approval number ******). This research project will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research 2007 (Updated 2018). If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. If you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human participants, or your rights as a participant, please contact the Human Research Ethics Committee's Secretariat on:

Phone: +61 8 8313 6028
Email: hrec@adelaide.edu.au
Post: Level 4, Rundle Mall Plaza, 50 Rundle Mall, ADELAIDE SA 5000

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If I want to participate, what do I do? Please fill out the enclosed questionnaire and put your completed questionnaire in the secure box available on the ward. This box will be locked, with a key held only by the researcher.

Yours sincerely,

Omar Alrasheedi
PhD Student at University of Adelaide, South Australia
Adelaide Nursing School | Faculty of Health and Medical Sciences

9.11 Appendix 11: Preliminary data collection approval from Saudi Ministry of Health

Kingdom of Saudi Arabia
Ministry of Health
General Directorate for Research and Studies
(GDRS)

Preliminary Approval Letter ***Date: 16/04/2019***

To whom it may concern

University of Adelaide
College of Nursing
Australia

Subject: To facilitate the mission of Mr. Omar Awadh Alrasheedi
Academic No.: a1618298

Dear Sir/Madam,

This is to inform you that, this is a preliminary approval letter to **Mr. Omar A. Alrasheedi** who submitted an application to The General Directorate for Researches and Studies, Ministry of Health, Kingdom of Saudi Arabia (***GDRS-MoH***) to collect data for his research project titled: "**Factors Influencing Nurses' Intention to Work in the Oncology Specialty: A Mixed Method Study in Riyadh, Saudi Arabia"** as a part of his Ph.D degree thesis at the main referral hospitals in Riyadh and Makkah cities, KSA to be started from **(15/05/2019)** till **(15/08/2019)**.

Please note that according to our rules and regulations, the proposal needs to get acceptance by MoH scientific and ethical reviewing committees prior conducting the study at MoH facilities.

Yours Faithfully,,,,,

Director General
General Directorate for Research and Studies

Athari F. Alotaibi

المملكة العربية السعودية
وزارة الصحة
الإدارة العامة للبحوث والدراسات
الشؤون الإدارية و المالية

e-mail: research@moh.gov.sa

المملكة العربية السعودية
وزارة الصحة
الوكالة المساعدة للتخطيط والتميز المؤسسي
الإدارة العامة للبحوث والدراسات

وزارة الصحة
Ministry of Health

١٤٤٠/٨/١١هـ الموافق ٢٠١٩/٤/١٦م

موافقة مبدئية على إجراء دراسة

المحترم **سعادة / الملحق الثقافي السعودي – أستراليا**

السلام عليكم ورحمة الله وبركاته،،،،

إشارة إلى موضوع الطالب/ عمر عواض الرشيدي، المبتعث من كلية التمريض جامعة الملك سعود لدراسة درجة الدكتوراة في تخصص "التمريض" بكلية التمريض جامعة أديليد بأستراليا، رقم السجل المدني (١٠٦٥٤٤١١٢٩)، والرقم الأكاديمي (a599207791) وعنوان البحث: " العوامل المؤثرة في رغبة الممرضين للعمل في تخصص الأورام: دراسة طريقة مشتركة في الرياض، المملكة العربية السعودية ".

نحيط سعادتكم علماً بأن هذه موافقة مبدئية من الإدارة العامة للبحوث والدراسات بوزارة الصحة على إجراء هذا البحث لجمع المعلومات والبيانات اللازمة من مستشفيات الإحالة الرئيسية بمدينتي الرياض ومكة المكرمة على أن تبدأ من تاريخ (١٥ مايو ٢٠١٩م) وحتى تاريخ (١٥ أغسطس ٢٠١٩م) ولمدة ثلاثة شهور، على أن لا يسمح للطالب بجمع بيانات الدراسة إلا بعد إستيفاء جميع المستندات المطلوبة والحصول على موافقة لجنة الأخلاقيات بالوزارة وتوقيع إتفاقية المشاركة في البيانات.

وقد أعطى هذا الخطاب بناءً على طلبه لتقديمه للملحقية الثقافية السعودية في أستراليا.

ات

المملكة العربية السعودية وزارة الصحة
الإدارة العامة للبحوث والدراسات
الشؤون الادارية و المالية
الوكالة المساعدة للتخطيط والتميز

e-mail: research@moh.gov.sa

9.12 Appendix 12: Ethics approval from the University of Adelaide

Our reference 33653

RESEARCH SERVICES
OFFICE OF RESEARCH ETHICS, COMPLIANCE AND INTEGRITY
THE UNIVERSITY OF ADELAIDE

LEVEL 4, RUNDLE MALL PLAZA
50 RUNDLE MALL
ADELAIDE SA 5000 AUSTRALIA

TELEPHONE +61 8 8313 5137
FACSIMILE +61 8 8313 3700
EMAIL hrec@adelaide.edu.au

CRICOS Provider Number 00123M

16 May 2019

Professor Gillian Harvey
Nursing

Dear Professor Harvey

ETHICS APPROVAL No: H-2019-078
PROJECT TITLE: Factors Influencing Nurses' Intention To Work in the Oncology Specialty: A Mixed Method Study in Riyadh, Saudi Arabia

The ethics application for the above project has been reviewed by the Low Risk Human Research Ethics Review Group (Faculty of Health and Medical Sciences) and is deemed to meet the requirements of the *National Statement on Ethical Conduct in Human Research 2007 (Updated 2018)* involving no more than low risk for research participants.

You are authorised to commence your research on: 16/05/2019
The ethics expiry date for this project is: 31/05/2022

NAMED INVESTIGATORS:

Chief Investigator:	Professor Gillian Harvey
Student - Postgraduate Doctorate by Research (PhD):	Mr Omar Awadh M Alrasheedi
Associate Investigator:	Dr Tim Schultz

CONDITIONS OF APPROVAL: Thank you for your responses to the matters raised. The revised ethics application provided on the 16th of may, 2019 has been approved.

Ethics approval is granted for three years and is subject to satisfactory annual reporting. The form titled Annual Report on Project Status is to be used when reporting annual progress and project completion and can be downloaded at http://www.adelaide.edu.au/research-services/oreci/human/reporting/. Prior to expiry, ethics approval may be extended for a further period.

Participants in the study are to be given a copy of the information sheet and the signed consent form to retain. It is also a condition of approval that you immediately report anything which might warrant review of ethical approval including:

- serious or unexpected adverse effects on participants,
- previously unforeseen events which might affect continued ethical acceptability of the project,
- proposed changes to the protocol or project investigators; and
- the project is discontinued before the expected date of completion.

Yours sincerely,

Ms Michelle White
Secretary

The University of Adelaide

9.13 Appendix 13: Ethics approval from King Fahad Medical City (KFMC)

Kingdom of Saudi Arabia
Ministry of Health
King Fahad Medical City
(162)

وزارة الصحة
مدينة الملك فهد الطبية
King Fahad Medical City

المملكة العربية السعودية
وزارة الصحة
مدينة الملك فهد الطبية
(١٦٢)

IRB Registration Number with KACST, KSA: H-01-R-012
IRB Registration Number with OHRP/NIH, USA: IRB00010471
Approval Number Federal Wide Assurance NIH, USA: FWA00018774

May 9, 2019
IRB Log Number: 19-250E
Department: External - The University of Adelaide
Category of Approval: EXEMPT

Dear Omar Alrasheedi, Prof. Gillian Harvey and Dr. Timothy Schultz,

I am pleased to inform you that your submission dated April 30, 2019 for the study titled '**Factors Influencing Nurses' Intention to Work in the Oncology Specialty**' was reviewed and was approved according to Good Clinical Practice guidelines. Please note that this approval is from the research ethics perspective only. You will still need to get permission from the head of department or unit in KFMC or an external institution to commence data collection.

We wish you well as you proceed with the study and request you to keep the IRB informed of the progress on a regular basis, using the IRB log number shown above.

Please be advised that regulations require that you submit a progress report on your research every 6 months. You are also required to submit any manuscript resulting from this research for approval by IRB before submission to journals for publication.

As a researcher you are required to have current and valid certification on protection human research subjects that can be obtained by taking a short online course at the US NIH site or the Saudi NCBE site followed by a multiple choice test. Please submit your current and valid certificate for our records. Failure to submit this certificate shall a reason for suspension of your research project.

If you have any further questions feel free to contact me.

Sincerely yours,

Institutional Review Board
Approved
Date: 09 MAY 2019

Prof. Omar H. Kasule
Chairman, Institutional Review Board (IRB)
King Fahad Medical City, Riyadh, KSA
Tel: +966 1 288 9999 Ext. 26913
E-mail: okasule@kfmc.med.sa

مدينة الملك فهد الطبية
King Fahad Medical City

KFMC NURSING RESEARCH COMMITTEE

NURSING RESEARCH APPLICATION FORM

Completed application form and submit it with your proposal to the KFMC Nursing Research Committee.

Principal Investigator: **Name:** Omar Alrasheedi	**Email:** omar.alrasheedi@adelaide.edu.au	**Contact No.:** +966599207791	**Fax No:**
Hospital: university of Adelaide	Department: Adelaide nursing School	Section: HDR	
Research: Masters Degree ☐	PhD ☒ Institutional study ☐	Other ☐	
Study Title: Factors Influencing Nurses' Intention to Work in The Oncology Specialty			
Name of department/s where research will be conducted: All oncology department			

Status of Principal Investigator:			
DON ☐ NM/HN ☐ Charge Nurse ☐ Nurse Educator ☐ Staff Nurse 1,2,3 ☐ Other: ☒ Lecturer at king Saud University & PhD student at Adelaide University			
Co-Investigator(s):	Omar Awadh Alrasheedi	omar.alrasheedi@adelaide.edu.au	+966599207791
Study Supervisor/s:	Prof Gillian Harvey	gillian.harvey@adelaide. edu.au	+61 8 8313 0267
Approval letter from Institution/organization	Yes: ☒ No: ☐		
Funding Information:	☐ Extramural	☐ Intramural	☒ No Funding
Funding Source(s):	☒ Government	☐ Industry	☐ Foundation
Study Sponsor:	Yes: ☒ No: ☐	Agency/Sponsor/Program	SACM/King Saud University
Study Duration: three months	Start Date: 27 June 2019	End Date: 15 August 2019	

Study Description: State the objectives, value and necessity of the study. Include reasons why the proposed study should be undertaken in KFMC. The aim of this research is to explore the factors influencing nurses' intention to work in the oncology specialty in Saudi Arabia. In particular, this research seeks to analyse the relationships between knowledge of palliative care, attitudes toward caring for dying patient, self-efficacy, job satisfaction and intention toward working in oncology specialty among; undergraduate nursing students and registered nurses working in oncology specialty. Gaining more insight into different aspects of oncology nursing could help design better strategies to attract nurses to this specialty and improve their working environments. Thus, the findings from this study will lead to the identification of different factors that could play a role in improving the oncology nursing workforce. These improvements could lead to promote nurse job satisfaction and decreased nurse turnover. Finding of this research might help in improve the recruitment of nurses into the oncology specialty and promote job retention among current staff. Findings of this research could help nursing policymakers in Saudi Arabia to plan for the future nursing workforce strategy in aspect to support the MOH in limiting the financial loss related to turnover and minimize the unanticipated staff nursing shortages. Overall, the aims of this project aligns with the Saudi government long-term goals "2030 vision" toward increase and improve Saudi citizen nursing workforce (Al-Dossary 2018).

مدينة الملك فهد الطبية
King Fahad Medical City

KFMC NURSING RESEARCH COMMITTEE

NURSING RESEARCH APPLICATION FORM

I confirm that the information submitted is true and accurate and I will abide with the requirements set by the KFMC Nursing Research Committee and acknowledge KFMC in my dissertation/thesis publication. I will submit the study findings/results when the study is completed, as well as a copy of any presentation I have done. (You may be asked to present your study results at a Nursing Research Conference)

Omar Awadh Alrasheedi
Printed Name

27 June 2019
Date

COMMITTEE APPROVAL: ☑ Approved ☐ Not Approved ☐ Minor changes ☐ Major changes

Remarks: Participation of the nurses and all the trainees are purely voluntary.

KFMC NURSING RESEARCH COMMITTEE APPROVAL NUMBER: _____

Approved/~~Not approved by~~:

Diana Lalithabai
Nurse Educator NED
Badge # 014808
Dept # 7842

Dr. Diana Selvamony Lalithabai
Chairperson, Nursing Research Committee

Approved/Not approved by:

imed O. Hawsawi
rector of Nursing Affairs

KFMC

9.14 Appendix 14: Ethics approval from King Saud University Medical City (KSUMC)

Kingdom of Saudi Arabia
King Saudi University (KSU)
p.o. Box 7805 Riyadh 11472
Tel. +966 11 467 00 11
Fax. +96611 467 19 92
http://medicalcity.ksu.edu.sa

المملكة العربية السعودية
جامعة الملك سعود (KSU)
ص.ب ٧٨٠٥ الرياض ١١٤٧٢
هاتف ٤٦٧٠٠١١ ١١
فاكس ٤٦٧١٩٩٢ ١١

جامعة الملك سعود
King Saud University
المدينة الطبية الجامعية

05.08.2019 (04.12.1440)
Ref. No. 19/0881/IRB

To: **Mr. Omar Awadh Alrasheedi**
Faculty of Health and Medical Sciences
King Saud College of Nursing
Email: oalrasheedi@ksu.edu.sa
Principal Investigator

CC: Prof. Gillian Harvey, Dr. Tim Scultz
Co-Investigators

Subject: **Approval of Research Project No. E-19-4107**

Study Title: "Factors Influencing Nurses' Intention to Work in the Oncology Specialty: A Mixed Method Study in Riyadh, Saudi Arabia"

Type of Review: Expedite
Date of Approval: 05 August 2019
Date of Expiry: 05 August 2020

Dear Mr. Omar Awadh Alrasheedi,

I am pleased to inform you that your above-mentioned research project submitted to the IRB was reviewed and approved on 05 August 2019 (04 Dhul Al-Hijjah 1440). You are now granted permission to conduct this study given that your study does not disclose participant's identity and poses no risk to the patients.

As principal investigator, you are required to abide by the rules and regulations of the Kingdom of Saudi Arabia and the research policies and procedures of the KSU IRB. If you make any changes to the protocol during the period of this approval, you must submit a revised protocol to the IRB for approval prior to implementing the changes. Please quote the project number shown above in any future correspondence or follow-ups related to this study.

This approval is for a period of one (1) year commencing from the date of this letter. If you wish to have your protocol approved for continuation, please submit a completed request for reapproval of an approved protocol form (KSU-IRB 017E) at least 30 days before the expiry date. Failure to receive approval for continuation before the expiration date will result in automatic suspension of the approval of this protocol on the expiration date. Information collected following suspension is unapproved research and can never be reported or published as research data.

We wish you success in your research and request you to keep the IRB informed about the progress and final outcome of the study in a regular basis. If you have any question, please feel free to contact me.

Thank you!

Sincerely yours,

Prof. Abdulrahman Alsultan
Chairman of IRB
Health Sciences Colleges Research on Human Subjects
King Saud University College of Medicine
P. O. B ox 7805 Riyadh 11472 K.S.A.
Email: aalsultan1@ksu.edu.sa

College Medical Research Institutional Review Board (IRB)

/braezeli

جامعة الملك سعود (034)
هاتف 4673355 11 966+
فاكس 4673366 11 966+

المملكة العربية السعودية
ص.ب 2454 الرياض 11451
www.ksu.edu.sa

جامعة الملك سعود
King Saud University

عمادة البحث العلمي
مكتب العميد

Ref No: KSU- HE-19-276

سعادة الباحث/ عمر عواض الرشيدي **حفظه الله**

السلام عليكم ورحمة الله وبركاته

إشارة إلى توصية رئيس اللجنة الفرعية للكليات الإنسانية لأخلاقيات البحوث على الكائنات الحية.

نفيدكم بموافقة اللجنة الدائمة لأخلاقيات البحث العلمي بالتفويض الممنوح لسعادة عميد البحث العلمي خلال الإجازة الصيفية، على إجراء تطبيق الأداة الموضحة في الجدول التالي:

م	اسم الباحث	البحث	الأداة	الحالة
1	**عمر عواض الرشيدي**	"العوامل المؤثرة على رغبة الممرضين العمل في تخصص تمريض رعاية مرضى الأورام في مدينة الرياض بالمملكة العربية السعودية – دراسة مقطعية"	**استبانة**	**الموافقة**

وعليه نأمل من الجهات المعنية بالجامعة تسهيل مهمة الباحث.

وتفضلوا بقبول وافر الاحترام

عميد البحث العلمي المكلف

نائب رئيس اللجنة الدائمة لأخلاقيات البحث العلمي

أ.د محمد بن إبراهيم الوابل

صورة إلى سكرتير اللجنة الدائمة لأخلاقيات البحث العلمي

٤/٦٧/٤٢١١٥٣
١٤٤٠/١٠/٢٨هـ

جامعة الملك سعود (034)
هاتف 08 01 467 11 966+
فاكس 99 79 467 11 966+

المملكة العربية السعودية
ص.ب 2454 الرياض 11451
www.ksu.edu.sa

جامعة الملك سعود
King Saud University

مكتب وكيل الجامعة
للدراسات العليا والبحث العلمي

Ref. No.: KSU-HE-19-276

Researcher. Omar Alrasheedi

Subject: Research Project No. KSU-HE-19-276

Project Title: "Factors Influencing Nurse Intention To Work in the Oncology Specialty in Riyadh Saudi Arabia – A Cross Sectional Study"

Dear Mr. Alrasheedi

With reference to the approval of the institutional Review Board (Human and Social Researches), regarding the above mentioned subject, please be informed that the institutional Review Board of king Saud University has confirmed the approval of your project.

We wish you the best of success with your research endeavors.

Sincerely yours,

Prof. Khalid Ibrahim Alhumaizi

Vice Rector for Graduate Studies & Scientific Research

Chairman, Institutional Review Board (KSU)

9.15 Appendix 15: Ethics approval from King Faisal Specialist Hospital & Research Centre (KFSHRC)

مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre
Gen. Org. مؤسسة عامة

RESEARCH ETHICS COMMITTEE

MBC: , Ext: 24528 , Fax: 27894

INTERNAL MEMO

TO: **Rakan Khair**
Staff Nurse I
Oncology Liver Nursing Department - Riyadh

DATE: 27 Dhu Al Qida 1440
30 July 2019

FROM: **Abeer Omer**
Member
Research Ethics Committee

REF: C380/998/40

SUBJECT: **PROJECT # 2191 205 (FACTORS INFLUENCING NURSES INTENTION TO WORK IN THE ONCOLOGY SPECIALTY)**

The above-referenced proposal was reviewed by the Research Ethics Committee (REC) on 23 July 2019.

It is my pleasure to inform you that the REC has recommended the Proposal, Data Collection Sheet and Waiver of Informed Consent Form for approval as submitted; and I would like to take this opportunity to congratulate you on behalf of the Research Advisory Council.

Please be informed that in conducting this project, the Investigators are required to abide by the rules and regulations of the Government of Saudi Arabia, KFSH&RC, and the RAC. Further, you are required to submit a Progress/Final Report by 23 June 2020; so it can be reviewed by the Research Ethics Committee (REC) without lapse of approval. The approval of this project will automatically be suspended 23 July 2020, pending the acceptance of the Report. You also need to notify the ORA as soon as possible in the case of any amendments to the project, termination of the study, any event or new information that may affect the benefit/risk ratio of the project.

Please observe the following:

1. Personally identifying data should only be collected when necessary for research.
2. The data collected should only be used for this project.
3. Data should be stored securely so that only a few authorised users are permitted access to the database.
4. Secondary disclosures of personally identifiable data are not allowed.
5. Should there be a need to contact the research subjects for follow-up information, you will need to seek the authorisation of the RAC prior to such contact.

We wish you every success in your research endeavours.

cc: Omar.alrasheedi@adelaide.edu.au

9.16 Appendix 16: Ethics approval from Prince Sultan Military Medical City (PSMMC)

Prince Sultan Military Medical City,
Scientific Research Center
P.O. Box 7897, Riyadh, 11159
Kingdom of Saudi Arabia
Research Ethics Committee
HP-01-R079

July 29, 2019

Omar Alrasheedi
PhD Candidate,
University of Adelaide.

RE: **Factors Influencing Nurses' Intention to Work in the Oncology Specialty**

Omar Alrasheedi., Thamer Alduraywish., Faisal Radhi Alenezi.

This is in reference to your submitted proposal which has been reviewed by the appointed member of the committer through an expedited review process. On the recommendation of the board of review in the ethical aspects of the proposal, Research Ethics Committee is pleased to approve and grant permission to conduct your study. Your Research protocol has been documented under

Project No:	1231
Date Approved:	29 July
Series of:	2019

Kindly Quote the project number indicated herein in all transactions and communications. You are advised to submit a report in relation to this research scheme to update the committee of its progress.
Also please note that this approval is valid only one year commencing from the date of this letter. I trust your research scheme provides fruitful and beneficial to the Prince Sultan Military Medical City and its affiliated health centers.

Best Regards,

Dr. Nawaf Alkhayat

Chairman, Research Ethics Committee.

29.7.19

9.17 Appendix 17: Ethics approval from King Abdullah Medical City (KAMC)

مدينة الملك عبد الله الطبية
KING ABDULLAH MEDICAL CITY

المملكة العربية السعودية Kingdom of Saudi Arabia
وزارة الصحة Ministry of Health
مدينة الملك عبد الله الطبية بالعاصمة المقدسة King Abdulla Medical City in Holy capital
اللجنة المحلية لأخلاقيات البحث Institutional Review Board

Institutional Review Board Opinion Letter

Protocol Title	Factors Influencing Nurses' Intention to Work in the Oncology Specialty: A Mixed Method Study in Riyadh, Saudi Arabia.
Version	1.0
Principal investigator	Faisal Alasmari
IRB number	19-553
Sponsor	NA

Dear Mr. Alasmari,

This is to inform you that the above mentioned proposal has been the subject of exemption from review by KAMC IRB registered at the National BioMedical Ethics Committee, King Abdulaziz City for Science and Technology on 14-07-1433 (Registration no. H-02-K-001) and is following the GCP-ICH regulations (OHRP Registration no. IORG0007625).

The decision of **exemption** from review was based on the following submitted documents:

1. Protocol version 1.0
2. Data collection form version 1.0
3. Participant Information Sheet version 1.0

Exemption conditions:

- Subject nominative identifiers should be removed from all questionnaires.
- Subject nominative identifiers should be removed on the extraction sheet, and serial number will be used.
- Maintaining patient confidentiality during publication
- Approval timeframe: The study is approved for **one year** from the date of this letter. Extension can be requested one month before the expiry of the approval.
- To conduct research as per the approved documents
- Amendments to the approved documents require IRB approval before implementation
- Research participant confidentiality should be protected at all times and may be subject to audits by KAMC HRPP
- End of study report is expected before expiration of approval
- Document retention for the study should be retained by the PI in safe locked place for three years after the study closure.

General Approval conditions:

- **If your study involves subject consent: Copy of all consents should be submitted to IRB**
- **Final manuscript should be acknowledged by IRB before Journal Submission**
- **If subject's clinical photo would be used for publication or presentation additional patient consent will be required and should be submitted to IRB before publication.**

N.B.: Please note that this letter gives you ethical clearance to perform your study according to the approved documents; you still need to obtain necessary administrative approval from the site/s where the study will be conducted.

Dr Tahani Hassan Nageeti		**25-Jul-2019**
(Name of IRB Chair)	*(Signature)*	*DD/MM/YYYY (Date of approval)*

9.18 Appendix 18: Ethics approval for Phase Two study from King Saud University Medical City (KSUMC)

Kingdom of Saudi Arabia
King Saudi University (034)
p.o. Box 7805 Riyadh 11472
Tel: +966 11 467 00 11
Fax: +96611 467 19 92
http://medicalcity.ksu.edu.sa

المملكة العربية السعودية
جامعة الملك سعود (٣٤)
ص.ب ٧٨٠٥ الرياض ١١٤٧٢
هاتف: ٤٦٧٠٠١١ ٩٦٦+
فاكس: ٤٦٧١٩٩٢ ٩٦٦+

جامعة الملك سعود
King Saud University

المدينة الطبية الجامعية
Institutional Review Board

13.10.2020 (26.02.1442)
Ref. No. 20/0727/IRB

To: **Mr. Omar Awadh M Alrasheedi**
PhD Student
King Saud University College of Nursing
The University of Adelaide – College of Nursing
Email: oalrasheedi@ksu.edu.sa
Principal Investigator

Cc: Prof. Gillian Harvey, Dr. Tim Schultz
Co-investigators

Subject: **Renewal of Approval of Research Project No. E-19-4107**
Study Title: "Factors Influencing Nurses' Intention to Work in The Oncology Specialty: A Mixed Method Study in Riyadh, Saudi Arabia"
Type of Review: Expedite

Dear Mr. Omar Awadh M Alrasheedi,

Reference to your request for the approval of the amendment done on the above-mentioned research project which was initially reviewed and approved on 05 August 2019 (04 Dhu Al-hijjah 1440), please be informed that the IRB has no objection towards your request to the following modifications:

1. To add a qualitative part in the study by conducting a semi-structured interviews to collect data from Oncology nurses by using zoom interview, and a Zoom group discussion with the Oncology nurse's leaders/managers
2. Use of a focus group to combine and synthesize phase one and phase two results with a group of stakeholders to develop strategies and recommendations to improve the oncology nursing specialty in Saudi Arabia.
3. Audi recording of data which will be transcribed verbatim into a word document.

You may continue with the conduct of this study with the above-mentioned approved modifications. Please be informed that in conducting this study, you as the principal investigator, are required to abide by the rules and regulations of the Government of Saudi Arabia, the KSUMC IRB policies and procedures and the ICH-GCP Guidelines. The IRB mandates regular submission of study progress report every six months by the primary investigator. Otherwise, project approval will be suspended.

We wish you success in your research.

Thank you!

Sincerely yours,

Prof. Abdulrahman AlSultan
Chairman of IRB
Health Sciences Colleges Research on Human Subjects
King Saud University College of Medicine
P. O. B ox 7805 Riyadh 11472 K.S.A.
Email: aalsultan1@ksu.edu.sa

كلية الطب
لجنة أخلاقيات البحوث الطبية
College Medicine
Institutional Review Board (IRB)

/rubie

9.19 Appendix 19: Participant information sheet for Phase Two study

Attachment 8

PARTICIPANT INFORMATION SHEET

PROJECT TITLE: Factors Influencing Nurses' Intention to Work in The Oncology Specialty: A Mixed Method Study in Riyadh, Saudi Arabia.
HUMAN RESEARCH ETHICS COMMITTEE APPROVAL NUMBER: H-2019-078
PRINCIPAL INVESTIGATOR: Professor Gillian Harvey
STUDENT RESEARCHER: Omar Alrasheedi
STUDENT'S DEGREE: PhD Student

You are invited to participate in the research project described below.

What is the project about? This research project will explore the factors influencing nurses' intention to work in the oncology specialty in Saudi Arabian hospitals. Findings from this study may contribute to future planning and development of oncology nursing workforce. In turn, this could help to promote increased job satisfaction and reduce turnover of nursing staff.

Who is undertaking the project? The project is being conducted by Omar Alrasheedi. This research will form the basis for the degree of the Doctor of Philosophy at the University of Adelaide, South Australia under the supervision of Professor Gillian Harvey and Dr Timothy Schultz.

Why am I being invited to participate? You are being invited as you are

- aged above 18 AND
- work in King Saud University Medical City (KSUMC) AND
- are a Saudi or non-Saudi registered nurse working in the oncology specialty OR
- a Saudi registered nurse working in a non-oncology specialty

What am I being invited to do? If you agree to participate, you will be interviewed by Mr. Omar Alrasheedi who will ask you about nursing work in the oncology specialty and challenges encountered by nurses in this specialty. There are also some questions that ask about your understanding of palliative care and attitudes toward caring for the dying patient. The interview will be conducted virtually through an online meeting platform (ZOOM). The researcher will follow the University of Adelaide guidelines on the use of Zoom software such as using a password for the interview meeting and waiting room for the participant. The interview will be audio recorded and transcribed.

How much time will my involvement in the project take? The interview will take approximately 30 -40 minutes.

Are there any risks associated with participating in this project? There are no foreseeable risks associated with participating in this research.

What are the potential benefits of the research project? While there will be no immediate benefit to you, this research may lead to a better understanding of the factors that influence nurses' decisions to work in the oncology speciality. This could help to inform future strategies to recruit nurses to work the oncology specialty and promote job retention amongst current staff. Each participant will receive a reward

for their participation. The amount will be a 100 Saudi Riyal shopping voucher as an incentive for participation. The researcher will send the online eGift Card to the participant via email at the end of the interview.

Can I withdraw from the project? Participation in the research is entirely your choice. Only those people who give their informed consent will be included in the research. Whether or not you decide to participate, your decision will not disadvantage or negatively affect your work.

If you do decide to participate, you may withdraw from the interview at any time without giving a reason and have the option of withdrawing any data which identifies you.

What will happen to my information? Complete anonymity cannot be guaranteed due to the small and discreet participant groups. However, the utmost care will be taken to ensure that no personal identifying details are revealed. The confidentiality and privacy of all participants will be upheld, and the views and opinions will not be publicly accessible in a personally identifiable manner. During data analysis each participant will be given a code, and only the code will be used in any reporting of the results. The interview data will be securely stored according to the University of Adelaide policy.

Any information (data) you provide at any stage in this research study will be treated confidentially, and only the researcher and supervisors will have access to your data. All data will be retained in secure folders at the University of Adelaide for 5 years. The results of this study will be presented at public forums, conferences and will also be published in peer-reviewed Journals.

Who do I contact if I have questions about the project? You are free to discuss your participation, or for more information, please contact the researcher by email: omar.alrasheedi@adelaide.edu.au, or phone: (+966) 599207791 or (+61)478765996. Alternatively you can contact the researcher's principal supervisor, Professor Gillian Harvey by email: gillian.harvey@adelaide.edu.au.

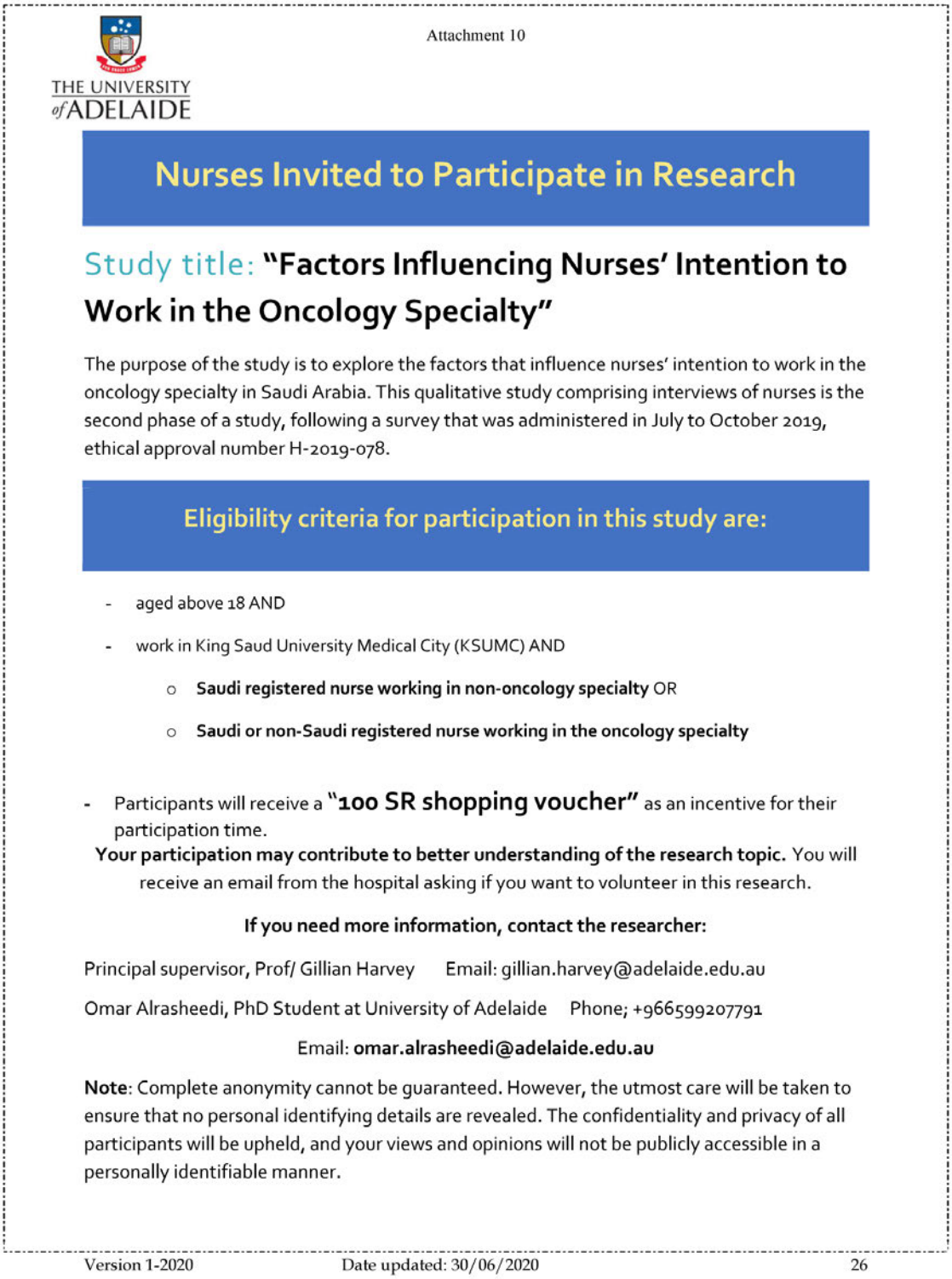
What if I have a complaint or any concerns? The study has been approved by the Human Research Ethics Committee at the University of Adelaide (approval number H-2019-078). This research project will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research 2007 (Updated 2018). If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. If you wish to speak with an independent person regarding concerns or a complaint, the University's policy on research involving human participants, or your rights as a participant, please contact the Human Research Ethics Committee's Secretariat on:
Phone: +61 8 8313 6028
Email: hrec@adelaide.edu.au
Post: Level 4, Rundle Mall Plaza, 50 Rundle Mall, ADELAIDE SA 5000
Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If I want to participate, what do I do? Please sign the consent form attached in this email and return it to this email omar.alrasheedi@adelaide.edu.au.

Yours sincerely,

Omar Alrasheedi
PhD Student at University of Adelaide, South Australia
Adelaide Nursing School | Faculty of Health and Medical Sciences

9.20 Appendix 20: Advertising flyer to recruit participants for Phase Two study



Attachment 10

THE UNIVERSITY of ADELAIDE

Nurses Invited to Participate in Research

Study title: "Factors Influencing Nurses' Intention to Work in the Oncology Specialty"

The purpose of the study is to explore the factors that influence nurses' intention to work in the oncology specialty in Saudi Arabia. This qualitative study comprising interviews of nurses is the second phase of a study, following a survey that was administered in July to October 2019, ethical approval number H-2019-078.

Eligibility criteria for participation in this study are:

- aged above 18 AND
- work in King Saud University Medical City (KSUMC) AND
  - **Saudi registered nurse working in non-oncology specialty** OR
  - **Saudi or non-Saudi registered nurse working in the oncology specialty**

- Participants will receive a **"100 SR shopping voucher"** as an incentive for their participation time.

Your participation may contribute to better understanding of the research topic. You will receive an email from the hospital asking if you want to volunteer in this research.

If you need more information, contact the researcher:

Principal supervisor, Prof/ Gillian Harvey Email: gillian.harvey@adelaide.edu.au

Omar Alrasheedi, PhD Student at University of Adelaide Phone; +966599207791

Email: **omar.alrasheedi@adelaide.edu.au**

Note: Complete anonymity cannot be guaranteed. However, the utmost care will be taken to ensure that no personal identifying details are revealed. The confidentiality and privacy of all participants will be upheld, and your views and opinions will not be publicly accessible in a personally identifiable manner.

Version 1-2020 Date updated: 30/06/2020 26

9.21 Appendix 21: Consent form for Phase Two study

Attachment 9

Human Research Ethics Committee (HREC)

CONSENT FORM

1. I have read the attached Information Sheet and agree to take part in the following research project:

Title:	**Factors Influencing Nurses' Intention to Work in The Oncology Specialty: A Mixed Method Study in Riyadh, Saudi Arabia.**
Ethics Approval Number:	**H-2019-078**

2. I have had the project, so far as it affects me, and the potential risks and burdens fully explained to my satisfaction by the research worker. I have had the opportunity to ask any questions I may have about the project and my participation. My consent is given freely.

3. Although I understand the purpose of the research project is to improve the quality of health/medical care, it has also been explained that my involvement may not be of any benefit to me.

4. I agree to participate in the activities as outlined in the participant information sheet.

5. I agree to be:
   Audio recorded ☐ Yes ☐ No
6. I understand that I am free to withdraw from the project at any time without any negative consequences.

7. I have been informed that the information gained in the project may be published in a book/journal article/thesis/news article/conference presentations/website/report etc.

8. I have been informed that while I will not be named in the published materials, it may not be possible to guarantee my anonymity given the nature of the study and small number of participants involved.

9. I understand my information will only be disclosed according to the consent provided, except where disclosure is required by law.

10. I am aware that I should keep a copy of this Consent Form, when completed, and the attached Information Sheet.

Participant to complete:

Name: _____Signature: _____ Date:_____

Email: _____Phone:_____

9.22 Appendix 22: Publication from the Phase One study (quantitative)

Alrasheedi, O, Schultz, TJ & Harvey, G 2021, 'Factors influencing nurses' intention to work in the oncology specialty: multi-institutional cross-sectional study', *BMC Palliative Care*, vol. 20, no. 1, pp. 1-12.

Statement of Authorship

Title of Paper	Factors influencing nurses' intention to work in the oncology specialty: multi-institutional cross-sectional study'
Publication Status	☑ Published ☐ Accepted for Publication ☐ Submitted for Publication ☐ Unpublished and Unsubmitted work written in manuscript style
Publication Details	- Alrasheedi, O, Schultz, TJ & Harvey, G 2021, 'Factors influencing nurses' intention to work in the oncology specialty: multi-institutional cross-sectional study', BMC Palliative Care, vol. 20, no. 1, pp. 1-12.

Principal Author

Name of Principal Author (Candidate)	Omar Alrasheedi		
Contribution to the Paper	Conceived the study, designed the study, conducted data analysis, interpreted the findings and drafted the manuscript		
Overall percentage (%)	80%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature	*omar*	Date	03/June/2022

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);
ii. permission is granted for the candidate in include the publication in the thesis; and
iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

Name of Co-Author	Dr Tim Schultz		
Contribution to the Paper	Contributed to the design of the study, validated the data analysis and interpretation of the findings, and reviewed the manuscript.		
Signature		Date	03/03/2022

Name of Co-Author	Professor Gillian Harvey		
Contribution to the Paper	Contributed to the design of the study, validated the data analysis and interpretation of the findings, and reviewed the manuscript.		
Signature		Date	10th June 2022

Please cut and paste additional co-author panels

Alrasheedi et al. BMC Palliative Care (2021) 20:72
https://doi.org/10.1186/s12904-021-00764-9

BMC Palliative Care

RESEARCH Open Access

Factors influencing nurses' intention to work in the oncology specialty: multi-institutional cross-sectional study

Omar Alrasheedi[1,2*], Timothy John Schultz[1,3] and Gillian Harvey[1,4]

Abstract

Background: Nursing care for terminally ill cancer patients is routinely provided by oncology nurses in Saudi Arabia. Shortages and retention of oncology nurses is an important concern for healthcare leaders.

Objectives: To identify and describe predictors of nurses' intention toward working in the oncology specialty amongst three groups: undergraduate nursing students, oncology registered nurses and postgraduate oncology nursing students. In particular, the study sought to analyse association between individual characteristics, job-related factors, palliative care knowledge, attitude toward caring for dying patients, general self-efficacy, job satisfaction and intention to work in oncology.

Methods: A cross-sectional study was conducted involving 477 participants in five major hospitals in Saudi Arabia. The Palliative Care Quiz for Nursing, Frommelt Attitudes Toward Care of the Dying Scale, General Self-Efficacy Scale and Minnesota Satisfaction Questionnaire short form were used for data collection. Multilevel logistic regression analysis was used to identify predictors associated with intention to work in oncology.

Results: 43.9% ($n = 208$) of the sample reported an intention to work in oncology. Only one variable was a significant predictor of intention to work in oncology across all three groups studied: a more positive attitude toward caring for dying patients (Odds ratio (OR) = 1.09 [95% confidence interval (CI) 1.04–1.16]), (OR = 1.08 [95% CI 1.04–1.12]), (OR = 1.078 [95% CI 1.053–1.103] with $P \leq 0.001$ for undergraduate, registered and postgraduate groups respectively. At post-graduate level, higher levels of palliative care knowledge and general self-efficacy were significantly associated with increased intention, whilst at undergraduate level, general self-efficacy was a significant predictor. Job satisfaction was a significant predictor of intention amongst registered nurses.

Conclusions: Attitude toward caring for dying patients and general self-efficacy appear to be the most important predictors of intention to work in the oncology nursing specialty. However, the significance of influencing factors varied between the different groups of nurses studied. Perhaps surprisingly, palliative care knowledge was an influential factor amongst the postgraduate group only. The study results provide important insights for nursing leaders and policymakers in Saudi Arabia to inform the future planning of nursing workforce strategies to address shortages and retention of oncology nurses.

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[2]College of Nursing, King Saud University, Riyadh 11451, Saudi Arabia
Full list of author information is available at the end of the article

Keywords: Saudi Arabia, Oncology nursing, Palliative care nursing, Nursing workforce, Nursing turnover, Nursing shortage

Background

Saudi hospital environments are complicated due to the predominance of an expatriate workforce and patients' conservative cultural background [1, 2]. While Saudi citizen nurses represent only 36.5% of the total nursing workforce [3], Arabic is the primary language of Saudi Arabia, and only a small number of its citizens are familiar with English. On the other hand, most expatriate nurses are not familiar with the Arabic language, leading to ineffective communication between patients and nurses [4]. These issues may limit hospitals' abilities to provide high-quality health services and lead to patient dissatisfaction [5].

Nursing care for terminally ill cancer patients is routinely provided by oncology nurses in Saudi Arabia, as specialist palliative care nursing is in its infancy [6]. As oncology services in rural settings are limited, referrals to metropolitan services may cause delayed diagnosis or treatment, and patients consequently presenting with advanced stage cancer [7]. Further, for cultural reasons, Saudi patients may not disclose their cancer diagnosis or prognosis to their family, which may result in delayed treatment and/or cancer-related risks [7]. Although specialised cancer treatment is available for Saudi patients, for reasons specified above, some patients do not seek medical advice except in the late stages of their cancer when the effectiveness of the treatment is minimised, resulting in a high mortality rate and poor prognosis [7].

Shortages and retention of oncology nurses is an important concern for healthcare leaders in Saudi Arabia. Saudi citizens make up less than 9% of the oncology nursing workforce, significantly lower than the proportion of Saudi nurses in the nursing workforce [6, 8]. Expatriate nurses working in oncology have reported difficulties relating to language and cultural barriers especially while delivering end-of-life (EOL) care [7, 9, 10]. Language barriers contribute to poor understanding of information between nurses, the patient and the patient's family that negatively impact the patient-nurse relationship [11]. In particular, oncology nursing that encompasses caring for a person with a life-threatening illness, experiencing emotional distress, and receiving complex information about chemotherapy, radiotherapy or palliative treatment, necessitates effective and safe communication with patients and families [12]. These issues may negatively affect the nurses' work environment and contribute to high nursing turnover. In a previous study, a negative correlation was found between nurses perceived self-efficacy and distress amongst a sample of inpatient oncology nurses in the United States [13]. Furthermore, the relocation of expatriate nurses to their home countries requires additional recruitment and training of oncology nurses, creating a financial burden for the Ministry of Health [1]. For these reasons, the Saudi government is undertaking significant changes in the healthcare system through the 'Saudi Vision 2030', a national transformation program that aims to increase the proportion of Saudi citizen nurses [3].

A literature review study found there was a negative attitude toward the oncology specialty among novice nurses in the United States, possibly linked to a lack of proper academic preparation and exposure [14]. In New Zealand, Wilkinson [15] conducted a study of 287 newly graduated nurses and found that the oncology specialty was the least preferred place to work following graduation [15]. Part of the explanation for this was that students elected to work in medical and surgical units because they thought that they could consolidate their basic skills before moving to a speciality area. A study in Saudi Arabia evaluated oncology nurses' attitudes toward caring for dying patients and palliative care knowledge in one of the main referral hospitals. The authors reported that Saudi nurses demonstrated the most negative attitude toward caring for dying patients and poor knowledge compared to nurses from 19 countries working in the same hospital [6].

In summary, there appear to be several issues that could help explain the low representation of Saudi nurses in the oncology nursing workforce, although these have not been fully explored to date within the Saudi context. Better understanding of the factors that affect recruitment and retention of nurses to work in the oncology specialty is important and could help to inform future strategy in line with the 'Saudi Vision 2030' [16]. The current study aims to explore these issues in greater depth by examining what influences nurses' intention to work in the oncology specialty, where intention is defined as a mental process of planning to either work, stay, or leave the oncology specialty [17]. Specifically, to inform the development of a Saudi oncology nursing workforce that can deliver effective palliative care, this study aimed to address two research questions: 1) What are the intentions of three different groups of nurses in Saudi Arabia toward working in the oncology specialty, and 2) what factors influence nurses' intention toward working in oncology nursing. For the second research question, we tested for associations between potential predictor variables (knowledge, attitude, self-efficacy, job

satisfaction) and intention toward working in oncology nursing.

Methods

Study design and aims

A cross-sectional study design was employed to analyse the association between: individual characteristics, job-related factors, palliative care knowledge, attitude toward caring for dying patients, general self-efficacy, job satisfaction and nurses' intention toward working in oncology.

Setting and sample

Data were collected using convenience sampling from five main hospitals in Saudi Arabia that include King Fahad Medical City (KFMC), King Saud University Medical City (KSUMC), King Faisal Specialist Hospital and Research Centre Riyadh (KFSHRC-R), Prince Sultan Military Medical City (PSMMC) and King Abdullah Medical City (KAMC). KFMC, KSUMC, KFSHRC-R and PSMMC are located in Riyadh and have bed capacity around 1200, 1500, 1500, 1000 respectively. The KAMC is located in Makkah and has around 1500 bed capacity. The sample comprised three groups: undergraduate nursing students (UNS) who had completed their internship program, postgraduate oncology nursing students (PONS) enrolled in a postgraduate oncology nursing diploma program and oncology registered nurses (ORN) currently working in inpatient oncology settings. All PONS had a bachelor degree in nursing and were full-time students as mandated by the responsible authority for postgraduate nursing education in Saudi Arabia. Based on the information provided by the hospitals included in this study, there were approximately 231 UNS, 398 ORN and 36 PONS meeting the inclusion criteria for participation in the study. For the UNS and ORN, the minimum required sample size was estimated at 140 for each group, based on 14 predictor levels and the requirement for at least 10 observations per level [18].

Recruitment and data collection

Data were collected from June 31 to August 14, 2019. An advertising flyer was used to recruit participants from the selected hospitals. As explained in the flyer, the questionnaire and participant information sheets were placed on the nursing reception desk with instructions to return completed questionnaires to a co-located secure collection box. Boxes were locked by the researcher and emptied at weekly intervals.

Measurements

The questionnaire comprised a demographic component and working intentions, and four validated instruments to measure knowledge, attitude, self-efficacy and job satisfaction. The first three of these instruments were used with all three groups, whilst the job satisfaction measure was used with the ORN group only.

Demographics and intention toward working in oncology

Demographic-related questions based on previous studies were designed to collect information about age, gender, marital status and nationality, as well as job-related information [6, 19]. There was a slight variation in the measurement of intention towards working in oncology between the three participant groups to reflect their different situations. UNS participants were asked to report their future intention towards working in oncology and 13 other nursing specialties to understand their preference for oncology within other specialties [15]. For ORN participants, a single item assessed their intention to staying in oncology nursing in the next 3 years and for PONS participants, a single item assessed their intention to working in oncology after degree completion [16]. All three participants groups used a five-point Likert scale ranging from very unlikely to very likely.

Knowledge

The Palliative Care Quiz for Nurses (PCQN), developed and validated by Ross, McDonald and McGuinness [20], was used to evaluate palliative care knowledge among both qualified nurses and nursing students [21]. The PCQN consists of 20 dichotomous questions in the form of "true" or "false" or "don't know the answer" with higher scores (out of 20) indicating better knowledge. The internal consistency of the PCQN in this study was acceptable (Kuder–Richardson 20 = 0.70).

Attitude

Nurses' attitudes toward caring for dying patients was measured using the Frommelt Attitudes Toward Care of the Dying Scale (FATCOD) [22]. The FATCOD scale consists of 30 statements, and participants are asked to rate each statement on the range of a 5-point Likert scale from strongly disagree to strongly agree. The FATCOD statements are divided into 15 positive and 15 negative statement with a total score ranging from 30 to 150. A high score overall indicates a positive attitude toward caring for dying patients [22]. The internal consistency of the FATCOD in this study was good (Cronbach's alpha = 0.81). The content validity for FATCOD is 1.00 [22].

Self-efficacy

The General self-efficacy scale (GSE) developed and validated by Schwarzer and Jerusalem [23] was used to assess the strength of an individual's belief in their ability to respond to novel or difficult situations and to deal with any associated barriers. The GSE scale has 10 items

with a 4-point choice scale ranging from "1 = not at all true" to "4 = exactly true" [23]. GSE has been validated and used in several studies among undergraduate nursing student [24, 25] and among registered nurses [26–28]. The internal consistency of the GSE in this study was good (Cronbach's alpha = 0.85).

Job satisfaction

The Minnesota Satisfaction Questionnaire (MSQ) Short-Form was used to evaluate employees' feelings toward their job [29, 30]. The MSQ short-form comprises 20 statements and participants are asked to rate their feeling on each statement on range from "Very Satisfied = score 5" to "Very Dissatisfied = score 1. The internal consistency of the MSQ in this study was good (Cronbach's alpha = 0.92). The construct validity of MSQ has been confirmed through data from various occupational groups at the 0.001 significance level on all scales [30].

Statistical methods

SPSS (IBM, v 25.0) was used for data analysis. Descriptive statistics (frequency analyses of the categorical variables and means and standard deviations for the continuous variables) were used to first summarise the survey responses. Inferential statistics including chi-square for categorical outcomes and t-tests for continuous outcomes were used to identify variables ($P < 0.20$) for subsequent multivariate analysis. A correlation matrix was used to describe the relationship between study variables.

A multilevel logistic regression model was used to assess the effect of individual characteristics, job-related factors, PCQN, FATCOD, GSE and MSQ (dependent variables) on nurses intention toward working in the oncology speciality (independent variables). Backward elimination method was used to fit the regression model, which excluded variables in stepwise fashion in which $P > 0.5$ [31]. All test assumptions such as linearity, normality, collinearity and homoscedasticity were tested.

Ethics approval and informed consent to participate

This study complied with the Declaration of Helsinki and was approved by The University of Adelaide, Australia Institutional Review Board (IRB) (no. H-2019-078), KFMC IRB (no. 19-250E), KSUMC IRB (no. E-19-4107), KFSHRC-R IRB (no. 2191205), PSMMC IRB (no. HP-01-R079), KAMC IRB (no. 19–553). Informed consent was obtained from all study participants. Completion and return of the questionnaire by the participants indicated their consent to participate in the study as explained in the participation information sheet and the flyer. Participants were informed that they were free to withdraw from the study at any time and that anonymity and confidentiality would be maintained through not using personal identifiers or reporting potentially identifiable information.

Results

Univariate and bivariate analysis

The total sample for this study consisted of 474 out of 665 participants equating to a 71.2% response rate. Results for each group are summarised in Table 1 and will be presented separately.

UNS Group

The UNS consisted of 178 out of 231 participants (77% response rate); the mean age was 23.6($SD \pm 1.2$). The majority (73%, $n = 130$) were female and almost entirely Saudi. Most (79.2%, $n = 141$) participants reported that they did not receive education about palliative care during their undergraduate program. In terms of future intention toward working in oncology and 13 other nursing specialities, emergency nursing, surgical nursing and perioperative nursing were the most preferred nursing specialities among students, whilst oncology nursing, aged care nursing, midwifery and orthopaedic nursing were the least preferred nursing specialities (Fig. 1). Only 51 (28.6%) UNS reported that they were likely (ie a score of 4 or 5 on the Likert scale) to work in oncology nursing. Gender was a significant predictor of likelihood ($P = 0.012$) and females were more likely than males to work in oncology. The FATCOD and GSE scores were significantly higher ($P < 0.001$, $P = 0.03$, respectively) in those who indicated that they were likely to work in oncology (Table 1).

ORN group

The ORN group consisted of 263 out of 398 participants (66% response rate), with a mean age of 35.3 (SD ± 7.6). The majority of the participants were female (88.6%, $n = 233$) and non-Saudi (96.6%, $n = 254$). Only 28.5% ($n = 75$) of participants reported that they received palliative care education before graduation, and 35% ($n = 92$) reported that they received education after graduation. All participants reported that they delivered nursing care for terminally ill patients at least once per month. The majority of the participants were from adult wards (71.9%, $n = 189$), compared to 28.1% ($n = 74$) from a paediatric ward. About half reported an intention to stay in oncology, and 45.6% ($n = 120$) intended to stay working in their current hospital.

There was a statistically significant association between receiving palliative care education after graduation and intending to stay in the oncology speciality ($\chi 2 = 14.1$, $p < 0.001$). The intention of nurses to stay in the current hospital was also significantly associated with

Table 1 Univariate and bivariate analysis of the study variables for the UNS, ORN and PONS N or M ± SD

Variables	Nurses' Intention Toward Working in Oncology Nursing											
	UNS				ORN				PONS			
	Total *N* = 178	Likely *N* = 51	Unlikely *N* = 127	*P-value*	Total *N* = 263	Likely *N* = 130	Unlikely *N* = 133	*P-value*	Total *N* = 33	Likely *N* = 27	Unlikely *N* = 6	*P-value*
Age	23.6 ± 1.2	23.6 ± 1.63	23.6 ± 0.99	0.88[c]	35.3 ± 7.6	36.5 ± 8.1	34.1 ± 7	0.01[c]	30.7 ± 2.7	30.7 ± 2.7	30.3 ± 2.7	0.74[c]
Gender												
Female	130	44	86		233	112	121		25	21	4	
Male	48	7	41	0.012[a]	30	18	12	0.21[a]	8	6	2	0.56[b]
Marital status												
Single	161	46	114		115	53	58		12	9	2	
Married	17	5	12	0.94[a]	148	74	74	0.83[a]	21	17	4	0.86[b]
Nationality												
Saudi	177	51	126		9	4	5		33	27	6	
Non-Saudi	1	0	1	0.52[b]	254	126	128	0.76[b]	0	0	0	n/a
Received undergraduate palliative care education												
Yes	37	7	30		75	42	33		2	2	0	
No	141	44	97	0.14[a]	188	88	100	0.17[a]	31	25	6	0.49[b]
Received palliative care education after graduate												
Yes	n/a				92	60	32		17	15	2	
No	n/a				171	70	101	< 0.001[a]	16	12	4	0.32[b]
Level of nursing education												
Diploma	n/a				37	23	14		n/a			
Bachelor	n/a				215	101	114		n/a			
Postgraduate	n/a				11	6	5	0.22[a]	n/a			
Years as registered nurse*	n/a				12.1 ± 7.3	13.3 ± 7.8	10.9 ± 6.5	0.007[c]	6.7 ± 4	6.63 ± 4.04	6.79 ± 4.35	0.93[c]
Years as oncology nurse*	n/a				7.6 ± 6	8.4 ± 6.3	6.9 ± 5.7	0.04[c]	1.6 ± 2.7	1.68 ± 2.97	1.29 ± 0.84	0.75[c]
in the current hospital*	n/a				6.3 ± 5.6	6.9 ± 6.1	5.6 ± 5	0.62[c]	n/a			
Years in the current unit*	n/a				4.9 ± 5.2	5.4 ± 5.6	4.4 ± 4.6	0.13[c]	n/a			
Times caring for the terminally ill												
Never	n/a				0(0%)	–	–		n/a			
1–2 times/month	n/a				48	26	22		n/a			
1-2times/week	n/a				84	36	48		n/a			
3–5 times/week	n/a				78	42	36		n/a			
> 5 times/week	n/a				53	26	27	0.47[a]	n/a			
Type of patient												
Paediatric	n/a				74	30	44		n/a			
Adult	n/a				189	100	89	0.07[a]	n/a			
Intention to stay in the current hospital												
Unlikely	n/a				143	37	106		n/a			
Likely	n/a				120	93	27	< 0.001a	n/a			
Research Instruments												
PCQN (0–20)	7.1 ± 2.1	7.3 ± 1.6	7.1 ± 2.2	0.48[c]	9.6 ± 1.9	10.1 ± 2.11	9.2 ± 1.8	0.001[c]	11 ± 2.1	11.3 ± 2.1	9.8 ± 1.8	0.13[c]
FATCOD (30–150)	98.2 ± 8.1	102 ± 7.6	97 ± 7.9	<.001[c]	108.7 ± 11.2	113 ± 11.6	104.5 ± 9.1	< 0.001[c]	100.3 ± 8.1	101 ± 8	95.6 ± 7.8	0.12[c]
GSE (10–40)	31.8 ± 5.1	33.1 ± 4.3	31.3 ± 5.3	0.03[c]	30.8 ± 4.9	32 ± 4.8	29.6 ± 4.6	< 0.001[c]	28.3 ± 3.3	28.7 ± 3.4	26.7 ± 2.8	0.17[c]
MSQ (20–100)	n/a				69.38 ± 11.5	73.2 ± 10.2	65.7 ± 11.5	< 0.001[c]	n/a			

* Years of nursing experience, a = Chi-square, b = Fisher's exact, c = independent t-test, n/a = not applicable

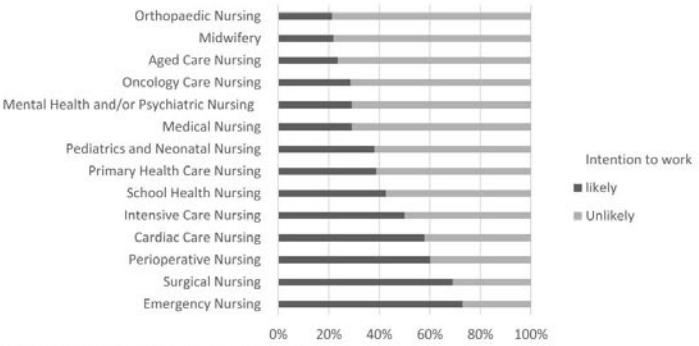

Fig. 1 Intention of UNS toward their future nursing career speciality

intention to stay in the oncology speciality ($\chi 2 = 69.5$, $p < 0.001$) (Table 1).

Nurses who were likely to stay in oncology had significantly higher palliative care knowledge (PCQN) ($t = 3.42$, $p = 0.001$), attitudes (FATCOD) ($t = 6.56$, $p < 0.001$), self-efficacy (GSE) ($t = 4.06$, $P < 0.001$) and job satisfaction (MSQ) ($t = 5.51$, $p < 0.001$) than nurses who intended to leave oncology nursing. Nurses who were likely to stay in oncology were older ($t = 2.54$, $p = 0.012$), more experienced as an RN ($t = 2.71$, $p = 0.007$), and more experienced as an ORN ($t = 2.03$, $p = 0.043$).

PONS group

The PONS group consisted of 33 participants out of 36 participants (91.6% response rate), the mean age was 30.7 (SD ± 2.7). The majority of the participants were female (76%, $n = 25$) and all were Saudi. Most (93.9%, $n = 31$) did not receive education about palliative care during their undergraduate program and most ($n = 27$, 81.8%) intended to work in oncology nursing after graduation (Table 1).

Pearson's correlation analysis

UNS Group

There was a significant positive relationship between attitude and self-efficacy, indicating that students who had a better attitude toward caring for dying patients also had better self-efficacy (Table 2). The relationship between self-efficacy and palliative care knowledge was also a significant positive relationship, suggesting that students with better palliative care knowledge also had higher self-efficacy.

ORN group

There was a significant positive relationship between self-efficacy and: age, years of nursing experience as an RN and as an oncology nurse, years of nursing experience in the current hospital and current unit and job satisfaction (Table 3). Palliative care knowledge was significantly correlated with attitude, age and years of nursing experience as an RN. Job satisfaction was significantly correlated with nursing experience in the current unit, attitude and self-efficacy.

PONS group

The only significant relationship of interest was a positive relationship between attitude and age (Table 4).

Multivariate analysis

Only one variable was a significant predictor of intention to work in oncology across all three groups studied: a more positive attitude toward caring for dying patients (Odds ratio (OR) = 1.09 [95% confidence interval (CI) 1.04–1.16]), (OR = 1.08 [95% CI 1.04–1.12]), (OR = 1.078 [95% CI 1.053–1.103] with $P \leq 0.001$ for UNS,ORN and

Table 2 Pearson's Correlation between study variables and outcomes

Variable	AGE	KNOWLEDGE (PCQN)	ATTITUDE (FATCOD)	SELF-EFFICACY (GSE)
AGE	–			
KNOWLEDGE (PCQN)	−0.12	–		
ATTITUDE (FATCOD)	−0.04	0.10	–	
SELF-EFFICACY (GSE)	0.02	0.17*	0.15*	–

* $P < 0.05$

Table 3 Pearson's Correlation between study variables and outcomes for ORNs

Variable	AGE	AS A REGISTERED NURSE#	AS AN ONCOLOGY NURSE#	IN CURRENT HOSPITAL#	IN CURRENT UNIT#	KNOWLEDGE (PCQN)	ATTITUDE (FATCOD)	SELF-EFFICACY (GSE)	JOB SATISFACTION (MSQ)
AGE	–								
AS A REGISTERED NURSE#	.85**	–							
AS AN ONCOLOGY NURSE#	.64**	.72**	–						
IN CURRENT HOSPITAL#	.73**	.78**	.74**	–					
IN CURRENT UNIT#	.59**	.66**	.66**	.81**	–				
KNOWLEDGE (PCQN)	.18**	.14*	.05	.09	.06	–			
ATTITUDE (FATCOD)	.05	.06	−.01	−.08	−.06	.37**	–		
SELF-EFFICACY (GSE)	.17**	.19**	.21**	.20**	.26**	.08	.09	–	
JOB SATISFACTION (MSQ)	.07	.10	.09	.11	.15*	.01	.13*	.41**	–

* $P < 0.05$., ** $P < 0.01$., # YEARS OF NURSING EXPERIENCE

PONS respectively. Separate multivariate regressions for each participant group follow.

UNS regression model (intention toward working in oncology)

In multivariate analysis, gender, FATCOD and GSE scores for UNS were significant predictors of intention toward working in oncology nursing (Table 5). Specifically, in terms of gender, the odds of intending to work in oncology nursing were 3.5 times greater for females than they were for males. Regarding FATCOD, every unit increase in the FATCOD score increased the odds of the likelihood to work in oncology by 9%, whilst every unit increase in the GSE score increased the odds of intention toward working in oncology by 6%.

ORN regression model (intention toward working in oncology)

For ORNs, marital status, type of ward (paediatric versus adult), intention to stay in current hospital, years of experience in oncology, FATCOD and MSQ scores were significant predictors of intention to stay working in oncology (Table 5). Specifically, the odds of staying in oncology were 1.43 times greater in single compared to married nurses. The odds of staying in oncology were 1.95 times greater in nurses working in adult wards compared to paediatrics and 8.5 times greater for staff who reported an intention to stay in the hospital.

Regarding experience in oncology, every year's increase in the experience of the nurse in oncology increased the odds of the likelihood to stay in oncology by 3%. For the attitude scale (FATCOD), every unit increase in the

Table 4 Pearson's Correlation between study variables and outcomes for PONS

VARIABLE	AGE	AS A REGISTERED NURSE#	AS AN ONCOLOGY NURSE#	KNOWLEDGE (PCQN)	ATTITUDE (FATCOD)	SELF-EFFICACY (GSE)
AGE	–					
AS A REGISTERED NURSE#	.74**	–				
AS AN ONCOLOGY NURSE#	.21	.58**	–			
KNOWLEDGE (PCQN)	−.15	−.16	−.03	–		
ATTITUDE (FATCOD)	.41*	.05	−.07	.33	–	
SELF-EFFICACY (GSE)	.18	.003	.038	.018	.182	–

* $P < 0.05$, ** $P < 0.01$, # years of nursing experience

Table 5 Multilevel logistic regression examining UNS, ORN and PONS demographic, job-related factors, PCQN, FATCOD, GSE and MSQ on their intention toward working in oncology speciality

Outcome	Predictors		UNS		ORN		PONS	
			Odds Ratio (CI 95%)	*P*- value	Odds ratio (95% CI)	*P*-value	Odds ratio (95% CI)	*P*-value
Intention toward working in oncology speciality.	Age		e		e		e	
	Gender	Male	REF		e		e	
		Female	3.53 (1.84–6.75)	< 0.001	e		e	
	Marital status	Married	e		REF		e	
		Single	e		1.43 (1.25–1.63)	< 0.001	e	
	Nationality	Saudi	n/a		REF		n/a	
		Non-Saudi	n/a		0.336 (0.05–2.43)	0.280	n/a	
	Received undergraduate palliative care education	No	REF		REF		e	
		Yes	3.47 (0.58–20.70)	0.171	1.71 (0.69–4.23)	0.249	e	
	Received palliative care education after graduate	No	n/a		REF		e	
		Yes	n/a		1.56 (0.87–2.77)	0.129	e	
	Type of patient	Paediatric	n/a		REF		n/a	
		Adult	n/a		1.95 (1.60–2.36)	< 0.001	n/a	
	Intention to stay in current hospital	Unlikely	n/a		REF		n/a	
		Likely	n/a		8.49 (3.72–19.34)	< 0.001	n/a	
	Years as registered nurse		n/a		e		e	
	Years as oncology nurse		n/a		1.03 (1.00–1.075)	0.043	e	
	PCQN (0–20)		e		1.10 (0.89–1.37)	0.353	1.272 (1.061–1.525)	0.009
	FATCOD (30–150)		1.09 (1.04–1.16)	0.001	1.08 (1.04–1.12)	< 0.001	1.078 (1.053–1.103)	< 0.001
	GSE (10–40)		1.06 (1.03–1.09)	< 0.001	1.05 (0.99–1.11)	0.102	1.222 (1.044–1.430)	0.013
	MSQ (20–100)		n/a		1.03 (1.02–1.03)	< 0.001	n/a	

n/a = not applicable, e = eliminated as the *p*-value above 0.5

FATCOD score increased the odds of the likelihood to work in oncology by 8%. Regarding job satisfaction (MSQ), every unit increase in the MSQ score increased the odds of the likelihood to work in oncology by 3%.

PONS regression model (intention toward working in oncology)

In the PONs sample, the PCQN, FATCOD and GSE scores were significant predictors related to intention toward working in oncology (Table 5). Specifically, every unit increase in the PCQN scores increased the odds of working in oncology by 27%. Every unit increase in the FATCOD score increased the odds of working in oncology by 8%. Regarding self-efficacy (GSE), every unit increase in the GSE scores increased the odds of working in oncology by 22%.

Discussion

This study examined the factors influencing current and prospective nurses' intention toward working in the oncology nursing specialty. Overall, intention to work in oncology varied across the three groups studied from a relatively low level in the UNS group to a high level in the PONS, which is not surprising given that they have chosen to undertake a specialist diploma. No previous study has measured the factors influencing nurse's intention toward working in oncology nursing worldwide. Across all three groups studied, a more positive attitude toward caring for dying patients was a significant indicator of intention to work in oncology. At the postgraduate level, higher levels of palliative care knowledge and general self-efficacy were also significantly associated with increased intention, whilst at undergraduate level, general self-efficacy was a significant predictor of intention. Job satisfaction was a significant predictor of intention amongst the registered nurse sample.

The oncology nursing specialty was one of the least preferred specialty choices among UNS participants, which could be due to factors such as limited student nurse exposure to oncology and their clinical placement experiences [15]. Gender was also significantly related to UNS intention toward working in oncology nursing, with female students reporting that they were more than three times likely to work in oncology than their male counterparts. Studies investigating the relationship between gender and intention to work in oncology are lacking and further research in this area is warranted.

Attitude toward caring for dying patients was the only constant significant predictor across all three groups toward intention to work in oncology nursing. In this

study, the FATCOD mean scores for UNS, ORN and PONS were 98.2, 108.7, 100.3, respectively. Table 6 summarises and compares these findings to other studies utilizing the same research instruments in similar populations. Compared to the findings of previous studies, Saudi undergraduate students had slightly higher attitude scores than Turkish students (95.2) [37] and Palestinian students (96.9) [38] but had noticeably lower attitude scores than Greek (111.9) [34], Italian (115) [39] and Swedish students (126) [40]. One explanation for these findings could relate to the influence of religious culture on attitude towards caring for dying patients, given that Muslim countries appear to report lower attitude scores than non-Muslim countries. Again, this is an area where research is lacking and qualitative investigation into the influence of religion on attitude toward caring for dying patients and intention to work in oncology nursing would be beneficial.

Roleplay simulation in providing EOL care has been shown to have a significant positive impact on nursing and medical students' attitude [43]. Likewise, a pre-test, post-test study of the effect of EOL simulation found a significant improvement in nursing students' attitude and perceived competence in the care of dying patients [44]. Furthermore, EOL care simulation was recommended as an educational strategy to improve and evaluate the EOL nursing care competence among students [45]. Although these studies offer encouragement to trial simulation as an intervention to improve attitudes and thereby intention to work in oncology nursing, limitations in their study design, including small sample size, the scope of pilot studies and lack of control groups reduce the strength of such recommendations and further research into EOL simulation is recommended.

Palliative care knowledge was a significant predictor amongst the postgraduate student group only. The PCQN results for UNS and ORN were consistent with the previous studies conducted in Saudi Arabia (Table 6) and relatively low compared with other developed countries such as Australia. This difference could relate to the fact that palliative care education is integrated within

Table 6 Study variables score in this study and previous studies

Research Instruments	Type of participants	This study	Previous study
PCQN	UNS	7.1 ± 2.1	7.0 ± 2.8 Saudi UNS [32]
			8.0 ± 3.1 Jordan UNS [33]
			8.2 ± 2.8 Greece UNS [34]
	ORN	9.6 ± 1.9	9.1 ± 3.1 Saudi registered nurse [6]
			11.8 ± 2.8 Ireland registered nurse [35].
			11.7 ± 3.1 Australia registered nurse [36]
	PONS	11.0 ± 2.1	n/s
FATCOD	UNS	98.2 ± 8.1	95.2 ± 14.1 Turkish UNS [37]
			96.9 ± 8.3 Palestine UNS [38]
			111.9 ± 10.2 Greece UNS [34]
			115.2 ± 7.86 Italia UNS [39]
			126.0 Sweden UNS [40]
	ORN	108.7 ± 11.2	111.7 ± 14.0 Saudi registered nurse [6]
	PONS	100.3 ± 8.1	n/s
GSE	UNS	31.8 ± 5.1	34.5 ± 8.4 Saudi Arabia UNS [24]
			29.7 ± 4.5 Poland UNS [25]
	ORN	30.8 ± 4.9	29.8 ± 5.8 in Iran registered nurses [26]
			24.9 ± 5.4 in China registered nurses [27]
			24.9 ± 4.4 in China paediatric nurses [28]
	PONS	28.3 ± 3.3	n/s
MSQ	UNS	n/a	n/s
	ORN	69.3 ± 11.5	63.8 ± 15.3Egypt physicians and nurses [41]
			75.0 China psychiatric nurses [42]
	PONS	n/a	n/s

n/a = not applicable, n/s = no previous study

undergraduate nursing programs in these other countries [6, 46].

We found that more than half of the ORN participants reported that they were intending to leave their current hospital and/or the oncology specialty within the next 3 years. This is consistent with the results of the job satisfaction scale (MSQ), as the majority were not satisfied with their current nursing job. Moreover, job satisfaction was a significant predictor toward working (staying or leaving) in oncology nursing among ORN participants. Job satisfaction was statistically significantly associated with intention to leave nurses in two studies conducted in China and Jordan [19, 42]. ORN working with adult patients reported an intention to stay working in oncology that was almost double that of paediatric ORNs, possibly due to the additional compassion fatigue associated with caring for children with cancer and their families [47]. The high levels of reported intention to leave oncology nursing amongst the registered nurse sample reinforces the need for urgent planning to decrease nursing turnover and job dissatisfaction among oncology nurses in Saudi Arabia. In subsequent phases of the research, the findings will be discussed in focus group meetings with nursing leaders and educators in Saudi Arabia to identify potential strategies to address the barriers identified in this study and improve the recruitment and retention of Saudi nurses to work in oncology.

Strengths and limitations

A major limitation is that the use of a cross-sectional study design does not establish a causal relationship between dependent and independent variables. The use of a self-administered questionnaire may have imposed recall bias and social desirability bias [48], however, the low levels of reported intention toward working in oncology nursing would suggest this was not the case. The strength of the study lies in the large sample size and the high response rate of over 70% to the questionnaire survey. The findings add to the body of knowledge on Saudi oncology nursing and can help to inform future recruitment and retention strategies.

Conclusion

To our knowledge, this is the first study that has investigated the influence of individual characteristics, job-related factors, palliative care knowledge, attitude toward caring for dying patients, self-efficacy and job satisfaction on nurses' intention toward working in oncology nursing. This study provides a new insight into understanding the oncology nursing workforce in Saudi, in terms of challenges and possible solutions. Findings such as the lack of appeal of the oncology specialty to undergraduate nurses, the likely loss of existing oncology nurses and the importance of attitude in shaping intention to work in oncology nursing, should be taken into account when planning for the future Saudi oncology nursing workforce.

Abbreviations

UNS: Undergraduate Nursing Student; PONS: Postgraduate Oncology Nursing Student; ORN: Oncology Registered Nurse; PCQN: Palliative Care Quiz for Nurses; FATCOD: Frommelt Attitude Toward Care of the Dying Scale; GSE: General self-efficacy scale; MSQ: Minnesota Satisfaction Questionnaire; PCN: Palliative Care Nursing; EOL: End of life; KFMC: King Fahad Medical City; KSUMC: King Saud University Medical City; KFSHRC-R: King Faisal Specialist Hospital and Research Centre Riyadh; PSMMC: Prince Sultan Military Medical City; KAMC: King Abdullah Medical City

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Authors' contributions

All authors contributed substantially toward developing the study, data analysis, drafting and revising the paper. OA collected and managed the data. All authors have read and approved the final manuscript.

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Availability of data and materials

All datasets during and/or analysed during this study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study complied with the Declaration of Helsinki and was approved by The University of Adelaide, Australia Institutional Review Board (IRB) (no. H-2019-078), King Fahad Medical City (KFMC) IRB (no. 19-250E), King Saud University Medical City (KSUMC) IRB (no. E-19-4107), King Faisal Specialist Hospital and Research Centre (KFSHRC-R) IRB (no. 2191205), Prince Sultan Military Medical City (PSMMC) IRB (no. HP-01-R079), King Abdullah Medical City (KAMC) IRB (no. 19–553). Informed consent was obtained from all study participants. Completion and return of the questionnaire by the participants indicated their consent to participate in the study as explained in the participation information sheet and the flyer. Participants were informed that they were free to withdraw from the study at any time until the submission of the questionnaire and could choose not to complete the survey or to skip questions. Participant anonymity was maintained as no personal identifiers were recorded on the questionnaire survey.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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