Healthcare Professionals’, Patients’, and Caregivers’ Views about Cancer Pain and its Management in Libya

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Intellectual Property and Publication Statement

The candidate confirms that the work submitted is his own, except where work, which has formed part of jointly-authored publications, has been included. The contribution of the candidate and the other authors to this work has been explicitly indicated below. The candidate confirms that appropriate credit has been given within the thesis where reference has been made to the work of others. To date, the following papers have been published or awaiting final acceptance after invited revisions from the journals.

**Peer-reviewed publications:**


**The papers are awaiting final acceptance after invited revisions from the journals:**

- SALIM M. Makhlouf; SHENAZ AHMED; MICHAEL BENNETT. Libyan healthcare professionals', patients' and caregivers' perceptions and religious beliefs about cancer pain and its management: A qualitative study. Journal of Health and Religion.
Conference abstracts:


- SALIM M. Makhlouf; SHENAZ AHMED; MICHAEL BENNETT. 2021. Libyan healthcare professionals', patients' and caregivers' perceptions and religious beliefs about cancer pain and its management: A qualitative study. North-East Postgraduate Conference, Diversity; November 11-12; United Kingdom [Accepted]. (See appendix 41).
III

Declaration

The author of this thesis was the first and corresponding author for all the publications. He drafted the papers, revised them as per supervisors’ feedback, formatted them according to the journal style, submitted them to the respective journals, and answered the quires raised by the editorial office, reviewers, and the production office.

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Abstract

Background: Cancer pain remains a significant problem worldwide. It presents in about 50% of cancer patients with advanced stages. Although several guidelines and pharmacological interventions for Cancer Pain Management (CPM) exist, inadequate assessment and undertreatment of cancer pain are well-documented globally, especially in developing countries, including Libya. Lack of knowledge and negative attitudes and perceptions towards cancer pain and opioids among Healthcare Professionals (HCPs), patients, and caregivers are reported as barriers to effective CPM in Libya and worldwide.

Aim: This study aimed to explore Libyan HCPs’, patients’, and caregivers’ views about cancer pain and its management.

Methods: The research design in this study is an exploratory sequential mixed-methods approach, which is more appropriate for this study based on the study’s purpose to answer the research questions. This thesis consists of three studies: A systematic review, a qualitative descriptive study involving semi-structured interviews with 36 participants: 18 Libyan cancer patients, 6 caregivers, and 12 Libyan HCPs, and a cross-sectional survey involving a convenience sample of 152 oncology nurses and physicians working in six oncology settings in Libya.

Results: Libyan patients, caregivers, and newly qualified HCPs were concerned about the social stigma of opioids and feared drug addiction. Some patients and caregivers relied on religious and cultural beliefs for managing cancer pain, including the use of the Qur’an and cautery as coping strategies for CPM. Libyan HCPs perceived a lack of policies and guidelines, pain rating scales, and professional education and training in CPM as barriers to effective CPM.

Conclusion: Our results suggest that Libyan patients, caregivers, and oncology HCPs hold perceived barriers, lack of knowledge, and negative attitudes towards CPM. Professional education and training in CPM among HCPs, addressing phobia and myths on opioid usage, and the benefits and complications of using opioids will likely result in reduced barriers to CPM in Libya.
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<td>Accident and Emergency</td>
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<td>ANOVA</td>
<td>Analysis of variance</td>
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<td>BMC</td>
<td>Benghazi Medical Centre</td>
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<td>BPS</td>
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<td>Cancer Pain</td>
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<td>CPM</td>
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<td>NHS</td>
<td>National Health Service</td>
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<td>NOIS</td>
<td>National Oncology Institute of Sabratha</td>
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<td>NKARSP</td>
<td>The Nurses’ Knowledge and Attitudes Survey Regarding Pain</td>
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<td>PC</td>
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<td>PCPA</td>
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<td>PCPQ</td>
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XVIII

PPQK  Patient Pain Questionnaire Knowledge Subscale
PRISMA  Preferred Reporting Items for Systematic Reviews and Meta-
         Analysis
PROSPERO  International Prospective Register of Systematic Reviews
PKQ  Pain Knowledge Questionnaire
PPQ  Patient Pain Questionnaire
PSI  the physician survey instrument
QoL  Quality of Life
RH  Regional Hospitals
SA  Shenaz Ahmed
SI  Simon Pini
SD  Standard Deviation
SM  Salim Makhlouf
SPSS  Statistical Package for the Social Sciences
SR  Systematic Review
TCHs  Tertiary Care Hospitals
TMC1  Tobruk Medical Centre 1
TMC2  Tripoli Medical Centre 2
IPA  Interpretative Phenomenological Analysis
TA  Thematic Analysis
UK  United Kingdom
USA  United States of America
WBG  World Bank Group
WHO  World Health Organisation
Chapter 1
Introduction and background

1.1 Introduction

The chapter aims to present an overview and background to this exploratory sequential mixed-methods study: Firstly, the chapter starts with the background of the study in section 1.2. Secondly, section 1.3 presents a brief overview of cancer. Thirdly, this chapter highlights the stigma of cancer and opioids for CPM in section 1.4. Fourthly, sections 1.5 and 1.6 deliberate the Islamic worldview of cancer and Islamic perspectives on cancer care and CPM, respectively. Furthermore, the chapter provides an overview of the WHO and palliative care (PC) in section 1.7. Moreover, section 1.8 reviews an overview of cancer pain and its management. Additionally, the chapter discusses barriers to effective Cancer Pain Management (CPM) in section 1.9. Likewise, section 1.10 briefly outlines the research hypothesis, aims, and objectives. Besides, the chapter describes and discusses the significance of this mixed-methods study in section 1.11. Finally, the chapter will end with the outline of this thesis in section 1.12.

1.2 Background of the study

1.2.1 Brief an overview of the study setting (Libya)

1.2.1.1 The location and population of Libya

Libya is situated in the North of Africa and covers around 1750 million km², making it the third-largest country in Africa (Kidd, 2018). It is situated on the southern Mediterranean coast and lies in the geographic coordinates 25°N and 17°E, as shown in Figure 1.1. Libya neighbours Egypt on the east, Tunisia and Algeria on the west, and Chad, Sudan, and Niger on the west (Otman and Karlberg, 2007; Worldatlas, 2018a; CIA, 2021a). Due to Libya having a Mediterranean coastline of roughly 1900 km, it is considered a gateway to Europe and a strategic location for the African continent (History World Net, 2019; CIA, 2021a; Fadel, 2014). (Fadel, 2014). The Libyan population is relatively small, at about 6,678,570 people (WBG, 2020).
1.2.1.2 The religion and language of Libya

The official religion of Libya is Islam, and most Libyan people are Muslim Sunni, with approximately 97% of the population practicing this religion (Worldatlas, 2018a; CIA, 2021b). The influence of Islamic religion can be seen in Libya, as a majority of the Libyan population practices their faith daily and in their everyday work or study (Worldatlas, 2018a). Muslim Sunnis follow the customs (sunnah) of the Prophet Muhammad (peace be upon him); precisely, the branch of Islam that agrees as legitimate the “reigning caliphs” who followed the Prophet. The majority of Muslim Sunnis acknowledge the authority of the Qur’an and Sunnah as interpreted by the (ulama) scholars (St John, 2006). Arabic is the official language in Libya, and Italian and English are also widely understood and spoken among educated Libyan people (Worldatlas, 2018a; Kidd, 2018; CIA, 2021b). Other languages, such as Berber and Amazigh, are spoken in some areas by Berber and Amazigh peoples, who live in the southern region of Libya (Worldatlas, 2018a; CIA, 2021b).
1.2.1.3 The culture of Libya

The culture of Libya is predominantly Arabic Islamic culture, which has similarities to other Arabic countries in the Middle East and North Africa (MENA) region (Ajaj, 2012). The Arabic culture often comprises people’s beliefs, rituals, and values (Al Qadire, 2011b). However, depending on the region cultures, traditions, and dialects can be remarkably different from one country to another. For instance, the Levant: Lebanon, Syria, Palestine, and Jordan; Mesopotamia: Iraq; the Arabian Peninsula: Kuwait, Bahrain, Qatar, Saudi Arabia, Oman, Yemen, and the United Arab Emirates; and the Maghreb (Northwest Africa): Libya, Tunisia, Algeria, Morocco and Mauritania (Ajaj, 2012). Libya appears socially homogenous with a common language and religion, making smooth communication between Libyan people and other MENA countries (Alhmali,
2007). Although the majority of Libyan people (97%) identify themselves as Arab and Berbers, the Libyan nation has mixed ethnic groups (3%), including Greek, Egyptian, Maltese, Italian, Tunisian, Armenians, Cretans, and Turkish (Elkaram, 2014; CIA, 2021b).

1.2.1.4 The education system in Libya

Education in Libya has been rapidly developed since 1963 due to oil income (Alhmali, 2007). In Libya, education is free for all Libyan people, and it is compulsory for all children between ages 6 and 18. Education development in Libya was noticeable, particularly during the 1970s and 1980s (Yousif et al., 1996). During this period, the number of pupils who attended the schools doubled. There was a noticeable increase of female students, approximately 30%, whereas male students were higher, with 80% attendance compared with females (Khalifa, 2002; El-Fallah, 2014). In 1975, compulsory education for both primary and secondary schools was established. The government fully funded these levels of education by covering all costs, including the curriculums, training, and teaching (Khalifa, 2002). The Libyan government has continuously encouraged high-performing students to continue their studies abroad, as this will assist them to extend their knowledge, and they will learn and develop their skills in developed countries such as the United Kingdom (UK) and the United States (US) (Clark, 2004).

The expenditure on education among the Libyan public is roughly 4% of the Gross Domestic Product (GDP), which is around the average for the MENA regions. The rates of reported adult literacy and educational enrolment in Libya were one of the highest in the North African region, which was around 86% for both genders (males 91%, females 81%), with the highest rate for youth literacy among neighbouring countries, which accounted for approximately 99% (WHO, 2007a). However, the quality of education in Libya is under-standard. Therefore, many different educational institutions need to be built to educate a significant number of students in a relatively short time (Alhmali, 2007). Subsequently, the overall quality of the educational system can be affected by poor-quality inputs and several serious structural challenges (Youssef, 2006) and its worldwide
competitiveness ranking (Schwab, 2010). In addition, the facilities of education and teaching methods are not benchmarked against international standards or any educational system in other countries. Moreover, there are no linkages between research institutions and businesses, commonly seen in developed countries (UNESCO, 2005). It is possible, therefore, that HCPs in Libya might not have international standards of education and training in the medical field, especially CPM.

1.2.2 Overview of the healthcare system in Libya

Health systems are defined by the World Health Organisation (WHO) as including all the institutions, resources, and organisations dedicated to producing health actions (WHO, 2000). In principle, the health system is designed to promote and progress the population’s health; health systems have existed to treat diseases and protect people’s health (WHO, 2000). According to the WHO, the essential health indicators in Libya are part of the MENA region, especially Egypt and Tunisia (WHO, 2007a).

1.2.2.1 The Libyan Ministry of Health (MoH)

The MoH in Libya is responsible for financing all public healthcare systems, whereas the private healthcare sectors are funded by their owners, who can be either a group of people such as doctors and business people, two doctors, or just one doctor. The private sectors have to follow the regulations and policies of the MOH but can independently. The MoH is responsible for monitoring, evaluation, regulation, planning, and resource allocation (El-Fallah, 2014). The national organisations, including general and specialised hospitals, training and research institutions, and the District Health Authorities (DHAs), are inspected and supervised by the MoH. The DHA aims to provide comprehensive healthcare services, including preventive, promotional, curative, and rehabilitative services through primary healthcare facilities and rural hospitals. Additional healthcare services in Libya are supplied by the army and the national oil companies to their employees.
Furthermore, a sector called Social Security (welfare) can provide numerous healthcare and rehabilitation services for individuals with special needs and disabled people. Despite private health services in Libya currently having a limited role, they are dramatically growing and developing (El-Fallah, 2014). However, the Health sector capacity in Libya needs to upgrade functions at the national level of practicing healthcare system governance. As well as, the development of facilities of the DHAs (El-Fallah, 2014). It has been stated that the quality of the healthcare system in Libya can be seemingly questionable in several areas, which include the policy and planning of the health system, the capacities of institutions, and individuals-related sectors (WHO, 2010b). Therefore, reviewing and upgrading the legislation of health and frameworks should be realised to enable joint work between institutions and health-related sectors (WHO, 2007a; 2010b).

1.2.2.2 The Libyan National Healthcare Services (LNHS)

The LNHS consists of two main sectors, namely the public and private. The current public health system in Libya was established following the independence of the country in 1951 (Abudejaja and Singh, 2000). The health legislation in Libya was agreed upon and signed under the health law, number 106, dated 1973, which stated that the healthcare services are free of charge for all Libyan citizens (El Taguri et al., 2008). Thus, all citizens across the country had free access to healthcare services through a chain of LNHS (WHO, 2010b). However, today many Libyan people perceive that the public healthcare services in Libya are inadequate (McGregor, 1998; El-Fallah, 2016), and maintain that the quality of the Libyan public healthcare services has deteriorated (WHO, 2007a), resulting in a lack of trust and unequal access to quality healthcare services (Osborne, 2010). Subsequently, Libyan people who can afford to pay for private healthcare services opt out of the public healthcare system (Osborne, 2010). This could be one reason why Libyan patients seek private medical services either inside or outside the county (El-Fallah, 2016).
1.2.2.3 The structure of the Libyan healthcare system

The Libyan healthcare system consists of five different sectors: Public Healthcare Centres (PHCCs), Regional Hospitals (RH), Tertiary Care Hospitals (TCHs), Private Hospitals and Clinics (PH&C), and Accident and Emergency Hospitals (A&E) (Daw et al., 2016). Libya has 96 public hospitals with 20,289 beds and 25 specialised units available with 5,970 beds (Health Information Centre, 2009 cited in WHO, 2011, p. 23; Hassounah, 2013). Furthermore, there are 1,355 centres of primary healthcare and 37 polyclinics, as well as 17 isolation units (Hassounah, 2013; WHO, 2010a).

Although the model of healthcare is a mixture of public and private sectors, the main provider of health services in Libya is the public sector with healthcare services, such as curative, preventive, and rehabilitation services, and these are provided as free services to all Libyan people (WHO, 2007a; 2012). Most levels of the health service in Libya are devolved and supplied through a series of centres, primary healthcare units, rehabilitation centres, polyclinics, tertiary care specialised hospitals, and general hospitals in both urban and rural areas. There are three levels of operation for the Libyan healthcare system, delivered in Figure 1.2 below (WHO, 2007a; 2012).
In comparison to the UK healthcare system (Nuffieldtrust, 2021), the Libyan healthcare system has poor quality services and management, as well as a lack of suitable training for HCPs (El Oakley et al., 2013a; Jabeal and Rashid, 2018). Furthermore, corruption and delays in the building, maintenance, and supply of medical equipment have led to a significant shortcoming in operations (El Taguri et al., 2008; Mohapatra and Al Shekteria, 2009). Elkhammas and Singh (2010) stated that the Libyan healthcare system suffers from poor management and insufficient resourcing, resulting from the old regime's negligence over many years. Hence, Libyan people are dissatisfied with the current healthcare services and lack confidence in the quality of healthcare facilities, which has resulted in several patients seeking healthcare services abroad (Salam et al., 2010). The Libyan healthcare system focuses on the quantity rather than the quality of the healthcare services (WHO, 2007b). A study conducted by El Oakley et al. (2013a) emphasised that the current Libyan healthcare system does not function well and
provides inadequate healthcare quality. Thus, the whole system needs to be rehabilitated.

1.2.2.4 The Libyan healthcare system during and after the revolution

The healthcare system was heavily damaged and underfunded during and after the revolution that Libya had in 2011 (Daw et al., 2016; El Oakley et al., 2013a). The damage to Libyan healthcare services resulted in the ailing and collapse of the health system associated with extra demand imposed during that time (El Oakley et al., 2013a). A study by Daw et al. (2016) reported that due to the war, about 62 (29%) of Libyan healthcare services were structurally damaged among the 216 healthcare facilities that were studied. Among 62 damages, 11 (5%) healthcare services were wholly destroyed, whereas 51 (24%) had significant damage/ were damaged but not completely destroyed. Similarly, Primary healthcare clinics had 49 (23%) damaged services, followed by Accident and Emergency (A&E) departments. The damage to the Libyan healthcare system resulted in a significant lack of medical supplies, such as medical disposables and essential medications (Daw et al., 2016). This was followed by a lack of security for medical staff and miscommunication between patients, HCPs, and staff management (Ghobarah et al., 2004; Betsi et al., 2006; Daw et al., 2016). Following the revolution against Gaddafi’s regime in 2011, the healthcare system in particular and the whole political system, in general, have been transformed in Libya (Rages, 2014).

1.2.2.5 Education and training for Libyan HCPs

According to the Human Development Resource Centre (HDRC, 2011), many Libyan nurses are qualified with high-school-level qualifications (equivalent to UK A levels), so they are seemingly not well qualified and did not receive adequate training. Consequently, the standard of nursing care is inadequate. Shukri (2005); also argued that several safety issues related to Libyan patients in their hospitals are associated with nurses who had high-school-level qualifications delivering healthcare services with a low level of knowledge, lack of skills, and incompetence. Likewise, it has been stated that there is a lack of knowledge and
training in different specialist areas among doctors, nurses, paramedics, and pharmacists in the healthcare services in Libya (El-Fallah, 2014). Since 2018, more oncology centres and departments have been established in Libya. Thus, some Libyan HCPs were sent overseas for oncology training.

Furthermore, the Libyan government sent several medical students abroad to achieve postgraduate level qualifications (Jabeal and Rashid, 2018). However, the focus of education and training was only on cancer management. Thus, no training or education in palliative care or CPM for Libyan HCPs is shown. A possible explanation for this might be that palliative care (El Ansary et al., 2014a) and pain management services (Petropoulos et al., 2016; Elzahaf et al., 2016a) do not exist in the Libyan healthcare system.

1.2.2.6 Overview of oncology services in Libya

Cancer care is delivered to Libyan patients through seven main national cancer centres and departments located in different regions across Libya (Eastern, Central, Southern, and Western). These are: Tobruk Medical Centre (TMC), Benghazi Medical Centre (BMC), National Cancer Centre Benghazi (NCCB), National Cancer Institute of Misratah (NCIM), Sabha Oncology Centre (SOC), Tripoli Medical Centre (TMC), and National Institute of Oncology-Sabratha (NIOS). One oncology department is located in Tobruk city, and one oncology department and one national cancer centre are located in Benghazi, in the Eastern region of Libya. Western Libya’s main national cancer institute is in Sabratha city, which is the closest city to Tripoli. There is also one oncology department in Tripoli city, which is the capital city of Libya.

Between 1970 and 1994, there were only two oncology departments in Libya, which are the oncology department at the Benghazi Howari hospital and the oncology department at the Tripoli Central Hospital (Adel Attia et al., 2022). The oncology unit of Benghazi Howari Hospital was the only oncology department in Eastern Libya, and the oncology unit of Tripoli Central Hospital was the only oncology department in Western Libya. After that, the national cancer institute in
Sabratha (NIOS) was established in 1994, which is located (80 km) west of Tripoli. In 2007, the National Cancer Institute of Misratah (NCIM) was also lunched. Followed by Sabha Oncology Centre (SOC), which was established in 2016. Then, in 2017, another new oncology department was established in Tobruk Medical Centre (TMC) in Tobruk city (Adel Attia et al., 2022). In 2018, the National Cancer Centre Benghazi (NCCB) was also newly established in Benghazi city. Although oncology services (Benghazi Howari hospital and Tripoli Central Hospital) have been established since 1970 (Adel Attia et al., 2022), there are still no specialists in cancer care (Oncologists) in Libya. Cancer care service in Libya is delivered to the patients by the general practitioners (GPs), who usually hold the Libyan Board Licences in different general specialties (e.g., surgeon, general internal medicine, and paediatric), which equals to the Membership of the Royal Colleges of Physicians (MRCPUK). Some of them (the Libyan GPs) received a short-period of training in oncology.

Unfortunately, there is a lack of information and sources about healthcare services, especially around oncology, palliative care, and pain management services in Libya (Rajagopal et al., 2003; De Lima and Hamzah, 2004; De Lima et al., 2004). This statement also was supported by Elkhammas and Singh (2010), who stated that the Libyan healthcare system suffers from poor management and insufficient resourcing, which resulted from neglect by the old regime over many years.

1.3 Brief an overview of cancer

1.3.1 Cancer causes, mortality, and Prevalence

The WHO defines cancer as “the rapid creation of abnormal cells that grow beyond their usual boundaries, which can then invade adjoining parts of the body and spread to other organs” (WHO, 2018a). Cancer is a severe health problem, as it has become one of the most common causes of death worldwide (Siegel et al., 2015; WHO, 2020a). According to Global Cancer Incidence, Mortality and Prevalence’s (GLOBOCAN) estimation, by 2030, the number of new cancer cases will reach about 21.4 million cases, and about 13.3 million are expected to
die worldwide every year (WHO and IARC, 2019h). This disease has become the most common cause of death in Libya (Alhdiri et al., 2017). According to WHO and IARC (2019c), in 2018, there were approximately 3,375 deaths due to cancer in Libya. Cancer can be caused by either external factors, such as chemicals, tobacco, infectious organisms, and radiation, or internal factors, including hormones, immune conditions, inherited mutations, and mutations, which can occur due to metabolism (ACS, 2018; NCI, 2015).

Some interventions can be used to help control the causes of cancer. Such interventions are typically related to educational programmes, which can help by raising awareness among the patients and their caregivers about cancer and its causes and management, resulting in changes in the behaviour of patients (Hosseini et al., 2016). Stressful factors that might be associated with cancer can be managed by various solutions, including psychological interventions (Hosseini et al., 2016). Several studies highlighted the positive effects of psychological interventions, including reducing stress and depression and helping cancer patients to cope with their physical and psychological damages (Brown et al., 2003; Kubzansky and Thurston, 2007; Abu Khait and Lazenby, 2021).

Other interventions that have been shown to generate positive effects on cancer patients are spirituality and religion, as such interventions might help to fight against emotional, stressful, and physical issues, which can be caused by cancer, such as chronic pain, loss of hope, fear of death, and mental health (Abu Khait and Lazenby, 2021; Meraviglia, 2006; Kappelman et al., 2007; Mahfudh, 2010; Basri et al., 2015). However, spiritual and religious beliefs can also be barriers to cancer and pain management, especially if patients and their caregivers preferred to use spiritual and religious intervention instead of medical treatment (Pathmawathi et al., 2015; Ibrahim et al., 2020). This issue will be discussed in detail in the following sections and in the discussion chapter (Chapter 6).
1.3.2 Cancer survivors

The term cancer survivors has been used first by Mullan (1985) as the concept of patients who are living with and beyond cancer. He grouped cancer survivorship into three phases: acute, extended and permanent survival (Mullan, 1985). Following Mullan, Feuerstein (2007) defined cancer survivors as embracing the entire cancer continuum from the patients, who have been diagnosed with cancer, through to those who are living with any type of cancer for a period of five years or longer after active cancer treatment, including physical, mental and social aspects of living with and after a cancer diagnosis. The cancer survival rate has increased globally in recent years (Rowland and Yabroff, 2019). In 2018, the prevalence of cancer survivors within the previous 5-years was around 43.8 million cancer survivors universally (Rowland and Yabroff, 2019), and in Libya, there were almost 13727 cases in the same year (WHO and IARC, 2019d).

The rising of cancer survivors could be due to the availability of many cancer treatment options, such as chemotherapy, radiotherapy, and immunotherapy (Institute, 2021). However, such radical treatments can be associated with severe side effects, such as fatigue, hair loss, infection, anaemia, nausea and vomiting, constipation, diarrhoea, sore skin, stiff joints and muscles (NHS, 2020; Institute, 2019), as well as pain, (van den Beuken-van Everdingen et al., 2016a) and a heavy financial burden to both cancer patients and family caregivers, (Carrera et al., 2018; Longo et al., 2021; Yabroff and Kim, 2009), especially in developing countries (Kankeu et al., 2013; Bloom et al., 2011; Pisani, 2011). Studies found that medical treatment and pain prescriptions were more likely to be delayed or avoided by cancer patients who were economically affected by cancer procedures and treatment (Azzani et al., 2015; Weaver et al., 2010; Zafar et al., 2013), resulting in pain, depression, and anxiety (Ell et al., 2008; Kim et al., 2010).

1.4 The stigma of cancer and opioids

Stigma can be one of the psychosocial issues that are associated with a serious illness (e.g., cancer), resulting in a negative effect on social relationships and
behavioural responses, and it can lead to adverse health outcomes (Pachankis et al., 2018; Ohlsson-Nevo et al., 2020). Such stigma might be described as an internalised sense of shame about having an unwanted health condition, such as cancer, which is usually associated with fear of discrimination because of imputed inferiority or unacceptability (Goffman, 2009). Health-related stigmatisation has been defined by Pachankis et al. (2018) as a process by which a patient is associated with negative properties due to his/her serious illness.

Several signs and symptoms of the disease can be associated with health-related stigma, and thus, some patients may have distress, which might negatively affect their quality of life (Earnshaw and Quinn, 2012; Browne et al., 2013). For example, smoking and alcohol abuse that are related to certain behaviours or conditions (Mons et al., 2018; Matejcic et al., 2017), might be perceived by some people as having been caused by the person's lifestyle, and therefore this can lead to more stigmatisation, resulting in internalised feelings of guilt (Butt, 2008; Weiss et al., 2017). Among patients with breast and prostate cancers, stigma can be additionally influenced by losing of the female or male identity or sexual functioning, resulting in severe distress and withdrawal from physical and social activities (Fang et al., 2015; Lin et al., 2016; Ou et al., 2019; Phelan et al., 2013).

The stigma that is associated with cancer can be one of the main reasons for some patients to avoid seeing a clinician (Ermiah et al., 2012; Akin-Odneye and Husman, 2021). A study showed that the stigma of fear and shame about breast cancer was reported among Libyan cancer patients, as one of the main reasons for delaying the diagnosis of cancer, resulting in preventing them to visit the HCPs (Ermiah et al., 2012). A study conducted in Taiwan by Tang et al. (2016) found that the stigma of cancer among patients was related to the concepts of “cancer equals death” (e.g., the feeling of death approaching and awareness of disease severity); “cancer equals menace to social life,” which means social life is affected and includes other individuals’ uncomfortable attitudes towards cancer (e.g., shame, sympathy, pity, suffering, and over-cautiousness) and external physical changes; and “cancer equals cancer-ridden life” (e.g., being sensitive to the topic of death and calculating the number of remaining survival days).
The stigma of opioids can be another problematic aspect that is associated with patients with cancer pain (Bulls et al., 2022a). The term opiate is used for a drug derived from the opium poppy, which is a naturally occurring alkaloid (Trescot et al., 2008). The such term refers to any substance that binds specifically to endogenous opioid receptors, which are found within the body, and produces a complete or partial stimulation (Stannard and Booth, 2005; Trescot et al., 2008). Opioids are neurotransmitters and neurohormones in complex signalling systems, which produce both inhibition (mainly in the spinal cord) and stimulation (in the chemoreceptor trigger zone) inside the human body (Trescot et al., 2008; Stannard and Booth, 2005). Opioid analgesics include weak opioids (e.g., codeine) and strong opioids (e.g., morphine) act on the opioid receptors, which work in the central and peripheral nervous systems via the mu, delta, or kappa-opioid receptors in the body (Trescot et al., 2008). In the short term, the opioid effect is of a neuromodulator origin, whereas in the long term, opioids can bring the adaptative phenomena, which are known as poor tolerance, dependence, and addiction to drugs (Waldhoer et al., 2004), which may lead to opioid stigma.

For example, in Western countries, prescribing opioids for pain and CPM contributed to sharp increases in morbidity and mortality that are related to opioids, resulting in opioid stigma due to negative attitudes towards the prescription of opioids among the general public and heightened scrutiny towards practices of opioid prescribing (National Academies of Sciences, 2017; Paice et al., 2016). This could be why some patients with cancer pain still experience adverse consequences (Paice, 2018; Schenker et al., 2021b), including the stigma of opioids (Bulls et al., 2019). However, opioid stigmatisation in Eastern countries, particularly among Muslims, might be due to cultural or/and religious beliefs (Rajeh Saifan et al., 2019; Nasser et al., 2016; Kagawa-Singer, 2011; Al Qadire, 2012b; Colak et al., 2014b).

An American study reported that opioid stigma was recognised among 59 out of 97 patients, among approximately 40% out of 60% of patients, who were prescribed opioids, had opioid stigma due to fear of drug addiction (Bulls et al., 2019). Three manifestations of opioid stigma were highlighted, including patient
direct experience with opioid stigma and discrimination in healthcare settings; the concern about opioid stigma can affect patient’s care in the future, or anticipated stigma; and the attitudes and behaviours of opioid-restricting, which may reflect internalised the stigma and fear of drug addiction (Bulls et al., 2022b).

Cancer patients might also refuse opioids for CPM, as people surrounding them (e.g., caregivers and HCPs) might be negatively impacted by opioid stigma (Corrigan et al., 2011; Earnshaw and Chaudoir, 2009; Earnshaw et al., 2013; Schenker et al., 2021a). This result reflects those of Lou and Shang (2017), who also emphasised that cancer patients’ attitudes towards opioids were influenced by their family caregivers’ attitudes towards cancer pain and opioids. Another study highlighted that one of the main barriers to effective CPM was that cancer patients, who received opioids for CPM, feel stigmatised by HCPs, pharmacists, and society (Schenker et al., 2021a).

Some HCPs also showed their concern about the stigma of opioids due to a fear of poor tolerance and drug addiction, which could be related to their religious and cultural beliefs, resulting in barriers to effective CPM (Rajeh Saifan et al., 2019; Nasser et al., 2016; Kagawa-Singer, 2011). A survey reported that about 45% of Lebanese physicians hesitated to prescribe morphine for CPM due to the stigma of opioids, which was related to fear of side effects, poor tolerance, and drug addiction (Nasser et al., 2016).

Yet, no data describing Libyan patients,’ and caregivers,’ and HCPs’ views about cancer pain and its management, including the stigma of opioids in the Libyan population. Thus, the extent to which people generally view and stigmatise cancer pain and opioids for CPM is unknown. Therefore, one of the aims of this study was to fill important knowledge gaps by exploring and understanding Libyan HCPs’, patients,’ and family caregivers’ views about cancer pain and its management.
1.5 Islamic religious worldview of cancer

Cancer has been characterised by high mortality worldwide (Szpytma et al., 2019; Moser et al., 2014; Arndt et al., 2007). In Islam, dying is usually perceived as a time for reflection and repentance, which is bringing oneself closer to God (Almighty) through immersion in Islamic activities, such as recitation of verses from the Qur’an and prayers (Choong, 2015). Cancer in Islamic society can be attributed according to the Qur’an as a natural occurrence, penance for sin, or a test of the Muslim faith (Silbermann and Hassan, 2011). For example, some Muslim patients and their caregivers usually perceive cancer as the death penalty or infer illness, pain, and dying as a test from God (Szpytma et al., 2019; Attum et al., 2022).

In the Islamic world, religious beliefs usually contribute to the health and well-being of its believers (Silbermann and Hassan, 2011). This could be therefore suggest that Muslims subscribe to the belief that their health is a gift from God as He is the (God) Almighty and therefore any illness, such as cancer takes place only through His will (Al-Shahri and Al-Khenaizan, 2005). Accordingly, it can be stated that religious activities are important for many cancer patients and their caregivers (Sprik et al., 2020). Evidence highlighted that the Qur’an and prayer were the most widely used among cancer patients as coping strategies to cope with their illness (Yates et al., 2005; Mahfudh, 2010; Bloomer and Al-Mutair, 2013; Sprik et al., 2020).

Islamic religious practices can reflect geographic and cultural differences (Silbermann and Hassan, 2011). However, social, cultural, and religious structures are difficult to separate, as they can affect the entire way of meaning and response to disease, such as cancer (Silbermann and Hassan, 2011). Religious and cultural beliefs may dictate some practices, which are related to healthcare, medical decisions, nondisclosure of bad news (e.g., cancer diagnosis), spiritual needs, and palliative care, particularly for care for patients with end-of-life (Silbermann and Hassan, 2011).
Although many studies showed that some patients and their caregivers used prayer and the Qur’an as coping strategies to cope with cancer (Yates et al., 2005; Mahfudh, 2010; Bloomer and Al-Mutair, 2013; Sprik et al., 2020), the preference of using such strategies could likewise negatively influence the management of pain or cancer. Evidence showed that some patients and their caregivers usually prefer to use prayers and the Qur’an instead of medical medications to help the patients cope with their anxiety and cancer (Pathmawathi et al., 2015; Ibrahim et al., 2020). More information about this topic will be discussed in the next sections and in Chapter 6.

1.6 Islamic perspectives on cancer care and CPM

For the last two decades, spiritual and religious interventions have been widely used as strategies to prevent or treat a range of physical difficulties, including the cope with a disease (e.g., cancer), mental health, pain management, and increasing the quality of life (Hosseini et al., 2016; Koenig, 2012; Abu Khait and Lazenby, 2021). Recently, many studies have emerged about religion and spirituality and coping with cancer and pain (Peteet and Balboni, 2013; Piderman et al., 2015; Fitchett G and Canada AL, 2010; Abu Khait and Lazenby, 2021; Oliveira et al., 2021). The positive effect that religious coping can have on people who have experienced serious illnesses, such as cancer, has been examined by many researchers (Ano and Vasconcelles, 2005; Rana et al., 2015; Tarakeshwar et al., 2006). A systematic review highlighted the importance of different psychosocial and spiritual approaches, including mental health (e.g., treating psychological distress without medication), spiritual well-being (e.g., depending on faith for spiritual well-being and relying on religious and spiritual sources), and quality of life (e.g., improving knowledge of cancer for improving QoL), which were commonly used for Muslim patients with cancer to cope with their disease (Abu Khait and Lazenby, 2021).

Many studies showed that cancer patients perceived that religious and/or spiritual beliefs are one of the most important factors that help them to cope with their illness and cancer pain (Conway, 2010; Puchalski et al., 2018; Balboni et al., 2007; Astrow et al., 2005). A survey reported that as the use of faith increases
among cancer patients, pain decreases in intensity by 0.394 points (Oliveira et al., 2021). Thus, spirituality can be used as a coping strategy to cope with cancer pain.

In Islamic countries, cultural traditions and religious beliefs play important roles in decision-making about the prevention, care, diagnosis, and management of disease (e.g., cancer), and CPM (Mahfudh, 2010; Manal Al-Zadjali et al., 2022). Religious and cultural beliefs can influence cancer care and how they affect the patients’ and their family caregivers’ attitudes and choices regarding cancer care and CPM (Manal Al-Zadjali et al., 2022; Mahfudh, 2010). For instance, Muslim patients recite verses of the Qur’an and prayer as coping strategies for coping with their cancer and pain (Mahfudh, 2010). In the stage of end-of-life, if the patient was no longer able to recite the Qur'an by him/herself, the family members recite the Qur’an for him or her. This would help imbue the relatives of terminally ill patients with peace, serenity, and a sense of closeness with God (Bloomer and Al-Mutair, 2013). However, this could be barriers to cancer and pain management because some patients and family caregivers prefer to use the Qur’an and prayer instated of medical treatments, as they believe that the Qur’an could cure illnesses, such as cancer, and relieve physical suffering like pain (Hatamipour et al., 2015; Erol et al., 2018).

Additionally, cultural and social characteristics can fundamentally affect the role of religion or spirituality that can be played in the coping process (Ahmadi and Ahmadi, 2018; DeMarinis, 2018). For instance, in Muslim countries, some cancer patients and their caregivers prefer to use traditional cautery (Kaiy – ironing the place of cancer or pain with fire) as alternative therapy instead of medical treatments for cancer and pain management (Farid and El-Mansourey, 2015; Elzahaf et al., 2016a; Aboushanab and Alsanad, 2018; Attum et al., 2022).

The cautery is a traditional therapy used by some people in Arabic Muslim countries for cancer and pain management, which should be discouraged (Abou-Elhamd, 2009b). The ancient Egyptians had great faith in the therapeutic values of fire; thus, they used cautery to stop bleeding (Abou-Elhamd, 2009b). Cautery
involves creating burns on the tissue (by overheating a knife or piece of iron using the fire) to either stop bleeding or close wounds, as the heat would remove part of the body or make the blood clot (Al Binali, 2004). Choosing the location for applying the cautery depends on the complaint by the patient (i.e., type of pain or disease) (Al Binali, 2004). For example, in cases of diabetic foot, the cautery can be applied to the dorsum of the patient’s foot or the lateral aspect of his/her lower leg (Al-Wahbi, 2006). In case of jaundice, it might be applied to the patient’s left hand. For treating sciatica, the cautery could be used in up to 17 different locations of the patient’s body. If the patient was complaining about chest pain with shortness of breath (i.e., angina or myocardial infarction), cautery can be applied to the 4th and the 5th anterior or posterior ribs of the patient’s body in the same location of pain (Al Binali, 2004). In this sense, cautery may act in the same way as acupuncture, stimulating the release of endogenous opioids and other neurotransmitters, which can prevent the feeling of pain (Abou-Elhamd, 2009b).

It seems clear that the preference for using cautery by some Muslim people to manage cancer and pain might be based on a specific account narrated by the Prophet Muhammed (PBUH). However, there was probably a misunderstanding about this narration, as the authentic narration is that the Prophet (PBUH) said: "Healing is in three things: A gulp of honey, cupping and branding with fire (cauterising). Nevertheless, I forbid my followers to use (cauterisation) branding with fire." (Al-Bukhari, 1996 cited in; Fitzpatrick and Walker, 2014, p. 264). Unfortunately, due to the apparent misinterpretation of this narration, some Muslim patients and their caregivers might prefer to use cautery instead of medical treatment to manage their cancer and pain. Many studies indicated that cultural beliefs, including the use of cautery, had an adverse effect on cancer and pain management (Farid and El-Mansoury, 2015; Abou-Elhamd, 2009b). For instance, Farid and El-Mansoury (2015) stated that due to the application of cautery by Libyan patients to cure their cancer, cancer management is usually delayed, increasing the aggressiveness of the disease.

Although seeking medical treatments is a must for Muslim patients to cure their diseases and pain (Mohd Azaman, 2021), many Muslims belief that medications
cannot prevent nor postpone death since the matters are believed to be in the hands of (God) Allah (Al-Kaaba Abdul Aziz et al., 2015). Furthermore, recreational narcotics are forbidden in Islam (Attum et al., 2022). Accordingly, it seems that due to religious and cultural beliefs, some patients believe that they should endure their pain courageously (Ho et al., 2013; Colak et al., 2014b). This could be the reason why some patients do not prefer to use medical treatments for managing their cancer and pain. For example, opioids are not frequently used by Muslims for CPM, and this may be because their use may be rejected by some Muslim HCPs, patients, and caregivers due to personal perceptions and views about opioids, which could be related to their religious beliefs (Cleary et al., 2013a). Consequently, there is evidence that cancer patients in such countries still hesitate to receive appropriate CPM (Saini and Bhatnagar, 2016; INCB, 2019).

1.7 Overview of the WHO and Palliative Care (PC)

1.7.1 The concept of PC worldwide

The WHO defines PC as “an approach that improves the quality of life of patients (adults and children) and their families who are facing the problems associated with a life-threatening illness, through the prevention and relief of suffering by means of early identification and correct assessment and treatment of pain and other problems, whether physical, psychosocial or spiritual” (WHO, 2014, p. 2). Therefore, it is the ethical responsibility of health systems and HCPs to recognise that it is a moral duty to alleviate patients’ pain and suffering, including physical, psychosocial, or spiritual (WHO, 2014). The concept of PC has been traditionally viewed as intensive care for terminally ill patients. However, its scope has recently expanded to include patients who may live longer with cancer or end-stage organ failure (Sanderson and Tieman, 2010; WHO, 2021). PC aims to improve the symptoms, dignity, and Quality of Life (QoL) of terminally ill patients and the care of and support of patients’ families (Meeker, 2004; WHO, 2021). Through PC services, relief from physical, psychosocial, and spiritual issues can be achieved in over 90% of advanced cancer patients (WHO, 2021). It is estimated that more than 20 million patients each year need PC at the end of their life, and from this number, about 6% of them are children (WHO, 2018b).
Pain management as a part of PC plays an essential role in the alleviation of symptoms, which are usually associated with cancer pain, as cancer pain can be a multifactorial experience, and it might be present together with several other symptoms (Meuser et al., 2001; WHO, 2020c). Interventions of the PC for cancer patients can help relieve symptoms associated with disease progressing, and it allows cancer patients to live comfortably (WHO, 2020b; 2018a), as well as helping to reduce the doses of opioid analgesics such as morphine, which are used for CPM (Strasser et al., 2005). Hence, a global approach with the PC must be used for CPM with the correct use of opioid analgesics, starting from the first stage of cancer and forwards (Maltoni, 2008; WHO, 2020d).

1.7.2 Palliative Care (PC) in Libya

Although the World Health Assembly (WHA67.19) resolution urges member states to integrate PC into the healthcare system to provide worldwide health coverage as an essential strategy (WHA, 2014), there is an absence of a policy for integrating PC into many healthcare systems in developing countries, including Libya (El Ansary et al., 2014a; Fadhil et al., 2017). Therefore, it is possible that the guidelines for CPM, including WHO (WHO, 2019) and NICE (NICE, 2012), are not used by many Libyan HCPs in cancer care settings (El Oakley et al., 2013b). This can indicate that pain management is not a high priority in the Libyan healthcare system (Shamieh and Jazieh, 2010a). There is also limited access to opioid analgesics, such as morphine for CPM, in many developing countries (El Ansary et al., 2014a; Shamieh and Jazieh, 2010a), including Libya (El Ansary et al., 2014a). For example, during the period from 2014 to 2018, no data were available regarding the consumption of opioids, such as morphine for CPM in Libya (INCB, 2019), compared with other North African countries, and the UK (See Table 1.1). A possible explanation for this might be that in developing countries, including Libya, there are shortages of oncologists, pain management, and PC specialists, and a lack of facilities in healthcare services (Size et al., 2007; Kumar, 2007; El Oakley et al., 2013a; El Ansary et al., 2014b; Alhdiri et al., 2017). Accordingly, Libya might face a significant challenge in improving CPM. PC services in the MENA region, including Libya, have been neglected (Shamieh and Jazieh, 2010a; El Ansary et al., 2014a). This can be due
to many reasons, which include lack of education among both HCPs and the general public, restricted access to opioid analgesics for CPM, limited resources, lack of appropriate policy to ensure availability and access to PC within the healthcare system (Rajagopal et al., 2003; De Lima and Hamzah, 2004; De Lima et al., 2004).

Table 1-1 Comparison between North African countries and the UK regarding the consumption of morphine for CPM (2014-2018 average)

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>POPULATION IN 2018</th>
<th>NUMBER OF CANCER DEATHS IN 2018</th>
<th>MORPHINE (KG) 2014</th>
<th>MORPHINE (KG) 2017</th>
<th>MORPHINE (KG) 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALGERIA</td>
<td>42,228,430</td>
<td>29,453</td>
<td>7</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>EGYPT</td>
<td>98,423,600</td>
<td>85,432</td>
<td>2</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>LIBYA</td>
<td>6,678,570</td>
<td>3,375</td>
<td>?</td>
<td>&lt;&lt;</td>
<td>?</td>
</tr>
<tr>
<td>MOROCCO</td>
<td>36,029,140</td>
<td>32,962</td>
<td>17</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>TUNISIA</td>
<td>11,565,200</td>
<td>10,092</td>
<td>27</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>THE UK</td>
<td>66,573,503</td>
<td>178,473</td>
<td>3145</td>
<td>8050</td>
<td>8040</td>
</tr>
<tr>
<td>TOTAL</td>
<td>194,924,940</td>
<td>161,314</td>
<td>40</td>
<td>50</td>
<td>54</td>
</tr>
</tbody>
</table>

Note: The symbol "<<" indicates an amount less than “1” defined daily dose for statistical purposes per million inhabitants per day. A question mark “?” signifies that none of the quarterly reports was received. The International Narcotics Control Board (INCB), The World Health Organisation and International Agency for Research on Cancer (WHO and IARC).

Source: Adopted from (WHO and IARC, 2019a; WBG, 2020; WHO and IARC, 2019b; f; e; INCB, 2019; WHO and IARC, 2019g).

1.8 Overview of cancer pain and its management

1.8.1 Definition and classification of pain

Although different authors have defined pain in various ways (Watson et al., 2010; Vaajoki, 2013), For example, Watson et al. (2010) claim that pain is a “common symptom. We face it day after day in our work in all its different guises- from sore knees, broken bones, period pains through chronic back pain to pain from bony metastases” (p. 2). Whereas, Vaajoki (2013) defined pain as a subjective, private, and unique experience that can be affected by the patient’s age, gender, culture, and previous experience of pain. It may also be affected by a patient’s beliefs and emotions. It is apparent that these definitions were based on the authors’ personal experiences of pain. Therefore, such definitions might not be as widely used or valid as the one introduced in 1979 by the International Association for the Study of Pain (IASP), because the IASP definition of pain has been used as a valid definition for a long time by some authors in a number of books, studies, and websites (the Registered Nurses’
The IASP defined pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or something that is described in terms of such damage” (IASP, 2018).

Pain can be divided into two main categories, acute pain and chronic pain (Roos, 2004; Feizerfan and Sheh, 2014). Acute pain is defined as pain that is of quick onset and usually lasts for a short time (Buglass, 2007). It is often a result of an unexpected illness or injury. Some common reasons may cause acute pain, such as surgical procedures, trauma, burns, injuries, hospital procedures, inflammation, infection, angina, labour pain, and postoperative pain (Buglass, 2007). Acute pain, if not appropriately treated, may lead to chronic pain (Voscopoulos and Lema, 2010). Chronic pain can be defined as pain that continues for a long-term duration, which can be more than 12 weeks, or persisting after the time that healing would have been thought to have occurred after trauma or surgery processes (McGann, 2007; Parsons and Preece, 2010).

Chronic pain is often one of the most significant challenges for cancer patients, as it is a distressing symptom of cancer, which presents in 20% to 50% of patients (Fischer et al., 2010). It has been estimated that moderate to severe chronic pain is present in up to 80% of patients with cancer in their terminal stages (WHO, 2020a). Chronic pain can affect cancer patients and their family caregivers’ quality of life (QOL) (Yamagishi et al., 2012a).

In terms of pathophysiological principles, chronic pain can be classified as nociceptive pain, neuropathic pain, or both (Caraceni and Shkodra, 2019; Faull et al., 2012; Bennett, 2006). Nociceptive pain can be caused by damage to body tissue and it is most often described as aching, a sharp, cramping, or throbbing pain (Stevens, 2007). Such pain responds to traditional analgesics like simple analgesics, NSAIDs, and strong opioids (Mann and Carr, 2006). A study showed that placebo analgesia also can work as a positively antinociceptive effect
A placebo intervention can simulate factors, such as patient-physician interaction and treatment environment (Miller and Kaptchuk, 2008), and therefore, such influence, they have on the body and brain can be the same as that produced by the active treatment, which works the same as therapeutic context (Tracey, 2010). There are two types of nociceptive pain, which are somatic pain that can be resulting from a tissue injury, either musculoskeletal, such as inflammatory, degenerative, or trauma, and visceral pain that can be caused due to prolonged activation of the visceral nociceptors in different pathological mechanisms, such as ischaemic, pancreatitis, colic, and cancer (Mann and Carr, 2006).

Neuropathic pain is defined as pain instigated by or due to a primary injury or dysfunction in the nervous system (Treede et al., 2008). It is associated with symptoms such as shooting pain, burning pain, electric shocks, numbness, pins or needles, allodynia, and hyperalgesia (Brook et al., 2011). Neuropathic pain is prevalent in about 19% of cancer patients, and this figure can be increased to reach approximately 39% of patients with mixed pain (Bennett et al., 2012b). A systematic review estimated that neuropathic pain could be present in about 7% to 10% of the general population (van Hecke et al., 2014). Neuropathic pain can be caused by primary cancer or metastasis due to injuring or damaging the central or peripheral nervous system (Scholz et al., 2019; Watson and Sandroni, 2016; NICE, 2013; Schembri, 2019). In patients with advanced cancer, neuropathic pain can be because of tumour infiltration of nerve roots or nerves and might be due to exposure to radiation therapy or chemotherapeutic agents (Nersesyan and Slavin, 2007). The focus of this study will be on the most important and most feared cancer symptom, which is cancer pain.

1.8.2 Cancer pain

It has been stated that cancer pain is a complex problem, and it can be challenging to understand (Jones et al., 2011; Greig et al., 2005; McPherson et al., 2008). Bennett and his colleagues indicated that “The term “cancer pain” is often poorly defined and is not synonymous with pain in a cancer patient or pain in a cancer survivor” (Bennett et al., 2019, p. 38). There are some causes of
cancer pain, which can be due to either the disease itself, or metastases inflaming; which is associated with the tumour, or affected nerves. Alternatively, viscera pain is associated with tissue or nerve damage caused by the treatments of cancer, such as chemotherapy, radiation, and surgery (Bennett et al., 2019; Keefe et al., 2005; Raphael et al., 2010). Cancer pain can be associated with adverse effects on people’s QoL, followed by cancer treatment, including physical, social, psychological, and financial well-being (Ferrell, 1995; Jones et al., 2011; Cope and Zhao, 2011). Pain-related cancer can also lead to distress among patients’ families and caregivers (Wittenberg-Lyles et al., 2011). Evidence has illustrated that psychological distress, fatigue, and pain can be the most common indications in patients with cancer (Portenoy et al., 1994; Ventafridda et al., 1990; Curtis et al., 1990).

1.8.3 Prevalence of cancer pain
The prevalence of cancer pain can be associated with both stages of the disease and the location of the cancer (Goudas et al., 2005; Ger et al., 1998; Ding et al., 1991; Huang et al., 2003). Pain prevalence and pain intensity in advanced cancer might be closely related to the progression of the disease (Haanpää et al., 2011). According to a systematic review, more than 50% of cancer survivors received cancer treatment, and roughly 66% of advanced cancer patients reported pain (Van den Beuken-van Everdingen et al., 2016b). Evidence suggests that between 45% and 56% of patients with advanced cancer experience moderate to severe cancer pain (Breivik et al., 2009; van den Beuken-van Everdingen et al., 2007a; Seretny et al., 2014).

The prevalence of cancer pain in some Arab countries was reported as follows: about 73% among a convenience sample of 162 Jordanian cancer patients (Al Qadire et al., 2013), and roughly 9% of Saudi cancer patients who were daily seen in a pain clinic (Kaki, 2006), and approximately 40% among a sample of 400 Lebanese cancer patients (Hamieh et al., 2018). No data were found regarding the prevalence of cancer pain in Libya. This statement was supported by Bodalal et al. (2014, p. 6296), who stated that:
“This is further compounded in the Libyan scenario by the lack of a proper documentation system, absent digitalization of patient records, and no central authority to follow cancer patients on a long-term basis (i.e., surveillance).”

1.8.4 Cancer pain assessment

According to the European Association for Palliative Care (EAPC) recommendations regarding pain assessment in palliative care practice and research, the selection of the instruments should be personalised to certain patient populations and the study's design (Caraceni et al., 2002). A challenge for pain assessment is the overabundance of different assessment tools to be chosen from them (Jaatun, 2016). Although some available assessment tools cover all the acknowledged pain domains, many tools cover only some of them (Knudsen et al., 2009; Jaatun, 2016). Thus, different pain domains need to be addressed when assessing pain in patients with cancer, including pain intensity, location, temporal pattern, treatment, and exacerbating or relieving factors, alongside interference with health-related quality of life (Hølen et al., 2006).

In order to measure pain intensity, universal scales have been recommended, including Visual Analogue Scales (VAS), Numerical Rating Scales (NRS), Verbal Rating Scales (VRS), and Faces Pain Rating Scales (Cousins and Gallagher, 2017; Nguyen and Fabrigar, 2018; Caraceni et al., 2002; BPS, 2019b). It has been stated that there is no statistical evidence for preference of one rating scale over the other, as long as HCPs are sure that cancer patients can understand and use a specific scale (Hjermstad et al., 2009). However, the 11-point NRS is the most commonly used scale to measure cancer-related pain intensity (Hjermstad et al., 2011; Brunelli et al., 2010; Kim and Jung, 2020). NRS is a valid and reliable tool (Caraceni and Shkodra, 2019; Hjermstad et al., 2009), as it has been verbally validated in many studies, which assessed cancer pain (Brunelli et al., 2010; de Conno et al., 1994; Paice and Cohen, 1997; Kim and Jung, 2020). However, a study by Willems et al. (2021) aimed to compare between NRS and (non) acceptable pain evaluation scale and found that the (non) acceptable pain evaluation was more recommended for assessing cancer pain in the oncology clinic, as the interpretation of the NRS appears to be complicated.
To control pain related to cancer, a comprehensive assessment of pain is an essential step (Hjermstad et al., 2009; Portnow et al., 2003; Stewart, 2014), including a pain history, physical and psychological examinations (Fink and Gallagher, 2019; BPS, 2010). The ‘total pain’ should also be evaluated throughout the assessment, as social, psychological, cultural, spiritual, and religious factors can influence cancer pain (Scarborough and Smith, 2018; Colak et al., 2014b). Multidimensional tools, including the Brief Pain Inventory (BPI) and the McGill Pain Questionnaire (MPQ), can be used to assess cancer pain. These tools have been recommended to be clinically valuable for assessing cancer pain, as such scales assess not only the location and severity of pain but evaluate impairment due to such pain (Haefeli and Elfering, 2006; Scher et al., 2020; Caraceni et al., 2002; Kumar, 2011; Bennett, 2009; Ngamkham et al., 2012). Evidence of the validity has been reported for these two tools (Scher et al., 2020).

Despite all the recommendations and the availability of tools for assessing cancer pain mentioned above, the assessment of cancer pain is still far from satisfactory in many oncology and palliative care settings (Caraceni et al., 2005; Meuser et al., 2001; Patrick et al., 2004), especially in developing countries (Lamas and Rosenbaum, 2012; Saini and Bhatnagar, 2016). It is suggested that inadequate pain assessment is one of the most significant barriers to optimal CPM (Breuer et al., 2011a; Herr et al., 2004; McCracken, 2015). Evidence shows that cancer pain assessment is often insufficient, with many HCPs, due to ignoring or not assessing the pain properly (Lim et al., 2015; Thinh et al., 2018; Murillo et al., 2017). A study conducted in the USA to evaluate the extent of Evidence-Based Practices (EBPs) in assessing and managing cancer pain reported that although about 70% of cancer patients were assessed for their pain, reassessment of moderate or severe pain after treatment was conducted only in approximately 5% of cases (Herr et al., 2010). Another barrier to assessing cancer pain could be related to cancer patients or their caregivers' compliance (Caraceni et al., 2004).

1.8.5 Cancer Pain Management (CPM)

As mentioned earlier, cancer pain can result from the disease itself or painful diagnostic procedures or anti-cancer treatments (Bennett et al., 2019; Keefe et al., 2005; Raphael et al., 2010). Accordingly, an appropriate CPM needs to be
multidimensional, including physical, social, psychological, and spiritual dimensions (WHO, 2003). The main focus in CPM for cancer patients at the end of their life should be improving their ability of function and QoL (Ferrell and Coyle, 2010). Several attempts have been made worldwide to establish effective CPM. One of the most common and significant attempts is the ‘analgesic ladder,’ set by the WHO (See Figure 1.3), to manage mild, moderate, or severe pain in adult cancer patients (WHO, 2020d). Strong opioid analgesics, including morphine, remain the most effective and recommended treatment for CPM (Wiffen et al., 2016; Zeppetella and Davies, 2013; WHO, 2019).

![Analgesic ladder designed by the WHO](source)

**Figure 1-3 Analgesic ladder designed by the WHO**

**Source:** Adapted from WHO (2018c)

Although the availability of many guidelines and pharmacological options to manage cancer pain (NICE, 2012; WHO, 2019), inadequate assessment and lack of treatment of cancer pain remain inadequate worldwide (Thinh et al., 2018; Greco et al., 2014; Li et al., 2018; Mori et al., 2012). A systematic review of 20 articles reported that about one-third of patients with cancer pain did not receive adequate CPM (Greco et al., 2014). Furthermore, it has been estimated that about 28% of patients experiencing advanced cancer die from cancer with unalleviated pain (Sela et al., 2002). This can be more obvious in developing countries, including Libya, because strong opioid analgesics, such as morphine,
are either limited or legally restricted for CPM (Alsirafy et al., 2011b; Cleary et al., 2013a; Shamieh and Jazieh, 2010b; Harrington et al., 2010; Goucke and Chaudakshetrin, 2018). Hence, there is evidence that cancer patients in developing countries still do not receive appropriate CPM (Saini and Bhatnagar, 2016). A survey conducted in Lebanon that included 400 cancer patients reported that more than 37% of cancer patients suffer from cancer pain, and inadequate CPM was found to be about 46% among all cancer patients (Hamieh et al., 2018). In developing countries, including Libya, this may be because access to strong opioids is challenging, and the use of opioids, including morphine, may be rejected by some HCPs, patients, and family caregivers for CPM (Alsirafy et al., 2011b; Cleary et al., 2013a; Al Qadire, 2012b; Colak et al., 2014b; Darawad et al., 2019a). However, in Libya, cancer pain is more likely to be under-measured and under-treated than in other developing countries, as pain management and palliative care services do not exist in the Libyan healthcare system. (El Ansary et al., 2014b; Silbermann et al., 2014; Fadhil et al., 2017; Elzahaf et al., 2016a; Petropoulos et al., 2016).

1.9 Barriers to effective CPM

1.9.1 HCPs related barriers

1.9.1.1 HCPs’ knowledge and attitudes towards CPM

Several studies have shown that a lack of appropriate knowledge and poor attitudes towards CPM among HCPs were reported as one of the main barriers to effective CPM (Al Khalaileh and Al Qadire, 2012b; Shahnazi et al., 2012; Kassa and Kassa, 2014; Darawad et al., 2017b). Although nurses play a critical role in CPM because they have direct responsibilities related to regular pain assessment and tailoring opioids (Machira et al., 2013), many studies have shown that the nurses had more negative attitudes and a lower level of knowledge about CPM than the physicians (Darawad et al., 2017b; Jeon et al., 2007; Jho et al., 2014). The evidence revealed that HCPs who had low knowledge about CPM and negative attitudes towards opioids could not prescribe adequate opioids for CPM (Wells et al., 2002; Clarke et al., 1996; Lui et al., 2008; Yildirim et al., 2008). A survey conducted in Taiwan, including 1,797 nurses, aimed to explore the nurses’
knowledge about CPM and found that the nurses lacked adequate knowledge about cancer pain and opioids to manage cancer pain adequately (Lai et al., 2003). Although their survey used many statistics to prove their point, there was insufficient information about data analysis. For example, information about which statistical analysis was used, how it was conducted, and which software was used for data coding and analysis. Furthermore, they compared their results (Lai et al., 2003) with other studies (O'Brien et al., 1996; Clarke et al., 1996; Glajchen and Bookbinder, 2001), which used different instruments. All these limitations in their study could negatively influence the reliability of their results. However, similar to previous studies (Clarke et al., 1996; Liu et al., 2021; Zhang et al., 2015; Alqahtani, 2014b), their results showed that the nurses with high-level qualifications (i.e., Master's degree), and who attended training and education in CPM and more experience in CPM had higher levels of knowledge about CPM than those who did not. It seems that lack of HSPs' knowledge and poor attitudes towards CPM is a barrier to effective CPM.

Many studies (Prandi et al., 2015; Bernardi et al., 2007b; Darawad et al., 2019a) have shown that the most common attitudinal barriers to effective CPM shared across nurses and physicians were the fear of poor tolerance, the side effects of opioids, and drug addiction. The evidence revealed that HCPs who believe that strong opioids for CPM can lead to poor tolerance, side effects, and addiction are more likely to undertreat cancer patients (Elliott and Elliott, 1992b; Ger et al., 2000a; Kwon, 2014a). A study found that about 70% of physicians hesitated to increase opioid dosage and frequency for CPM due to fear of drug tolerance and addiction (Ger et al., 2000a). As mentioned above, Libyan HCPs might have poor attitudes and a lack of knowledge about CPM, similar to other HCPs, leading to barriers to effective CPM in Libya.

In contrast to earlier findings, some studies revealed that oncology nurses and physicians achieved higher positive scores on the Knowledge and Attitudes Surveys (KAS) regarding CPM compared to general nurses and physicians (Shahriary et al., 2015; Gallagher et al., 2004; Jeon et al., 2007; Larue et al., 1995; Utne et al., 2018; McCaffery and Ferrell, 1995). There is evidence that
oncology HCPs, demonstrated better knowledge and a more positive attitude towards CPM than other HCPs; this could be due to their extensive work experience in cancer pain settings; as reported by Etafa et al. (2020).

Etafa et al. (2020) concluded that HCPs, who had work experience in palliative care and pain management settings, reported higher significant mean knowledge scores about CPM. McCaffery and Ferrell (1995); stated that nursing staff from countries such as Canada and the US, which have the longest experience of palliative care units, showed a better level of attitudes and knowledge about CPM than nurses from countries such as Japan and Spain, which had palliative care and pain management services more recently. Although in most developing countries including Libya, many HCPs do not have experience in pain management and palliative care settings, as these services do not exist in their countries (El Ansary et al., 2014a; Elzahaf et al., 2016a), HCPs still have cancer patients in their clinics, who might suffer from cancer pain and need such services (i.e., pain management and palliative care) for CPM.

However, it has been argued that experience in cancer care and palliative care settings without education and training in CPM is not enough to improve HCPs’ knowledge about CPM (Bernardi et al., 2007b; Oldemenger et al., 2009a; WHO, 2019). Several studies showed that the lack of education and training in CPM among HCPs is the most important CPM barrier (Ger et al., 2000a; Hooten and Bruce, 2011a; Bouya et al., 2018; Yanjun et al., 2010a; Yang et al., 2014). A survey conducted in China involving 201 physicians found that physicians who had training in CPM reported significantly higher mean scores about CPM knowledge than those who did not (Yanjun et al., 2010a). Their results indicated that lack of training in CPM was the highest physician barrier to morphine usage in clinical practices. Libyan HCPs might have similar barriers to CPM as other HCPs in previous studies due to a lack of training and education in CPM (Ger et al., 2000a; Hooten and Bruce, 2011a; Bouya et al., 2018; Yanjun et al., 2010a). Therefore, it is possible that education and training in CPM are critical issues for improving the HCPs’ knowledge about CPM. Several studies have shown that HCPs with a high level of qualifications (i.e., Master’s degree), who had
experience in pain care and palliative care units and received professional training and education in CPM, obtained higher scores on adequate attitudes and knowledge about CPM (Jho et al., 2014; Omran et al., 2014; Yanjun et al., 2010a; Utne et al., 2018).

1.9.1.2 HCPs’ perceptions and beliefs about CPM

The evidence highlighted that HCPs’ views, perceptions, and beliefs about cancer pain and opioids could be barriers to effective CPM (Elliott and Elliott, 1992b; Al Khalaileh and Al Qadire, 2012b; Rajeh Saifan et al., 2019). Some HCPs may hesitate to prescribe or reject strong opioids, such as morphine for CPM, due to their perceptions or beliefs about opioids (Cleary et al., 2013a). A survey conducted by Bernardi et al. (2007b) reported that more than 50% of oncology nurses disregard or underestimate cancer pain when patients report it to avoid prescribing strong opioids for CPM. A mixed-methods study conducted in Cyprus by Charalambous et al. (2019) involved 73 HCPs in exploring HCPs’ perceptions of using opioid medications for CPM. Their study found that about 70% of HCPs hold negative perceptions about opioids (opiophobia). Hence, roughly 49% of physicians were reluctant to prescribe strong opioids for CPM, resulting in a barrier to appropriate CPM. In developing countries, many studies showed that HCPs hesitated or rejected to prescribe or give strong opioids for CPM as they had negative perceptions or beliefs about cancer pain and opioids (Rajeh Saifan et al., 2019; Al Khalaileh and Al Qadire, 2012b; Nasser et al., 2016). Although these previous studies were surveys with relatively small sample sizes, which might limit the generalisability of their findings, their studies found that HCPs’ perceptions and beliefs towards opioids were a barrier to effective CPM. Libyan HCPs might have negative perceptions or beliefs similar to those described in earlier studies. Therefore, there may be evidence that cancer patients in developing countries still do not receive appropriate CPM (Saini and Bhatnagar, 2016), including Libya.
1.9.2 Patients and caregivers related barriers

1.9.2.1 Patients’ and caregivers’ knowledge and attitudes to CPM

Many studies stated that due to varied barriers, including a lack of knowledge and attitudes towards CPM, cancer patients at different stages of their disease still do not receive appropriate CPM (Greco et al., 2014; Dees et al., 2011; Al Qadire et al., 2013; Chwistek, 2017; Thinh et al., 2018). Several earlier literatures showed that cancer patients and caregivers had low mean scores on the Knowledge and Attitudes Surveys (KAS), indicating poor attitudes and lack of knowledge about CPM (Riddell and Fitch, 1997; Cohen et al., 2005; Lin, 2000). Therefore, many cancer patients and caregivers may be reluctant to report pain to HCPs and reject strong opioids for CPM (Oldenmenger et al., 2009b; Colak et al., 2014b; Vallerand et al., 2007b; Lou and Shang, 2017). Attitudinal barriers to effective CPM, including fear of poor tolerance, side effects of opioids, and drug addiction, were prominent among cancer patients and caregivers (Sun et al., 2008; Lin, 2000). Lou and Shang (2017) highlighted that the relationship between caregivers’ attitudes and their patients’ pain knowledge towards CPM is important because their attitudes towards cancer pain and opioids could influence patients’ attitudes and pain knowledge. Hence, caregivers should have general awareness and adequate knowledge about CPM. It has been argued that it is crucial to increase caregivers’ ability to participate in CPM and assess pain and help their patients take adequate doses of opioid medications (Yates et al., 2004a). Vallerand et al. (2007b) found that family caregivers with pain management knowledge had significantly fewer barriers to effective CPM than those who did not.

1.9.2.2 Patients’ and caregivers’ perceptions and beliefs about CPM

Additional barriers to adequate CPM could be related to patients’ and caregivers’ perceptions and beliefs. The evidence found that cancer patients and caregivers’ views of cancer pain and opioids were influenced by their religious and cultural beliefs, as they rejected opioid analgesics for CPM because of their negative attitudes towards them, and in particular, they fear addiction, citing religious and cultural reasons for rejecting such opioids for CPM (Al Qadire, 2012b; Colak et al., 2014b). For example, some Muslim patients usually find that reading the
Qur’an is a beneficial and comfortable way to help them cope with their disease and pain (Mahfudh, 2010). This could be beneficial as some patients and their caregivers believe that the Qur’an could cure diseases, such as cancer, and relieve physical suffering like pain (Hatamipour et al., 2015; Erol et al., 2018). Although evidence found that cancer patients, who relied on their religious beliefs to cope with their disease and pain, showed a sense of hope, peace, strength, and confidence (Rahnama et al., 2012), such beliefs may negatively influence CPM because they can lead to reluctance to use the medical treatment, such as opioids for CPM (Bosch and Banos, 2002; Jacobsen et al., 2009b; Tzeng et al., 2008; Chen et al., 2012).

Evidence showed that people who hold negative perceptions about strong opioids rejected to use of such opioids for CPM (Silbermann, 2011; Yates et al., 2002; Ho et al., 2020). Silbermann (2011) stated that many patients and their caregivers viewed opioids as a path to death; hence opioid medications became their last choice. A survey conducted in Australia that included 114 cancer patients reported that approximately 40% of patients tended to wait until their pain became severe before seeking opioid medications for CPM (Yates et al., 2002). A recent qualitative study involved 31 participants (18 adult cancer patients and 13 caregivers) found that many cancer patients and their caregivers preferred to use morphine for CPM as a last option because they hold concerns and negative perceptions about strong opioids, including drug side effects and addiction, as well as morphine is only used at the terminal stages (Ho et al., 2020).

It has been stated that cultural and religious beliefs can affect patients’ interpretation of their pain and consideration of treatment (Silbermann and Hassan, 2011; Colak et al., 2014b). For instance, many patients and their caregivers believed that the Qur’an and the prayers could cure diseases, such as cancer, and relieve physical suffering like pain (Hatamipour et al., 2015; Hosseini et al., 2016; Erol et al., 2018; Makhlouf et al., 2020). Thus, some patients and their caregivers usually prefer to use the Qur’an and prayers instead of medical medications to help the patients cope with their disease, anxiety, and pain (Pathmawathi et al., 2015; Ibrahim et al., 2020). Some cancer patients and their
caregivers may develop misconceptions about CPM depending on their cultural background. A study found that American Indian patients, caregivers, and HCPs believed that expressing pain was seen as a sign of weakness, and complaining about cancer pain will only extend their vulnerability (Haozous and Knobf, 2013). Another study showed that Taiwanese cancer patients do not report cancer pain and refuse to use opioids because, in their culture, they consider pain a necessary aspect of life (Chou et al., 2011). In Arab countries, including Libya, some cancer patients, and their caregivers prefer to use cautery (Kaiy – ironing the place of cancer or pain with fire) as alternative therapy instead of medical treatments to manage their cancer and pain (Farid and El-Mansoury, 2015; Elzahaf et al., 2016a; Aboushanab and Alsanad, 2018). Many HCPs believed that cultural beliefs had an adverse effect on CPM (Farid and El-Mansoury, 2015; Abou-Elhamd, 2009a). For example, Farid and El-Mansoury (2015) stated that due to the application of cautery by some Libyan patients to cure their cancer, cancer management is usually delayed, increasing the aggressiveness of the disease associated with chronic cancer pain. Unfortunately, due to religious and cultural beliefs, some people believe that they should endure their pain courageously (Ho et al., 2013; Colak et al., 2014b). Studies showed that Turkish and Jordanian patients showed negative attitudes towards morphine as they continued rejecting morphine for their cancer pain after sessions about opioids were given. That was due to fear of addiction, religious reasons, and cultural prohibitions (Al Qadire, 2012b; Colak et al., 2014b). Therefore, it is possible that religious and cultural beliefs can be barriers to effective CPM.

Libyan cancer patients and their family caregivers' views, perceptions, and beliefs about cancer pain and opioids may also be similar to those described in the studies mentioned earlier, resulting in barriers to effective CPM in Libya. The evidence suggests that HCPs should recognise and understand that patients often turn to their religious, spiritual, and cultural beliefs when considering medical treatment (Silbermann and Hassan, 2011; Dedeli and Kaptan, 2013; Swihart and Martin, 2020). Understanding patients’ perceptions of religious and cultural beliefs can enable HCPs to improve CPM, as such beliefs should guide HCPs in how and when patients’ pain should be treated (Silbermann and Hassan, 2011; Givler and Maani-Fogelman, 2020).
1.9.3 Healthcare system-related barriers

1.9.3.1 policies and guidelines for CPM

The lack of clear policies and guidelines for CPM has been highlighted as a barrier to adequate CPM in many studies worldwide (Elcigil et al., 2011; Jacobsen et al., 2014; Kwon, 2014a), especially in developing countries (WHO, 2003; Saini and Bhatnagar, 2016). According to the WHO; WHO (2003), the absence of national policies and guidelines for palliative care and CPM services in developing countries is common, resulting in additional barriers to effective CPM. Although several guidelines have been established worldwide for effective CPM, such as the WHO (WHO, 2019) and NICE (NICE, 2012), most HCPs in developing counties seem not to follow these guidelines because such guidelines do not exist in their clinics (Saini and Bhatnagar, 2016; Abu-Odah et al., 2020; El Ansary et al., 2014a). Jacobsen et al. (2014) found that cancer pain was poorly managed because of restricted hospital policies regarding drug administration, leading to inadequate opioids being prescribed to patients with cancer pain. Another study also revealed that due to the absence of hospital policy about supplying patients with opioid medications at home, many cancer patients did not receive sufficient opioid medication for their pain, especially those living in rural areas (Alnems, 2012a).

Despite policies and regulations for palliative care and CPM existing in some developing countries, such policies and guidelines are not implemented in clinical practices because of strict rules for using strong opioids (Saini and Bhatnagar, 2016; Abu-Odah et al., 2020; Toba et al., 2019; Li et al., 2013). For instance, a cross-sectional survey conducted in Palestine that included 220 HCPs, reported that 69.5% of HCPs perceived that strict hospital regulation regarding the use of opioid medications for CPM was among the most common barriers to effective CPM (Toba et al., 2019). Accordingly, there is evidence that many cancer patients in developing countries still do not receive adequate CPM (Saini and Bhatnagar, 2016; Saifan et al., 2019).
The lack of policies and guidelines for palliative care and CPM in most developing countries, including Libya, could be due to certain healthcare services, such as palliative care (El Ansary et al., 2014b; Silbermann et al., 2014; Fadhil et al., 2017) and pain management services (Elzahaf et al., 2016a; Petropoulos et al., 2016) that do not exist in the healthcare system. It can thus be suggested that the unavailability of palliative care and CPM policies and guidelines is another issue that negatively influences CPM in developing countries, including Libya.

1.9.3.2 Limits on access to opioids for CPM

Although morphine remains the most effective and recommended medication for CPM in most developed countries (WHO, 2019), access to such opioid analgesics for CPM is either limited or legally restricted in many developing countries, including Libya (Shamieh and Jazieh, 2010b; Saini and Bhatnagar, 2016). Most cancer patients in developing countries receive inadequate opioid analgesics, particularly morphine, compared to developed countries (WHO, 2003; INCB, 2019). For example, in 2018, the consumption of morphine for palliative care and CPM in developed countries, such as Europe, the US, Canada, and Australia, was 87%, whereas only 13% of the total amount of morphine consumed in developing countries (INCB, 2019). In Libya, there was no data available regarding the consumption of morphine for palliative care and CPM (INCB, 2019).

A survey conducted in Jordan which involved 162 cancer patients, reported that approximately 73% of cancer patients suffered from cancer-related pain, and about 30% of patients with cancer pain had not been treated for their pain (Al Qadire et al., 2013). Another survey conducted in Lebanon that included 400 cancer patients reported that about 40% of cancer patients suffered from cancer-related pain, and inadequate CPM was found to be approximately 47% among all cancer patients due to limits on access to opioids (Hamieh et al., 2018). Many studies from the same regions also suggested that cancer pain is unrelieved in various cases due to limited access or legal restrictions to opioid analgesics (El Ansary et al., 2014a; Cleary et al., 2013b; AlSirafy et al., 2011a). It can thus be suggested that many cancer patients in developing countries, including Libya,
might suffer from severe cancer pain and do not receive adequate opioid medications due to limits on access to opioids for CPM (Saini and Bhatnagar, 2016; Shamieh and Jazieh, 2010b).

However, it has been argued that accessing opioids alone is unlikely to relieve cancer pain (Wells, 2000; Anderson et al., 2002; Gunnarsdottir et al., 2005). Evidence found that many cancer patients were experiencing unrelieved cancer pain, even though they had increasingly been prescribed opioids for their pain (Wells, 2000; Anderson et al., 2002). It can thus be suggested that HCPs,’ patients,’ and caregivers’ poor views, perceptions, beliefs, attitudes, and lack of knowledge about cancer pain and opioid analgesics for CPM could be the main barriers to effective CPM as discussed earlier in this chapter.

1.10 Hypothesis, aims, and Objectives

1.10.1 Statement of the problem

Although CPM can be achieved in approximately 90% of cancer patients worldwide (WHO, 2003), cancer pain is a frequent problem experienced by patients with advanced cancer because it is often undertreated in various cases (Green et al., 2011; Mori et al., 2012; Greco et al., 2014), especially in developing countries (Saifan et al., 2019; Saini and Bhatnagar, 2016; Li et al., 2018; Hamieh et al., 2018). A survey conducted in Lebanon by Hamieh et al. (2018) that included 400 cancer patients found that roughly 38% of cancer patients suffer from cancer pain, and about 46% reported inadequate CPM among all cancer patients.

Many common barriers to effective CPM related to HCPs,’ patients’ and caregivers’ poor views, beliefs, attitudes, and knowledge, and the healthcare system have been identified as significant clinical problems in various studies worldwide (Lou and Shang, 2017; Kwon, 2014a; Al Khalaileh and Al Qadire, 2012b; Lin et al., 2000; Kim et al., 2011; Yanjun et al., 2010a; Saifan et al., 2019). There have been some effective attempts to overcome these barriers (Sun et al.,
2007; Kwon, 2014a). For instance, several authors have suggested that professional education and continuing training in CPM can improve HCPs’ attitudes and knowledge about CPM (Omran et al., 2014; Lai et al., 2003; Patiraki et al., 2006b; Allard et al., 2001; Alvarez and Agra, 2006; Bennett et al., 2011; Bouya et al., 2018). A systematic review indicated that educational programmes on CPM, including CPM topics in nursing curricula and training programmes on CPM, are the most important factors for enhancing nurses’ knowledge and attitudes towards CPM (Bouya et al., 2018). Furthermore, evidence highlighted that providing educational sessions on CPM can improve caregivers’ knowledge and reduce their attitudinal barriers to effective CPM (Meeker et al., 2011). However, these interventions have not significantly overcome CPM, especially in developing countries, as there is evidence that cancer patients in such countries still do not receive appropriate CPM (Saini and Bhatnagar, 2016; Saifan et al., 2019). These barriers are likely to be related to HCPs’, cancer patients’, and caregivers’ poor views, beliefs, attitudes, and knowledge about cancer pain and opioid medications (Al Khalaileh and Al Qadire, 2012b; Saifan et al., 2019; Colak et al., 2014b; Lin et al., 2000).

In developing countries, especially in Libya, cancer patients who do not receive appropriate CPM may be due to many potential reasons: Firstly, underfunding and the collapse of the Libyan healthcare system since the revolution in 2011 (El Oakley et al., 2013b). Secondly, an absence of palliative care (El Ansary et al., 2014b; Silbermann et al., 2014; Fadhil et al., 2017) and pain management services (Elzahaf et al., 2016a; Petropoulos et al., 2016). Thirdly, access to opioid medications for CPM is either limited or legally restricted (Shamieh and Jazieh, 2010b). Finally, as mentioned in this chapter, similar to earlier studies (Al Khalaileh and Al Qadire, 2012b; Colak et al., 2014b; Saifan et al., 2015), Libyan HCPs’, patients’, and caregivers’ views, perceptions, beliefs, and attitudes towards cancer pain and opioids can prevent effective CPM in Libya.

Although many studies from different countries exist the literature that barriers to effective CPM due to HCPs’, patients’ and caregivers’ views, perceptions, beliefs, and attitudes towards CPM (Saini and Bhatnagar, 2016; Breivik et al., 2009; Van
den Beuken-van Everdingen et al., 2016b; Li et al., 2018; Reis-Pina et al., 2015; 2018; Thinh et al., 2018; Kwon, 2014a), there is no published research on this subject in Libya. Likewise, the CPM situation among Libyan HCPs has not been previously assessed, despite the poor QoL, which has been found among cancer patients in Libya (Nouh et al., 2018; Agila, 2020; Hashemi et al., 2019). Addressing this problem will have practical benefits for cancer patients, particularly in Libya and generally in developing countries, and help establish the reasons for potential barriers to effective CPM in order to understand and overcome this widespread phenomenon. Accordingly, this mixed-methods study examines the challenges and barriers confronting HCPs, cancer patients, and family caregivers to improve CPM in Libya.

1.10.2 Research Question
What are the views of Libyan healthcare professionals, patients, and family caregivers about cancer pain and its management?

1.10.3 The overall research aims and individual research objectives
The research aims to explore Libyan HCPs,’ patients,’ and family caregivers’ views about cancer pain and its management. This aim was achieved by accomplishing the following three objectives:

I. Carry out a systematic review of research relating to both the nature and impact of attitudes and knowledge towards CPM.

II. Explore and understand Libyan HCPs’, patients,’ and family caregivers’ views about cancer pain and its management.

III. Complete an evaluation of HCPs’ knowledge, attitudes, and potential barriers regarding cancer pain and its management in Libya.

1.10.4 Research Hypothesis
Libyan HCPs, cancer patients, and caregivers' perceptions, attitudes, and knowledge about cancer pain and opioids for CPM might be barriers to effective CPM in Libya.
1.11 Significance of the Study

To the best of the researcher's knowledge, this is the first comprehensive study that explored Libyan HCPs, patients, and family caregivers' views about cancer pain and its management. This study’s findings will help identify the potential barriers to effective CPM in Libya. Identifying these potential barriers may help promote better care for cancer patients with pain in Libya. Regarding research contributions, the current study will bridge the gap in the literature on barriers to effective CPM by exploring HCPs,’ patients,’ and caregivers’ views about cancer pain and opioids, which might improve CPM in Libya. With respect to the practical contributions, the findings of this study will enable HCPs, hospital managers, and policymakers to better understand barriers to effective CPM and guide them when planning guidelines and policies for palliative care and CPM in Libya.

This study will establish baseline information about HCPs,’ patients,’ and caregivers’ current knowledge, attitudes, views, and beliefs about CPM in Libya. Thus, examining Libyan HCPs,’ patients,’ and caregivers’ views about cancer pain and its management will identify the potential barriers to effective CPM and significantly improve CPM practice in Libya. This will also reflect positively on cancer patients’ QoL, resulting in decreasing hospital admission rates and medical costs (Green et al., 2011; Tangka et al., 2010). Exploring potential barriers to adequate CPM as perceived by Libyan HCPs, patients, and caregivers might also be contributed to the design of future relevant educational programmes (at schools of medicine and nursing and in-service education in practices) to focus more on CPM topics in their curricula.

1.12 Outline of the thesis

This thesis consists of six chapters to achieve both the research questions and its aims and objectives as outlined in sub-sections 1.10.2 and 1.10.3, respectively. The following is a brief description of each chapter:

Chapter Two:

This chapter presents the detailed research methodology and methods used in this mixed-methods study. It also provides a mixed-methods design for this study,
including pragmatism, the rationale for adopting a mixed-methods design in this study, classification of a mixed-methods design, and study design specifics. This is followed by an overview of research methods for each study with the justifications for using them in this thesis. The chapter also describes data sampling, collection, and analysis for each study in this thesis.

Chapter Three:
This chapter is devoted to achieving the first objective of this study, which is to review the evidence regarding HCPs’, patients’, caregivers’, the general public’s attitudes and knowledge about cancer pain and its management, and to determine the nature and impact of attitudes and knowledge towards CPM. The chapter presents the results of study one (a systematic review) in this thesis.

Chapter Four:
This chapter is dedicated to accomplishing the second objective of this mixed-methods study, which is to explore Libyan HCPs’, patients’, and caregivers’ views about cancer pain and its management. This chapter presents the results of study two (a qualitative study). The chapter concludes by summarising the main results of the study.

Chapter Five:
This chapter is devoted to attaining the third objective of the present study, which is to evaluate further nurses’ and physicians’ knowledge, attitudes, and perceived barriers regarding cancer pain and its management in Libya. This chapter presents the results of study three (a quantitative study) in this thesis. The chapter ends with a summary of the key findings.

Chapter Six:
This chapter starts with integrating and summarising the main findings of the three studies in this mixed-methods study, which are presented in chapters three, four, and five, respectively. The chapter discusses the overall results from three studies in this thesis. Next, this chapter provides research strengths and limitations for each study. The research contributions to research and practice are also outlined in this chapter. The chapter ends with a conclusion and recommendations for policy and practice.
Chapter 2
Research Methodology and Methods

2.1 Introduction

This chapter aims to present the research methodology and methods utilised in this mixed-methods study. For context, an overview of the 3 studies that comprise this thesis is outlined first in section 2.2. Secondly, the chapter presents the study and discusses the mixed-methods design in section 2.3, which include pragmatism, justification for using pragmatism in this study, the rationale for adopting mixed-methods design, classification of a mixed-methods design, and justification of using an exploratory mixed-methods design in sub-sections 2.3.1, 2.3.2, 2.3.3, 2.3.4, and 2.3.4.1.1 respectively. Thirdly, section 2.4 presents and discussed in detail the study design specifics for each study included in this thesis. Finally, the chapter briefly outlines ethical considerations for this study in section 2.5.

2.2 Study Overview

This thesis consists of three studies: a systematic review (study one) to identify existing knowledge of HCPs’, cancer patients’, family caregivers’ and the general public’s attitudes and knowledge towards CPM; a qualitative study (study two) to identify Libyan HCPs’, patients’, and caregivers’ views surrounding cancer pain and its management, who were either had training courses or sought oncology treatment in Egypt; and quantitative study (study three), to evaluate HCPs’ knowledge, attitudes, and potential barriers regarding CPM in Libya. The methods for three studies that are included in this thesis are outlined in sections 2.4.1, 2.4.2, and 2.4.3 below. The results for each study included in this thesis are presented in chapters 3, 4, and 5, respectively.

The research methods for each included study in this thesis were carefully chosen by consideration of the phenomenon under examination and its relevance to each research question. In this thesis, three research designs were conducted, including a systematic review (study one), a qualitative method (study two), and
a quantitative method (study three). Each method design was used based on the nature of the research question for each study (Teherani et al., 2015; Creswell and Poth, 2018). A summary of research methods for each study included in this thesis is shown in Figure 2.1.

The current researcher used the second and third studies of method designs to collect data from Libyan HCPs, cancer patients, and family caregivers regarding; views, perceptions, attitudes, and knowledge about cancer pain and opioids for CPM.
2.3 Mixed-methods design for this study

2.3.1 Pragmatism

In mixed-methods design, pragmatism is a research philosophy that is based on epistemology, which means no single way to learn but several different ways of understanding the world as there are multiple realities (Saunders et al., 2012). In other words, it allows the researcher to not be constrained by a specific ontology;
however, be flexible and find the best way by mixing qualitative and quantitative methods to address research objectives (Feilzer, 2010a). Mixed-methods research can be done through many different designs based on a specific study’s purpose (Creswell and Clark, 2011). This design seeks to build on the strengths (Rauscher and Greenfield, 2009) and reduce the weaknesses (Palinkas et al., 2011) of qualitative and quantitative approaches to draw the inferences that can lead to more understanding of the topic being studied.

2.3.2 Justification for using pragmatism in this study

A pragmatic approach was used to support a mixture of methods (qualitative and quantitative studies) conducted by the researcher (Feilzer, 2010b). Another reason for adopting this approach was that it is the best approach to present the researcher’s view of multiple realities open to practical inquiry. Thus, this pragmatic approach was used to solve practical issues in the real world (Dewey, 1925; Rorty, 1999; Creswell and Clark, 2017).

A pragmatic paradigm, which centres on methodological assumptions, was more appropriate for exploring the multiple perspectives of included participants (Feilzer, 2010a; Creswell et al.; Biesta, 2010; Creswell and Clark, 2011). Therefore, the pragmatist paradigm suitably reflects the philosophy behind the current study. Particularly, the pragmatist paradigms were more suited to the current research for many reasons. Firstly, the practical results were considered important in study two (qualitative study) and study three (quantitative study) of the current research. Secondly, pragmatists aim to consider what work should address a specific research question (Onwuegbuzie and Johnson, 2006). This was similar to the aim of study two, which was intended to explore and understand Libyan HCPs, patients, and family caregivers’ views considering cancer pain and its management, and the aim of study three in the present study, which was to evaluate nurses' and physicians' knowledge, attitudes, and potential barriers regarding CPM in Libya.
Moreover, for generalisation purposes, pragmatic paradigms, in conjunction with methodological assumptions, often collect flexible qualitative data from small sample sizes and analyse them using a combination of inductive and deductive reasoning and utilising coding data analysis (Easterby-Smith et al., 2012; Saunders et al., 2016). Therefore, this method is deduced as a good fit to answer the research question of study two in the present study. Additionally, as pragmatisms usually involve mixed-method designs, this can give a more comprehensive view of a specific research problem when these designs are drawn together than if just one epidemiolocal or ontological assumption was used (Mason, 2006).

### 2.3.3 The rationale for adopting a mixed-methods design in this study

A mixed-methods design was the most suited design for addressing the research questions and the aims (See sub-sections 1.5.2 and 1.5.3 in Chapter 1) of this study for many reasons. Firstly, this design is usually used to triangulate the findings by combining qualitative method and quantitative research so that both integrated approaches may be mutually corroborated and the weaknesses of each approach might be avoided, as the strength of both approaches can be combined in one research, creating an effective research strategy (Creswell and Clark, 2011; Mason, 2006; Johnson and Onwuegbuzie, 2004). Secondly, it is a belief in doing what can work best for achieving a wanted result (Bryman, 2006). Furthermore, pragmatism can support researchers in choosing between different methods required to address a specific research question, and it helps determine which methods are the best for the target study (Morgan, 2007).

Additionally, collecting data through open-ended questions (i.e., “questions that do not provide participants with a predetermined set of answer choices, instead allowing the participants to provide responses in their own words”) (Allen, 2017), for qualitative data and close-ended questions (i.e., questions that provide the person responding to them with a fixed number of responses are constricted in the range of options participant has to choose from as answers) (Lavrakas, 2008), for quantitative data in the same study has proved to be an effective approach in
research (Creswell, 2013b). Additionally, in this design, qualitative data were used to generate hypotheses, and the quantitative approach was used to test the generated hypotheses within a single study (Bryman, 2006). The researchers' design was more aligned with the present mixed-methods study, as it involved collecting and analysing qualitative data in study two, followed by the quantitative data in study three, based on the initial qualitative results (Creswell and Clark, 2011). Another rationale behind adopting this design was that the present researcher brings together a more comprehensive account of the research area that he is interested in by employing both qualitative and quantitative approaches to allow him to develop a comprehensive understanding of the experience of cancer pain and its management from HCPs, cancer patients, and family caregivers’ perspectives (Creswell and Plano Clark, 2017; Bryman, 2006). Likewise, employing qualitative and quantitative methods in a single study can enhance the integrity of the findings (Bryman, 2006). Finally, this mixed-methods design has been commonly developed and employed in health and social sciences (Bergman, 2008).

2.3.4 Classification of a mixed-methods design

The mixed-methods design has been classified into three major types: convergent parallel design, explanatory sequential design, and exploratory sequential design (Creswell and Plano Clark, 2017). According to Creswell and Plano Clark (2017), the method of selecting the mixed-methods design is based on three decisions, which are: the order in which data will be firstly conducted (i.e., the timing of the use of data collection), how the two datasets will be connected or related (i.e., the approach to mixing both datasets), and the weight of both qualitative and quantitative methods (i.e., the emphasis given to each method). Thus, in this mixed-methods study, the exploratory sequential design was used because the qualitative data were collected first.

2.3.4.1 The exploratory sequential design

According to Creswell and Clark (2017), exploratory sequential mixed-methods design is an approach that consists of collecting and analysing qualitative data
and collecting and analysing quantitative data in a sequence of phases. In this design, the priority is usually given to the qualitative study; the researcher collects qualitative data, then the data can be analysed, and the results of this will direct the next study (quantitative study). In the first study of this design, the qualitative analysis provides “critical fodder” for developing research questions for the second study (quantitative study). Both qualitative and quantitative methods are usually integrated at the interpretation phase in a single study (Creswell and Clark, 2017; Teddlie and Tashakkori, 2011; Onwuegbuzie et al., 2010). An exploratory sequential design is used when a phenomenon needs to be explored, especially if the aim is to generate items that can be included in a particular questionnaire, which will be tested and applied in study three (quantitative study) in this thesis (Hanson et al., 2005; Doyle et al., 2016a).

In this study, an exploratory sequential mixed-methods design (See Figure 2.2) was adopted. As mentioned in section 2.4, this thesis consists of three studies, including a systematic review, qualitative research, and quantitative study. Mason (2006); stated that combining two methods could give a more comprehensive view of the research problem than one specific paradigm. Each technique used in studies two and three in this thesis was based on each study’s aim and objectives. This method is recommended because it helps the researcher generate hypotheses that can be tested quantitatively. Based on the results from a qualitative study, a research instrument (questionnaire) was developed, which was used in quantitative research (study three) for more investigations (Bryman, 2016).
2.3.4.1.1 Justification of using an exploratory mixed-methods design

Although several mixed-methods designs are available to collect required information (Creswell and Clark, 2017), an exploratory sequential mixed-methods design was chosen to be used in this study for many reasons: Firstly, it has been stated that each design in the mixed-methods research can be selected depending upon the objective of a specific study, the adoption of research strategy, and the availability of time length for data collection and analysis (Creswell and Clark, 2011). This study aimed to explore Libyan HCPs’, patients’, and caregivers' views about cancer pain and its management. Secondly, according to Creswell and Clark (2011), an exploratory mixed-methods design is useful when either the researcher or the research problem is concerned with qualitative data, as this can give the study strengths and advantages of the qualitative approach. Thirdly, as a research method, this design is the most appropriate design for this study because the present researcher was aiming to develop and adopt an appropriate questionnaire for the quantitative study and to generalise the findings from the qualitative study to a larger sample gathered during the quantitative research (Creswell et al., 2003; Biesta, 2010), as well as identifying important variables to quantitative study as such variables were unknown. The current research has identified new emergent research questions based on the qualitative study’s results, which were not answered within qualitative data (Creswell and Clark, 2011; Morgan, 2007). In addition, the exploratory sequential design is suitable because it facilitates the collection of one type of data at a time, which is in keeping with the plan of the current study.
2.4 Study Design Specifics

2.4.1 Systematic Review (study one)

2.4.1.1 Review Question
What are healthcare professionals,’ patients,’ family caregivers,’ and the public’s attitudes and knowledge about cancer pain and opioids for CPM?

2.4.1.2 Review Aim
To systematically review research on the nature and impact of attitudes and knowledge towards CPM.

2.4.1.3 Review Hypothesis
HCPs, patients, family caregivers, and the public’s negative attitudes and knowledge about cancer pain and opioids for CPM might be barriers to effective CPM worldwide.

2.4.1.4 Review Methods

2.4.1.4.1 Protocol and registration
The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement was used as a guideline for reporting the findings in this Systematic Review (SR) (Moher et al., 2009; Liberati et al., 2009; Moher et al., 2015). The protocol for this review was registered with PROSPERO on 12th December 2018 (no. CRD42018117625).
2.4.1.4.2 Adapting PICO into PCO for the current SR

Study one in this thesis was SR; the first stage involved in this SR was developing a research protocol. This explains methods to perform SR and comprehensive inclusion and exclusion criteria. Notably, it addresses the types of studies, participants, and interventions, as well as the types of outcome measures (PICO), which have been developed for quantitative review questions (Bettany-Saltikov, 2012; Ostaszkiewicz and O’Connell, 2007; Riesenberg and Justice, 2014; Stern et al., 2014). However, PICO has been slightly changed to PCO (Population, Context, and Outcome) to work appropriately for this current method (Riesenberg and Justice, 2014; Stern et al., 2014). Moreover, the PCO framework worked effectively with the present SR question as no interventions or comparisons needed to be looked for. Therefore, the modified PCO framework was used in study one (systematic review) in this thesis. (See Table 2.1).

Table 2-1 Example of SR: PICO modified to PCO (Population, Context, and Outcome)

<table>
<thead>
<tr>
<th>Population</th>
<th>Adult patients with cancer, family caregivers, and HCPs aged (&gt; 18) years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>Cancer pain and opioids</td>
</tr>
<tr>
<td>Outcome</td>
<td>Attitudes and knowledge</td>
</tr>
</tbody>
</table>

Source: Adapted from Butler et al. (2016).

According to the Centre for Reviews & Dissemination’s (CRD’s) guidance, six elements of review should be identified by the reviewers; these are eligibility criteria for considering studies, search strategy for identification of studies, study selection methods, data extraction methods, study quality assessment methods, and data synthesis methods (CRD, 2009; Gough et al., 2017). These elements are mentioned in detail in the following six sub-sections:

2.4.1.4.3 Eligibility criteria for considering studies for this SR (PCO)

Five main aspects of studies have been identified by some scholars that should be fully specified to develop well-defined study eligibility criteria; including types of studies (study designs), types of participants/population, types of intervention (context), comparison, and types of outcome measures (Moher et al., 2009; Littell
et al., 2008). In the current SR, as previously mentioned, PICO has been modified to PCO (Population, Context, and Outcome) as it works appropriately for this method. More details about those eligibility criteria are presented in the following four sub-sections. The inclusion and exclusion criteria are listed in Table 2.2 below.

Table 2-2 Summary of inclusion and exclusion criteria

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Adult (&gt; 18 years of age).</td>
<td>• Children and adolescents (&lt; 18 years of age).</td>
</tr>
<tr>
<td>• Studies wrote in English.</td>
<td>• Studies not in English.</td>
</tr>
<tr>
<td>• Cancer pain.</td>
<td>• Pain-related to non-malignant disease.</td>
</tr>
<tr>
<td>• Studies include attitudes and knowledge towards cancer pain and opioids.</td>
<td>• Barriers are not related to attitudes and knowledge.</td>
</tr>
<tr>
<td>• Published literature only.</td>
<td>• Unpublished research.</td>
</tr>
<tr>
<td>• Cross-sectional design.</td>
<td></td>
</tr>
</tbody>
</table>

2.4.1.4.3.1 Types of studies (study designs)

The inclusion criteria include evidence from studies including cancer patients, family caregivers,’ and HCPs’ attitudes and knowledge towards cancer pain and opioids. Studies that include adults (> 18 years), including barriers to pain management relating to attitude and knowledge, studies based on a cross-sectional design, and studies published in English were included. In contrast, studies with non-malignant pain, barriers not related to attitudes and knowledge, studies including children and adolescents (< 18 years), and studies not published in English were excluded.

Originally the plan was to conduct a qualitative SR, and the initial search found just one paper with a qualitative design (De Silva and Rolls, 2011). In contrast, 37 quantitative studies were found based on cross-sectional design (Riddell and Fitch, 1997; Cohen et al., 2005; Colak et al., 2014b; McCaffery and Ferrell, 1995; O’Brien et al., 1996; Hollen et al., 2000; Howell et al., 2000b; Wells et al., 2001; Bernardi et al., 2007b; Yildirim et al., 2008; Kassa and Kassa, 2014; Shahnazi et al., 2012; Shahriary et al., 2015; Utne et al., 2018; Zhang et al., 2015; Breuer et al., 2011a; Kim et al., 2011; Yanjun et al., 2010a; Eftekhar et al., 2007b; Elliott
and Elliott, 1992b; Ger et al., 2000b; Gallagher et al., 2004; Jeon et al., 2007; Larue et al., 1995; Elliott et al., 1995; Von Roenn et al., 1993; Furstenberg et al., 1998; Srisawang et al., 2013; Jho et al., 2014; Darawad et al., 2017b; Kaki, 2011; Vallerand et al., 2007b; Fazeny et al., 2000; Lou and Shang, 2017; Elliott et al., 1996; Levin et al., 1985; Larue et al., 1999). Therefore, the emphasis has been changed to conducting quantitative SR with a cross-sectional design.

2.4.1.4.3.2 Types of participants/population
The review was restricted to considering attitudes and knowledge towards cancer pain and opioids of adult patients with cancer, family caregivers of patients with cancer, and HCPs aged 18 years old and above. Those studies, including children and adolescents less than 18 years of age, were excluded from this review.

2.4.1.4.3.3 Types of Contexts
The contexts included in this review were restricted to cancer pain and opioids. Precise definitions of these contexts have been described in section 1.7, Chapter 1.

2.4.1.4.3.4 Types of outcome measures
The outcome measures were the attitudes and knowledge towards cancer pain and opioids. The included studies in this systematic review used different questionnaires (e.g., the Barriers Questionnaire) ranging between 0 and 5 (0 = no barriers and 5 = the highest barrier scores) to assess participants’ knowledge and attitudes towards CPM.

2.4.1.4.4 Search strategy for identification of studies
Two steps were conducted by the researcher, as these steps are highly recommended during study selection that has been retrieved from electronic databases (CRD, 2009; Glasziou et al., 2001). Step one: Initially, only the title and abstract of each study were carefully read to include or exclude the study.
The particular study was included to be rechecked in the second step if it was difficult to decide whether to include or exclude it due to insufficient information provided in the title or abstract. Step two: Studies identified in step one were read in full, and the information was synthesised into the SR. The researcher and his supervisors performed the selection process. EndNote X7 was used to manage all retrieved studies and to identify and eliminate/remove duplicated studies. The articles included in this review were assessed based on the inclusion criteria presented in Table 2.2. The decision to exclude studies from this review was independently obtained based on the exclusion criteria (See Table 2.2). Excluded articles and reasons for exclusion are documented in Appendix (5).

It has been stated by Brunton et al. (2017) that many different sources can be searched to collect relevant studies for a specific review. These include searching bibliographic databases, hand-searching, and checking reference lists of relevant studies (Gough et al., 2017; Brunton et al., 2017). Therefore, an additional hand-searching strategy was applied, including Google, Google Scholar, and checking reference lists of all selected studies to ensure any relevant references were assessed for inclusion. The following keyword search terms used in Google and Google Scholar were 'Knowledge of and attitude towards cancer pain.'

The search terms were based on population, contexts (context pain, context opioids, and context cancer), and outcome (Butler et al., 2016). To identify publications for inclusion in the present review, the keywords employed are shown in Table 2.3. For more information regarding search strategy, see Appendix (1). In order to develop a well-defined search strategy, two crucial elements should be determined: search sources and search terms (Brunton et al., 2017). Search sources and search terms were critically identified and justified in two sub-sections, as mentioned below.

### 2.4.1.4.4.1 Search sources

Many search sources can be used to find studies relevant to a specific review, mainly bibliographic databases, hand searching, reference list checking, and web searching (Brunton et al., 2017; Littell et al., 2008). As the search process should retrieve as many relevant studies as possible (CRD, 2009), in this review, all six
electronic databases (the Cochrane Library, MEDLINE, PsycINFO, CINAHL, Web of Science, and EMBASE) were searched in July 2018. Additionally, hand-searching of Google, Google Scholar, and reference lists of relevant studies were conducted to cover all available related studies.

2.4.1.4.2 Search Terms

It has been stated that search terms should be identified based on the components of the research question (Khan et al., 2011). The initial search strategy has been used to make a preliminary search of relevant databases for titles employing the search terms and words in the text. In any SR, search terms must be determined based on population, intervention, comparison, and outcome (CRD, 2009). However, with reference to the current review, the search term was determined based on population, contexts (context-pain, context-opioids, and context-cancer), and outcome (Butler et al., 2016). To identify publications for inclusion in the present SR, the keywords employed in the search of 6 electronic databases were shown in table 2.3. A librarian was involved in assisting in developing such search terms. For more search information strategy, see appendix (1).

Table 2-3 Example of PCO Search Terms

<table>
<thead>
<tr>
<th>population</th>
<th>Context-Pain</th>
<th>Context-Opioids</th>
<th>Context-Cancer</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>adults*</td>
<td>exp PAIN/ exp Pain management/ pain* Management* management*.</td>
<td>exp Analgesics/ exp morphine/ exp narcotics/ morphine* Buprenorphine* opioid* diamorphine* opioid* Dihydrocodeine* opiate* alfentanil* fentanyl* oxycodeone* hydromorphone*</td>
<td>Cancer* tumor* carcinoma* leuk? emia*</td>
<td>Attitude* Knowledge* View* opinion* concern* feeling* idea* perception* perspective* experience* perceive* standpoint* expectation* preference* need* satisfaction* interaction*</td>
</tr>
</tbody>
</table>

Source: Adapted from Butler et al. (2016).
1.3.1.3.4 Data Extraction

It has been recommended by the Centre for Reviews and Dissemination (CRD) that the extraction of data should be reliable and unbiased (CRD, 2009). Nevertheless, it is predisposed to human error, and subjective decisions are usually required. As accepted, there should be at least one researcher to extract the data with a second reviewer checking the data extraction form independently for accuracy and inclusiveness (Littell et al., 2008; CRD, 2009). Therefore, two reviewers developed and piloted the data extraction form independently (S.M. & S.P.). A third reviewer (M.B.) was involved in reconciling any disagreements. The process of data extraction forms can potentially reduce bias and improve validity and reliability (CRD, 2009). In this review, the data extraction form was adapted from the Centre for Reviews and Dissemination (CRD), University of York (CRD, 2009) – see appendix (2).

The data were extracted for each of the 36 included studies. The form of data extraction should be designed to fit the question and aim of a specific review. Hence, it is essential to design a form that extracts the data relating to five elements: study design, participants, interventions, comparisons, and outcomes (CRD, 2009; Littell et al., 2008). In addition to these elements, it is advised that the form extracts identifiable data from each included study, including the first author of the study, its publication date, and place of study (Littell et al., 2008; CRD, 2009). Therefore, the extraction of data from the included studies was based on the names of authors, year, country of publication, design of the study, the aim of the study, sample size, the setting of study, mean age, sex ratio, type of measurements, type of sample, type of cancer, main findings, and the quality of study as outlined in Table 3.2 in chapter 3. It has been recommended by CRD (2009) that researchers should pilot the data extraction form before the process of extraction is begun in order to ensure the form’s capability to extract all the necessary data. Consequently, this review’s “data extraction form” has been piloted in the first five studies meeting the inclusion criteria before beginning the extraction process.
1.3.1.3.5 Quality Assessment of the Included Studies

The reason for using the critical appraisal process for the included studies was that studies could be published with variable levels of methodological rigour among the many research articles, and some research may be open to bias; hence their results could be unreliable (Burls, 2009). Another reason is to enable an in-depth understanding of each included study and ease a questioning, critical method to the study’s findings (Hannes et al., 2012). Hill and Spittlehouse (2001) stated that SRs and randomised controlled trials (RCTs) should be critically appraised as they are not automatically of good quality. It has been strongly recommended that the assessment of quality should be done separately by at least two reviewers (Pearson et al., 2011; JBI, 2016; Lockwood et al., 2015; Moola et al., 2017). Hence, all 36 included studies have been critically appraised by two researchers (S.M. & S.P.) independently using the Joanna Briggs Institute Analytical Cross-Sectional Studies Assessment (JBI-ACSSA). See appendix (3). To reconcile any differences, a third reviewer (M.B.) was involved. The JBI-ACSSA tool was chosen as it is more coherent and appropriate for the study design of included quantitative studies (Moola et al., 2017; JBI, 2016). The assigning score for the data quality was performed as 1 point for each applicable item, with a score of 7 as the maximum score (Poudel et al., 2018). An overall score was calculated for each included study, and the rating of quality was judged as good (6/7 and 7/7), fair (3/7 to 5/7), or poor (< 3/7) (Goldsmith et al., 2007) – see appendix (4). No score was below 3/7, so no study was excluded based on the quality assessment only.

1.3.1.3.6 Analysis of included studies

The primary analysis was a comparison of important similarities and differences between participants/population (HCPs, cancer patients, caregivers, and the general public) and the outcome measures (Attitudes and knowledge about cancer pain and opioids). All comparisons made were narratively described and summarised in tables (Popay et al., 2006; CRD, 2009). Due to the identified studies being too heterogeneous clinically (clinical processes differed): Population (e.g., sex, age); geography (e.g., UK, USA, China), no meta-analysis was undertaken. As a consequence, no sensitivity analyses were required.
1.3.1.4 Justification for conducting this systematic review

Study one (systematic review) was required as it enabled the researcher to understand better the knowledge and attitudes of HCPs, patients, family caregivers, and the general public, which often resulted in barriers to effective CPM. Furthermore, this review was necessary to search for gaps in the existing knowledge (Smith et al., 2009). Moreover, it was needed to place research in a particular context (barriers to effective CPM) and to ensure that new research was implemented and designed in the most appropriate method (Clarke, 2007). Thus, based on the results from this review (study one), study two (qualitative study) was conducted. The themes from this review’s outcomes guided the researcher while conducting study two in this thesis and developed the interview questions and data analysis. The current review was appropriate to answer the research question for study one, and it enabled the researcher to decide on a more reliable basis than an individual study (Liberati et al., 2009; Aromataris and Pearson, 2014).

2.4.2 Qualitative Study (study two)

2.4.2.1 Research Question

What are the views of Libyan healthcare professionals, patients, and caregivers about cancer pain and its management?

2.4.2.2 Study Aim

To explore and understand Libyan HCPs’, patients,’ and family caregivers’ views about cancer pain and its management.

2.4.2.3 Study Hypothesis

Libyan HCPs’, patients,’ and family caregivers’ views, beliefs, attitudes, and knowledge about cancer pain and opioids might affect CPM in Libya.
2.4.2.4 Qualitative Method

2.4.2.5 Justification of using the qualitative method

The qualitative method was utilised in study two because it examines the individual meanings of the personals' experiences and their action (Polgar and Thomas, 2000). Furthermore, the qualitative study aims to understand individuals' opinions without creating any value judgments during the data collection (Carter and Henderson, 2005). A qualitative method was used with a descriptive qualitative design in study two of this thesis (Sandelowski, 2010; Neergaard et al., 2009). As described in an earlier chapter, knowledge about potential barriers to effective CPM due to HCPs,’ patients’ and caregivers’ views, perceptions, beliefs, and attitudes were documented in many studies from different countries (Makhlouf et al., 2020; Al-Ghabeeesh et al., 2020; Kwon, 2014a). In Libya, there is no published research was found on this subject. Bowling (2014) has recommended that a qualitative method should be conducted when there is a lack of information regarding a specific phenomenon of interest, once the phenomenon is complex or sensitive, and when the phenomenon needs to be explored inductively. Thus, the qualitative method was useful for understanding the specific phenomenon through the experiences and perspectives of individuals (Collis and Hussey, 2014). Study two sought to fill the lack of published data and information surrounding Libyan perceptions of CPM.

The research question in study two is in keeping with qualitative studies, as it examines people’s personal experiences and their actions in everyday lives (Kinmond, 2012; Polgar and Thomas, 2013). Therefore, this method was the most appropriate design in order to achieve the richness and depth of the data to answer the research question of study two (Creswell, 2013b). The current researcher needed a detailed understanding of the views of Libyan HCPs, patients, and caregivers about cancer pain and its management by attending to individual accounts of those participants who have direct experiences associated with this phenomenon (Toles and Barroso, 2014), which could only be established by talking to people directly (Creswell, 2013b).
2.4.2.5.1 Justification for choosing a qualitative description

Selecting one of the methodological research designs is based on what the methodology itself is attempting to achieve (Teherani et al., 2015; Creswell and Poth, 2018). Thus, the process in the current study began with matching the research question of study two to the aims of the five most commonly used qualitative designs, which are ethnography, phenomenology, grounded theory, narrative, and case study (Neuman, 2011; Chase, 2011; Moran, 2002; Creswell, 2007). The current researcher faced a challenge while selecting a qualitative design, as at the beginning, he thought phenomenology would be an appropriate design for study two (qualitative study) in this thesis. However, after the extensive reading of the literature and consulting with supervisors and qualitative researchers, the present researcher found that none of those mentioned above research designs were suitable to answer the research question of study two.

Furthermore, there was evidence that some researchers were criticised for wrongly choosing “phenomenology” as a research design in their studies in the past (Crotty, 1996; Paley, 1997). Therefore, the researcher looked for an appropriate qualitative design to fit his study’s aim and question. The research question of study two, to explore the views of Libyan HCPs, patients, and caregivers about cancer pain and its management, guided the researcher in choosing the appropriate design. A qualitative description was chosen for the research design of this study because it aims not to describe the lived experiences of people, as would be expected in “phenomenology,” or to explain or to seek to understand a specific phenomenon as in the case in “ethnography. In addition the study does not intend to discover phenomenon as this is usually a case in “grounded theory,” or to explore a particular process as in “case studies” (Doody and Bailey, 2016). However, it seeks to discover and understand a specific phenomenon, a process, or the perspectives and worldviews of the individuals involved (Caelli et al., 2003; Merriam, 1998). Although the qualitative descriptive design is considered less interpretative than other forms of qualitative designs (e.g., phenomenology), it is not free of interpretation and produces findings close to the data (Sandelowski, 2010). Sandelowski (2000); described it as “All inquiry entails description, and all description entails interpretation” (p. 335). It has been stated that the use of a qualitative descriptive design is
appropriate where information is required directly from people who are experiencing a specific phenomenon under target investigation, especially where resources and time are limited and perhaps as part of a mixed-methods study (Neergaard et al., 2009; Bradshaw et al., 2017). This design is frequently used within mixed-methods studies, which can help with questionnaire development in exploratory studies and corroborate and validate findings in convergent studies (Doyle et al., 2016b).

The fundamental aspect of qualitative descriptive design is valuable in its own right (Bradshaw et al., 2017). The most frequently proposed rationale for using a descriptive design is to provide a straight descriptive summary of experiences and perceptions (Sandelowski, 2010), mainly in areas where little is known about the phenomenon of investigation. This is in line with the aim of study two (qualitative study) in this thesis.

2.4.2.5.2 Description of the inclusion and exclusion criteria

The inclusion criteria were adults over 18 from the following groups; Libyan oncology doctors and nurses, advanced cancer patients, and caregivers. Patients eligible to participate had been diagnosed with advanced cancer at stages (II & III and IV), associated with pain based on their hospital records, and patients who were waiting for chemotherapy or radiotherapy or waiting to see their doctors. Patients’ records were screened by staff at this site (oncologist practice manager and oncology nurse) to identify patients who were meeting the eligibility criteria for this study. Caregivers were adults who had been caregivers for a minimum of 3 months and travelled with their patients to Egypt for treatment; HCPs had worked in an oncology setting for more than six months. Only participants who could give written consent to participate and without communication difficulties were included.

In contrast, patients under 18 years of age with cancer pain were excluded. Other exclusion criteria were considered, including patients with learning difficulties and
patients with psychological distress. Adult participants who have to lack the capacity to give informed consent also were excluded from this study.

2.4.2.5.3 Research sampling, participants, and settings
Purposive sampling was used in this study to recruit individuals with CPM experience. Purposive sampling aims to sample a group of individuals with enough experience and knowledge of a specific phenomenon of interest, the same purpose of the current study (Saunders et al., 2016; Bowling, 2014). Bryman (2016) stated that purposive sampling could be selected when specific characteristics or features are needed, enabling the researcher to explore the phenomenon of interest in detail and understand the central themes in a particular study. To achieve purposive sampling, participants were selected as those target participants who can best inform a research question and enhance understanding of the phenomenon of interest (Creswell, 2009; Kuper et al., 2008). Thus, Libyan cancer patients, who were seeking oncology treatment at an oncology centre in Egypt, their family caregivers, and Libyan HCPs (oncologists and oncology nurses), who were having training courses, were recruited.

2.4.2.5.4 Recruiting procedure
All participants (Libyan patients, caregivers, and HCPs) were recruited through either a receptionist or an oncology nurse in Alexandria, Egypt. This setting was chosen for the following reasons: firstly, as Libya was on the Foreign and Commonwealth Office's list of places, they advised "against all travel" due to Libya's critical situation (war). Hence this setting was chosen as an alternative. Secondly, Libyan patients have been seeking oncology treatment abroad since 2011, as the healthcare system was heavily damaged during and after the Libyan revolution that took place between February and December 2011 (El Oakley et al., 2013a; Daw et al., 2016). Furthermore, as new oncology centres have been established recently in Libya, oncology HCPs were sent to Egypt and Jordan for training.
The researcher started recruiting potential participants by contacting the Specialized Universal Network (SUN) of oncology in Egypt, and then the Libyan Consulate of Alexandria. The permission letters for data collection were sent to the Libyan consulate in Egypt and the SUN oncology centre in advance to get ethical approval - see appendices 6 and 7 (for recruiting Libyan patients and caregivers) and appendix 8 (for recruiting Libyan HCPs). Similarly, permission letters were sent to the Libyan Consulate of Alexandria, Egypt, for authorisation (See appendices 6 and 9). Then, the researcher had a meeting with the research coordinator (nurse/receptionist) and the medical director in the SUN oncology centre in Egypt; also, a meeting between the researcher and the Libyan Consulate members had a place in the Libyan Consulate in Alexandria, Egypt to explain the aim of research and its design and to recruit for this study.

The University approved the ethical approvals of Leeds Research Ethics Committee – see appendix (17), the SUN of oncology in Egypt, for patients and caregivers – see appendix (19), and HCPs – see appendices (20 and 21). Furthermore, an authorisation letter was given by the Libyan Consulate of Alexandria, Egypt – see appendix (18). Following ethical approvals, an invitation letter was given to all participants via an oncology nurse or receptionist to participate in this study (See Appendix 10).

2.4.2.5.5 Qualitative sample size

In qualitative studies, the sample size is typically small, focusing on the volume and richness of information collected (Patton, 2002). Morse (1991a) emphasised that the sample size in qualitative studies involving ethnography and grounded theory approaches could be averaged between 20 and 50 participants. While Creswell (2013b) stated that the ideal sample size figure should range from 5 to 30 based on the type of approach that a study follows (e.g., phenomenology or grounded theory). According to Patton (2002), there is no rule for sample size in qualitative studies. Thus, the sample size can be based on “what you want to know, the purpose of the study, what is at stake, what will be useful, what will have credibility, and what can be done within the available time and resources” (p. 244). As there was no specific set figure for sample size in qualitative studies,
Most qualitative studies were not focused on sample size, but the focus was on the general conception that qualitative research aims to generate rich and in-depth data (Creswell, 2013b).

It has been argued that in judging sample size as either too large or too small, an appropriate sample size for a qualitative study depends on the aim of the research (Sandelowski, 1995). Adequate sample size can be determined in qualitative research when the sample allows the study’s objective to be achieved (Sandelowski, 1995; Morse, 1991b) and sufficiently answers the research question (Marshall, 1996). According to Sim et al. (2018), decisions on the number of participants included in a qualitative study can be a priori or a posteriori made through an adaptive approach, by reference to saturation. However, the sample size should be proper and sufficient to explain the studied occurrence, regardless of the method of sampling used.

The sample size can be determined by information saturation, which means that the sampling will be terminated when no more new information is forthcoming, and therefore redundancy will be the primary criterion (Lofland and Lofland, 1995; Bryman, 2004). The concept of “saturation,” which is borrowed from grounded theory, has been used by many qualitative researchers to assess whether or not the sample size is proper in a qualitative study (Malterud et al., 2016; Sandelowski, 1995). Hence, the sample size of this qualitative study was 36 participants, which was more than sufficient as the interviews were in-depth, face-to-face, and semi-structured. A sample size of more than 36 participants was not accepted as time-consuming for data analysis as the analysis usually takes more time, and more participants would not contribute to the effectiveness of the study. This study’s analysis of these 36 transcripts revealed that data saturation had been reached and recruiting further participants was unnecessary; more new qualitative data would produce redundant information (Fusch and Ness, 2015).
### 2.4.2.5.6 Qualitative data collection procedure

The data collection process started on 16\textsuperscript{th} June 2019 and ended on 26\textsuperscript{th} September 2019. A total of 41 participants were approached; 5 patients were excluded as they were in the early stages of cancer. No participants declined, resulting in a total of 36 participants that met the inclusion criteria being recruited based on data saturation limitations (Corbin and Strauss, 2008). To avoid bias and ensure consistency and reliability of collected information, the researcher conducted semi-structured face-to-face interviews with Libyan patients, caregivers, and HCPs, and the findings were reviewed by two supervisors (Morse et al., 2002).

One-to-one semi-structured interviews were conducted with a total of 36 participants: 18 Libyan cancer patients, six caregivers, and 12 Libyan HCPs (oncologists and oncology nurses) who were either seeking oncology medication or doing training courses at the SUN oncology centre in Egypt were conducted by the researcher in this study. The interviews last approximately 30 to 45 minutes in duration. Questions for participants are presented in appendices 14, 15, and 16. At the same time, a background information sheet for participants (See appendix 12) was distributed during the interviews, which took about 5 minutes to complete.

All interviews were conducted in Arabic, and they were audio-recorded. A semi-structured interview topic guide and participants’ questions were developed based on the current literature, our (study one) recent systematic review (Makhlouf et al., 2020), and the study aims to guide the researcher and ensure consistency (Hadi et al., 2017).

In qualitative health research, interviews have probably become a common method of collecting data over the last two decades (Hollway and Wheeler, 2010; Saunders et al., 2016; Green and Thorogood, 2018). Qualitative interviews are defined as a method of conversations directed, more or less, towards the researchers’ specific needs for gathering their data (Green and Thorogood, 2018). A research interview can be a way of asking “purposeful questions” and
listening carefully to the interviewee, as this can help the researcher explore the answers further (Saunders et al., 2016). Therefore, interviews can help the interviewer collect reliable and valid data relevant to a specific research question or objective (Saunders et al., 2016).

The aim of the interview is the finding informants’ thoughts, feelings, and perceptions. In qualitative research, semi-structured or focused interviews are often applied for data collection. Unlike quantitative research, the questions usually focus on the topic areas or concerns that need to be covered and follow the inquiry lines (Hollway and Wheeler, 2010). As a consequence of cancer and pain related to cancer can be sensitive issues for both patients and their families (Kagawa-Singer, 2011; Silbermann and Hassan, 2011); also, as patients’ cultural and belief views and as patients privacy, one-to-one semi-structured interviews with Libyan cancer patients, their caregivers, and Libyan HCPs were conducted by the researcher in this study. The reasons for adopting semi-structured interviews for data collection in this study are presented in the following sub-section.

2.4.2.5.7 Semi-structured interviews

In semi-structured interviews, the researcher should prepare a list of themes and possibly some key questions to be covered (Saunders et al., 2016). The order of questions can be varied dependent on the flow of conversation during the interview. A semi-structured interview has the advantage of great flexibility, so an additional question can be added, as this may be needed to explore a specific research question in a particular area (Saunders et al., 2016). This can enable the researcher to access new areas and make their data richer by discovering issues and concerns that were not covered before (Pope and Mays, 2006). Saunders et al. (2016) stated that “the nature of the questions and the ensuing discussion mean that data will be captured by audio-recording the conversation or perhaps note-taking” (p.391). However, the concern issue in this interview is that time consuming, as a long time can be taken to conduct and analyse the data (Bryman, 2016).
It has been argued that the collection of data in a qualitative study is best achieved using audio and/or video recording (Barker et al., 1994; Polgar and Thomas, 1991), as this can allow all the information that needs to be collected to be free from error and omission (Bottomley, 1998). An audio recorder was used during qualitative data collection to prepare transcripts allowing the interview to be accessible for an independent analysis. Before starting recording, all participants were asked if they were happy using an audio recorder, and their consent was taken. The interviews were conducted in the participants’ language (Arabic) to express their feelings as much as possible without hesitation (Rice and Ezzy, 1999).

The interviews also have disadvantages, such as being time-consuming and expensive (Bryman, 2016; Denscombe, 2014). However, within this study, the number of participants was reasonably small (36 participants), and there were sufficient resources and time. Another disadvantage can be related to practical considerations affecting data collection. For example, when the interview takes place in a hospital, the interview could be disrupted by medical staff as the hospitals are always busy, so a quiet location for the interview cannot always be found (Hollway and Wheeler, 2010). Manderson et al. (2006) stated that the social context interviews could affect the relationship between research and researcher. Therefore, all interviews were conducted in a private, quiet room. Another consideration considered when transcribing and analysing the data from interviews was that it is time-consuming. It was stated that the transcription of one hour of tape recording usually takes between 5 and 6 hours to be completed (Bryman, 2016).

2.4.2.5.7.1 Justification of using the semi-structured interview

There are many circumstances in gathering data using a semi-structured interview (Dawson, 2009). One of these is the purpose of the research (Saunders et al., 2016). Semi-structured interviews can be included in the research design when a researcher is undertaking a study that provides an exploratory element (Saunders et al., 2016; Dawson, 2009). The semi-structured interview was a good fit with the current research for many reasons: Firstly, semi-structured interviews
combine the strengths and eliminate the weaknesses of either exclusively structured or exclusively unstructured interviews. Secondly, such an interview is the most commonly used approach in health research for qualitative data gathering (Gill et al., 2008).

Furthermore, semi-structured interviews enhance the validity of responses because of their flexibility and opportunity, which can help probe further during the interview sessions (Langdridge, 2007). Moreover, it enables an in-depth meaning and insight, and understanding of the participant's perception or experience of one target research subject (Gill et al., 2008; Britten, 1999; Sheppard, 2004; Berg, 2007; Denscombe, 2014). This is consistent with the aim of study two in this thesis, which was to explore and understand Libyan HCPs’, patients’, and caregivers’ views considering cancer pain and its management. Dawson (2009) justified using semi-structured interviews as they offer the opportunity to explore new areas that were not previously considered by working through pre-set questions and the questions produced from a participant's responses. This was another reason for adopting a semi-structured interview for this study by the present researcher.

2.4.2.5.8 Pilot study for qualitative interviews

A pilot study can be defined as “a small-scale version of the planned study, trial runs of planned methods, or miniature versions of the anticipated research in order to answer a methodological question(s) and to guide the development of the research plan” (Prescott and Soeken, 1989, p. 60). To avoid or minimise issues that might arise during data collection, it is essential to conduct a pilot study as it helps refine the elements of instruments required for data collection (Bryman, 2016). This test also helps to ensure the questions included in the research instruments are reorganised and straightforward for both the researcher and target participants (Saunders et al., 2016).

Kuforiji (2017) stated the importance of conducting a pilot study because it served as an opportunity for the researchers to gain skills by practicing the interview and
to note the strengths and weaknesses of the employed methods to allow appropriate arrangements or modifications to be made. Such a pilot study can increase the researcher’s competency, and it provides an opportunity for enhancing interview techniques. The current researcher conducted a pilot study, and he attended an online course titled “Interviewing Skills” before starting study two in this thesis.

2.4.2.5.9 Qualitative data analysis
There are many different ways to analyse qualitative data (Lacey and Luff, 2001; Green and Thorogood, 2004; Easterby-Smith et al., 2012). The selection of an appropriate method is guided by the study’s objectives (Smith and Firth, 2011). It has been specified that choosing a particular method for analysing qualitative data depends mainly on “what the researcher wants to find out” (Easterby-Smith et al., 2012, p.163). In this qualitative study, the researcher aimed to explore Libyan HCPs’, patients’, and caregivers’ views about cancer pain and its management. Qualitative data analysis can be broadly divided into three categories: Sociolinguistic methods (discourse and conversation analysis), grounded theory, and thematic analysis (Smith and Firth, 2011). Thematic analysis has been defined as “a method for identifying themes and patterns of meaning across a dataset in relation to a research question” (Braun and Clarke, 2013, p.175). The researcher chose thematic analysis to analyse the collected data in this study, using the approach of Braun and Clarke (2006). The justification for using thematic analysis in this study is discussed in detail in the next subsection.

2.4.2.5.9.1 Justification for using thematic analysis
The reasons for selecting thematic analysis rather than Interpretative phenomenological analysis or other techniques were that thematic analysis is a method rather than a methodology. Furthermore, as it is “rigorous thematic approach can produce an insightful analysis that answers particular research questions” (Braun and Clarke, 2006, p.97). Moreover, thematic analysis is a very flexible approach; thus, it can be applied in all studies regardless of theoretical and epistemological perspectives (Braun and Clarke, 2006; Wilson and
MacLean, 2011; Howitt and Cramer, 2017). Additionally, thematic analysis is an easy and accessible method to apply because it does not need technical knowledge and thorough theoretical approaches and methods as grounded theory (Braun and Clarke, 2006; Wilson and MacLean, 2011). Besides, this analysis method offers a rich and in-depth narrative of data as it depends on the manifest and latent meaning of data for creating themes (Joffe and Yardley, 2004; Braun and Clarke, 2006).

In contrast, Interpretative phenomenological analysis aims to describe the meaning of the lived experience of a specific phenomenon (Smith and Shinebourne, 2012). Alternatively, content analysis is concerned with frequencies of occasions of specific categories, which has a tendency towards the quantitative end of the continuum of qualitative data (Dawson, 2002; Krippendorff, 2018; Vaismoradi et al., 2013). Conversely, discourse analysis aims to understand how individuals use a language to create and enact activities and identities (Weiss and Wodak, 2007). However, grounded theory analysis builds a theory about a specific social phenomenon (Green and Thorogood, 2018). Thus, based on all the reasons mentioned above and comparisons among approaches, it can thus be suggested that thematic analysis is the most appropriate method to analyse the collected data in study two in this thesis.

2.4.2.5.9.2 Process of data analysis

Although thematic analysis is widely used, there is no consensus on how to undertake such an approach rigorously (Braun and Clarke, 2006). Thus, there are various ways to conduct thematic analysis (Alhojailan, 2012; Javadi and Zarea, 2016), which means that there is also some misperception about the nature of the thematic analysis. For example, it is distinct from a content analysis (Vaismoradi et al., 2013). It is recognised that in order to know the practical aspects of how to do qualitative analysis, clear guidance is needed (Clarke and Braun, 2013). The thematic analysis offers a clear and practical framework for guiding the researcher to thematic analysis (Maguire and Delahunt, 2017). To guide, identify, and interpret patterns of meaning within the qualitative data analysis, a six-step process proposed by Braun and Clarke was used by the
researcher in this study (Braun and Clarke, 2006). These phases are Familiarisation, coding, searching, reviewing themes, defining themes, and interpretation. For more details about the process of thematic analysis (See Table 2.4). Braun and Clarke’s guidelines have been considered the most systematic guide for conducting thematic analysis (Gray, 2014; Maguire and Delahunt, 2017; Howitt and Cramer, 2017; Green and Thorogood, 2018).

Once the recording ended, the audio-recorded interviews were transcribed into Arabic by a professional transcriber. After finishing all data analysis, only the sections of the datasets included (information that was needed) in the data analysis was translated from Arabic into English by the researcher, and all data (information needed) was translated back (from English to Arabic) by a legal expert translator, to ensure reliability and validity. To manage thematic data analysis and help analyse, shape, organisation, and code the data generated, NVivo plus V12 software was used (Creswell, 2013b). To enhance validity, another two supervisors cooperated in the coding process and discussed the iterative development of the themes (Boyatzis, 1998).
Table 2-4 The process of data analysis (thematic analysis)

<table>
<thead>
<tr>
<th>Phases</th>
<th>Description of the process</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Familiarising</td>
<td>Familiarisation with the data is the first and the most important step in conducting thematic analysis. The present researcher familiarised himself with the data in several ways: Firstly, the interviews were conducted by the researcher, which made him more familiar with the data; Secondly, each transcript was checked against the main interview recording to check the accuracy of the transcription, providing more in-depth information about the data; and finally, the researcher read and re-read the interview transcripts before formally beginning the coding of data.</td>
</tr>
<tr>
<td>2- Coding</td>
<td>Generating initial code is “the most basic segment, or element of the raw data or information that can be assessed in a meaningful way regarding the phenomenon” (Boyatzis, 1998, p.63). Data were coded using NVivo plus V12 software. Line-by-line coding was applied to code individual transcripts, and the coding outline was checked independently by the researcher and his supervisors for validity, one of whom was an experienced qualitative researcher (S.A.). The process of coding continued until all the transcripts were coded.</td>
</tr>
<tr>
<td>3- Searching</td>
<td>The process began with searching for themes. Once all the interviews were coded, the duplicate codes were eliminated, and relevant data emerged from individual interviews; then, the researcher searched for potential themes.</td>
</tr>
<tr>
<td>4- Reviewing themes</td>
<td>The researcher checked if the themes work in relation to code. Thus, different codes were sorted into potential themes. The relevant data extracts were collated within these potential themes. As the new themes emerged, old ones were reviewed and sometimes renamed in light of the emergence of new themes. Mind maps were used for collating codes into themes. Once the initial set of potential themes was developed, then the process of reviewing and, if required, amending the themes began.</td>
</tr>
<tr>
<td>5- Defining themes</td>
<td>Similar themes were combined; other themes were either divided or renamed if needed. To increase our results’ dependability, the researcher described and discussed detailed themes with his supervisors. Then refined and discussed them (themes) again to ensure consistency in the interpretation of the data.</td>
</tr>
<tr>
<td>6- Interpretation</td>
<td>As with other forms of data analysis, writing qualitative results was the final step. The findings are presented in detail in Chapter 4. Data extracts have also been provided to demonstrate the prevalence of themes and sub-themes. The Consolidated Criteria for Reporting Qualitative research (COREQ) criteria were applied to maintain research quality and guide the reporting of the findings in this study (Tong et al., 2007).</td>
</tr>
</tbody>
</table>


A deductive approach was initially employed to organise and analyse the data according to themes identified a priori, followed by an inductive approach to identify emerging themes. Line-by-line coding was applied to code individual transcripts, and the coding outline was checked independently by the researcher and his supervisors for validity, one of whom was an experienced qualitative researcher.

Once duplicate codes were eliminated, and relevant data emerged from individual interviews, the researcher started searching for potential themes. Similar themes were combined; other themes were either divided or renamed if
needed. To ensure more reliability and validity, two supervisors, S.A. and M.B., frequently cooperated and guided the researcher (S.M.) during the coding and analysis processes and regular discussion about emerging themes (Boyatzis, 1998; Carnevale, 2002).

Data analysis also involved consistent cross-referencing between the participants for comparisons based on gender, age, and educational status. NVivo 12 Plus was used to analyse the Arabic transcripts; these were not translated into English to avoid any meaning loss through translation and ensure reliability and validity (Twinn, 1997; Al-Amer et al., 2015). The researcher analysed the data and wrote his interpretation of it in English. Key quotes to support this interpretation were translated into English. To increase our results' dependability, the researcher described and discussed detailed themes with his supervisors (S.A. and M.B.) (Lincoln and Guba, 1986), then refined and discussed them again to ensure consistency in the interpretation of the data. To ensure rigour and trustworthiness of study findings, debriefing and providing "thick description" methods were utilized (Green and Thorogood, 2018; Shenton, 2004). To strengthen our results regarding confirmability and credibility, the data source triangulation technique was applied by using several groups of oncology department staff who are working in different Libyan hospitals and oncology centres, with different roles (Shenton, 2004). The Consolidated Criteria for Reporting Qualitative research (COREQ) criteria were applied to maintain research quality and guide the reporting of the findings in this study (Tong et al., 2007). (See appendix 36).

2.4.2.6 Validity and reliability of the qualitative study

The validity and reliability of qualitative data and its findings are common issues mainly associated with this method. For example, when a specific data collection passes the validity and reliability tests, this means that an instrument would be considered a good measure (Dikko, 2016). Validity has been defined as a concern about whether the research findings were really about what they appeared to be about (Saunders et al., 2015b). According to Neuman (2013), assessment validity represents the ‘truthfulness’ of the tools applied in specific research. Different criteria have been used to assess the quality of qualitative
research (Patton, 2002). The main principles in qualitative studies, which can be used to ensure validity and reliability, are credibility (internal validity), consistency (reliability), and transferability (external validity) (Morse et al., 2002; Leung, 2015; Grossoehme, 2014; Franklin and Ballan, 2001).

### 2.4.2.6.1 Credibility (internal validity)

According to El-Fallah (2014), credibility refers to conducting a specific study confidently that ensures the truth value of targeted data and its interpretation. Two elements were suggested for achieving study credibility: enhancing the believability of the findings when conducting the study and relevant measures to ensure that the study’s credibility is demonstrated to the readers (Lincoln and Guba, 1985). The current study provides the study design, adopted research methodology, and methods and justifies using them to achieve these recommendations. Furthermore, volunteers who were knowledgeable about the research topic and settings were recruited to ensure the credibility of the generated data. Moreover, the questions for the interviews were piloted to increase the credibility of this study. Kvale (2007) stated that the interview schedule should contain prompts, as this can help reduce the interview bias, and it also assists the researcher in avoiding asking leading questions, which can lead to bias in the answers. In the current qualitative study, the interview transcripts’ quotes were used in the findings and presented transparently. To ensure confidence in the reliability of the results, a straightforward step-by-step process from data collection to data analysis was shown to the readers. For additional lending credibility to qualitative data, data gathering and analysis were thus simultaneous and iterative (Giacomini and Cook, 2000; Mays and Pope, 2000).

### 2.4.2.6.2 Consistency (Reliability)

Consistency refers to whether the study’s data collection techniques or analysis procedures could be replicated and obtain consistent findings (Bowling, 2014; Saunders et al., 2015b). Bowling (2014) added that although reliability is not appropriate for all parts of the study, the rigour of tools and the analytical methods used in the study if repeated would lead to consistent results. In study two (qualitative study) in the thesis, semi-structured interview topic guides were
developed based on the existing literature and our systematic review (Makhlouf et al., 2020), and the study aims to guide the researcher and ensure consistency (Hadi et al., 2017). Furthermore, to avoid bias and to ensure consistency of collected information, the same investigator (SM) conducted semi-structured face-to-face interviews with Libyan patients, caregivers, and HCPs, and the findings were reviewed by the other two supervisors (SA and MB) (Morse et al., 2002). Moreover, NVivo 12 Plus was used to analyse the Arabic transcripts; these were not translated into English to avoid any meaning loss through translation and ensure reliability and validity (Twinn, 1997).

2.4.2.6.3 Transferability (external validity)

In the research, transferability refers to the extent to which the findings could be transferable to other similar settings (Tobin and Begley, 2004). Similarly, in qualitative studies, the transferability is that the current results should transfer to other participants (El-Fallah, 2014). Lincoln and Guba (1985) stated that providing adequate descriptive data is required to help others (readers) who might use it to evaluate applicable data in similar contexts. In the current qualitative study, the researcher provided a detailed and profound description of the study findings to help readers use the relevant results in their context. Study methodology and methods, including study design, sampling and recruitment, study settings, data collection, and analysis, were also detailed to enhance transferability. This was suggested by Willig (2013), who stated that providing detailed descriptions of the study would fit another situation, as such detailed descriptions would allow the readers to decide which study findings apply to the broader population.

2.4.3 Quantitative Study (study three)

2.4.3.1 Study question

What are the attitudes, level of knowledge, and perceived barriers related to the Libyan healthcare professionals (HCPs) towards cancer pain management (CPM)?
In order to answer this question, the following sub-questions need to be achieved:

Q1. Do nurses’ and physicians’ perceptions, beliefs, and lack of knowledge about cancer pain and opioids affect CPM in Libya?
Q2. Is there any difference between Libyan nurses and doctors regarding attitudes and knowledge towards CPM?
Q3. Do Libyan HCPs, who had training and/or education in CPM have adequate knowledge and positive attitudes about CPM?
Q4. Does work experience in Libyan cancer care settings enhance HCPs’ knowledge and attitudes towards CPM?
Q5. Do HCPs in Libya have more barriers towards CPM than HCPs in other countries?

2.4.3.2 Study aims and objectives

The study aims to evaluate further nurses' and physicians' knowledge, attitudes, and perceived barriers regarding cancer pain and its management in Libya. To achieve this aim, the following objectives are required:

i. To determine nurses' and physicians' perceptions, beliefs, and knowledge about cancer pain and opioids for CPM in Libya.
ii. To identify the differences between Libyan nurses and doctors regarding attitudes and knowledge towards CPM.
iii. To determine whether Libyan HCPs, who had training and/or education in CPM have adequate knowledge and positive attitudes towards CPM.
iv. To determine whether or not work experience in cancer care settings enhances Libyan nurses’ and physicians' knowledge and attitudes about CPM.
v. To determine whether Libyan oncology HCPs have more barriers towards CPM than HCPs in other societies.
2.4.3.3 Survey Hypotheses

Table 2-5 Illustration of hypotheses for this study

<table>
<thead>
<tr>
<th>H</th>
<th>Independent variable(s)</th>
<th>Dependent variable(s)</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>HCPs’ perceptions and knowledge</td>
<td>CPM</td>
<td>Nurses’ and physicians’ perceptions and knowledge about cancer pain and the role of opioids for CPM might impact CPM in Libya</td>
</tr>
<tr>
<td>H2</td>
<td>HCPs’ beliefs</td>
<td>CPM</td>
<td>Libyan physicians and nurses might believe cancer pain is challenging to be relieved</td>
</tr>
<tr>
<td>H3</td>
<td>Nurses’ and doctors’ attitudes and knowledge</td>
<td>CPM</td>
<td>There might be a difference between Libyan nurses and doctors regarding attitudes and knowledge towards CPM</td>
</tr>
<tr>
<td>H4</td>
<td>Training; Education</td>
<td>Attitudes; Knowledge</td>
<td>Libyan HCPs, who had training and/or education in CPM might have adequate knowledge and positive attitudes about CPM</td>
</tr>
<tr>
<td>H5</td>
<td>Work experience</td>
<td>Knowledge; Attitudes</td>
<td>Work experience in cancer care settings likely enhances Libyan HCPs’ knowledge and attitudes towards CPM</td>
</tr>
<tr>
<td>H6</td>
<td>Libyan HCPs; other HCPs</td>
<td>Barriers to CPM</td>
<td>Doctors and nurses in Libya may have more barriers towards CPM than HCPs in other countries</td>
</tr>
</tbody>
</table>

2.4.3.4 A quantitative method

A quantitative method design involves numerical data, and it is usually used to investigate relationships between variables and produce a statistical analysis (Saunders et al., 2016). This method can be appropriate when information or knowledge is already available, having been collected via a questionnaire or survey (Creswell, 2009). Saunders et al. (2016) highlighted that the quantitative method is useful for generalising the results to a broader target population. The quantitative approach allows the researchers to make broad generalisations and familiarise themselves with the investigated topic (Morris, 2011). In study three within this study, a quantitative method was adopted as the nature of study three’s research question in this study is in line with such a method.

2.4.3.4.1 Justification of the need for a quantitative method

The quantitative method was needed in this thesis for the following reasons: Firstly, study three (quantitative method) was needed to generalise the qualitative findings (study two) and minimise the researcher bias. Secondly, it has been
stated that selecting a research method should be based on the nature of the research questions (Teherani et al., 2015; Creswell and Poth, 2018). The nature of study three’s research question in this study was “What are the attitudes, level of knowledge, and perceived barriers related to the Libyan HCPs towards CPM?”. This question is in line with the quantitative studies, which aim to answer these kinds of research questions (Creswell and Poth, 2018). Thirdly, according to that statement, the research philosophy should be considered while identifying the research method throughout conducting a specific study (Almohaimmeed, 2012; Matthews and Ross, 2010; Tuli, 2010). The positivist paradigm has been adopted in study three (quantitative study) in this mixed-methods design, one of the paradigms that can be applied within quantitative methods (Bhattacherjee, 2012a; Matthews and Ross, 2010; Neuman, 2013).

Furthermore, choosing a particular research method is usually directed by the type of data that needs to be collected to answer specific questions (Almohaimmeed, 2012). Study three in this study required structured data (numerical data), which can help statistically test the hypothesis of HCPs' attitudes, level of knowledge, and potential barriers towards CPM, and this can be done using a quantitative method (Bowling, 2014; Gray, 2018). Moreover, the data collected via the questionnaire in study three need to be tested using statistical analysis, which cannot be achieved without a quantitative method (Creswell, 2013c; Robson and McCartan, 2016).

2.4.3.4.2 Exploratory quantitative design

It has been argued that the researchers can use exploratory design when investigating a new phenomenon, event, or behaviour, which has not been explored yet, and the researcher knows little or nothing about such phenomenon (Neuman, 2013; Saunders et al., 2015a; Malhotra et al., 2017). That is consistent with the aim of study three in this thesis, which was to evaluate HCPs' knowledge, attitudes, and potential barriers regarding CPM in Libya. This thesis is considered a mixed-methods design involving descriptive and exploratory designs with a pragmatic paradigm (Johnson and Onwuegbuzie, 2004; Morgan, 2007; Yvonne Feilzer, 2010).
2.4.3.4.2.1 The rationale for adopting exploratory quantitative design

The aim of exploratory studies seeks to investigate a new specific phenomenon, behaviour, or event, which has not been explored yet, and the researcher knows nothing or little about it (Neuman, 2013; Saunders et al., 2015b). The current quantitative study (study three) was considered exploratory research as there was not enough known about the existing phenomenon and the problem has not been investigated yet (Saunders et al., 2009). Study three aims to line with the purpose of exploratory design: to evaluate nurses' and physicians' knowledge, attitudes, and potential barriers to cancer pain and its management in Libya.

According to Saunders et al. (2015b), exploratory research is needed to gain insights and familiarity for a later investigation or it can be undertaken when a research problem is in a preliminary stage of its investigation. An exploratory design has an open character that highlights flexibility and pragmatism, which are needed to answer “what” questions when investigating a new research question (Maanen et al., 2001). It has been stated that exploratory research questions can be designed to help the researchers understand more regarding a specific topic of interest (Neuman, 2013; Saunders et al., 2015b). Consequently, the exploratory design appears to be the best option for study three in this thesis as it is consistent with the central question and sub-questions of study three in this thesis. Thus, the current researcher argues that exploratory quantitative design is the proper research design for study three.

2.4.3.4.3 The process of recruiting

All potential oncology physicians and/or nurses were recruited via clinic-known persons or survey coordinators (normal staff oncology physicians, i.e., not senior or manager staff) at each national cancer institute or centre in Libya. After receiving ethical approval from the School of Medicine Research Ethics Committee, the University of Leeds (See appendix 30), and the Libyan oncology settings (See appendices 22, 23, 24, 25, and 26), the researcher sent an invitation letter (See appendix 29), the approved letters, and the survey (See appendix 35) via Dropbox to the survey coordinators at each national cancer institute and centre. Each survey coordinator gave the study an information sheet
to a responsible person. (See appendix 28). The participants put the completed questionnaires in private boxes for data collection.

**2.4.3.4.4 Quantitative data collection**

Data collection takes up to 5 months between the 15th of November 2020 and the 1st of April 2021. The two most common research designs can collect quantitative studies, including surveys and experiments (Bowling, 2014; Neuman, 2013; Saunders et al., 2015b). The survey was more appropriate for collecting data in study three than the experiment, as the survey is usually used for gathering detailed data about participants in order to describe, explain, and or compare individual’s knowledge, attitudes, thoughts, and perceptions towards a specific phenomenon (Bhattacherjee, 2012a; Gray, 2018). This is in line with the aim of study three (quantitative study), which was to evaluate HCPs’ knowledge, attitudes, and potential barriers regarding cancer pain and its management in Libya. An experiment investigates causal relationships between two variables by separating independents, such as causes, from dependent variables like effects (Bhattacherjee, 2012a; Bryman, 2015). Thus, the survey was adopted to be used in study three. More details on the justification for using the BQ-II questionnaire in this study are outlined in sections 2.4.3.4.8 below.

**2.4.3.4.5 Description of the inclusion and exclusion criteria**

The inclusion criteria are Libyan oncology nurses and doctors working in oncology settings in Libya. The HCPs with at least six months of experience in cancer care settings. Another inclusion criterion is that participants can give written or verbal consent to participate in this study. Nursing students and medical students practicing in oncology settings were excluded from this study as they may not have sufficient experience and knowledge.

**2.4.3.4.6 Participants and setting**

A cross-sectional survey was carried out with a convenience sample of 152 eligible participants (oncology nurses and physicians) working in several
oncology settings (n= 6), which were located in three different regions of Libya (Eastern, Northwestern, and Western). These are Tobruk Medical Centre (TMC), Benghazi Medical Centre (BMC), National Cancer Centre Benghazi (NCCB), National Cancer Institute of Misratah (NCIM), National Oncology Institute of Sabratha (NOIS), and Tripoli Medical Centre (TMC). After receiving ethical approval from the School of Medicine Research Ethics Committee, University of Leeds, the U.K., and relevant settings in Libya, the targeted participants were recruited by survey coordinators (oncology physicians) between November 2020 and April 2021. The response rate was 76%. To minimise the bias, all participants were recruited through survey coordinators (normal staff oncology physicians, i.e., not senior or manager staff) at each national oncology setting in Libya. The researcher sent the questionnaires and information sheets via Dropbox to the survey coordinators at each national oncology setting in Libya. Each survey coordinator printed and distributed the questionnaires with an information sheet to all potential participants (100%), as the researcher instructed to minimise the potential bias. After the questionnaires were completed, the participants (oncology nurses and physicians) put the completed questionnaires in the secure boxes themselves. Then the survey coordinators scanned and uploaded all completed questionnaires into Dropbox and sent them straightway to the researcher via Dropbox. After all, questionnaires were sent, each coordinator was ensured to safely delete the copies and shred all original copies.

2.4.3.4.7 Quantitative sample size

It has been stated that identifying the sample size is a crucial step, which the researcher should carefully take into account (Malhotra et al., 2017), as it can be challenging to identify the sample size owing to the lack of rules when using non-probability sampling techniques (Saunders et al., 2015b). The power of the Precision programme was used to calculate the sample size in this study (Borenstein et al., 2001) to ensure the survey had sufficient ability to examine all included objectives in this study. According to Guadagnoli and Velicer (1988), a sample size between 100 and 150 is recommended, especially when the internal consistency for an instrument is expected to be at 0.60 and above. In the current study, the internal consistency for the overall BQ-II scales was higher (α = 0.90)
than recommended, indicating an excellent internal consistency for the overall BQ-II scales (Kline, 2015). The sample size of participants for this survey was estimated to be about 200 oncology nurses and physicians working in oncology settings in Libya. For this cross-sectional survey, 185 (93%) HCPs responded. Of those 185, 160 (87%) participants returned the questionnaires (via secured boxes) to the survey coordinators. Eight of the returned questionnaires were excluded as many (40% – 70%) answers were missing. Thus, 152 (76%) valid questionnaires were eligible for use in this study for statistical analyses.

2.4.3.4.8 Justification of using the BQ-II questionnaire

The Barriers Questionnaire II (BQ-II) has been adopted and modified into study three in this thesis for data collection. The justification for using this survey was: Firstly, the questionnaire is the most common method for collecting primary data in quantitative studies (Creswell, 2009). Secondly, this particular BQ-II questionnaire has been widely used to collect data to assess concerns about cancer pain and the use of pain medication for CPM among both patients and HCPs groups (Lou and Shang, 2017; Gunnarsdottir et al., 2008; Al Qadire, 2011b). This is in line with the aim of study three (quantitative study) in this thesis, which was to evaluate HCPs’ knowledge, attitudes, and potential barriers regarding CPM in Libya. Furthermore, surveys are suitable as they enable the researchers to examine the relationships between multiple variables, and such survey methods can make comparisons among specific groups (Neuman, 2013; Howitt and Cramer, 2017). This is the case of study three in this thesis, which tests the effect of three independent variables (HCPs’ perceptions and beliefs, attitudes, level of knowledge, and potential barriers) on two dependent variables (CPM and total BQ-II scores and its subscales), and compare these relationships between two groups (oncology nurses and oncologists) to test the moderating effect of eight variables (Age, gender, profession, marital status, educational level, training, work experience, and using WHO for CPM). Moreover, a survey is suitable for collecting data from a large sample in a wide range with a target population (Bhattacherjee, 2012a).
Additionally, the survey has been chosen as it has a high degree of generalisability because it involves a large sample size that can be collected from a field of a particular context (Neuman, 2013). Study three of the current thesis requires collecting the data from a sample of 200 participants from multiple centres in Libya's broad region (Eastern, Western, and North-western). The current researcher aims to generalise the results of study three in this thesis to the Libyan population for improving CPM in Libya. Lastly, compared to other methods, the survey is an appropriate method in terms of cost and time, as it enables the researcher to collect essential data within a short time and at a low price (Zikmund et al., 2013).

2.4.3.4.9 Questionnaire (Survey)

It has been stated that questionnaires are the most common method that can be used for data gathering in quantitative studies (Creswell, 2009). There are many advantages of using questionnaires as a research instrument, including it is easy to arrange and can save both time and money compared to other methods like interviews (Denscombe, 2014). The Questionnaire also offers less affected by interpersonal factors and more degree of anonymity (Bowling, 2014). In contrast, questionnaires have some disadvantages, such as they might be affected by many biases, including response bias (Zikmund et al., 2013). Another drawback is that the response rate can be low compared with other methods; some participants might find the questions within the questionnaire are not clear enough for them, which can lead to misleading in establishing direct associations among the variables (Denscombe, 2014). To avoid disadvantages of the questionnaire, such as response bias, it has been recommended that the researcher should make the questions understandable, interpretable, and readable (Sharpe et al., 2015). Hence, study three in this thesis adopted a widely used, well-validated questionnaire, the Barriers Questionnaire II (BQ-II) (Gunnarsdottir et al., 2002; Al Khalaileh and Al Qadire, 2012b; Gunnarsdottir et al., 2005; Saifan et al., 2019).

There are two types of surveys: a cross-sectional survey and a longitudinal survey (Saunders et al., 2016). Each of these two surveys can be conducted based on the time-based dimension. For example, the researcher, who uses a
cross-sectional survey, gathers the data from the participants only in one phase at one specific time. In a longitudinal study, the researcher collects the data from the participants more than once on different occasions (Saunders et al., 2016; Neuman, 2013).

The Barriers Questionnaire (B.Q.) was developed by Ward et al. (1993), and it was revised and renamed the Barriers Questionnaire II (BQ-II) (Gunnarsdottir et al., 2002; Gunnarsdottir et al., 2008), which was used for data collection in study three of this thesis. The BQ-II consists of 27 multiple-choice questions (self-report questionnaire) divided into four subscales: physiological effects, fatalism, communication, and harmful effects. Permission was obtained from Ward to use the BQ-II in this survey. (See appendix 39). Furthermore, an Arabic version of BQ-II has been permitted by Al Qadire to be used in study three of this thesis. (See appendix 40). The survey items are measured on a 6-point Likert scale, which shows how much the participant agrees with the target statement. For instance, ‘0’ means “do not agree,” and ‘5’ means that the participant “agreed very much” (Lou and Shang, 2017). (See appendix 34). This self-report questionnaire assesses concerns about cancer pain and using pain medication for CPM (Lou and Shang, 2017). It also evaluates the attitudinal barriers towards CPM (Gunnarsdottir et al., 2002). Mean scores for the BQ-II overall scale and subscales are used as dependent (outcome) variables for analyses, with higher scores (rating 3 or above: > 50%) indicating greater attitudinal barriers and poorer knowledge about CPM. Items 1, 8, and 24 in subscale (fatalism) were reverse scored before starting data analysis. Minor changes were made, such as the word patient/s was used instead of the phrase "you and I" to fit this study's purpose. Answers "mostly agree" and "agree" were merged into the category "agree very much," indicating barriers to effective CPM. (See appendix 31).

The questionnaires were sent via Dropbox to survey coordinators (oncology doctors), who helped distribute the questionnaires and explained and assisted with filling in forms for any participant needing help. The participants have recruited through oncologists’ survey coordinators at each cancer institute or centre in Libya. The questionnaire takes up to 10 minutes to be completed. At the
same time, the background information sheet for participants was distributed during the survey, which took about 5 minutes to complete. After the questionnaires were completed, the survey coordinators (oncology physicians) sent back all the completed questionnaires and background information sheets to the researcher via a secured Dropbox.

2.4.3.4.10 Pilot study for survey

The BQ-II is a reliable and valid instrument to measure patient, family caregiver, and HCPs-related barriers to CPM in several studies (Gunnarsdottir et al., 2005; Gunnarsdottir et al., 2002; Saifan et al., 2019). Based on the findings from Gunnarsdottir et al. (Gunnarsdottir et al., 2005), there is the initial evidence of both the reliability and validity of the BQ-II. It is a well-known questionnaire, as it has been validated and used in different studies (Gunnarsdottir et al., 2002; Saifan et al., 2019) in different languages, including Arabic (Saifan et al., 2019). According to Al Khalaileh and Al Qadire (2012b), the BQ-II was “translated into Arabic and verified using the back-translation approach, and a linguistic expert was consulted to ensure that the translation was adequate.” (p.2). This approach is well-known as it is usually used when translating such survey instruments (Brislin, 1986). An Arabic version of the BQ-II has been validated and used in previous studies (Saifan et al., 2019; Al Khalaileh and Al Qadire, 2012b). It has been recommended to test an instrument before using it in a study that involves a new target population (Bhattacherjee, 2012a). Thus, a draft of this questionnaire has been discussed with experts (supervisors) who critically evaluate it (Neuman, 2013). After that, an Arabic version of the BQ-II was pilot tested (with eight participants who were included in the study) before distributing the questionnaire to all study participants to ensure readability. The current researcher reported the psychometric properties for the Arabic version of BQ-II, using response data from the entire final sample size; n = 152 participants, including test-retest reliability (r > 0.80) and internal consistency reliability (the Cronbach’s Alpha) for the overall BQ-II scales for HCPs was excellent (α= 0.90) and Alpha for the three factors ranging from 0.74 – 0.85. (See appendix 33). Using a well-validated questionnaire, such as the BQ-II, would improve the internal validity.
2.4.3.5 The credibility of the study

The validity and reliability are two criteria that have been operationalised to ensure the credibility of this study.

2.4.3.5.1 Validity of survey

Validity has been described as “whether the findings are really about what they appear to be about” (Saunders et al., 2009, p. 157). In other words, it is usually applied by the researchers to ensure the data collection methods precisely measure the research purpose, the measurements including content validity, criteria validity, and construct validity (Malhotra et al., 2012). In this study, content validity (content validity of questionnaire items) was the most significant concern of the present researcher. The content validity was strengthened by ensuring the questionnaire’s items and language were tested. In the current study, the items in the questionnaire were considerably referred from prior items, which Gunnarsdottir et al. (2002) used to test attitudinal barriers towards CPM. Furthermore, It is a well-known questionnaire, as it has been validated and used in different studies (Gunnarsdottir et al., 2008; Lin and Ward, 1995; Al Qadire, 2011b; Al Khalaileh and Al Qadire, 2012b; Xhixha et al., 2013; Jafari et al., 2019), in different languages, including Arabic (Al Qadire, 2011b; Al Khalaileh and Al Qadire, 2012b; Saifan et al., 2019). In this study, an Arabic version of the BQ-II has been validated and used in previous studies (Al Qadire, 2011b; Al Khalaileh and Al Qadire, 2012b; Saifan et al., 2019). According to Al Khalaileh and Al Qadire (2012b), the BQ-II was “translated into Arabic and verified using the back-translation approach, and a linguistic expert was consulted to ensure that the translation was adequate.” (p.2). This approach is well-known as it is usually used when translating such survey instruments (Brislin, 1986).

2.4.3.5.2 Reliability of survey

Reliability is a necessary consideration in any study, as it ensures consistency of specific results to be generated and represented again when conducting similar data collection methods by other researchers or at a different place (Saunders et al., 2009). In the current study, the researcher tries to be as transparent as
possible by explaining how the data were collected, processed, and analysed and the research approach exerted on this study to ensure reliability. According to Malhotra et al. (2012), the reliability of a study refers to specific research that should be free from random errors. Robson and McCartan (2016) stated that to compromise the reliability of the study, random errors could result from either “subject error or participant error” or “subject bias or participant bias.”

In order to alleviate the random errors, Cronbach’s alpha was applied to assess the level of internal consistency among the total scale (27-items) BQ-II and its subscales and the observed variables, which need measurement (Bhattacherjee, 2012a). (See Table 2.6). The ideal cut-off point to indicate a good convergent validity and reliability for a specific item has been highlighted as 0.70 or higher (Hair et al., 2010). Cronbach’s alpha values for each item in the BQ-II and its four subscales were considerably higher than the cut-off point of 0.70. In study three of the current study, Cronbach’s alpha values ranged from 0.74 for the BQ-II subscale for (fatalism) to 0.85 for the BQ-II subscale (communication) in BQ-II subscales. In study three of this thesis, Cronbach’s alpha for the total BQ-II scales (27 items) was excellent (α = 0.90). This indicated an excellent internal consistency in this study for all BQ-II scales, good for three subscales (physiological effects, communication, and harmful effects) and acceptable for one subscale (fatalism) (Kline, 2015). Cronbach’s alpha for each existing variable in the current study was examined using SPSS, version 26. Interpreting Alpha for the Likert scale question and interval scale are presented in appendices 33 and 34, respectively.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Cronbach’s Alpha</th>
<th>No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>All BQ-II items</td>
<td>0.90</td>
<td>27</td>
</tr>
<tr>
<td>Physiological effects</td>
<td>0.80</td>
<td>12</td>
</tr>
<tr>
<td>Fatalism</td>
<td>0.74</td>
<td>3</td>
</tr>
<tr>
<td>Communication</td>
<td>0.85</td>
<td>6</td>
</tr>
<tr>
<td>Harmful effects</td>
<td>0.84</td>
<td>6</td>
</tr>
</tbody>
</table>

2.4.3.6 The response rate for the survey
The data collection process for this survey started on 15th November 2020 and ended on 1st April 2021. The data were recruited from six oncology departments
and centres across Libya. As shown in Figure 2.3 below, 200 eligible HCPs (Oncology nurses and physicians) were invited to participate in this survey. Among those 200 participants, 185 (93%) HCPs accepted participating in the study. Of those 185, 160 (87%) participants returned the questionnaires to the survey coordinators. Eight of the returned questionnaires were excluded, as many answers were missed. Thus, 152 valid questionnaires were eligible to be used in study three of the current study for statistical analyses. The percentage of respondents, which is calculated after returning all valid questionnaires from targeted eligible people invited to participate in specific research, is called the response rate (Zikmund et al., 2013). The current study’s response rate was 76% (152/200). According to Neuman (2013), response rates that range between 68% and 75% are appropriate for academic organisations; thus, the response rate in the current study is considered good.

Figure 2-3 Response Rate
2.4.3.7 Quantitative data analysis

Two different ways can be used to analyse quantitative data. These are descriptive analyses, which can summarise and describe participants' and variables' characteristics statistically. Another way is that inferential analysis is utilised to test hypotheses statistically and validate theories (Bhattacherjee, 2012a). Descriptive and inferential statistical tests were used to analyse the quantitative data in this study.

Descriptive statistics were used to analyse demographic information, including age, gender, profession, marital status, educational levels, training, work experience, and WHO for CPM. Categorical data are summarised as numbers (proportion), and continuous data are summarised using means (standard deviation) and range. Inferential analyses included an independent t-test and multiple linear regression analysis to analyse the relationship between dependent (outcome) and independent (cause) variables (Bhattacherjee, 2012a). The statistical significance level was set at a 2-sided $p < 0.05$. Data coding and analysis were carried out using Statistical Package for Social Sciences (SPSS), version 26 software. Since this is an exploratory study, the researcher does not intend for readers to treat the results as definitive, and as such, the current researcher does not make corrections/adjustments for multiple testing.

2.5 Ethical considerations

The principle of ethical consideration is to protect the interests of research participants (Eide and Kahn, 2008). Health researchers follow ethics that aim to protect participants from any risk or harm and apply professional rules in codes of conduct and guidelines for research (Hollway and Wheeler, 2010). The current study received ethical approval from the School of Medicine Research Ethics Committee, University of Leeds, UK, for study two (MREC 18-064) and study three (MREC 20-005). The approval letters for both studies are presented in appendices (17) and (30).
2.5.1 Ethical procedure

2.5.1.1 Researching sensitive subjects
Cancer and pain can be sensitive issues for both patients and their families to discuss. Furthermore, asking participants questions about their views, knowledge, attitudes, or life experiences may generate emotional responses that the researcher should acknowledge. Therefore, the researcher ensured that the participants were okay by asking if they were fine, interviewees who appeared to be distressed were asked if they would prefer to end the interview, and the researcher offered tissues and water if needed.

2.5.1.2 Informed consent
In order to obtain informed consent for study two in this thesis, three recommended conditions were achieved. First, adequate information about the study was given to the participants, second, consent was obtained voluntarily, and third, the target participants were individuals with mental capacity (Gray, 2018; Matthews and Ross, 2010; Bhattacherjee, 2012a). The current researcher ensured that participants’ autonomy was respected by requiring informed consent - see appendix (13). Furthermore, all participants were given information sheets - see appendix (11) for study two and appendix (27) for study three, including everything about the study. For study three, as the questionnaires were short and did not collect sensitive information, consent was implied through the completion and return of the questionnaire. Hence, completion of the questionnaire indicates informed consent.

2.5.1.3 Anonymity
In order to make sure anonymity was applied in this study, all participants' identities were not connected with their responses. Consequently, no one, including the researcher, can identify participants personally in the study (Bhattacherjee, 2012a). Although it has been stated that the best way to protect participants' anonymity is by not collecting personal data (e.g., name, telephone number, or address) (Gray, 2018), it was difficult to not collect personal data in
this study as participants’ names were needed to match the collected data. However, all personal data were anonymised before the data analysis. Any quotation that was used was also anonymised, and an effort was made to exclude any associated information that could be used to identify the participant, such as context elements.

2.5.1.4 Confidentiality

In this study, the data confidentiality was protected in several ways: Firstly, all the interviews were taken in a private room for participants’ privacy and confidentiality at the SUN oncology centre, Egypt. Secondly, the interviews were recorded using an encrypted audio recorder just for the study purpose, and consent for using an audio recorder was required. Finally, as all participants were volunteers, they had the right to withdraw consent from the study at any time during the interview. However, participants could only withdraw their data from the study up to one week after the interview, after which withdrawal was no longer possible because their data were anonymised and embedded in our data analysis.

In study three, the questionnaires were kept in a locked-in office at each hospital; the coordinators scanned and uploaded the questionnaires into Dropbox. And then, the questionnaires were sent to the researcher via Dropbox. Both Dropbox and OneDrive are secure, but Dropbox has been chosen for two reasons: Firstly, the supervisor has recommended it. Secondly, it is familiar and easy for some survey coordinators, and it is easy to upload. After the questionnaires were sent back to the researcher, each coordinator safely deleted the uploaded copies and shredded all original copies.

2.5.1.5 Data Storage

The interview questions, participants’ demographic forms, and signed consent forms were stored separately, either in a locked cabinet on University premises or scanned and saved to the University M drive (shredded paper copies). The interviews were recorded using an audio recorder, and consent for that was taken. The researcher has complied with the University of Leeds policy for
“Safeguarded Data-Storage, Backup, and Encryption.” Contact details forms were shredded after completing the interviews. Audio data were removed from the audio device and moved into a personal laptop, encrypted, password-protected, and stored securely. Transcription was carried out in a private space. All personal identification information was removed during transcription. All transcriptions were stored in an encrypted laptop, and the complete transcripts will only be accessible to the researchers. The questionnaires and participants’ demographic forms for study three were stored securely and saved to the University OneDrive on an encrypted, password-protected personal computer. The researcher complies with the University of Leeds policy for “Safeguarded Data-Storage, Backup, and Encryption.” Contact detail forms were shredded after completing the study. Nobody has access to data except the researcher and supervisors via the secure OneDrive system.
Chapter 3
Managing Pain in People with Cancer— a Systematic Review of the Attitudes and Knowledge of Professionals, Patients, Caregivers, and Public

3.1 Introduction
This chapter reviews evidence regarding attitudes and knowledge about cancer pain and its management obtained from HCPs, patients, caregivers, and the general public. It will aim to determine the nature and impact of attitudes and knowledge towards CPM.

Firstly, the chapter introduces the results of a systematic review (SR) in section 3.2, including information sources and study selection and characteristics of included studies in sub-sections 3.2.1 and 3.2.2, respectively. Secondly, in sub-section 3.2.3, the overall results of included studies are presented.

3.2 Systematic Review Findings
3.2.1 Information sources and study selection
The total number of studies identified by six electronic databases (the Cochrane Library, MEDLINE, PsycINFO, CINAHL, Web of Science, and EMBASE) was 6830 articles (See appendix 1). More details about initial search terms that led to the identification of 6830 articles are presented in Table 2.3 in Chapter 2. In addition, 17 studies were identified by hand-searching (including Google, Google Scholar, and checking reference lists of relevant studies). (See Chapter 2 research methods and methodology). After removing duplicate studies, a total of 5650 articles remained.

Five thousand five hundred twenty-three studies were excluded after each study's title and carefully reviewed abstracts. (See Table 2.2 summary of inclusion and exclusion criteria in Chapter 2). The total number of full-text articles which were
then assessed for eligibility was 133. At this stage, 97 studies were excluded for different reasons; 42 articles were excluded because they were not related to attitudes and knowledge towards CPM, 35 studies were excluded as they were not associated with cancer pain or opioid analgesics, and 6 studies were not published in English, 5 studies as they involved adolescents and children with cancer pain, 5 articles as not based on a cross-sectional design, 2 studies as the same data were used in another included study, 1 paper was a Letter to the editor (not enough information was stated), and 1 study as the full text could not be sourced. (See Table 3.1). All full references to the excluded articles and reasons for exclusion are listed in appendix (5). Consequently, a total number of 36 studies were included in this review, as illustrated in Figure 3.1. An updated search was needed to see if any more relevant studies were published between 2018 and 2022. A new search for relevant studies between 2018 and 2022 resulted in 2142 articles. After screening based on inclusion and exclusion criteria (See Table 2.2 in Chapter 2), no study has been included since 2018.

Table 3-1 Number of articles excluded and the reason for exclusion

<table>
<thead>
<tr>
<th>Number of articles excluded: n = 97</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>They were not related to attitudes and knowledge towards CPM</td>
</tr>
<tr>
<td>35</td>
<td>They were not associated with cancer pain or opioid analgesics</td>
</tr>
<tr>
<td>6</td>
<td>Not published in English</td>
</tr>
<tr>
<td>5</td>
<td>They involved adolescents and children with cancer pain</td>
</tr>
<tr>
<td>5</td>
<td>Not based on a cross-sectional design,</td>
</tr>
<tr>
<td>2</td>
<td>The same data were used in another included study</td>
</tr>
<tr>
<td>1</td>
<td>A Letter to the editor (not enough information was stated)</td>
</tr>
<tr>
<td>1</td>
<td>The full text could not be sourced</td>
</tr>
</tbody>
</table>
Figure 3-1 PRISMA diagram for the strategy of the study selection

Source: Adapted from Moher et al. (2009).
3.2.2 Included studies

All 36 studies identified in this review used a cross-sectional design, employing various questionnaires to assess knowledge of and attitudes towards CPM. The studies were based in 18 countries: United States (n = 10), Iran (n = 3), China (n = 3), Turkey (n = 2), Taiwan (n = 2), Israel (n = 1), Korea (n = 2), Saudi Arabia (n = 1), South Korea (n = 1), Canada (n = 1), France (n = 2), Thailand (n = 1), United Kingdom (n = 1), Italy (n = 1), Jordan (n = 1), Columbia (n = 1), Ethiopia (n = 1), Norway (n = 1), and one study was international (n = 1; included Australia, Japan, Spain, Canada, and the US). Thirteen studies (36.11%) used established/validated questionnaires as detailed below (Bernardi et al., 2007b; Yildirim et al., 2008; Kassa and Kassa, 2014; Shahriary et al., 2015; Darawad et al., 2017b; Utne et al., 2018; Elliott and Elliott, 1992b; Von Roenn et al., 1993; Lin et al., 2000; Vallerand et al., 2007b; Lou and Shang, 2017; Riddell and Fitch, 1997; Cohen et al., 2005). Six studies (16.7%) used the same questionnaire: the Knowledge and Attitudes Scale (NKAS) (Bernardi et al., 2007b; Yildirim et al., 2008; Kassa and Kassa, 2014; Shahriary et al., 2015; Darawad et al., 2017b; Utne et al., 2018). Physician Cancer Pain Questionnaire was used in 2 studies (5.5%) (Elliott and Elliott, 1992b; Von Roenn et al., 1993), and three articles (8.3%) used Barriers Questionnaire (BQ) (Lin et al., 2000; Vallerand et al., 2007b; Lou and Shang, 2017). The Patient Pain Questionnaire (PPQ) was used in 2 studies (5.5%) (Riddell and Fitch, 1997; Cohen et al., 2005). Whereas 4 studies (11%) used questionnaires designed specifically for the questions of their studies: Two studies (5.5) used the North Carolina Cancer Pain Initiative (NCCPI) survey (O’Brien et al., 1996; Hollen et al., 2000). A cross-sectional telephone survey was used in one study (2.7%) (Elliott et al., 1995). A self-administered questionnaire designed based on the Health Belief Model (HBM) was also used in 1 study (2.7%) (Shahnazi et al., 2012). (See Table 3.2). Nineteen studies (52.7%) did not state which questionnaire was used.

Twenty-seven studies (75%) focused on HCPs’ knowledge and attitudes towards cancer pain and opioids for CPM (McCaffery and Ferrell, 1995; O’Brien et al., 1996; Hollen et al., 2000; Wells et al., 2001; Bernardi et al., 2007b; Yildirim et al., 2008; Kassa and Kassa, 2014; Furstenberg et al., 1998; Von Roenn et al., 1993; Elliott et al., 1995; Larue et al., 1995; Elliott and Elliott, 1992b; Ger et al., 2000a;
Breuer et al., 2011a; Gallagher et al., 2004; Jeon et al., 2007; Eftekhar et al., 2007a; Yanjun et al., 2010a; Kim et al., 2011; Shahnazi et al., 2012; Kaki, 2011; Srisawang et al., 2013; Jho et al., 2014; Shahriary et al., 2015; Darawad et al., 2017b; Zhang et al., 2015; Utne et al., 2018). Three studies (8.33%) focused only on cancer patients, and 4 studies (11.11%) focused on both patients and their family caregivers (Riddell and Fitch, 1997; Cohen et al., 2005; Colak et al., 2014b; Elliott et al., 1996; Lin et al., 2000; Lou and Shang, 2017; Vallerand et al., 2007b), and only two studies (5.56%) focused on the general public (Levin et al., 1985; Larue et al., 1999). A more recent qualitative study was found by hand-searching (De Silva and Rolls, 2011). However, this was excluded as it did not include a cross-sectional design. Summarised included studies addressing HCPs', patients,' caregivers,' and the general public's attitudes and knowledge towards CPM are presented in Table 3.2 below.
Table 3-2 Summarised studies addressing HCPs', patients', caregivers', and the general public's attitudes and knowledge towards CPM

<table>
<thead>
<tr>
<th>Author(s), year, and country</th>
<th>Study design</th>
<th>Study aim</th>
<th>Study participants</th>
<th>Study setting</th>
<th>Mean age</th>
<th>Sex ratio</th>
<th>Measurements</th>
<th>Type of Cancer</th>
<th>Main finding</th>
<th>Quality Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breuer et al., (2000), York, the US</td>
<td>Cross-sectional method</td>
<td>To evaluate the attitudes, knowledge, and practices of US medical oncologists related to CPM</td>
<td>482 Oncologists</td>
<td>The American Medical Association’s Physician Master File</td>
<td>56 years</td>
<td>Male 80%, female 20%</td>
<td>Not stated</td>
<td>N/A</td>
<td>The most important barriers to CPM were poor pain assessment and patient reluctance to take opioids or report pain. Other barriers included physician reluctance to prescribe opioids and perceived excessive regulation. In response to two vignettes describing challenging clinical scenarios, 60% and 87% endorsed treatment decisions that pain specialists would consider unacceptable. Frequent referrals to pain or palliative care specialists were reported by only 14% and 16%, respectively.</td>
<td>6/7</td>
</tr>
<tr>
<td>Ger et al., (2010), Taiwan</td>
<td>Cross-sectional method</td>
<td>To examine the attitudes of MDs regarding the optimal use of analgesics for CPM, to evaluate their knowledge and attitudes towards opioid prescribing</td>
<td>204 Oncologists</td>
<td>Two medical centres, Kaohsiung Veterans General Hospital (KSVGH) and Tzu Service General Hospital (TSGH) in Taiwan.</td>
<td>36.4 years</td>
<td>Males 95% and females 5%</td>
<td>Not stated</td>
<td>N/A</td>
<td>The most important barriers to optimal CPM identified by physicians themselves were physician-related problems, such as inadequate guidance from a pain specialist, inadequate knowledge of CPM, and inadequate pain assessment. The results of his study suggest that active analgesic education programs are urgently needed in Taiwan.</td>
<td>6/7</td>
</tr>
<tr>
<td>Zhang et al., (2015), China</td>
<td>Cross-sectional method</td>
<td>To evaluate physicians' current practice, attitudes towards, and knowledge of cancer pain management in China.</td>
<td>500 physicians</td>
<td>11 medical facilities in China.</td>
<td>&lt; 35 - ≥ 35 years</td>
<td>Male: 45.4%, female: 54.6%</td>
<td>Not stated</td>
<td>N/A</td>
<td>About 32.6% of physicians assessed pts' pain rarely, and 85.5% never or occasionally treated patients' CP together with psychologists. More than 50% of physicians indicated that opioid dose titration in pts with poor pain control and assessment of the cause and severity of pain were urgently needed knowledge for CPM. Inadequate assessment of pain and PM (63.0%), pts' reluctance to take opioids (62.2%), and inadequate staff knowledge of PM (61.4%) were the three most frequently cited barriers to physicians' CPM.</td>
<td>4/7</td>
</tr>
<tr>
<td>Yanjun et al., (2010), China</td>
<td>Survey</td>
<td>To determine the degree of physician knowledge on morphine use and the factors that impede morphine use in clinical practice in China.</td>
<td>201 physicians</td>
<td>4 hospitals in China</td>
<td>Not stated</td>
<td>Not stated</td>
<td>Not stated</td>
<td>N/A</td>
<td>Physicians who reported having received training in CPM and drug use demonstrated a significantly higher mean score of basic knowledge compared to physicians who reported not having received training (9.31±2.83 vs 7.0, p&lt;0.001). The top three cited impediments to the widespread clinical use of morphine for cancer pain were: (1) lack of professional knowledge and training (57.2%); (2) fear of opioid addiction (48.7%); and (3) physicians' personal preferences to select other drugs (46.0%).</td>
<td>6/7</td>
</tr>
<tr>
<td>Von Roenn et al., (1993), The US</td>
<td>Cross-sectional method</td>
<td>To determine the amount of knowledge about CPM among physicians practicing in ECOG-affiliated institutions and to determine the methods of pain control being used by physicians.</td>
<td>897 physicians</td>
<td>The Eastern Cooperative Oncology Group (ECOG).</td>
<td>Not stated</td>
<td>Not stated</td>
<td>PCPQ</td>
<td>N/A</td>
<td>Concerning the use of analgesics for cancer pain in the United States (N = 864), 86% of the respondents thought that the majority of patients with pain are undermedicated, although 13% thought that most patients receive adequate pain treatment. Most of the sample (67%) thought that at least 50% of the cancer patients they treat had pain at some point during their illness. Physicians estimated that almost one-half of cancer patients (48%) had pain for more than 1 month.</td>
<td>7/7</td>
</tr>
<tr>
<td>Elliott et al., (1995), The US</td>
<td>Cross-sectional method</td>
<td>To determine knowledge and attitudes about CPM among physicians in six Minnesota communities and to determine the physician-related barriers to CPM</td>
<td>145 physicians</td>
<td>The Minnesota Cancer Pain Project (MCPP)</td>
<td>Not stated</td>
<td>Male 89.7%, female 10.3%</td>
<td>CTS, PSI</td>
<td>N/A</td>
<td>A significant lack of knowledge was identified in nine of 14 CPM principles, but inappropriate attitudes were found in only two of nine CPM concepts. Medical especially had the strongest influence on knowledge and attitudes, with primary care physicians having significantly better outcomes than surgeons or medical subspecialists.</td>
<td>7/7</td>
</tr>
</tbody>
</table>
### Table 3-2 Summarised studies addressing HCPs', patients', caregivers', and the general public’s attitudes and knowledge towards CPM

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<tr>
<td>Erfkhar et al., (2007), Iran</td>
<td>Cross-sectional method</td>
<td>To evaluate knowledge about and attitudes towards cancer pain and its management in Iranian physicians with patient care responsibilities.</td>
<td>55 physicians</td>
<td>Six university hospitals in Tehran.</td>
<td>37 years.</td>
<td>54.6% male responders.</td>
<td>Not stated</td>
<td>N/A</td>
<td>Physicians recognised the importance of PM priority (76%), and about one-half of the physicians acknowledged the problem of inadequate PM in their settings. Inadequate staff knowledge of PM as barriers to good PM. No correlation was found between what physicians think they know and what they know about cancer pain and its management.</td>
<td>4/7</td>
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<tr>
<td>Elliott and Elliott, (1992), State of Minnesota, the U.S.</td>
<td>Cross-sectional method</td>
<td>To explore the prevalence among practicing physicians of 12 proposed myths or misconceptions about the use of morphine in CPM.</td>
<td>150 physicians</td>
<td>Direct patient care in Duluth, Minnesota. 47 different medical schools located in 31 states, Canada, and England.</td>
<td>Not stated</td>
<td>It is not stated.</td>
<td>PCPA</td>
<td>N/A</td>
<td>Many physicians misunderstood concepts of morphine tolerance, both analgesia (51%) and side effects (39%). Various were unaware of the use of adjuvant analgesics (29%), the efficacy of oral morphine (27%), and the non-existent risk of addiction in CPM (20%).</td>
<td>7/7</td>
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<tr>
<td>Kim et al., (2011), South Korea</td>
<td>Cross-sectional method</td>
<td>To evaluate young Korean physicians’ attitude towards the usage of analogics for CPM and their optimal knowledge of opioid prescription. Also wanted to find out the real factors that affect the attitude and knowledge of doctors.</td>
<td>1204 physicians</td>
<td>National Cancer Centre, Goyang, Si, Gyeonggi-do, South Korea</td>
<td>29.9+/- 2.2 years</td>
<td>Male 100%</td>
<td>Not stated</td>
<td>gastric, lung, liver, and colorectal malignancies for males and gastric, breast, colon, rectum, uterine cervix, lung, and thyroid gland malignancies for females</td>
<td>A large sample of physicians showed a negative attitude and inadequate knowledge status about CPM. The degree of attitude and knowledge status was different from their specialties and personal experiences. The factors that affected doctors’ attitudes and knowledge were: 1) medical specialty, 2) history of using a practical pain assessment tool, 3) self-perception of knowledge status about PM, 4) experience of prescribing opioids, and 5) experience of education for CPM. Although many physicians had a passive attitude in prescribing analogics, they are willingly open to using opioids for CPM in the future. The most important perceived barriers to optimal CPM were the fear of the risk of tolerance, drug addiction, side effects of opioids, and knowledge deficit about opioid</td>
<td>7/7</td>
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<tr>
<td>Gallagher et al., (2004), British Columbia</td>
<td>Survey</td>
<td>To acquire current data on physician knowledge and attitudes towards CPM as an educational needs assessment for the UBC Division of Palliative Care. Also, to solicit physicians’ opinions about the TPP’s possible effect on CP prescribing.</td>
<td>4,618 physicians</td>
<td>Palliative Care at the University of British Columbia, the BC Cancer Agency, and the College of Physicians/Surgeons of BC.</td>
<td>Not stated</td>
<td>Male 67.9% Female 27.9%</td>
<td>Not stated</td>
<td>N/A</td>
<td>The results show that 12% of MDs agreed with the knowledge question that any Pt who is given opioids for CPM is at a 25% or more risk for addiction. The highest percent of 80.6% disagreed that morphine for CPM shortens life but makes people more comfortable. The questions most frequently answered incorrectly (or by “don’t know”) were those available, perceptions that morphine has a poor image in public opinion (45%), revealing that lack of knowledge about CPM would significantly impair a physician’s ability to manage CP.</td>
<td>6/7</td>
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<tr>
<td>Larue et al., (1995), France</td>
<td>Cross-sectional method</td>
<td>To assess physicians’ estimates of the prevalence of pain among patients with cancer, their practice in prescribing analogics, their training in CPM, and the quality of care received by cancer patients in their practice and France.</td>
<td>900 physicians</td>
<td>Telephone by professional interviewers</td>
<td>&lt; 35 for ONCs and PCPs &gt;45 for GNCs and PCPs.</td>
<td>Female oncologists 36.3% and Female Primary care physicians 17.9%</td>
<td>Not stated</td>
<td>N/A</td>
<td>Although 85% of primary care physicians and 93% of medical oncologists express satisfaction with their ability to CPM, 76% of primary care physicians and 50% of medical oncologists report being reluctant to prescribe morphine for CPM. Both groups cited fear of side effects, poor tolerance, perceptions that other effective drugs are available, perceptions that morphine has a poor image in public opinion, and the constraints of prescription forms contribute significantly to physicians’ infrequent prescription of morphine, as being female and being an older oncologist.</td>
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<tr>
<td>Wells et al., (2001), Scotland, the UK</td>
<td>Cross-sectional method</td>
<td>To assess the knowledge and attitudes of nursing and medical staff working in a surgical unit before and after working with a newly established Hospital PC team.</td>
<td>101 physicians and nurses</td>
<td>a surgical unit, Hospital Palliative Care Team</td>
<td>34 years</td>
<td>Male: 22%, and female: 78%</td>
<td>Not stated</td>
<td>N/A</td>
<td>At baseline, 24% of staff showed a lack of knowledge and a poor attitude towards the risk of addiction to morphine. Regarding poor tolerance, at the follow-up time point, only 14% demonstrated a lack of knowledge. At follow-up, 34% (compared with 50% at baseline) still believed that increased doses of opioids were needed because opioids became ineffective over time. Although 25% of all staff still lacked knowledge about the risk of respiratory depression at follow-up, this was a significant improvement from the 56% who demonstrated a lack of knowledge at baseline. At baseline, a fairly high proportion of staff appeared to believe the pain was a part of advanced cancer (38%). Nurses performed pain assessment and documentation more regularly than physicians did. Although physicians had better knowledge of PM than did nurses, both groups lacked knowledge regarding the side effects and pharmacology of opioids. Physicians working in the palliative care ward and nurses who had received PM education obtained higher scores on knowledge.</td>
<td>4/7</td>
</tr>
<tr>
<td>Jho et al., (2014), Korea</td>
<td>Cross-sectional method</td>
<td>To evaluate knowledge, practices, and perceived barriers regarding CPM among physicians and nurses in Korea.</td>
<td>333 physicians and nurses</td>
<td>11 hospitals (6 public and 5 private hospitals) across Korea.</td>
<td>32.2 years for physicians and 29.0 years for nurses.</td>
<td>Physician, 61.5% male, 38.5% female. Nurses, 0% for male and 100% female.</td>
<td>Not stated</td>
<td>N/A</td>
<td>Nurses performed pain assessment and documentation more regularly than physicians did. Although physicians had better knowledge of PM than did nurses, both groups lacked knowledge regarding the side effects and pharmacology of opioids. Physicians working in the palliative care ward and nurses who had received PM education obtained higher scores on knowledge.</td>
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<tr>
<td>Jeon et al., (2007), Korea</td>
<td>Cross-sectional method</td>
<td>To assess clinicians’ practices and attitudes about CPM and to identify perceived concerns about and barriers to pain control in urban cancer-treatment settings in Korea.</td>
<td>250 physicians and nurses</td>
<td>seven hospitals in Korea</td>
<td>Not stated</td>
<td>Male: 42.8%, Female 57.2%</td>
<td>Not stated</td>
<td>N/A</td>
<td>The result shows that Both groups identified 90.6% concerned that difficulty in controlling strong side effects is the biggest potential barrier to good pain control. Also, they identified inadequate assessment of pain and pain management with 78.5% as the second biggest potential barriers to good pain control. 64.5% of both groups stated inadequate staff knowledge of PM.</td>
<td>6/7</td>
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<tr>
<td>Darawad et al., (2017), Jordan</td>
<td>Descriptive Cross-sectional method</td>
<td>To compare physicians’ and nurses’ knowledge and attitudes towards cancer pain management (CPM) and describe their perceived barriers to CPM at cancer units.</td>
<td>207 physicians and nurses</td>
<td>Oncology units from the military, educational, oncology centre, and public sectors in Jordan.</td>
<td>Physicains: 30.5 and Nurses: 28.1,</td>
<td>Physicians (M: 54.8%; F: 45.2%); physicians (M: 61.1%; F: 38.9%).</td>
<td>KAS</td>
<td>N/A</td>
<td>Findings revealed that Physicians had significantly higher adequate knowledge and better attitudes towards CPM than nurses (62.3% vs. 51.5%, respectively). Physicians were knowledgeable about medication for CPM and opioid addiction but had negative attitudes towards CPM. Nurses’ knowledge was better in regard to CPM guidelines, while they had poor knowledge about CPM and opioid addiction.</td>
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<tr>
<td>Furstenberg et al., (1998), State of New Hampshire, the US</td>
<td>Cross-sectional method</td>
<td>Evaluate the knowledge and attitudes of all three types of providers directly involved in caring for cancer Pts., physicians, pharmacists, and nurses.</td>
<td>554 physicians, pharmacists, and nurses.</td>
<td>Research and Development Committee of the New Hampshire State CP Initiative</td>
<td>43.4 years</td>
<td>Male 44%, Female 56%</td>
<td>N/A</td>
<td>Not stated</td>
<td>The results are generally consistent with results from other studies of physicians, nurses, and pharmacists in terms of knowledge of and attitudes towards CPM, perceived barriers to effective CPM, and lack of training in CPM. In contrast to some earlier studies. However, providers in this sample were not concerned about addiction among CPs. Lack of knowledge about CPM was found across providers.</td>
<td>6/7</td>
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<tr>
<td>Srisawang et al., (2013), Thailand</td>
<td>Cross-sectional method</td>
<td>To assess the knowledge and attitudes physicians and policymakers have regarding the use of opioids for CPM.</td>
<td>266 Physicians and policymakers</td>
<td>300 hospitals in Thailand</td>
<td>40 years</td>
<td>Physicians: male 57.5%, female 42.5%; Policymakers: male 40.4%, female 59.5%.</td>
<td>N/A</td>
<td>Not stated</td>
<td>Of the physicians, 62.1% had inadequate knowledge, and 33.8% had negative attitudes. Physicians who did not know the WHO three-step ladder were more likely to have less knowledge than those having used the WHO three-step ladder (OR = 13.0, p &lt; 0.001). Policymakers also had inadequate knowledge (74.5%) and negative attitudes (66.0%). Policymakers who never had CPM training were likely to have more negative attitudes than those having had training within less than one year (OR = 35.0, p = 0.005). Lack of training opportunities and periodic shortages of opioids were the greatest barriers to opioid availability for physicians and policymakers, respectively.</td>
<td>6/7</td>
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<tr>
<td>Yildirim et al., (2008), Turkey</td>
<td>Cross-sectional method</td>
<td>To examine information about the knowledge and attitudes of Turkish oncology nurses regarding CPM.</td>
<td>68 nurses</td>
<td>Oncology &amp; haematology units in two university hospitals located in Izmir, Turkey</td>
<td>25 years</td>
<td>Not stated</td>
<td>N/A</td>
<td>SRP</td>
<td>The findings showed that Turkish oncology nurses have inadequate knowledge and poor attitudes about CPM. Out of the 39 pain questions examined, the mean score for correctly answered items was 13.81 (35.41% correct answer rate). Compared with earlier research using the same tool. Only 8.8% of oncology nurses correctly identify that less than 1% of patients who receive opioids for pain relief will develop an addiction, and 91.2% erroneously believe that addiction will occur in patients. Most nurses (97.1%) incorrectly believed more patients over-report their pain.</td>
<td>7/7</td>
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<tr>
<td>Utne et al., (2018), Norway</td>
<td>Cross-sectional method</td>
<td>To survey knowledge and attitudes to pain and PM among nurses and to explore various demographic variables and knowledge level</td>
<td>312 nurses</td>
<td>Forum for Cancer Nursing</td>
<td>45 years</td>
<td>Female: 98.4%, male: 1.6%</td>
<td>N/A</td>
<td>NKA SP</td>
<td>Norwegian nurses had a mean NKA total score was 31 points (75%), indicating a relatively high level of knowledge and good attitudes towards pain in cancer care. Significant associations were found between NKA total score and PM course (p = 0.01) and workplace (p = 0.04). Nurses in cancer care in Norway have relatively good pain knowledge. The potential for improvement is the greatest with regard to pharmacology and nurses’ attitudes to how patients express pain.</td>
<td>7/7</td>
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<tr>
<td>Shahnaei et al., (2012), Iran</td>
<td>Cross-sectional method</td>
<td>To obtain information about the knowledge and attitudes of nurses concerning CPM</td>
<td>98 nurses</td>
<td>Alzahra educational hospital in Isfahan, Iran.</td>
<td>38.7 +/- 7.04 years</td>
<td>Male 18.4%, female 81.6%</td>
<td>HBM</td>
<td>N/A</td>
<td>From the 10 CP knowledge and attitude questions assessed, the mean number of correctly answered questions was 61.2 (SD =16.5) and 63 (SD =11), with a range of 30-100 and 35-95, respectively. There was a direct correlation between knowledge and attitude of nurses with Health Belief Model (HBM) constructs except for perceived barriers and perceived threats. Among the HBM constructs, the highest score was related to self-efficacy, with a mean score of 87.2 (SD =16.4).</td>
<td>6/7</td>
</tr>
<tr>
<td>Shahriary et al., (2015), Iran</td>
<td>Cross-sectional method</td>
<td>To determine the baseline level of knowledge and attitudes of oncology nurses regarding CPM</td>
<td>58 nurses</td>
<td>Shahid Sadoughi hospital, oncology units, Yazd, Iran</td>
<td>33.5 years</td>
<td>100% female</td>
<td>NKASP</td>
<td>N/A</td>
<td>The average correct response rate for nurses was 66.6%, ranging from 12.1% to 94.8%. The nurses' mean score on the knowledge and attitudes survey regarding PM was 28.5%. Results revealed that the mean percentage score overall was 65.7%. Only 8.6% of nurses obtained a passing score of 75% or greater. Widespread knowledge deficits and poor attitudes towards CPM were noted in this study</td>
<td>5/7</td>
</tr>
<tr>
<td>O’Brien et al., (1996), North Carolina, the US</td>
<td>Cross-sectional method</td>
<td>To describe the knowledge and attitudes of North Carolina nurses towards CPM. The analysis focused on knowledge, attitude, and perception of barriers to PM</td>
<td>340 nurses</td>
<td>The North Carolina, hospital settings</td>
<td>52 years</td>
<td>Male 3%, Female 97%</td>
<td>NCCPI</td>
<td>N/A</td>
<td>Knowledge scores for the three subscales revealed that nurses who had worked with CPs were more knowledgeable than those who did not work with CPs. The total knowledge score for nurses caring for CPs was 18.47 and 15.88 for nurses not caring for CPs (z = -6.19, p &lt; 0.001). Attitude towards PM was for nurses caring for CPs. The average was 3.52. A liberal attitude was reported more often by nurses caring for one or more CPs (X^2 = 3.9, df =1, p &lt; 0.05).</td>
<td>7/7</td>
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<tr>
<td>McCaffery and Ferrell, (1995), Australia, Canada, Japan, Spain, and the US.</td>
<td>Cross-sectional method</td>
<td>To address nurses’ knowledge and attitudes about pts’ reports of pain, the prevalence of CP, the preferred route of administration for analgesics, the preferred choice of opioids, initiation of treatment, dosing schedule, and knowledge about addiction</td>
<td>1,428 international nurses from 5 countries</td>
<td>Pain programs in Western, Eastern, Midwestern, &amp; southern, sts in the USA, Pain programs in Australia, pain programs in Canada, palliative care in Japan, and nurses had lectures In Spain</td>
<td>Not stated</td>
<td>Not stated</td>
<td>N/A</td>
<td>Prevalence of pain: higher % from nurses in Spain 94.8% and lower % was only 49% of nurses in Japan. Over-reporting of pain: Nurses from Japan reported an extremely high degree of misconception, with 28.9% responding that 80%-100% of CPs over-report their pain. Incidence of addiction: Roughly 20%-30% of nurses from each country reported the likelihood of addiction as 5%. The % was even higher at 50.9% for Japanese and Spanish nurses at 54.7%. Initiation of opioids: Canadian nurses reported the highest correct response with 93.2%, while was only 51.2% in Japanese nurses. Appropriate use of analgesics: widespread misconceptions in this area, with only 51.2% of nurses from Spain and 61.6% of Japan compared to 71.5% of Canadian and 66.3% of American nurses who selected morphine for CPM.</td>
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<td>Kassa and Kassa, (2014), Ethiopia</td>
<td>Cross-sectional method</td>
<td>To assess the attitude, the practice of nurses’ and barriers to CPM</td>
<td>82 nurses</td>
<td>1 public and 4 private health institutions provide cancer treatment in Addis Ababa, the capital city of Ethiopia.</td>
<td>42 years</td>
<td>Male 22%, female 64 78%</td>
<td>NKARSP</td>
<td>N/A</td>
<td>More than half, 53.7%, of the nurses' have a negative attitude towards CPM. Similarly, 65.9% of nurses had poor CPM practice. The identified barriers to adequate pain management were lack of courses related to pain in the undergraduate classes, lack of continuing training, patient and work overload, role confusion, lack of motivation, and salary.</td>
<td>6/7</td>
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<tr>
<td>Hollen et al., (2000), South Central State. The US</td>
<td>Cross-sectional method</td>
<td>To identify knowledge strengths and weaknesses and misperceptions about CPM among nurses</td>
<td>64 nurses</td>
<td>7 adult hospital oncology units and 11 hospices in a South-Central State.</td>
<td>It is not stated.</td>
<td>NCCPI</td>
<td>N/A</td>
<td>Hospice nurses (X = 24.71, SD = 2.27) scored significantly higher on the total knowledge test than the hospital oncology nurses X = 20.76, SD = 3.77; t(66) = 5.09, p &lt; 0.05. Hospice nurses also scored significantly higher than hospital nurses on opioid subscale t (61) = 5.52, p &lt; 0.05 and scheduling subscale t (62) = 3.77, p &lt; 0.05. Regarding attitudes, hospice nurses also had significantly higher liberalness score (X = 18.31, SD = 1.79) than hospital nurses (X = 16.94, SD = 2.32; t (61) = 2.58, p &lt; 0.05. The results showed that more than 50% of oncology nurses underestimated the pain of pts, and they, did not treat it in a correct way and had an incorrect self-evaluation about their CPM knowledge. 90.2% of respondents did not know the correct percentage of patients who over-report their pain. Among the 39 questions examined, 23 received less than 60% of the correct answer rate. The mean score for correctly answered items was 21.4 (55% correct answers).</td>
<td>5/7</td>
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<tr>
<td>Bernardi et al., (2007), Italy</td>
<td>Cross-sectional method</td>
<td>To obtain information about the knowledge and attitudes of Italian nurses concerning CPM and to determine the nurses’ PM knowledge</td>
<td>287 nurses</td>
<td>Oncology wards in the north, centre and South of Italy</td>
<td>Male 19.2%, female 78.7%</td>
<td>NKARSP</td>
<td>N/A</td>
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<tr>
<td>Kaki, (2011), Saudi Arabia</td>
<td>Cross-sectional method</td>
<td>To assess the final year medical students' knowledge, beliefs, and attitude towards CPM and the need for a formal pain curriculum in medical schools.</td>
<td>325 medical students</td>
<td>King Abdul-Aziz University Hospital, Jeddah, Kingdom of Saudi Arabia</td>
<td>23 years</td>
<td>Males 48.62%, females 51.38%</td>
<td>Not stated</td>
<td>N/A</td>
<td>54 % of the respondents believed that &lt; 40% of CPts suffered from pain. 46 % of them considered CP as untreatable, while 41.6% considered pain as a minor problem, and 58.6% considered drug addiction. There are 23.1% of students believed that pts are poor judges of their pain, 68% of them limited opioids prescribed to pts with poor prognosis, and 77.1% believed that drug tolerance or psychological dependence, rather than advanced stages cancer is the cause of increasing opioid doses. The student's knowledge of the causes of CP, pain clinic rule, and pain inclusion in the medical curriculum was poor.</td>
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<td>Riddell and Fitch, (1997), Canada</td>
<td>Descriptive correlational study</td>
<td>To examine pts’ knowledge of and attitudes towards CPM and to identify pts’ perspectives and factors related to effective and ineffective pain relief.</td>
<td>42 patients</td>
<td>Oncology facility at a teaching hospital</td>
<td>58.5 years</td>
<td>Female: 67%, male: 33%</td>
<td>PPQ</td>
<td>Head/neck, breast, hematologic, female reproductive system, lung, gastrointestinal, male reproductive</td>
<td>The results showed that many pts lacked knowledge of the principles involved in effective CPM and had unrealistic concerns about taking pain medications. Significant negative relationships were found between pain intensity rating and factors such as pts’ knowledge of PM, their level of satisfaction with pain relief, and their perception of the goal of PM. Pts identified a number of impediments to effective pain relief, including concerns about drug addiction and side effects.</td>
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<tr>
<td>Cohen et al., (2005), Israel</td>
<td>Descriptive cross-sectional method</td>
<td>To explore cancer pain experience, including knowledge and attitudes towards pain and pain control.</td>
<td>39 patients</td>
<td>Radiation department and outpatient centre of a large academic medical institution in Israel. ETH is located in 3 cities of Anatolia: Ankara, Konya, and Kayseri; namely Diskapi Yildirim Beyazit ETH, Kayseri ETH, and Konya ETH</td>
<td>73.2 years</td>
<td>Male: 48.7%, Female: 51.3%</td>
<td>PPQK</td>
<td>Lung, Breast, Colon, Other</td>
<td>Over half (56.7%) reported severe worst pain and had negative pain management indexes (56.4%). Knowledge and attitudes towards pain and pain control were poor (54.55%).</td>
<td>7/7</td>
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<tr>
<td>Colak et al., (2014), Turkey</td>
<td>Cross-sectional method</td>
<td>To survey the attitudes of cancer pts towards morphine for CPM and identify the factors that influence pts decisions to accept or refuse morphine for CPM</td>
<td>488 patients</td>
<td>54 years</td>
<td>Female: 61.68%, Male: 38.32%</td>
<td>Not stated</td>
<td>Breast Colorectal gastric and lung patients.</td>
<td>About 50% of cancer patients refused to use morphine, and 36.8% of them preferred another drug due to fear of addiction. Reservation of morphine for later in their disease was the case for 22.4% of the patients who refused morphine use. Whereas 13.7% of cancer patients refused morphine and 9.7% of them preferred another medication as a result of religious reasons.</td>
<td>6/7</td>
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<tr>
<td>Elliott et al., (1996), The US</td>
<td>Cross-sectional method</td>
<td>To investigate the relationship between specific knowledge and attitudes (cognitive factors) and pts’ and caregivers reports of cancer pain and attitudes.</td>
<td>244 patients and caregivers.</td>
<td>64 years for cancer patients and 60 years for family members</td>
<td>Cancer patients are 53% female; family members are 62% female.</td>
<td>Not stated</td>
<td>N/A</td>
<td>Patients’ and caregivers’ reports of patient pain and performance status were highly correlated, although family members consistently reported more pain and disability. Using regression analysis, cognitive factors were strongly related to family reports of patients’ pain (R2 = 0.27) but contributed little to explaining pain reported by patients themselves (R2 = 0.06). Assessment of pain for Family members is significantly related to appropriate knowledge and attitudes.</td>
<td>6/7</td>
<td></td>
</tr>
<tr>
<td>Lou and Shang, (2017), China</td>
<td>Descriptive Cross-sectional method</td>
<td>To investigate pts’ attitudes towards CPM and analyse the factors influencing these attitudes.</td>
<td>726 patients and caregivers</td>
<td>The oncology department of 7 hospitals in Beijing, China</td>
<td>Patients: 54.39±12.72 years. Caregivers: 46.07±13.26 years.</td>
<td>Patients: male 52.34%, female 47.66%, Caregivers: male 45.73%, female 54.27.</td>
<td>BQ-T, PKQ</td>
<td>Lung, oral, nasopharyngeal, oesophageal, gastrointestinal, breast, liver, pancreatic, lymphoma, and (kidney, ureter, bladder, ovarian, uterine.</td>
<td>The average score of attitudes towards CPM for CPs and caregivers through the BQT subscale score ranged from 0-5 were 2.96 ± 0.49 and 3.03 ± 0.49, respectively. The dimension scores for CPs and CGs indicated poor attitudes in six areas (scores ≥2.5), “Tolerance”, “Use of angesics as needed (p.r.n.)”, “Addiction”, “Disease progression”, “Distraction of physicians”, and “Side effects”. Two factors were entered into the regression equation: the caregivers’ attitudes towards CPM and the pts’ pain knowledge. These two factors explained 23.2% of the total variance in the pts’ average scores for their attitudes towards CPM.</td>
<td>7/7</td>
</tr>
</tbody>
</table>
Table 3-2 Summarised studies addressing HCPs’, patients’, caregivers’, and the general public’s attitudes and knowledge towards CPM

<table>
<thead>
<tr>
<th>Author(s), year, and country.</th>
<th>Study design</th>
<th>Study aim</th>
<th>Study participants</th>
<th>Study setting</th>
<th>Mean age</th>
<th>Sex ratio</th>
<th>Measurements</th>
<th>Type of Cancer</th>
<th>Main finding</th>
<th>Quality Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lin et al., (2000), Taiwan</td>
<td>Cross-sectional method</td>
<td>To examine caregivers’ and pts’ attitudes to CPM; to determine the relationship of attitudinal barriers to caregiver hesitancy to report pain and administer opioids, and to determine the relationship of barriers to opioids.</td>
<td>160 patients and caregivers</td>
<td>Inpatient palliative care units of two medical centres in the Taipei area of Taiwan</td>
<td>Patients: (59.63 +/- 11.76); family caregivers: (43.21 +/- 12.88)</td>
<td>Patients:</td>
<td>Male 47%; Female 53%; Family caregivers: Male 27%; Female 73%.</td>
<td>BQ-T, BPI-C</td>
<td>Lung, colorectal breast, liver, gastric, oral, cervical, and various other types</td>
<td>The five mean scores of the BQ-T subscale score among caregivers, with the highest scores being disease progression, side-effects, p.r.n., tolerance, and addiction. Two attitudinal barriers, ‘Constipation from pain medicine is upsetting,’ and ‘opioids will cause harm to kidneys,’ were endorsed by 100% of caregivers. About 12 caregivers (15%) reported their hesitation to report pain in the past month. Those caregivers who had expressed hesitancy to report pain recorded significantly higher scores on the fear of addiction barrier than those who had no hesitancy. Those caregivers who expressed hesitancy in administering opioids recorded significantly higher scores on the barriers, including fear of addiction, side effects, and tolerance, than those who had no reluctance in administering analgesics in the past month. The mean for each subscale of the BQ of caregivers expressing some agreement of concerns was between 1.05 and 2.41. The concerns were barriers to reporting pain and using analgesics, and up to 15% reported having a strong agreement. The greatest concern were opioid-related side effects, fears of addiction, the belief that pain meant disease progression, and tolerance.</td>
</tr>
<tr>
<td>Vallerand et al., (2007), Detroit, Michigan, the US</td>
<td>descriptive Cross-sectional method</td>
<td>To determine caregivers’ knowledge and examine concerns about reporting pain and using opioids for CP.</td>
<td>46 caregivers</td>
<td>homecare patients with cancer</td>
<td>55 years</td>
<td>Female 67.4%</td>
<td>BQ, FPQ</td>
<td>N/A</td>
<td>The mean for each subscale of the BQ of caregivers expressing some agreement of concerns was between 1.05 and 2.41. The concerns were barriers to reporting pain and using analgesics, and up to 15% reported having a strong agreement. The greatest concern were opioid-related side effects, fears of addiction, the belief that pain meant disease progression, and tolerance.</td>
<td>7/7</td>
</tr>
<tr>
<td>Larue et al., (1999), France</td>
<td>The cross-sectional method, mixed-method</td>
<td>To assess the evolution of the knowledge and attitudes of the French population with respect to pain management and morphine use.</td>
<td>2,007 general population: 1,001 general population in 1990 and 1006 general population in 1996</td>
<td>Telephone surveys by professional interviewers, and structured questionnaires</td>
<td>35-44 years</td>
<td>Male 47% in 1990, and 47% in 1996.</td>
<td>Not stated</td>
<td>Not stated.</td>
<td>The respondents’ awareness of the occurrence of pain in the course of cancer improved: 65% thought that pain is rare at the early stages of cancer in 1996, compared with 49% in 1990; 84% thought that pain is frequent at advanced stages of cancer, compared with 72% in 1990. The % of people who were not afraid of becoming addicted to morphine if prescribed for pain relief increased from 26% in 1990 to 69% in 1996. However, the % of respondents who agreed that morphine could be prescribed to CPs increased only slightly, from 79% to 83% for CPs. The result from the 472 respondents who had not been diagnosed with cancer: 15% of them agreed or strongly agreed that if they had cancer, their fear of the disease would make them seek medical care. About 18% indicated they would avoid seeking care as a result of concerns about the pain associated with cancer treatment. 62% associated the onset of pain with disease progression, and 57% thought CPs usually die a painful death. 50% of respondents had significant concerns about a variety of consequences of taking opioids, including confusion or disoriented, tolerance, and addiction.</td>
<td>6/7</td>
</tr>
<tr>
<td>Levin et al., (1985), Wisconsin, the US.</td>
<td>The cross-sectional method, mixed-method</td>
<td>To provide objective information about the public’s attitudes towards PM and the effects of beliefs on some factors, including delay in seeking treatment and avoidance of opioids.</td>
<td>496 general public</td>
<td>The Wisconsin Survey Research Laboratory</td>
<td>Not stated</td>
<td>Female 57%, male 43%</td>
<td>Not stated</td>
<td>Not stated</td>
<td>The % of people who were not afraid of becoming addicted to morphine if prescribed for pain relief increased from 26% in 1990 to 69% in 1996. However, the % of respondents who agreed that morphine could be prescribed to CPs increased only slightly, from 79% to 83% for CPs. The result from the 472 respondents who had not been diagnosed with cancer: 15% of them agreed or strongly agreed that if they had cancer, their fear of the disease would make them seek medical care. About 18% indicated they would avoid seeking care as a result of concerns about the pain associated with cancer treatment. 62% associated the onset of pain with disease progression, and 57% thought CPs usually die a painful death. 50% of respondents had significant concerns about a variety of consequences of taking opioids, including confusion or disoriented, tolerance, and addiction.</td>
<td>4/7</td>
</tr>
</tbody>
</table>

NKARSP = The Nurses’ Knowledge and Attitudes Survey Regarding Pain, PPQK = Patient Pain Questionnaire Knowledge Subscale, KASP = the Knowledge and Attitudes Survey Regarding Pain, CAS = the Knowledge and Attitudes Survey, CTS = the cross-sectional telephone survey, PSI = the physician survey instrument, PCPA = Physician Cancer Pain Attitude Questionnaire, NCCPI = North Carolina Cancer Pain Initiative survey, BQ-T = Barriers Questionnaire-Taiwan Form, PKQ = Pain Knowledge Questionnaire, BPI-C = the Brief Pain Inventory Chinese version, PPQ = Patient Pain Questionnaire, HBM = the Health Belief Model questionnaire, BQ = The Barriers Questionnaire, FPQ = the Family Pain Questionnaire, PCPQ = Physician Cancer Pain Questionnaire, pts = patients, CP= Cancer pain, CPM = Cancer Pain Management, ETH = Education and Training Hospitals. Quality Scoring = quality assessment of the included studies (see Chapter 2).
3.2.3 Results

3.2.3.1 Patients’ knowledge and attitudes towards CPM
The results from the majority of studies that involved cancer patients only (n = 3) and in studies that included cancer patients and their caregivers (n = 3) indicated that low mean scores on the patient’s knowledge and attitudes towards CPM, suggesting poor understanding or negative attitudes towards CPM among cancer patients (Riddell and Fitch, 1997; Colak et al., 2014b; Cohen et al., 2005; Lou and Shang, 2017). For instance, a study conducted in China by Lou and Shang (2017) reported through the Barriers Questionnaire-Taiwan (BQT; ranging from 0-5, "0" means "do not agree at all," and "5" means that the participant is "agreed very much" about cancer pain and using pain medication for CPM) that cancer patients had poor attitudes toward opioids for CPM in the six areas (scores ≥ 2.5): “Use of analgesics as needed (p.r.n.)” (3.73 ± 1.01), “Tolerance” (3.83 ± 0.96), “Addiction” (3.44 ± 1.05), “Side effects” (2.99 ± 0.68), “Disease progression” (3.28±1.26), and “Distraction of physicians” (3.16 ± 1.07), which can lead to attitudinal barriers to effective CPM. Another study by Colak et al. (2014b) reported that more than 50% of Turkish patients refused to receive strong opioids, such as morphine for CPM, and 36.8% of them preferred another (non-opioid) medication for managing cancer pain. The rejection of strong opioids for CPM among cancer patients was because of negative attitudes towards morphine, particularly due to a fear of addiction. In addition, religious and cultural reasons were cited as reasons for rejecting opioid treatment for CPM.

3.2.3.2 HCPs’ knowledge and attitudes towards CPM

3.2.3.2.1 Comparison of knowledge and attitudes to CPM between Physicians and Nurses
Studies that aimed to assess the knowledge and attitudes towards CPM among nurses and physicians (n = 5) showed that physicians had better knowledge and positive attitudes towards CPM than nurses (Jho et al., 2014; Furstenberg et al., 1998; Jeon et al., 2007; Darawad et al., 2017b; Wells et al., 2001). For example, a study by Darawad et al. (2017b) reported that physicians who work in oncology
settings had a higher understanding and knowledge about cancer pain and opioids for CPM than nurses. The mean scores on the Knowledge and Attitudes Survey (KAS; range: 0-39) for physicians was 24.3 (62.3%) compared to 20.08 (51.5%) for nurses ($P < 0.001$), indicating that physicians had higher knowledge and more positive attitudes towards CPM than nurses (Darawad et al., 2017b). Another study by Gallagher et al. (2004) showed that oncologists recorded higher knowledge of CPM than surgeons ($p < 0.001$). However, the results from studies with physicians ($n = 13$), with nurses ($n = 9$), and with both physicians and nurses ($n = 5$) indicate a lack of knowledge and poor attitudes towards CPM among HCPs resulted in barriers to effective CPM.

A study by Bernardi et al. (2007b) showed that pain knowledge and attitudes towards CPM could differ among HCPs based on the geographical location within a country. For example, nurses who worked in the central region of Italy had the lowest score of pain knowledge (47.9%; mean = 18; n = 66) compared with those in the North (57.2%; mean = 21; n = 149) and in the South of Italy (56.9%; mean = 23; n = 72) ($p < 0.001$). The study also reported that nurses who had received education in CPM had significantly higher mean knowledge scores than those who did not (mean = 22 versus mean = 20; $p < 0.05$). These results indicate that nurses did not have the same CPM education and training across Italy; thus, Italian patients with cancer pain were treated differently in the same country. This study also highlighted that education and training in CPM among HCPs are needed to improve HCPs' knowledge and attitudes towards CPM.

3.2.3.2.2 Comparison of nurses’ attitudes and knowledge towards CPM between different countries

When nursing knowledge and attitudes towards opioids for CPM were compared between countries, there was a difference between Western nurses and those from Asia and European countries. For instance, nurses from Canada (71.5%) and the USA (66.3%) were more likely to use opioid analgesics, such as morphine for CPM, than nurses from Japan (61.6%) and Spain (51.2%) (McCaffery and Ferrell, 1995). Furthermore, Canadian and American nurses
answered the relevant questions related to CPM correctly (51.3%, 43.4%), respectively, compared to only 14% of Spanish nurses and 17.2% of Japanese nurses who responded correctly (McCaffery and Ferrell, 1995). The result suggests that nurses from countries such as Canada and the USA showed more knowledge and positive attitudes towards CPM than nurses from Spain and Japan. Adequate knowledge and positive attitudes towards CPM among nurses from Canada and the USA were due to better/more thorough pain education and work experience in palliative care and CPM.

### 3.2.3.3 Caregivers' knowledge and attitudes towards CPM

All studies that included participants who were caregivers (only) (n = 1) and that involved caregivers and cancer patients together (n = 3) showed a lack of knowledge and negative attitudes of caregivers towards cancer pain and opioids for CPM. For example, a study conducted in Taiwan by Lin et al. (2000) indicated that family caregivers held concerns about cancer pain and opioids for CPM. These concerns were shown through the Barriers Questionnaire-Taiwan (BQT) survey (ranged 0-5), as follows: “disease progression” (Mean = 3.82), “side effects” (Mean = 3.29), “given as needed (p.r.n)” (Mean = 3.01), “poor tolerance” (Mean = 2.96), and “drug addiction” (Mean = 2.67), respectively (Lin et al., 2000). Another study conducted by Lou and Shang (2017) also revealed that caregivers’ attitudes towards CPM and patients’ pain knowledge explained about 23% of the total variance in the patients’ average scores for their attitudes towards CPM when entered into a regression equation. This indicated that patients’ attitudes towards CPM were influenced by their caregivers’ attitudes and the patient’s pain knowledge (Lou and Shang, 2017). The results also revealed that some family caregivers reported their hesitation to administer opioids for CPM and reported pain to their patients during the preceding month because caregivers believed opioids would cause constipation and harm patients’ kidneys (Lin et al., 2000). This result suggests that caregivers’ lack of adequate knowledge and poor attitudes towards cancer pain and opioids were barriers to effective CPM.

The results also showed similar concerns about cancer pain and opioids for CPM caregivers in China. These concerns were directed as higher and lower in some dimensions regarding “poor tolerance” (Mean = 3.74), “given as needed (p.r.n)”
(Mean = 3.51), “drug addiction” (Mean = 3.43), “disease progression” (Mean = 3.27), and “side effects” (Mean = 3.22), respectively (Lou and Shang, 2017). However, concerns about cancer pain and opioids for CPM among caregivers were lower in the USA (Vallerand et al., 2007b), indicating that caregivers in the USA might have a good level of knowledge and positive attitudes towards CPM than caregivers in Taiwan and China. For instance, the areas of concern for caregivers in the USA were “opioid-related side effects” (Mean = 2.41), “fears of drug addiction” (Mean = 2.35), “disease progression” (Mean = 2.28), and “poor tolerance” (Mean = 1.37), respectively (Vallerand et al., 2007b).

### 3.2.3.4 Public’s knowledge and attitudes towards CPM

The studies demonstrate that the general public (n = 2) showed a lack of knowledge and poor attitudes towards cancer pain and opioids for CPM. Levin et al. (1985) conducted a study that involved 472 general public respondents in the USA with no cancer diagnosis. They reported that approximately 20% of participants would avoid seeking care because of concerns about the pain associated with cancer treatment. Roughly 15% of the cohort agreed or strongly agreed that if they had cancer, their fear of the disease would make them seek medical care (Levin et al., 1985). The most common key concern among the general public in the USA that would affect them if they had cancer was the “potential for upset to their family,” followed by concern about the “possibility of dying of cancer.” Approximately 50% reported significant concern about pain resulting from cancer and its management process (Levin et al., 1985). The same study also reported that around 60% of the general public believed that pain usually is associated with disease progression, 57% thought that cancer patients usually die from cancer with a painful death, and 50% had significant concerns about opioid side effects, including confusion or disorientation, poor tolerance and drug addiction (Levin et al., 1985).

Another study by Larue et al. (1999) in France aimed to assess the evolution of the knowledge and attitudes of the French population between the period of 1990 and 1996 concerning pain management and the use of morphine. Their results illustrated improvements in the general public’s knowledge and attitudes towards CPM over time. For example, about 65% of the general public thought that pain
was rare at the early stages of cancer in 1996 compared with roughly 50% in their previous study in 1990 ($p < 0.001$) (Larue et al., 1999). Furthermore, the percentage of people who were not afraid of becoming addicted to morphine if prescribed for CPM increased from 26% in 1990 to 69% in 1996 ($p < 0.001$). However, there was not much difference between the general public in 1990 (79%) and 1996 (83%) regarding the statement “morphine could be prescribed to patients with cancer pain.” Overall, their study reported that 58% of the 1996 general public believed that their knowledge regarding cancer pain and its management had improved over the past five years (Larue et al., 1999). Although these studies were old, as published in 1985 and 1999, they were the only studies identified that could provide insight into the general public’s perception. As they were the only 2 found, it is an area of interest for further work. The results suggest that the general public showed a lack of adequate knowledge and poor attitudes towards CPM, resulting in barriers to effective CPM.

3.3 Summary of the Key findings

This chapter presents a systematic review of the literature related to the nature and impact of attitudes and knowledge towards CPM. Overall, evidence within the literature indicates that medical professionals, cancer patients, patient caregivers, and the general population are likely to harbour negative attitudes and display a lack of knowledge about CPM. These findings are consistent with those of recent studies and systematic reviews (Bouya et al., 2018; Saifan et al., 2015; van den Beuken-van Everdingen et al., 2007b; Van den Beuken-van Everdingen et al., 2016b; Colak et al., 2014b; Breivik et al., 2009; Greco et al., 2014; Saifan et al., 2019). Even though all included studies used the same design (cross-sectional design), the questionnaires that were used to conduct surveys in this particular area were different and some studies did not state which questionnaire was used or failed to provide information regarding the validity of the tools. Therefore, it was difficult to directly compare studies and the reliability of these included studies in this review could be compromised (Poudel et al., 2018; JBI, 2016).
This review also highlights that most studies indicated similar attitudinal barriers to effective CPM shared across patients, caregivers, HCPs, and the public. The barriers most commonly cited were the fear of poor tolerance, side effects of opioids, and drug addiction.

As a result of the negative attitudes, concerns about opioid use, and lack of education about CPM, the management of cancer pain remains a significant problem worldwide, especially in countries in Europe, Africa, and Asia (Saini and Bhatnagar, 2016; Breivik et al., 2009; Van den Beuken-van Everdingen et al., 2016b; Li et al., 2018; Reis-Pina et al., 2015; 2018; Thinh et al., 2018). This is an issue that needs addressing as it can result in unalleviated pain, and poor quality of life, for patients with cancer. Furthermore, there is still no clear measure to establish peoples’ beliefs, views, perceptions, and attitudes towards cancer pain and opioids for CPM. Hence, more details are needed to allow for ease of comparison and understanding of how these attitudes arise within different contexts and tailoring educational initiatives to address these are likely to impact improving CPM. In the Next Chapter a qualitative study (study two) that aims to explore and understand the Libyan HCPs’, patients,’ and family caregivers’ views about cancer pain and its management will be presented. Based on the result from this chapter (Chapter 3), a more in-depth understanding of the conceptions and attitudes towards CPM can be provided by a qualitative study (Ung et al., 2016). Additionally, a qualitative method was needed to help to identify the factors which can influence the HCPs’, cancer patients, and caregivers’ attitudes and knowledge towards CPM (Ung et al., 2016).
Chapter 4
Libyan healthcare professionals', patients' and caregivers' perceptions and religious beliefs about cancer pain and its management: A qualitative study

4.1 Introduction
This chapter presents the results of a qualitative study (Study two), which aimed to explore and understand the Libyan HCPs', patients', and family caregivers' views about cancer pain and its management. Firstly, section 4.2 presents the characteristics of the participants. Secondly, in section 4.3, key themes are presented, which include the influence of religion on CPM; the influence of culture on CPM; the influence of economic factors on CPM; patients and caregivers related barriers; HCPs related barriers; and healthcare system-related barriers in sub-sections 4.3.1., 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6, respectively. Finally, this chapter will be concluded by summarising the key findings in section 4.4.

4.2 Characteristics of participants
Thirty-six participants (12 Libyan HCPs, 18 cancer patients, and 6 family caregivers) agreed to participate in study two and were interviewed. The mean age for HCPs was 37.25 years (SD = 9.5), for cancer patients was 48.5 years (SD = 14.4), and it was 37.5 years (SD = 12.8) for family caregivers, ranging between 21 and 75.

All participants of family caregivers were males 6 (100%), as the interviews were conducted in Egypt and in the Libyan culture, caregivers who usually travel with patients abroad are males. Furthermore, some female caregivers refused to participate in the study. There were more married participants 21 (58.3%) than single 11 (30.5%), 3 participants (8.3%) were divorced, and only one participant (2.8%) was widowed.

Professions were 6 (50%) nurses and 6 (50%) physicians. HCPs and caregivers were more likely to have attained university education than patients
(undergraduate degree: 8.3% and 8.3% versus 5.6%) and postgraduate (8.3% and 0% versus 2.8%). Patients were more likely to have lower educational levels than caregivers and HCPs (intermediate: 25% versus 2.8% versus 11.1%) and elementary to standard (16.7% versus 5.6% versus 5.6%). Cancer diagnosis were: Breast 5 (27.8%), lung 2 (11.1%), pancreatic 1 (5.6%), nasopharyngeal 1 (5.6%), lymphoma 2 (11.1%), bladder 2 (11.1%), stomach 2 (11.1%), and colorectal 3 (16.7%). Stages of cancer were: 12 patients (66.7%) with stages II and III and 6 patients (33.3%) with stage IV. See Table 4.1 for participants’ demographic characteristics.

Table 4-1 Participants’ demographic characteristics

<table>
<thead>
<tr>
<th></th>
<th>HCPs (N=12)</th>
<th>Patients (N=18)</th>
<th>Caregivers (N=6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender; N (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>5 (41.66)</td>
<td>9 (50)</td>
<td>6 (100)</td>
</tr>
<tr>
<td>Female</td>
<td>7 (58.33)</td>
<td>9 (50)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Age (years):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>37.25 (9.51)</td>
<td>48.5 (14.39)</td>
<td>37.5 (12.83)</td>
</tr>
<tr>
<td>Range</td>
<td>22-50</td>
<td>21-75</td>
<td>28-60</td>
</tr>
<tr>
<td>Marital status; N (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>6 (50)</td>
<td>12 (66.66)</td>
<td>3 (50)</td>
</tr>
<tr>
<td>Single</td>
<td>4 (33.33)</td>
<td>4 (22.22)</td>
<td>3 (50)</td>
</tr>
<tr>
<td>Divorced</td>
<td>1 (8.33)</td>
<td>2 (11.11)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Widowed</td>
<td>1 (8.33)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Education; N (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary</td>
<td>0 (0)</td>
<td>5 (27.77)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Standard</td>
<td>2 (16.66)</td>
<td>1 (5.55)</td>
<td>2 (33.33)</td>
</tr>
<tr>
<td>Intermediate</td>
<td>4 (33.33)</td>
<td>9 (50)</td>
<td>1 (16.66)</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>3 (25)</td>
<td>2 (11.11)</td>
<td>3 (50)</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>3 (25)</td>
<td>1 (5.55)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Profession; N (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurses</td>
<td>6 (50)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physicians</td>
<td>6 (50)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly Salary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range; (£/month)</td>
<td>&lt; 500 - 1500</td>
<td>≤ 500</td>
<td>&lt; 500</td>
</tr>
<tr>
<td>No income N, (%)</td>
<td>0 (0)</td>
<td>5 (27.77)</td>
<td>1 (16.66)</td>
</tr>
<tr>
<td>Cancer diagnosis; N (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast</td>
<td>5 (27.77)</td>
<td></td>
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</tr>
<tr>
<td>Lung</td>
<td>2 (11.11)</td>
<td></td>
<td></td>
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<tr>
<td>Pancreatic</td>
<td>1 (5.55)</td>
<td></td>
<td></td>
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<tr>
<td>Nasopharyngeal</td>
<td>1 (5.55)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymphoma</td>
<td>2 (11.11)</td>
<td></td>
<td></td>
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<tr>
<td>Bladder</td>
<td>2 (11.11)</td>
<td></td>
<td></td>
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<tr>
<td>Stomach</td>
<td>2 (11.11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colorectal</td>
<td>3 (16.66)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage of cancer; N (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II &amp; III</td>
<td>12 (66.66)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>6 (33.33)</td>
<td></td>
<td></td>
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<tr>
<td>Type of pain medication; N (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>13 (72.22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On pain medication</td>
<td>5 (27.77)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paracetamol</td>
<td>2 (11.11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSAID</td>
<td>3 (16.66)</td>
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</tr>
<tr>
<td>Codeine</td>
<td>0 (0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tramadol</td>
<td>0 (0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morphine</td>
<td>0 (0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HCP= Healthcare Professionals; N= number; SD= Standard Deviation; %= percentage; /= per; £= pound sterling; <= less than
4.3 Key Themes

Six themes and 12 sub-themes were identified, including the influence of religion on CPM, the influence of culture on CPM, the influence of economic factors on CPM, patients, and caregivers related barriers, HCPs-related barriers, and healthcare system-related barriers, as shown in Figure 4.1 below.

![Figure 4-1 Thematic Map: themes and sub-themes](image)

4.3.1 Influence of religion on CPM

4.3.1.1 Belief and trust in Allah (God)

Many Libyan patients and their caregivers relied upon their religious beliefs (i.e., prayer and trust in Allah) as a coping strategy to manage cancer and pain. Thus, most believed that Allah was with them, and He (Allah) would help cure the disease and relieve the pain. Most family caregivers emphasised that religious beliefs helped them and the patient cope with the disease and suffering:
“…….I pray to Allah to cure my cancer and relieve my pain as I believe, and I am fully convinced that Allah is with me and He (Allah) can cure my disease. Thus, I feel strong to endure the pain, and I do not take pain medications.” P5

“I do not prefer to give my sister either weak or strong pain medications. We believe and trust in Allah; He (Allah) can cure the disease and relieve the pain. I pray to Allah to cure her cancer and give her the ability to be patient with her disease and bear the pain…….” C6

This suggests that some patients seemed to believe they could effectively control their cancer pain by seeking help from Allah through prayer. However, such religious beliefs could be a barrier to the medical management of cancer pain as most patients (and their caregivers) are reluctant to use opioids for CPM.

While the HCPs who participated in this study followed the same religion as the cancer patients and family caregivers, many HCPs highlighted that patients should listen to their HCPs and use their prescribed medication for cancer pain. Likewise, they expressed the opinion that patients should not rely only on spiritual support and ignore medical prescriptions:

“…… medical staff should know that religious beliefs such as prayer can be used as a coping strategy besides treating all patients as that can help and support patients. However, patients should also use their medication for cancer and pain.” D2

This finding could mean that some HCPs acknowledged that religious belief was essential for their patients to cope with cancer and pain. Although the use of religious beliefs and practices as a coping strategy besides medical treatment could reduce the stress associated with an experience of pain, some patients might still experience some discomfort. Therefore, pain medication is needed. Furthermore, such beliefs were found to be a barrier to effective CPM, as opioid
analgesics for CPM were rejected by some patients and caregivers because they believed that the prayer was sufficient.

4.3.1.2 Use of the Qur’an as a coping strategy for CPM

Many cancer patients and family caregivers relied on religious beliefs such as the use of the Qur’an as a coping strategy to cope with cancer and pain. For example, some patients and caregivers recite verses from the Qur’an to support either themselves or their patients when the patient is diagnosed with and is undergoing cancer treatment. Additionally, reciting verses from the Qur’an is used as a support for managing cancer pain. Several Libyan patients and their caregivers in this study believed that Qur’an could cure diseases, such as cancer, and relieve physical suffering such as pain. Thus, some patients and family caregivers preferred to use the Qur’an instead of painkillers for CPM. This could be why some Libyan patients and their caregivers refused to use opioids for CPM in the current study.

"…… When I feel pain, I do not use pain medications. To relieve my pain, after each prayer, I put my hand on the place of the pain and recite specific Ayahs (Verses) from the Qur’an after each prayer, I put my hand on the place of the pain and recite specific Ayahs (Verses) from the Qur’an to relieve my pain. That makes me feel better and relaxed because such reciting helps me endure my pain. For instance, as Allah says in the Qur’an (And We send down of the Qur’an that which is a cure and a mercy for the believers)" Verse (17:82 Surat AL-Isra). P10

" We use verses from the Qur’an as supportive and coping strategies to cope with cancer and pain. For example, I usually use Al-Ruqyah Al-Shariah (i.e., reciting the Qur’an on the water, then the patient drinks it) and read or listen to the Qur’an to support my brother with his cancer and pain, as this usually helps him to be peaceful and relaxed. Accordingly, I do not prefer my brother to use pain medications like opioids……." C5
Although some HCPs also believed that the Qur'an could be used to relieve the patient's distress and anxiety, they did not believe that Qur'an could cure cancer and relieve cancer pain. This finding indicates that the use of the Qur'an could help to distract patients from their disease and anxiety.

"......... Verses from the Qur'an can be used to comfort and support patients during their medical treatment. For example, Allah says in the Qur'an that (O you who have believed, seek help through patience and prayer. Surely, Allah is with those who are patient), verse (2:153 Surat L-Baqarah). However, we usually advise patients to take their pain medications for cancer pain, as some patients and their caregivers usually prefer to use religious beliefs only as a coping strategy to cope with cancer pain. In this case, we as the medical team cannot do anything as this is their wishes and choice." D1

Relying exclusively on religious beliefs to cope with pain is a barrier to CPM, as some patients might reject taking pain medications due to their beliefs that the Qur'an will relieve their suffering. Although many patients and their caregivers were satisfied with the use of the Qur'an to manage cancer pain, this could influence how some patients and caregivers refused to use opioid analgesics for managing pain with cancer.

4.3.2 Influence of culture on CPM

4.3.2.1 Use of the cautery (Kaïy) for CPM

Another unanticipated finding in this study was that some Libyan patients and their caregivers commonly used traditional Arabic cautery (Kaïy – ironing the place of cancer or pain with fire) as an alternative therapy to manage cancer and pain. Some patients and caregivers believed that cautery was the faster way to treat cancer and pain and thus rejected medical interventions for CPM.
"...when I was diagnosed with cancer, I used the Kaiy, as my family took me somewhere to do it, which was to iron my body with fire in the place of cancer and pain.... After that, I felt comfortable, as the pain had gone. Therefore, I have not used painkillers anymore, and I prefer to use Kaiy for my cancer pain." P15

"Some caregivers prefer to use the Kaiy to manage their patients’ cancer and pain instead of medication in hospitals. Thus, they (family caregivers) usually convince their patients to do so, often leaving the hospital as the last option. This could be because of a lack of awareness and education among people” C4

Most Libyan HCPs acknowledged that many patients and their family caregivers refused pain medications and preferred traditional Arabic therapy like cautery:

"...our community is affected by their cultural beliefs, especially people with a low level of knowledge or uneducated. Therefore, some of them usually use cautery instead of medical treatment before coming to the hospital. This results in a delay in cancer and pain management. For example, some patients often come with advanced stage of cancer and severe pain, as they tried traditional medication before they came to the hospital." D2

They (HCPs) believed that a lack or low level of education contributed to cancer patients and their caregivers’ preference for cautery as an alternative therapy to CPM. These results imply that cultural beliefs (i.e., the use of cautery) could be a barrier to effective CPM, especially for poorly educated patients and caregivers. Thus, it can be suggested that the practice of cautery is another issue that influences CPM in Libya.
4.3.2.2 The social stigma of opioids

In this study, the social stigma of opioids was identified as another barrier to effective CPM. Most Libyan patients, caregivers, and newly qualified HCPs were reluctant to use opioids to manage cancer pain as they feared poor tolerance and drug addiction. It was found that some Libyan patients hesitated to ask for pain medication, and family caregivers refused to allow their patients to use opioids for CPM as they (patients and caregivers) had opiophobia (i.e., concern about poor tolerance, addiction, and side effects). Furthermore, some cancer patients feared being stigmatised:

"........., the patients and family caregivers rarely request opioids for managing cancer pain, as in our community opioids are a stigma. For instance, many people believe that if the patient demanded opioids, such as tramadol or morphine, that means this patient is addicted to opioids."

D2

"Due to the social stigma, some newly qualified doctors and nurses usually hesitate to give strong opioids for CPM. Some nurses have opiophobia; thus, they tell the patients that opioids can cause poor tolerance and addiction."

D1

This may result in some patients being forced to live with unnecessary suffering, as they could be afraid of being recognised as addicted people, their caregivers might refuse to give them opioids for CPM, or newly qualified physicians might refuse to prescribe opioids for CPM. Consequently, patients might not have requested opioids to manage their cancer pain.

4.3.3 Influence of economic factors on CPM

4.3.3.1 Financial hardship with cancer and pain

Financial difficulties among Libyan cancer patients and their caregivers in the current study were found to cause further concerns. Libyan cancer patients, who
had experienced financial hardships, often reported being forced to sell their personal belongings and borrow money to pay for cancer procedures and treatment:

“……. I did not use pain medications for my pain, and I endured my pain as we spent all the money on cancer treatment, so I could not afford to pay for pain medications. My husband had to sell his car and borrowed money to pay for cancer treatment, food, travel, and accommodation expenses.” P3

Family caregivers with difficult financial circumstances found that cancer-related costs negatively impacted the whole of their families:

“……. The cost of cancer treatment was expensive. Thus, we did struggle to afford the money. For instance, the operation’s cost was about 27.000 Libyan Dinars. The further cost was cancer treatment, travel, hotel, and food. All these costs overburdened us.” C5

This consequence could lead to some patients might experience cancer pain and they had to endure their pain untreated, as they might not have enough money to pay for such medication, or they may not want to bother their families about extra costs related to pain medication for their CPM.

4.3.4 Patients and caregivers related barriers

4.3.4.1 Patients’ misconceptions about cancer pain

In this study, some Libyan patients experienced pain after the first dose of their cancer treatment (i.e., chemotherapy or radiotherapy). Accordingly, they believed that their pain resulted from cancer treatment. At the same time, others experienced cancer pain at an advanced stage of their disease. Hence, they thought their pain was an indication of disease progression. Many patients
focused only on treating the disease itself rather than concerning themselves with pain because they believed that cancer pain is not relievable:

“I believe that my pain was due to chemotherapy, as I did not experience pain before starting the doses of cancer treatment. My doctor also told me that chemotherapy could cause pain as cancer treatment can cause nerve damage.” P14

“The pain I had was due to the disease becoming worse, as the pain has dramatically decreased since I had undergone the operation. Now I do not take pain medications, and I patiently tolerated the pain because the pain with cancer will not relieve.” P17

Due to this misconception, some patients might accept or endure their cancer pain and not take their pain medications. The patients possibly believed that it was reasonable to have pain with cancer treatment or that their pain was a sign of cancer progression, in which case there was nothing they could do to manage their pain completely. It is possible, therefore, that the misconceptions about cancer pain among Libyan cancer patients could be another barrier to CPM in Libya.

4.3.4.2 Patients’ and caregivers’ attitudes and perceptions of opioids

Many Libyan cancer patients and their caregivers refused to use opioid analgesics, such as tramadol and morphine, for CPM, as they were concerned about opioids' poor tolerance and drug addiction. In Libya, only tramadol tablets were prescribed for CPM to all patients with cancer pain, as there was a lack of morphine tablets and a limited amount of injectable morphine in the Libyan hospitals. However, morphine tablets were offered to Libyan patients who needed them for CPM in Egypt. In all cases, opioid analgesics were rejected by patients and their caregivers:
“……. When I experienced severe pain in Egypt, an Egyptian doctor prescribed morphine tablets for my pain. However, I did not use them because I was fear of becoming tolerated and addicted to such drugs.” P2

“I do not prefer my sister to use strong pain medications, such as tramadol or morphine for her pain, because I do not want her to become tolerated and addicted to these drugs.” C6

This ramification assumes that due to negative attitudes and perceptions towards opioid analgesics among Libyan patients and their caregivers, Libyan patients and caregivers could refuse to use opioid medications for CPM, resulting in barriers to effective CPM.

### 4.3.5 HCPs related barriers

#### 4.3.5.1 HCPs’ attitudes and perceptions of opioids

In this study, Libyan HCPs showed negative attitudes and perceptions towards opioid analgesics. For example, like the patients and careers, many HCPs believed that opioids, such as tramadol and morphine, could cause poor tolerance and drug addiction. However, this concern towards opioids was only among newly qualified HCPs. Due to negative perceptions and attitudes towards opioids among HCPs, they usually hesitate to prescribe or give such opioids for CPM:

“…….I do not prefer to prescribe opioids to the patient I look after, as the patient might easily become tolerant or addicted to these drugs. Therefore, I usually prescribe weak pain medications for CPM to avoid such concern.” D3
"...When a doctor prescribes tramadol to the patient, I usually hesitate to give it straight away as this drug can lead to poor tolerance or addiction. Thus, I advise the patient to use weak pain medications like paracetamol or ibuprofen." N2

For that reason, Libyan cancer patients might not have received adequate CPM due to some HCPs holding negative attitudes and perceptions towards opioids, resulting in barriers to effective CPM in Libya.

4.3.5.2 Lack of knowledge among HCPs

The results also found that most Libyan HCPs lacked comprehensive knowledge of CPM. This was attributed to an absence of experience and training in CPM among HCPs:

"... As oncology doctors, we do not have enough knowledge of CPM. Nobody in our team has training or professional education in CPM. Therefore, some HCPs usually focus on treating the disease itself and do not often pay attention to cancer pain. However, cancer pain must be managed; thus, some doctors occasionally use textbooks and internet resources for CPM and their daily work experience in a cancer care setting." D3

"... In Libya, many nurses lack knowledge and experience in CPM, as we did not have training or education courses in CPM. Hence, nurses usually do not prefer to talk about CPM. Libyan nurses generally have a limited duty, and CPM is not a part of our duty. Nurses in Libya only do the doctors’ requests." N5

Accordingly, managing patients with cancer pain was a challenge that HCPs could face in Libyan hospitals. Some Libyan physicians used their self-education and personal experience in cancer care settings to manage patients with cancer
pain. This outcome indicates that CPM might be inadequately managed as many HCPs showed a lack of knowledge about CPM.

4.3.6 Healthcare system-related barriers

4.3.6.1 Absence of policies and guidelines for CPM

In this study, many Libyan HCPs tended to subjectively assess and manage cancer pain without using standard pain rating scales or specific guidelines, such as NICE and WHO, as their hospitals did not have such protocols, policies, or guidelines for CPM.

Most Libyan doctors relied on the patient's facial expressions and patient self-reporting to assess cancer pain. Some Libyan physicians used textbooks, internet resources, and their individual cancer care experiences to manage cancer pain:

"We do not have guidelines for CPM in our hospital. Accordingly, I usually assess and manage cancer pain based on my experience from the daily setting and the patient's facial expression……..." D6

"As my duty, I always measure each patient's vital signs, including temperature, pulse rate, respiratory rate, and blood pressure. However, I never professionally measured the patient's pain level, as we do not have pain measurement tools in our clinic……..." N5

This could result in cancer patients' pain may be under-measured and mismanaged due to a lack of pain rating scales and guidelines for CPM, which could result in inadequate CPM in Libya.
4.3.6.2 Limit access to opioids for CPM

The results also showed that strong opioids, such as morphine, were not prescribed by doctors to their outpatients for CPM. This was due to no access to morphine tablets and very limited availability of morphine injections:

"………. I usually prescribe weak pain medications and sometimes morphine injections for CPM. However, recently I avoided prescribing morphine injections to the patients as I was afraid that the patients might have a symptom of opioid withdrawal due to the shortage of morphine injections. We do not prescribe morphine for outpatients, as morphine tablets are unavailable in our clinic." D2

This outcome suggests that many patients might not have received adequate CPM as limited access to opioid analgesics, which could result in a barrier to effective CPM.

4.3.6.3 Shortage of HCPs and heavy workload

In this study, a shortage of medical staff in oncology settings, a lack of specialists in CPM, and an increasing number of patients were other barriers to effective CPM in Libya. For example, many doctors and nurses complained about having a heavy workload:

“We do not have specialists in pain management in our clinic. Consequently, we have to treat patients with cancer pain alongside our work. That led to work overload, especially since we have a shortage of staff, and the number of patients has dramatically increased in our clinic………….” D6

Consequently, Libyan doctors might not have time to manage cancer pain due to the shortage of medical staff and heavy workload. Furthermore, their hospital did not have doctors who were specialists in palliative care or CPM to refer them the cases with cancer pain. Thus, it can be deduced that cancer pain might be inadequately managed in Libya.
4.4 Summary of the key findings

Study two in this thesis aimed to explore Libyan HCPs', patients, and family caregivers' views about cancer pain and its management. This is the first qualitative study that explores Libyan HCPs', cancer patients, and family caregivers’ views about CPM to the best of the researcher's knowledge. Study two (qualitative study) shows that Libyan cancer patients, caregivers, and HCPs hold negative views and attitudes, religious and cultural beliefs, which impacted CPM in Libya. Furthermore, lack of knowledge, training in CPM, and experience in palliative care among Libyan HCPs prevented effective CPM. Moreover, the Libyan economics, and healthcare system-related factors, present barriers to effective CPM in Libya. Hence, most cases with cancer pain may be undertreated in Libyan hospitals. Developing and evaluating interventions, such as education and training in CPM, are needed to address these concerns, and it would be necessary to improve patients’ outcomes with cancer pain in Libya.

The range of views and perceptions that the current researcher found may not reflect the views and perceptions of HCPs in all parts of Libya because the inclusion of HCPs participants was only 12 Libyan HCPs, and all HCPs participants were from one part of Libya, which is the Eastern region. Thus, the student and his supervisors agreed to conduct the third study of this thesis (quantitative study) with a large sample size from several oncology hospitals and centres (n= 6) located in different regions of Libya (Eastern, Central, and Western).
Chapter 5
Attitudes, knowledge, and perceived barriers towards CPM among HCPs in Libya: A national multicentre survey

5.1 Introduction
This chapter presents the results of the quantitative study (study three) in this thesis, which aimed to evaluate HCPs' knowledge, attitudes, and potential barriers regarding cancer pain and its management in Libya. Firstly, the chapter introduces the characteristics of participants in sub-section 5.2.1. Secondly, barriers to effective CPM among HCPs are presented in sub-section 5.2.3. Thirdly, the chapter highlights common barriers to CPM among Libyan HCPs in sub-section 5.2.4. Fourthly, this chapter uses multiple regression analyses to compare the mean overall BQ-II and its subscales and independent variables in sub-sections 5.2.5, 5.2.6, 5.2.7, 5.2.8, and 5.2.9, respectively. Furthermore, in sub-section 5.2.10, the chapter shows the comparison of the mean overall BQ-II and its subscales scores between HCPs in three countries (Libya, Jordan, and Albania). Finally, the chapter ends with a summary of the key findings in section 5.3.

5.2 Quantitative Results
5.2.1 Characteristics of participants
Two hundred Libyan oncology nurses and physicians agreed to participate in this study. For this cross-sectional survey, 185 (93%) Libyan HCPs responded. Of those 185, 160 (87%) participants returned the questionnaires to the survey coordinators. Eight of the returned questionnaires were excluded, as many answers were missing. Therefore, 152 valid questionnaires were eligible for use in this study for statistical analyses. The response rate was 76%.
According to Guadagnoli and Velicer (1988), a sample size between 100 and 150 is recommended, especially when the internal consistency for an instrument is expected value to be at $\alpha = 0.60$ and above. In the current study, the internal consistency for the overall BQ-II scales was higher ($\alpha = 0.90$) than recommended, indicating an excellent internal consistency for the overall BQ-II scales (Kline, 2015).

The mean age for all respondents was 36.29 years ($SD = 7.5$), ranging between 20 and 64. Participants mostly were females (65.1%), and there were more physicians (62.5%) than nurses (37.5%). There were more married participants (51.3%) than single (40.1%), 6 participants (3.9%) were divorced, and only one participant (0.7%) was widowed. Physicians (medical doctors) were more likely to have attained university education than nurses (undergraduate degree: 61.1% versus 14.0%) and postgraduate (38.9% versus 1.8%). Most nurses (84.2%) only held high-school degrees (equivalent to UK A levels). A few participants (12.5%) had completed training courses on CPM. More participants (84.9%) had long-term (greater than one year) work experience in cancer settings than those who had short-term (less than one year) work experience (15.1%). Participant characteristics are presented in Table 5.1.
Table 5-1 Participants’ demographic characteristics

<table>
<thead>
<tr>
<th>Professional; n (%)</th>
<th>HCPs (Oncology Nurses and Physicians) (n = 152)</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td>57 (37.5)</td>
<td></td>
</tr>
<tr>
<td>Physicians</td>
<td>95 (62.5)</td>
<td></td>
</tr>
<tr>
<td>Gender; n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>53 (34.9)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>99 (65.1)</td>
<td></td>
</tr>
<tr>
<td>Age (years); Mean (SD)</td>
<td>36.29 (7.5)</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>20-64</td>
<td></td>
</tr>
<tr>
<td>Marital status; n (%)</td>
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<td></td>
</tr>
<tr>
<td>Single</td>
<td>61 (40.1)</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>78 (51.3)</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
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<tr>
<td>Widowed</td>
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<tr>
<td>Missing</td>
<td>6 (3.95)</td>
<td></td>
</tr>
<tr>
<td>Education; n (%)</td>
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<td></td>
</tr>
<tr>
<td>High-school degree</td>
<td>48 (31.6)</td>
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<tr>
<td>Undergraduate degree</td>
<td>66 (43.4)</td>
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<tr>
<td>Postgraduate degree</td>
<td>38 (25.0)</td>
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<tr>
<td>Annually Salary</td>
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<tr>
<td>Mean (SD)</td>
<td>0.80 (0.67)</td>
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<td>Range; (£/ year)</td>
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<tr>
<td>Missing</td>
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<td>Training in CPM; n (%)</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>19 (12.5)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>133 (87.5)</td>
<td></td>
</tr>
<tr>
<td>Work experience; n (%)</td>
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</tr>
<tr>
<td>&lt; 1 year</td>
<td>23 (15.1)</td>
<td></td>
</tr>
<tr>
<td>&gt; 1 year</td>
<td>129 (84.9)</td>
<td></td>
</tr>
<tr>
<td>WHO &amp; NICE for CPM; n (%)</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>65 (42.8)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>87 (57.2)</td>
<td></td>
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<tr>
<td>Medication for CPM; n (%)</td>
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</tr>
<tr>
<td>Non-opioids</td>
<td>12 (8.2)</td>
<td></td>
</tr>
<tr>
<td>Weak opioids</td>
<td>5 (3.5)</td>
<td></td>
</tr>
<tr>
<td>Non-opioids and Weak opioids</td>
<td>42 (28.6)</td>
<td></td>
</tr>
<tr>
<td>Non-opioids, Weak opioids, and Strong opioids</td>
<td>88 (59.9)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>5 (3.5)</td>
<td></td>
</tr>
</tbody>
</table>

CPM = Cancer Pain Management; HCP = Healthcare Professionals; n = number; SD = Standard Deviation; % = percentage; £ = pound sterling; < = less than; > = greater than

5.2.2 The distribution of the overall BQ-II scores

For continuous variables, the data were required to be normally distributed, as this is one of the main assumptions for the inferential analysis to be carried out (Hair et al., 2010). In this study, univariate normality was examined by assessing skewness and kurtosis. The convention is that the null hypothesis (H₀) is rejected if the p-value is smaller than 0.05 (Shapiro and Wilk, 1965; Razali and Wah, 2011). The null hypothesis (H₀) for this test of normality indicated that the data of the overall BQ-II scores for both groups (males; n = 53) and (females; n = 99) were normally distributed, as the p-value for males and females was (p> 0.05). Thus, the null hypothesis (H₀) in this study was kept. According to Hair et al. (2010), the normal distribution should be accepted when the skewness and kurtosis values are in, the range of +/- 0.3. As presented below the data were
determined as normally distributed, since the values of skewness and kurtosis were in the range of +/- 0.3 for both gender groups (males and females) on the overall BQ-II scores.

Besides a visual inspection of their histograms (See Figure 5.1); normal a quantile-quantile (Q-Q) plots (See Appendix 37) and box plots (See Appendix 38) showed that the overall scores of the 27th items on BQ-II were normally distributed for both genders (males and females) in this study. A statistical skewness was reported as 0.012; (standard error; SE = 0.337) and a kurtosis -0.547 (SE = 0.662) for the males. Whereas for the females, a skewness was reported as 0.106 (SE = 0.271) and kurtosis -0.662 (SE = 0.535) (Doane and Seward, 2011). The data were normally distributed. Hence, parametric tests were used. A Leven test was also used in the current study for testing the equality of variances (homogeneity of variances). In the samples of the mean for the overall BQ-II scores and participants’ gender (males and females), Leven's test verified that there is equality of variances in the samples (p > 0.05).
The overall BQ scores for HCPs (nurses and physicians) were also normally distributed, as the p-value for both nurses and physicians was (p> 0.05), supporting the null hypothesis (H₀). This was based on Shapiro-Wilk's test (p> 0.05) (Shapiro and Wilk, 1965; Razali and Wah, 2011) and a visual inspection of a histogram. (See Figure 5.2). A statistical skewness was reported as -0.039; standard error (SE = 0.316) and a kurtosis -0.429 (SE = 0.623) for the nurses. Whereas, a skewness was reported as -0.423 (SE = 0.247) and kurtosis -0.181 (SE = 0.490) for the physicians (Doane and Seward, 2011). Accordingly, parametric tests were applied.

![Figure 5.2 The distribution of the BQ-II scores for HCPs](image)

5.2.3 Barriers to effective CPM among HCPs

Before the multiple linear regression test was run, bivariate analysis such as an independent t-test was conducted to compare the mean of the overall 27 items of BQ-II and its subscales between Libyan nurses (n = 57) and physicians (n = 95) regarding their attitudinal and knowledgeable barriers about CPM (unadjusted estimate). The results showed that nurses showed higher mean barrier scores (mean = 3.8, SD = 0.7) to CPM than physicians (mean = 2.9, SD = 0.8), p< 0.001. Perceived barriers to CPM on the overall BQ-II and its subscales
by nurses and physicians (using an independent $t$-test) are presented in table 5.2. Only five items did not show differences between nurses and physicians: No attitudinal and knowledgeable difference between the two groups (nurses and physicians) was seen for one item on the ‘physiological effects’ subscale “If the patient took pain medicine when he/she had mild pain, such medication might not be effective as well if his/her pain became severe,” $p > 0.05$; one item on the ‘harmful effects’ subscale “Many patients with cancer can be addicted to pain medication,” $p > 0.05$; and three items on the fatalism subscale “Cancer pain can be relieved, pain medicine can effectively control cancer pain, and medication can relieve pain related to cancer”, $p > 0.05$. This indicates that Libyan nurses had poorer attitudes and less knowledge concerning CPM than physicians.

The major differences in attitudinal and knowledgeable barriers to effective CPM between nurses and physicians were concern about ‘drug side effects’ and ‘poor tolerance’. Further most important concerns were on the statements “strong patient does not complain about pain” and “pain can distract the physician from treating cancer.”

When questionnaires were analysed, comparison between nurses and physicians who reported a fear of ‘drug addiction’ showed a difference in attitude (nurses: mean = 3.64, SD = 0.82 vs. physicians: mean = 3.15, SD = 0.97) and “opioids impair patient’s immune function” (nurses: mean = 3.23, SD = 1.12 vs. physicians: mean = 2.05, SD = 1.20) However, there was no difference between nurses and physicians, on ‘fatalistic beliefs.’ Both groups showed low mean barrier scores on the BQ-II subscale ‘fatalism.’ (See Table 5.2). An independent $t$-test (equal variances assumed) estimated that the mean difference in the ‘fatalism’ scores between nurses and physicians was 0.46 (95% CI: -0.22, 0.31). An independent $t$-test on the BQ-II subscale ‘fatalism’ was not significant, $t(150) = 0.351$, $p > 0.05$. This could mean that Libyan nurses and physicians believe that cancer pain can be relieved, supporting the null hypothesis ($H_0$).

Although, the results showed that nurses had higher attitudinal and knowledgeable barrier scores towards CPM than physicians, $p < 0.001$. When this
result was compared to other studies, the result indicates that both groups (Libyan nurses and physicians) showed less knowledge and poorer attitudes towards CPM than HCPs from other countries (See sub-section 5.2.10 below). This result suggests that Libyan HCPs’ poor attitudes and perceptions and lack of knowledge about cancer pain and opioids might affect CPM in Libya, supporting the alternative hypothesis (H1). Table 5.2 shows all respondents’ perspectives on barriers to CPM between nurses and physicians.

### Table 5-2 Perceived Barriers to CPM on the BQ-II by Libyan HCPs (n = 152), using an independent t-test (unadjusted estimate)

<table>
<thead>
<tr>
<th>Items in the questionnaire</th>
<th>Mean scores (SD)</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drowsiness from pain medicine is difficult to control</td>
<td>3.1 (1.7)</td>
<td>2.4 (1.5)</td>
<td>0.175, 1.221</td>
</tr>
<tr>
<td>2. Confusion from pain medicine cannot be controlled</td>
<td>3.0 (1.6)</td>
<td>2.2 (1.4)</td>
<td>0.306, 1.273</td>
</tr>
<tr>
<td>3. When the patient uses pain medicine, his/her body becomes used to its effects, and pretty soon, it will not work anymore</td>
<td>4.0 (1.0)</td>
<td>3.5 (1.4)</td>
<td>0.137, 0.901</td>
</tr>
<tr>
<td>4. Using pain medicine blocks the patient's ability to know if he/she has any new pain</td>
<td>3.5 (1.5)</td>
<td>3.0 (1.7)</td>
<td>0.242, 1.316</td>
</tr>
<tr>
<td>5. Naïveté from pain medicine cannot be relieved</td>
<td>2.5 (2.0)</td>
<td>1.3 (1.3)</td>
<td>0.631, 1.783</td>
</tr>
<tr>
<td>6. Pain medicine makes patients say or do embarrassing things</td>
<td>2.5 (1.9)</td>
<td>1.6 (1.4)</td>
<td>0.289, 1.452</td>
</tr>
<tr>
<td>7. If a patient takes pain medicine when he/she has some pain, then it might not work as well if the pain becomes worse</td>
<td>3.5 (1.5)</td>
<td>3.2 (1.5)</td>
<td>-0.233, 0.766</td>
</tr>
<tr>
<td>8. Pain medicine can keep patients from knowing what is going on in their bodies</td>
<td>3.3 (1.6)</td>
<td>2.2 (1.7)</td>
<td>0.473, 1.569</td>
</tr>
<tr>
<td>9. Constipation from pain medicine cannot be relieved</td>
<td>3.5 (1.7)</td>
<td>2.1 (1.8)</td>
<td>0.563, 1.697</td>
</tr>
<tr>
<td>10. It is easier for a patient to put up with pain than the side effects that come from pain medicine</td>
<td>3.3 (1.7)</td>
<td>2.6 (1.7)</td>
<td>0.243, 1.357</td>
</tr>
<tr>
<td>11. If the patient uses pain medicine now, it will not work as well if he/she needs it later</td>
<td>3.4 (1.6)</td>
<td>2.6 (1.6)</td>
<td>0.217, 1.298</td>
</tr>
<tr>
<td>12. Pain medicine can mask changes in the patient's health</td>
<td>3.3 (1.7)</td>
<td>2.6 (1.6)</td>
<td>0.217, 1.298</td>
</tr>
<tr>
<td>13. Cancer pain can be relieved</td>
<td>1.3 (1.4)</td>
<td>1.2 (1.6)</td>
<td>-0.325, 0.549</td>
</tr>
<tr>
<td>14. Pain medicine can effectively control cancer pain</td>
<td>1.5 (1.3)</td>
<td>1.5 (1.4)</td>
<td>-0.416, 0.486</td>
</tr>
<tr>
<td>15. Medicine can relieve cancer pain</td>
<td>1.2 (1.4)</td>
<td>1.1 (1.2)</td>
<td>-0.385, 0.462</td>
</tr>
<tr>
<td>16. It is important for the patient to be strong by not talking about his/her pain</td>
<td>3.3 (1.7)</td>
<td>1.8 (1.9)</td>
<td>0.809, 1.998</td>
</tr>
<tr>
<td>17. It is important for the doctor to focus on curing illness and not waste time</td>
<td>3.8 (1.7)</td>
<td>1.5 (2.0)</td>
<td>1.627, 2.829</td>
</tr>
<tr>
<td>controlling pain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. If doctors have to deal with the pain, they will not concentrate on curing the disease</td>
<td>2.1 (1.9)</td>
<td>1.2 (1.7)</td>
<td>0.358, 1.586</td>
</tr>
<tr>
<td>19. Doctors might find it annoying to be told about the pain</td>
<td>2.2 (2.0)</td>
<td>1.0 (1.5)</td>
<td>0.615, 1.869</td>
</tr>
<tr>
<td>20. Reports of pain could distract a doctor from curing cancer</td>
<td>2.1 (2.0)</td>
<td>1.1 (1.6)</td>
<td>0.378, 1.594</td>
</tr>
<tr>
<td>21. If the patient talks about pain, people will think he/she is a complainer</td>
<td>2.9 (2.0)</td>
<td>2.0 (2.0)</td>
<td>0.438, 1.717</td>
</tr>
<tr>
<td>22. There is a danger of patients becoming addicted to pain medicine</td>
<td>4.0 (1.4)</td>
<td>3.2 (1.5)</td>
<td>0.306, 1.273</td>
</tr>
<tr>
<td>23. Pain medicine weakens the immune system</td>
<td>3.0 (1.8)</td>
<td>1.9 (1.7)</td>
<td>0.580, 1.736</td>
</tr>
<tr>
<td>24. Many people with cancer get addicted to pain medicine</td>
<td>4.0 (1.5)</td>
<td>3.4 (1.5)</td>
<td>-0.072, 0.914</td>
</tr>
<tr>
<td>25. Using pain medicine can harm a patient's immune system</td>
<td>3.5 (1.7)</td>
<td>1.7 (1.7)</td>
<td>1.245, 2.362</td>
</tr>
<tr>
<td>26. Pain medicine can hurt a patient's immune system</td>
<td>3.4 (1.7)</td>
<td>1.7 (1.7)</td>
<td>1.262, 2.314</td>
</tr>
<tr>
<td>27. Pain medicine is very addictive</td>
<td>3.8 (1.6)</td>
<td>3.0 (1.5)</td>
<td>0.277, 1.274</td>
</tr>
<tr>
<td>Overall mean scores for the BQ-II</td>
<td>3.8 (1.7)</td>
<td>2.9 (0.8)</td>
<td>0.644, 1.12</td>
</tr>
</tbody>
</table>

SD = Standard Deviation; % = percentage; CI = Confidence Interval; P-value = the probability; ** = p < 0.05; *** = p < 0.001

#### 5.2.4 Common barriers to CPM among Libyan HCPs

The most common responses on the overall BQ-II and its subscales (rating 3 or above: > 50%; indicating greater attitudinal barriers and poorer knowledge towards CPM) between Libyan nurses and physicians were: 70% (n = 40/57) for nurses and 43% (n = 41/95) for physicians, for the statement “Using pain medicine can block the patient from knowing what is going on in his/her body.” Furthermore, 53% (30/57) of nurses thought that “Drug side effects,” such as ‘constipation’ is difficult to relieve” compared with 15% (n = 24/95) of physicians. Moreover, 72% (n = 41/57) of nurses and 34% (n = 34/95) of physicians believed
that “a ‘strong patient’ does not complain about pain.” In addition, 81% (n = 46/57) of nurses compared to 31% (n = 29/95) of physicians, for the statement that pain could ‘distract the doctor’ for the statement “Doctors should focus on curing cancer and not wasting their time by controlling pain.” Besides, 84% (n = 48/57) of nurses expressed deep concern about ‘opioids addiction’ compared to 69% (n = 66/95) of physicians. Additionally, the concern that ‘harmful effects’ of “opioids can impair a patient’s immune system” also caused concern among nurses 70% (n = 40/57) and physicians 27% (n = 26/95). (See Figure 5.3). This result indicates that Libyan oncology physicians had higher positive attitudes and levels of adequate knowledge about cancer pain and opioids than nurses. However, this was an independent t-test (unadjusted estimate). Thus, a multiple linear regression analysis was needed to investigate whether the Libyan HCPs’ demographic variables (e.g., age, gender, marital status, profession, educational level, training, work experience, or using WHO for CPM) were significantly associated with participants’ mean overall BQ-II and its subscales scores (adjusted estimate). (See sub-section 5.2.5 below).

Figure 5-3 Comparison of the most common barriers to CPM between Libyan nurses and physicians
5.2.5 Comparison between Libyan HCPs’ demographic variables and the mean overall BQ-II

Multiple linear regression analysis was performed to investigate whether the Libyan HCPs’ demographic variables (age, gender, marital status, profession, educational level, training, work experience, or using WHO for CPM) were significantly associated with participants' mean overall BQ-II scores (adjusted estimate). All of the assumptions were met. The mean overall BQ-II scores were used as the dependent (outcome) variables, and age, gender, marital status, profession, educational level, training, work experience, and WHO for CPM were entered concurrently as independent (cause) variables. Multiple regression results indicated that the model explained the $R^2 = 0.331$, which depicts that the model explains 33.1% of the variance in the mean overall BQ-II scores. The combination of variables showed that the regression model was significantly associated with the mean overall BQ-II performance, $F_{(11,134)} = 6.014$, $p < 0.001$. However, only profession (nurses vs. physicians) and educational levels (high-school vs. undergraduate vs. postgraduate degrees) contributed significantly to the model ($B = -0.530$, $p < 0.05$) and ($B = -0.641$, $p < 0.05$), respectively. This result indicates that nurses had higher barrier scores to CPM than physicians ($B = -0.530$). Furthermore, those who were with high-school and undergraduate degrees ($B = -0.082$) showed higher barrier scores to CPM than those with postgraduate degrees ($B = -0.641$).

However, age, gender, marital status (single vs. married vs. divorced), training, work experience, and using WHO for CPM were not significantly associated with the mean overall BQ-II scores. (See Table 5.3). Hence, this result shows that educational levels have inverse relationships, as when there is an increase in educational levels, the barriers to CPM (the mean overall BQ-II scores) decrease. The bootstrapped 95% confidence interval for the slope of the mean overall BQ-II scores is presented in table 5.3.
Table 5-3 Summary of multiple linear regression findings between mean overall BQ-II and the socio-demographic factors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levels</th>
<th>Beta Coefficients</th>
<th>R²</th>
<th>Coefficient (95% CI)</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td>4.547</td>
<td>0.331</td>
<td>2.610, 6.483</td>
<td>4.644</td>
<td>0.000***</td>
</tr>
<tr>
<td>Age</td>
<td>Ref = Male</td>
<td>0.040</td>
<td>0.331</td>
<td>-0.239, 0.319</td>
<td>0.283</td>
<td>0.778</td>
</tr>
<tr>
<td>Gender</td>
<td>Ref = Male</td>
<td>-0.082</td>
<td>0.331</td>
<td>-0.343, 0.178</td>
<td>-0.624</td>
<td>0.534</td>
</tr>
<tr>
<td>Marital status</td>
<td>Ref = Widowed</td>
<td>0.119</td>
<td>0.331</td>
<td>-1.351, 1.590</td>
<td>0.616</td>
<td>0.873</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>0.169</td>
<td>0.331</td>
<td>-1.295, 1.633</td>
<td>0.228</td>
<td>0.820</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>-0.572</td>
<td>0.331</td>
<td>-2.134, 0.990</td>
<td>-0.724</td>
<td>0.470</td>
</tr>
<tr>
<td>Profession</td>
<td>Ref = Nurses</td>
<td>-0.530</td>
<td>0.331</td>
<td>-1.054, -0.005</td>
<td>-1.998</td>
<td>0.048**</td>
</tr>
<tr>
<td>Education</td>
<td>Ref = Undergraduate</td>
<td>-0.208</td>
<td>0.331</td>
<td>-0.753, -0.336</td>
<td>-0.757</td>
<td>0.450</td>
</tr>
<tr>
<td></td>
<td>Postgraduate</td>
<td>-0.641</td>
<td>0.331</td>
<td>-1.239, -0.043</td>
<td>-2.121</td>
<td>0.036**</td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td>-0.261</td>
<td>0.331</td>
<td>-0.634, 0.113</td>
<td>-1.380</td>
<td>0.170</td>
</tr>
<tr>
<td>Work experience</td>
<td></td>
<td>-0.106</td>
<td>0.331</td>
<td>-0.451, 0.240</td>
<td>-0.604</td>
<td>0.547</td>
</tr>
<tr>
<td>WHO for CPM</td>
<td></td>
<td>0.088</td>
<td>0.331</td>
<td>-0.175, 0.352</td>
<td>0.664</td>
<td>0.508</td>
</tr>
</tbody>
</table>

p-value = the probability; CI = Confidence Interval; Overall BQ-II scores = the 27 items on Barriers Questionnaire II; R² = Coefficient of determination; % = percentage; n = number; CI = Confidence Interval; ** = p< 0.05; *** = p< 0.001

5.2.6 Comparison between the mean BQ-II subscale physiological effects and Libyan HCPs’ demographic variables

Multiple linear regression analysis was conducted to investigate whether the socio-demographic factors (age, gender, marital status, profession, educational level, training, work experience, or WHO for CPM) were significantly associated with participants’ mean BQ-II subscale physiological effects scores (adjusted estimate). All of the assumptions were met. The mean BQ-II physiological effects scores were used as the dependent (outcome) variables, and age, gender, marital status, profession, educational level, training, work experience, and WHO for CPM were entered concurrently as independent (cause) variables. Multiple regression results indicated that the model explained the R² = 0.267, which indicates that the model explains 26.7% of the variance in the mean BQ-II physiological effects scores. The combination of variables presented that the regression model was significantly associated with the mean BQ-II physiological effects performance, \( F(11, 134) = 4.427, p< 0.001 \). However, only professionals (nurses vs. physicians) contributed significantly to the model (B = -0.615, p< 0.05), indicating that physicians had lower barrier scores to CPM than nurses (B = -0.615).
The socio-demographic factors: age, gender, marital status (single vs. married vs. divorced), educational levels (high-school vs. undergraduate vs. postgraduate degree), training, work experience, and WHO for CPM did not significantly associate with the mean overall BQ-II scores. (See Table 5.4). The bootstrapped 95% confidence interval for the slope of the mean BQ-II physiological effects scores also are presented in Table 5.4 below.

Accordingly, these result shows that the profession was significantly associated with participants' mean BQ-II subscale “physiological effects” scores; compared to the nurses, the physicians had lower mean barrier scores. However, there was no longer a mean grade difference between age, gender, marital status, educational levels, training, work experience, and WHO for CPM groups, indicating that age, gender, marital status, educational levels, training, work experience, and WHO for CPM did not contribute to the multiple regression model. (See Table 5.4).

Table 5-4 Summary of multiple linear regression findings between mean BQ-II subscale physiological Effects (PE) and the socio-demographic factors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levels</th>
<th>Beta Coefficients</th>
<th>R²</th>
<th>Coefficient (95% CI)</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td>4.076</td>
<td>0.267</td>
<td>2.055, 6.096</td>
<td>3.990</td>
<td>0.000***</td>
</tr>
<tr>
<td>Age</td>
<td>Male</td>
<td>-0.150</td>
<td>0.267</td>
<td>-0.141, 0.441</td>
<td>1.018</td>
<td>0.310</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>-0.031</td>
<td>0.267</td>
<td>-0.240, 0.303</td>
<td>0.229</td>
<td>0.819</td>
</tr>
<tr>
<td>Marital status</td>
<td>Widowed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>0.284</td>
<td>0.267</td>
<td>-1.250, 1.818</td>
<td>0.366</td>
<td>0.715</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>0.290</td>
<td>0.267</td>
<td>-1.238, 1.817</td>
<td>0.375</td>
<td>0.708</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>-0.399</td>
<td>0.267</td>
<td>-2.029, 1.231</td>
<td>-0.484</td>
<td>0.629</td>
</tr>
<tr>
<td>Profession</td>
<td>Nurses</td>
<td>-0.615</td>
<td>0.267</td>
<td>-1.162, -0.068</td>
<td>-2.224</td>
<td>0.028**</td>
</tr>
<tr>
<td></td>
<td>Physicians</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Undergraduate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High-school</td>
<td>0.019</td>
<td>0.267</td>
<td>-0.549, 0.587</td>
<td>0.065</td>
<td>0.948</td>
</tr>
<tr>
<td></td>
<td>Postgraduate</td>
<td>-0.323</td>
<td>0.267</td>
<td>-0.947, 0.301</td>
<td>-1.025</td>
<td>0.307</td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td>-0.383</td>
<td>0.267</td>
<td>-0.772, 0.008</td>
<td>-1.940</td>
<td>0.055</td>
</tr>
<tr>
<td>Work experience</td>
<td></td>
<td>-0.077</td>
<td>0.267</td>
<td>-0.437, 0.284</td>
<td>-0.420</td>
<td>0.675</td>
</tr>
<tr>
<td>WHO for CPM</td>
<td></td>
<td>0.157</td>
<td>0.267</td>
<td>-0.118, 0.432</td>
<td>1.131</td>
<td>0.260</td>
</tr>
</tbody>
</table>

p-value = the probability; CI = Confidence Interval; BQ-II = the Barriers Questionnaire II subscale; PE = Physiological Effects; R² = Coefficient of determination; % = percentage; n = number; CI = Confidence Interval; ** = p< 0.05; *** = p< 0.001
5.2.7 Comparison between the mean BQ-II subscale fatalism and Libyan HCPs’ demographic variables

Multiple linear regression analysis was performed to investigate whether the socio-demographic factors (age, gender, marital status, profession, educational level, training, work experience, or WHO for CPM) were significantly associated with participants’ mean BQ-II subscale fatalism scores (adjusted estimate). All of the assumptions were met. The mean BQ-II fatalism scores were used as the dependent (outcome) variables, and age, gender, marital status, profession, educational level, training, work experience, and WHO for CPM have entered concurrently as independent (cause) variables.

Multiple regression results show that the model explained the $R^2 = 0.122$, which depicts that the model explains 12.2% of the variance in the mean BQ-II fatalism scores. The combination of variables presented that the regression model was not significantly associated with the mean BQ-II fatalistic beliefs, $F (11,134) = 1.699$, $p > 0.05$. Only marital status (single vs. married vs. divorced), were significantly associate with the mean BQ-II subscale fatalism scores ($B = -3.011$, $p < 0.05$), ($B = -3.007$, $p < 0.05$), ($B = -2.770$, $p < 0.05$), respectively. However, for the rest of the socio-demographic factors: age, gender, profession (nurses vs. physicians), educational levels (high-school vs. undergraduate vs. postgraduate degrees), training, work experience, and WHO for CPM did not significantly associate with the mean BQ-II subscale fatalism scores and (95% confidence interval) for the slope of the mean BQ-II subscale fatalism scores. (See Table 5.5).

Accordingly, the result shows that participants who were single, married, or divorced fell within the mean subscale “fatalism” BQ-II scores, which means that those who were single ($B = -3.011$), married ($B = -3.007$), and divorced ($B = -2.770$) showed higher barrier scores to CPM than those who were widowed when questionnaires (the subscale “fatalism” BQ-II) were analysed. For the rest of the variables, there is no longer a mean grade difference between the socio-demographic factors (age, gender, profession, educational levels, training, work experience, and WHO for CPM groups), indicating that age, gender, profession,
educational levels, training, work experience, and WHO for CPM did not contribute to the multiple regression model. (See Table 5.5).

**Table 5-5 Summary of multiple linear regression findings between mean BQ-II subscale Fatalism (F) and the socio-demographic factors**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levels</th>
<th>Beta Coefficients</th>
<th>R²</th>
<th>Coefficient (95% CI)</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td>4.712</td>
<td>0.122</td>
<td>2.624, 6.799</td>
<td>4.464</td>
<td>0.000***</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>0.107</td>
<td>0.122</td>
<td>-0.407, 0.194</td>
<td>-0.702</td>
<td>0.484</td>
</tr>
<tr>
<td>Gender</td>
<td>Ref = Male</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>-0.002</td>
<td>0.122</td>
<td>-0.283, 0.279</td>
<td>-0.014</td>
<td>0.989</td>
</tr>
<tr>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>-3.011</td>
<td>0.122</td>
<td>-4.596, -1.426</td>
<td>-3.758</td>
<td>0.000***</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>-3.007</td>
<td>0.122</td>
<td>-4.585, -1.429</td>
<td>-3.769</td>
<td>0.000***</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>-2.770</td>
<td>0.122</td>
<td>-4.453, -1.086</td>
<td>-3.254</td>
<td>0.001**</td>
</tr>
<tr>
<td>Profession</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Physicians</td>
<td>0.288</td>
<td>0.122</td>
<td>-0.277, 0.853</td>
<td>1.008</td>
<td>0.315</td>
</tr>
<tr>
<td>Education</td>
<td>Ref = Undergraduate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>High-school</td>
<td>-0.524</td>
<td>0.122</td>
<td>-1.111, 0.063</td>
<td>-1.767</td>
<td>0.080</td>
</tr>
<tr>
<td></td>
<td>Postgraduate</td>
<td>-0.446</td>
<td>0.122</td>
<td>-1.090, 0.198</td>
<td>-1.370</td>
<td>0.173</td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td>0.091</td>
<td>0.122</td>
<td>-0.312, 0.493</td>
<td>0.447</td>
<td>0.656</td>
</tr>
<tr>
<td>Work experience</td>
<td></td>
<td>-0.026</td>
<td>0.122</td>
<td>-0.398, 0.347</td>
<td>-0.136</td>
<td>0.892</td>
</tr>
<tr>
<td>WHO for CPM</td>
<td></td>
<td>0.005</td>
<td>0.122</td>
<td>-0.279, 0.289</td>
<td>0.036</td>
<td>0.971</td>
</tr>
</tbody>
</table>

*p-value = the probability; CI = Confidence Interval; BQ-II subscale (F) = the Barriers Questionnaire II subscale (Fatalism); R² = Coefficient of determination; % = percentage; n = number; CI = Confidence Interval; ** = p< 0.05; *** = p< 0.001

### 5.2.8 Comparison between the mean BQ-II subscale communication and Libyan HCPs’ demographic variables

Multiple linear regression analysis was conducted to determine whether the socio-demographic factors (age, gender, marital status, profession, educational level, training, work experience, or WHO for CPM) were significantly associated with participants’ mean BQ-II subscale communication scores. All of the assumptions were met. The mean BQ-II communication scores were used as the dependent (outcome) variables, and the socio-demographic factors (age, gender, marital status, profession, educational level, training, work experience, and WHO for CPM) were entered concurrently as independent (cause) variables. Multiple regression results indicate that the model explained the R² = 0.335, which depicts that the model explains 33.5% of the variance in the mean BQ-II “communication” scores. The combination of variables presented that the regression model was significantly associated with the mean BQ-II subscale “communication” performance, F (11,134) = 6.148, p< 0.001. However, only educational level (high-school vs. undergraduate vs. postgraduate degrees) contributed significantly to the model (B = -1.692, p< 0.001) and (B = -2.072, p< 0.001),
respectively. This result shows that participants with high-school and undergraduate degrees had higher barrier scores to CPM ($B = -1.692$) than those with postgraduate degrees ($B = -2.072$).

However, age, gender, marital status (single vs. married vs. divorced), profession, training, work experience, and WHO for CPM were not significantly associated with the mean BQ-II subscale “communication” scores and the bootstrapped (95% confidence interval) for the slope of the mean BQ-II subscale “communication” scores. (See Table 5.6).

Therefore, this result illustrates there was no longer a mean grade difference between age, gender, marital status, profession, training, work experience, and WHO for CPM groups, indicating that age, gender, marital status, profession, training, work experience, and WHO for CPM did not contribute to the multiple regression model. (See Table 5.6).

### Table 5.6 Summary of multiple linear regression findings between mean BQ-II subscale Communication (C) and the socio-demographic factors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levels</th>
<th>Beta Coefficients</th>
<th>$R^2$</th>
<th>Coefficient (95% CI)</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td>3.721</td>
<td>0.335</td>
<td>0.882, 6.561</td>
<td>2.592</td>
<td>0.011***</td>
</tr>
<tr>
<td>Age</td>
<td>Ref = Male</td>
<td>-0.145</td>
<td>0.335</td>
<td>-0.554, 0.265</td>
<td>-0.699</td>
<td>0.486</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>-0.318</td>
<td>0.335</td>
<td>-0.700, 0.064</td>
<td>-1.644</td>
<td>0.102</td>
</tr>
<tr>
<td>Marital status</td>
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<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>0.114</td>
<td>0.335</td>
<td>-2.042, 2.270</td>
<td>0.104</td>
<td>0.917</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>0.134</td>
<td>0.335</td>
<td>-2.013, 2.280</td>
<td>0.123</td>
<td>0.902</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>-0.771</td>
<td>0.335</td>
<td>-3.062, 1.519</td>
<td>-0.666</td>
<td>0.506</td>
</tr>
<tr>
<td>Profession</td>
<td>Ref = Nurses</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physicians</td>
<td>0.473</td>
<td>0.335</td>
<td>-0.296, 1.242</td>
<td>1.217</td>
<td>0.226</td>
</tr>
<tr>
<td>Education</td>
<td>Ref = Undergraduate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High-school</td>
<td>-1.692</td>
<td>0.335</td>
<td>-2.490, -0.894</td>
<td>-4.192</td>
<td>0.000***</td>
</tr>
<tr>
<td></td>
<td>Postgraduate</td>
<td>-2.072</td>
<td>0.335</td>
<td>-2.948, -1.196</td>
<td>-4.676</td>
<td>0.000***</td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td>-0.343</td>
<td>0.335</td>
<td>-0.890, 0.205</td>
<td>-1.238</td>
<td>0.218</td>
</tr>
<tr>
<td>Work experience</td>
<td></td>
<td>-0.042</td>
<td>0.335</td>
<td>-0.549, 0.465</td>
<td>-0.164</td>
<td>0.870</td>
</tr>
<tr>
<td>WHO for CPM</td>
<td></td>
<td>0.032</td>
<td>0.335</td>
<td>-0.354, 0.419</td>
<td>0.166</td>
<td>0.868</td>
</tr>
</tbody>
</table>

*p-value = the probability; CI = Confidence Interval; BQ-II subscale (C) = the Barriers Questionnaire II subscale (Communication); $R^2$ = Coefficient of determination; % = percentage; n = number; CI = Confidence Interval; ** = p< 0.05; *** = p< 0.001
5.2.9 Comparison between the mean BQ-II subscale harmful effects and Libyan HCPs’ demographic variables

Multiple linear regression analysis was conducted to determine whether the socio-demographic factors (age, gender, marital status, profession, educational level, training, work experience, or WHO for CPM) were significantly associated with participants’ mean BQ-II subscale harmful effects scores. All of the assumptions were met. The mean BQ-II harmful effects scores were used as the dependent (outcome) variables, and the socio-demographic factors (age, gender, marital status, profession, educational level, training, work experience, and WHO for CPM) were entered concurrently as independent (cause) variables. Multiple regression results indicate that the model explained the \( R^2 = 0.306 \), which depicts that the model explains 30.6% of the variance in the mean BQ-II “harmful effects” scores. The combination of variables presented that the regression model has significantly associated with the mean BQ-II subscale “harmful effects” performance, \( F(11,134) = 5.362, p< 0.001 \). However, only profession (nurses vs. physicians) and education (high-school vs. undergraduate vs. postgraduate degrees) contributed significantly to the model (\( B = -1.614, p< 0.001 \)) and (\( B = 1.123, p< 0.05 \)), respectively. This result illustrates that nurses had more barrier scores to CPM than physicians (\( B = -1.614 \)), and the participants with high-school and undergraduate degrees had more barrier scores to CPM (\( B = 1.123 \)) than those with a postgraduate degree (\( B = 0.363 \)).

However, the socio-demographic factors: age, gender, marital status (single vs. married vs. divorced), training, work experience, and WHO for CPM did not significantly associate with the mean BQ-II subscale “harmful effects” scores. (See Table 5.7). The bootstrapped (95% confidence interval) for the slope of the mean BQ-II subscale “harmful effects” scores is also presented in table 5.7 below.

Hence, this result shows that there was no longer a mean grade difference between age, gender, marital status, training, work experience, and WHO for CPM groups, indicating that age, gender, marital status, training, work experience, and WHO for CPM did not contribute to the multiple regression model. (See Table 5.7).
Table 5-7 Summary of multiple linear regression findings between mean BQ-II subscale Harmful Effects (HE) and the socio-demographic factors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levels</th>
<th>Beta Coefficients</th>
<th>R²</th>
<th>Coefficient (95% CI)</th>
<th>t-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
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<td>0.306</td>
<td>1.622, 6.787</td>
<td>3.220</td>
<td>0.002**</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.087</td>
<td>0.306</td>
<td>-0.285, 0.459</td>
<td>0.461</td>
<td>0.645</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Ref = Male</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>-0.069</td>
<td>0.306</td>
<td>-0.416, 0.279</td>
<td>-0.390</td>
<td>0.697</td>
</tr>
<tr>
<td>Marital status</td>
<td>Ref = Widowed</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>1.557</td>
<td>0.306</td>
<td>-0.404, 3.518</td>
<td>1.571</td>
<td>0.119</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>1.722</td>
<td>0.306</td>
<td>-0.230, 3.675</td>
<td>1.745</td>
<td>0.083</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>0.808</td>
<td>0.306</td>
<td>-1.275, 2.891</td>
<td>0.767</td>
<td>0.444</td>
</tr>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Physicians</td>
<td>-1.614</td>
<td>0.306</td>
<td>-2.314, -0.915</td>
<td>-4.567</td>
<td>0.000***</td>
</tr>
<tr>
<td>Education</td>
<td>Ref = Undergraduate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>High-school</td>
<td>1.123</td>
<td>0.306</td>
<td>0.397, 1.849</td>
<td>3.060</td>
<td>0.003**</td>
</tr>
<tr>
<td></td>
<td>Postgraduate</td>
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<td>0.306</td>
<td>-0.434, 1.160</td>
<td>0.900</td>
<td>0.370</td>
</tr>
<tr>
<td>Training</td>
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<td>0.306</td>
<td>-0.540, 0.456</td>
<td>-0.166</td>
<td>0.868</td>
<td></td>
</tr>
<tr>
<td>Work experience</td>
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<td>-0.684, 0.237</td>
<td>-0.959</td>
<td>0.339</td>
<td></td>
</tr>
<tr>
<td>WHO for CPM</td>
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<td>0.306</td>
<td>-0.325, 0.377</td>
<td>0.147</td>
<td>0.883</td>
<td></td>
</tr>
</tbody>
</table>

R² = Coefficient of determination; % = percentage; n = number; CI = Confidence Interval; ** = p< 0.05; *** = p< 0.001

5.2.10 Comparison of mean overall BQ-II and subscales scores between Libyan, Jordanian, and Albanian HCPs

A z test was performed to determine whether Libyan HCPs had different barrier scores on the overall BQ-II and its subscales from Jordanian HCPs and Albanian HCPs. The reason for choosing these two studies (Jordanian and Albanian studies) as both studies used the same BQ-II questionnaire, and the data, which were needed for comparison, were available in their studies (Al Qadire, 2011b; Xhixha et al., 2013). A z test was used to compare the average mean overall BQ-II scores of a sample of 152 Libyan HCPs (mean = 3.3) to the average mean overall BQ-II scores of Jordanian HCPs (mean = 2.0, SD = 0.9) (Al Qadire, 2011b) and Albanian HCPs (mean = 1.6, SD = 0.7) (Xhixha et al., 2013). (See Table 5.8).

The result indicates a significant difference in the mean ‘overall BQ-II’ scores between Libyan HCPs and Jordanian HCPs, z = + 17.80, p< 0.001. A similar result was found when the mean overall BQ-II scores for Libyan HCPs were compared to Albanian HCPs, z = + 29.94, p< 0.001. The result also shows a significant difference in the mean BQ-II subscale ‘physiological effects’ between Libyan HCPs and Jordanian HCPs, z = + 16.95, p< 0.001. A similar result was found when Libyan HCPs were compared to Albanian HCPs, z = + 21.57, p< 0.001. This result indicates that Libyan HCPs had higher mean barrier scores than Jordanian and Albanian HCPs. (See Table 5.8).
However, on the ‘fatalism’ subscale means scores for Libyan, Jordanian, and Albanian HCPs, the scores were the lowest compared to other subscales (mean = 1.7, SD 0.8), (mean = 1.4, SD = 1.0), and (mean = 1.0, SD = 0.2), respectively. This result shows that these three groups (Libyan, Jordanian, and Albanian HCPs) may believe cancer pain can be treated using pain medications. However, based on the z test, there was a perceptible difference in the mean BQ-II subscale ‘fatalism’ between Libyan HCPs and Jordanian HCPs, z = + 3.70, p < 0.05. A similar result was found when comparing Libyan HCPs to Albanian HCPs, z = +43.15, p < 0.001.

Furthermore, there was a significant difference in the mean BQ-II subscale ‘communication’ between Libyan HCPs and Jordanian HCPs, z = + 7.19, p < 0.001. A similar result was found when comparing Libyan HCPs with Albanian HCPs, z = + 92.46, p < 0.001. A z test result also showed that Libyan HCPs had higher mean barrier scores on the BQ subscale ‘harmful effects’ than Jordanian HCPs (z = + 13.56, p < 0.001) and Albanian HCPs (z = + 53.42, p < 0.001).

The “physiological and harmful effects of pain medications” were higher concerns in the Libyan HCPs (mean = 3.4, SD = 0.8) and (mean = 3.3, SD = 1.0) than Jordanian HCPs (mean = 2.3, SD = 0.8) and (mean = 2.2, SD = 1.0), and Albanian HCPs (mean = 1.6, SD = 0.7) and (mean = 2.0, SD = 0.3), respectively. This result indicates that Libyan HCPs show more lack of knowledge and poorer attitudes towards CPM than other HCPs in other countries (e.g., Jordan and Albania). This result is in line with the alternative hypothesis (H₆) in this study, which stated that “Doctors and nurses in Libya may have more barriers toward
CPM than HCPs in other countries.” The Libyan HCPs’ response to the overall BQ-II and its subscales is presented in the appendix (32).

5.2.11 The most common barriers to CPM among HCPs from three countries

The most common mean barrier scores among Libyan, Jordanian, and Albanian HCPs were ‘poor tolerance,’ ‘drug addiction,’ and ‘opioid side effects. For example, Libyan HCPs believed that “patients' bodies could increasingly become tolerant to pain medications, resulting in such medicines becoming ineffective,” and the mean score for this item was higher in Libyan HCPs (mean = 3.7, SD = 1.3) compared to Jordanian HCPs (mean = 3.1, SD = 1.7) (Al Qadire, 2011b) and Albanian HCPs (mean = 2.5, SD = 1.8) (Xhixha et al., 2013). (See Figure 5.4).

![Figure 5-4 Comparison of the mean most common barriers between Libyan, Jordanian, and Albanian HCPs](image)
Another comparison of common barrier scores on the BQ-II subscale items between the HCPs from the three countries (Libya, Jordan, and Albania) was performed. For instance, Libyan HCPs believed that “if the patients used pain medications, their ability to recognise any new pain would be blocked” was also higher in Libyan HCPs with a mean score of 3.4 (SD = 1.7) than Jordanian HCPs (mean = 2.9, SD = 1.4) and Albanian HCPs (mean = 3.0, SD = 1.7). This was followed by another concern of tolerance, as Libyan HCPs thought that “if a patient took pain medicine when he/she had mild Pain, such medication might not be effective as well if his/her Pain became severe” (mean = 3.3, SD = 1.5) compared to Jourdain HCPs (mean = 3.1, SD = 1.7) and Albanian HCPs (mean = 2.5, SD = 1.9). Besides another common concern among Libyan HCPs was 'drug addiction', as the three questions in the items related to ‘drug addiction’ were higher in Libyan HCPs (mean = 3.6, SD = 1.5) compared to Jordanian HCPs (mean = 3.0, SD = 1.5) and Albanian HCPs (mean = 2.3, SD = 1.9). Overall, this result indicates that oncology HCPs in Libya have higher barriers to effective CPM than HCPs in other countries, supporting an alternative hypothesis (H₆).

5.3 Summary of the key findings

This quantitative study (study three) in this thesis aimed to evaluate further nurses' and physicians' knowledge, attitudes, and perceived barriers regarding cancer pain and its management in Libya. This survey (study three) showed perceived barriers to effective CPM related to lack of knowledge and poor attitudes towards CPM among oncology HCPs in Libya. Libyan nurses and physicians scored higher barrier mean scores on the BQ-II overall and subscale items and showed lower adequate knowledge about cancer pain and opioids than HCPs in other countries (e.g., Jordan and Albania). This study also showed that participants with only high-school-level qualifications (equivalent to UK A levels) and undergraduate degrees had higher mean barrier scores on the overall BQ-II and its subscales than those with postgraduate-level qualifications. This result indicated that participants with postgraduate levels were associated with lower mean barrier scores towards CPM.
The result also indicated that both groups of Libyan HCPs who had training in CPM and those who did not, and those who had short-term (less than one year) and who had long-term (greater than one year) work experience in cancer care settings showed a similar level of barriers towards CPM. This evidence supports the null hypothesis (H₀), which is that there is no relationship between training in CPM and work experience in cancer care settings, and enhancing HCPs' knowledge and attitudes towards CPM. This result means that short training in CPM and work experience in cancer care settings did not improve the Libyan nurses' and physicians' knowledge and attitudes towards CPM.
6.1 Introduction

This chapter comprehensively discusses the key findings of the three studies included in this sequential exploratory mixed-methods study, which aimed to explore Libyan HCPs, patients, and family caregivers’ views about cancer pain and its management. Firstly, the chapter starts with integrating and summarising the main findings of the three studies in this thesis in section 6.2, which are presented in chapters three, four, and five, respectively. Secondly, the results from three studies in this mixed-methods study are discussed in section 6.3. Thirdly, this chapter provides research strengths and limitations in section 6.4. Fourthly, in section 6.5, the researcher reflected on undertaking this study. Fifthly, section 6.6 involves the research contributions to research and practice. Finally, the chapter ends with a conclusion and recommendations in section 6.7.

6.2 Integration and summary of results

The study’s main aim was divided into three sub-aims to achieve the overall purpose of this study: (1) The first aim was to systematically review research on the nature and impact of attitudes and knowledge towards CPM. (2) The second aim was to explore and understand Libyan HCPs’, patients’, and family caregivers’ perceptions of cancer pain and its management. (3) The third aim was to evaluate HCPs’ knowledge, attitudes, and potential barriers regarding cancer pain and its management in Libya.

To address the purpose of this sequential exploratory mixed-methods study and to answer the research questions, the data from the three studies (systematic review, qualitative study, and quantitative study) of this thesis were integrated on three different occasions. The first point was at the intermediate stage when the participants for the second study were selected based on the responses given in the first study (Hanson et al., 2005). The second point of integration was when
the participants for the third study were selected based on the responses given in the second study (Creswell et al., 2003). The third point of interaction was applied, where both complementary and convergent (triangulations) of the findings are described and discussed in the next section (Ivankova et al., 2006; Östlund et al., 2011).

To understand the views of Libyan HCPs, patients, and family caregivers about cancer pain and its management and to recognise the factors related to potential barriers to effective CPM in Libya, this thesis employed a mixed-methods design, the three methods (systematic review, qualitative, and quantitative methods) were sequential, and the data from each study were triangulated. Each method has different approaches and perspectives, with the results complementing each other and yielding a comprehensive picture. This thesis began relatively broadly by systematically reviewing and combining information related to HCPs, 'cancer patients,' caregivers,' and the general public's attitudes and knowledge towards CPM from various studies. Higgins and Green (2011) stated that the purpose of a systematic review is to synthesise research evidence and identify the limitations of current knowledge and propose directions for future research. Study one showed similar attitudinal barriers to effective CPM among HCPs, cancer patients, family caregivers, and the public. The most commonly cited barriers were fear of drug addiction, poor tolerance of medication, and side effects of opioids. The result also found differences between HCPs (physicians versus nurses) and countries based on their potential exposure to palliative care training and services. The overall result of study one confirmed that there are still barriers to effective CPM caused by HCPs', cancer patients', family caregivers', and the general public's lack of knowledge and/or poor attitudes towards effective CPM, resulting in unalleviated cancer pain. However, the studies were limited to quantitative methods and did not include qualitative studies (in-depth evidence) to show people's views, perceptions, and beliefs about cancer pain and opioids for CPM. Hence, study two (qualitative study) was needed to gain a more detailed understanding of how these attitudinal barriers arise within different contexts. Study two aimed to explore Libyan HCPs,' patients,' and caregivers' views about cancer pain and its management.
Study two showed that Libyan cancer patients were concerned about the social stigma of opioids, feared drug addiction, and could not pay for medicines if they faced financial difficulties. Instead, patients and caregivers emphasised religious and cultural beliefs for managing cancer pain, including the use of the Qur'an and cautery (ironing the place of cancer or pain with fire) as coping strategies for CPM. As CPM barriers, Libyan HCPs perceived a lack of policies and guidelines, pain rating scales, and professional education and training. Based on the findings from study two (qualitative study) and to generalise the qualitative results, further research with a large sample size was required to fully understand contextual differences in Libya’s current state of practice regarding CPM and HCPs’ attitudes and knowledge of CPM in Libya. Thus, study three (quantitative study) was conducted.

In study three, the results suggest that Libyan oncology HCPs hold perceived barriers, lack of knowledge, and poor perceptions and attitudes towards CPM. Nurses showed higher barrier scores towards CPM than physicians. The six significant differences in the attitudinal barriers between nurses and physicians were ‘opiod side effects,’ ‘poor tolerance,’ ‘strong patient endures pain,’ ‘distract the physician,’ ‘drug addiction,’ and ‘opioids impair immune function.’ Study three results also indicated that Libyan HCPs with high-level qualifications were associated with lower barrier scores to effective CPM.

In line with the mixed-methods design of the thesis, the general discussion represents a meta-inference of the assembled results from studies adopting different methods to provide overall convergent findings (Creswell et al., 2007).

6.3 Discussion of findings from three studies

6.3.1 Discussion of findings from study one

Study one in this thesis aimed to systematically review research on the nature and impact of attitudes and knowledge towards CPM. Even though all included studies in this review used the same design (cross-sectional design), the
questionnaires used to conduct surveys in this particular area were different, and some studies did not state which questionnaire was used or failed to provide information regarding the validity of the tools. Therefore, it was difficult to compare studies directly, and the reliability of these included studies in this review could be compromised (Poudel et al., 2018; JBI, 2016). However, almost two-thirds of the included studies, 25 out of the 36 (69.44%), were rated good quality.

Overall, study one showed that most included studies indicated similar attitudinal barriers to effective CPM shared across HCPs, patients, caregivers, and the public. The barriers most commonly cited by HCPs (McCaffery and Ferrell, 1995; Wells et al., 2001; Bernardi et al., 2007b; Kim et al., 2011; Yanjun et al., 2010b; Darawad et al., 2017b; Elliott and Elliott, 1992b; Jeon et al., 2007), patients and their caregivers (Colak et al., 2014b; Lin et al., 2000; Vallerand et al., 2007b; Lou and Shang, 2017), and the general public (Levin et al., 1985) were the fear of poor tolerance, side effects of opioids, and drug addiction. These findings are consistent with the existing literature. For example, a recent study by Saifan et al. (2019), found upon surveying 473 HCPs in Jordan, that the most clearly identified barriers towards CPM were negative attitudes and lack of knowledge towards CPM among HCPs, which resulted from fear of drug addiction, opioid side effects, and cultural beliefs. Another study by Nyirigira Gaston et al. (2021) aimed to evaluate the level of knowledge and attitude of HCPs towards CPM and also found that out of 80 participants, more than 66% of HCPs obtained a score below 50% on the Knowledge and Attitude Survey (KAS) towards chronic cancer pain and its management, which indicated inadequate knowledge about CPM among HCPs and about 51% of the HCPs had negative attitudes towards pain management and opioids.

However, the most common barriers cited by HCPs were contrary to the previous literature, which have suggested that the most important barriers were poor assessment of pain and its management, patient reluctance to take opioids, and inadequate staff knowledge of CPM (Breuer et al., 2011a; Zhang et al., 2015; Darawad et al., 2017b; Eftekhar et al., 2007a; Furstenberg et al., 1998; Ger et al., 2000a; Jho et al., 2014; Jeon et al., 2007). Furthermore, a previous systematic
review by Jacobsen et al. (2007) showed that physicians from countries, such as some states in the US, Australia, and Denmark, were more likely to prescribe strong opioids for CPM at recommended / appropriate doses as they were less concerned about opioid addiction (Jacobsen et al., 2007). Nevertheless, their general findings were that physicians consistently reported being concerned about high doses of opioids and the fear of side effects, and these fears were common reasons for reluctance to prescribe adequate opioids for managing cancer pain (Jacobsen et al., 2007). It can thus be suggested that people from different countries have different attitudes and knowledge about CPM. Therefore, it may be the case that these variations could result in some patients might not receiving appropriate CPM.

6.3.1.1 Patient's Knowledge and Attitudes Towards CPM

Most studies with cancer patients showed low mean scores on patients’ knowledge and attitudes towards CPM (Riddell and Fitch, 1997; Colak et al., 2014b; Cohen et al., 2005; Lou and Shang, 2017). This outcome may be explained that many patients could be reluctant to report their pain to HCPs because they have mistaken beliefs regarding opioid medication (Oldenmenger et al., 2009b). The common key concerns among patients with cancer about opioid analgesics were fear of tolerance, opioid side effects, and drug addiction (Lin et al., 2000; Lou and Shang, 2017; Colak et al., 2014b). This finding was also consistent with the literature review of this study (Jacobsen et al., 2009a).

Evidence showed that people who hold negative perceptions about strong opioids rejected to use of opioids for CPM (Silbermann, 2011; Yates et al., 2002; Ho et al., 2020). Silbermann (2011) argued that many patients and their caregivers viewed opioid medications as a path to death; accordingly, opioid analgesics became their last choice. A recent qualitative study involving 31 participants (18 adult cancer patients and 13 caregivers) found that many cancer patients and their caregivers preferred to use morphine for CPM as a last option because they hold concerns and negative perceptions about strong opioids, including drug side effects and addiction, as well as morphine is only used at the terminal stages (Ho et al., 2020). Although pain is considered an individual
experience, many patients are influenced by their religious or cultural beliefs, mainly when interpreting their pain or accepting CPM medication (Alnems, 2012b; Narayan, 2010; Davidhizar and Giger, 2004; Colak et al., 2014b). In study one in this thesis, negative attitudes towards morphine were shown by Turkish and Jordanian patients, who continued to reject morphine for their cancer pain following sessions that aimed to alleviate fear and increase knowledge about opioids. The reasons given for this were fear of addiction, religious reasons, and cultural prohibitions (Al Qadire, 2012a; Colak et al., 2014c). The results of this study would agree with the existing literature regarding the influence of religious and cultural beliefs on cancer and pain management. Silbermann and Hassan (2011) stated that patients’ responses to cancer or pain could differ based on the patient’s beliefs and culture. Therefore, it is possible that religious and cultural beliefs can be barriers to effective CPM. For instance, due to religious and cultural beliefs, some patients could believe that they should endure their pain courageously (Ho et al., 2013; Colak et al., 2014b). Hence, understanding patients’ religious and cultural beliefs can give the HCPs consideration into how the patient views cancer and pain (Silbermann and Hassan, 2011; Swihart and Martin, 2020). The evidence suggests that HCPs should recognise and understand that patients often refer to their religious, spiritual, and cultural beliefs when considering medical treatment (Swihart and Martin, 2020). Nevertheless, HCPs can also be influenced by their cultural or religious beliefs, as it has been argued that cultural and religious beliefs among HCPs were reported as one of the most obviously identified barriers to effective CPM (Rajeh Saifan et al., 2019; Prandi et al., 2015; Al Khalaileh and Al Qadire, 2012b).

6.3.1.2 HCPs’ Knowledge and Attitudes Towards CPM

Several studies included in study one showed that physicians had a better level of attitudes and knowledge towards CPM than nurses (Jho et al., 2014; Furstenberg et al., 1998; Jeon et al., 2007; Darawad et al., 2017b). There was also a difference between oncologists and surgeons regarding their level of knowledge about CPM, as oncologists showed more knowledge and positive attitudes towards cancer pain and opioids for CPM than surgeons (Gallagher et al., 2004). It seems possible that these results are due to work experience and
training in CPM, as many studies have shown that working in cancer patients’ care settings and receiving training in CPM can improve HCPs’ knowledge and attitudes towards CPM (Elliott et al., 1995; O’Brien et al., 1996; Jeon et al., 2007; Howell et al., 2000b; Yanjun et al., 2010b; Larue et al., 1995; Hollen et al., 2000; Utne et al., 2018).

The results also showed a variation between nurses from different countries regarding the level of knowledge and attitudes towards CPM (McCaffery and Ferrell, 1995). For instance, Canadian and American nurses reported better knowledge and attitudes about selecting morphine for CPM than nurses from Spain and Japan (McCaffery and Ferrell, 1995). It seems that the variation in knowledge about CPM among those nurses could indicate that morphine is under-prescribed. This view was supported by previous literature, which reported that the adherence rates to opioids for CPM varied from 20% to 95%, with most cancer patients taking their treatments only as needed (Oldenmenger et al., 2009b).

A significant variance among oncology nurses’ knowledge of pain was also found in different regions of Italy. For example, nurses who worked in the centre region of Italy had the lowest score in pain knowledge compared to the North and South areas (Bernardi et al., 2007b). A possible reason for this could be that nurses who recorded higher mean scores about their pain knowledge had attended more educational courses about pain management (Bernardi et al., 2007b). The result also showed that some oncology nurses had an incorrect self-evaluation about their knowledge of CPM (Bernardi et al., 2007b; Yildirim et al., 2008). This finding is consistent with Omran et al. (2014), who found that Jordanian oncology and non-oncology nurses have low knowledge about CPM.

In contrast to earlier findings, several studies indicated that oncology nurses and doctors achieved higher scores on the Knowledge and attitudes surveys (KAS) compared to general nurses and physicians (Shahriary et al., 2015; Gallagher et al., 2004; Jeon et al., 2007; Larue et al., 1995; Utne et al., 2018). These positive results could be due to the work experience of HCPs in cancer pain settings, as
was reported by McCaffery and Ferrell (1995), who stated that nursing staff from countries such as Canada and the US, which have the longest experience of palliative care units, showed a better level of attitudes and knowledge about CPM than nurses from countries (Japan and Spain) that had palliative care services more recently. It can thus be suggested that experience in cancer care or pain settings could enhance HCPs' attitudes and knowledge about CPM.

Nevertheless, it seems that experience in oncology or pain units without professional education and continuing training in CPM is not enough to increase HCPs' knowledge about CPM. This view was supported by Bernardi et al. (2007b), who reported that the years of experience of cancer care nurses were not correlated to pain knowledge scores. Accordingly, it is possible that professional education in CPM is the key issue for improving the HCPs' level of knowledge and attitudes towards CPM. Several authors have suggested that professional education and continuing training in CPM can improve HCPs' attitudes and knowledge about CPM (Omran et al., 2014; Lai et al., 2003; Patiraki et al., 2006b; Allard et al., 2001; Alvarez and Agra, 2006; Bennett et al., 2011). According to previous reviews of educational interventions aimed to improve CPM in different settings, a significant effect was shown on pain scores; however, the quality of opioid prescription and interference from pain in daily activities were not affected by the majority of interventions (Allard et al., 2001; Alvarez and Agra, 2006; Bennett et al., 2009; Oldenmenger et al., 2018). In general, therefore, it seems that a lack of professional education and continuing training in CPM could be one of the essential key barriers to CPM among HCPs (Ger et al., 2000a; Hooten and Bruce, 2011a). A study reported that physicians' lack of knowledge and training in CPM was one of the highest barriers to morphine usage in clinical practice (Yanjun et al., 2010a). Von Roenn et al. (1993) also claimed that HCPs, who had professional education and training in CPM, could aid cancer patients in both reporting their pain and in the effective use of the opioids prescribed to them. It is also well documented that there is less than optimal pain management for patients with cancer due to a lack of professional education about CPM (McCaffrey and Ferrell, 1997; Chwistek, 2017). Many studies have shown that HCPs who had experience in palliative care units, received training, and a high level of education in CPM obtained higher scores on the knowledge of CPM (Jho
et al., 2014; Patiraki et al., 2006b; Lai et al., 2003; Omran et al., 2014; Yanjun et al., 2010b; Utne et al., 2018). Therefore, it seems clear that the combination between professional education, continuing training, and experience in palliative care and CPM settings are crucial for improving HCPs’ knowledge and attitudes towards CPM.

6.3.1.3 Caregivers’ Knowledge and Attitudes Towards CPM

Various studies have shown that family caregivers had a low knowledge and attitudes towards CPM (Lin et al., 2000; Vallerand et al., 2007b; Lou and Shang, 2017). These negative attitudes and inadequate knowledge by caregivers about opioids and cancer pain could result in attitudinal barriers to effective CPM (Elliott et al., 1996; Lin, 2000; Lin et al., 2000). The correlation between caregivers’ attitudes and their patients’ pain knowledge towards CPM is interesting because patients’ attitudes towards CPM were influenced by their caregivers’ attitudes and the patients' pain knowledge (Lou and Shang, 2017). Hence, caregivers should have general awareness and adequate knowledge about CPM. This is important to increase caregivers’ ability to participate in CPM and enable them to assess pain and help their patients take adequate doses of opioids for CPM (Yates et al., 2004b). It has been argued that caregivers with sufficient pain management knowledge had significantly fewer barriers to CPM than those without (Vallerand et al., 2007a).

Interestingly, all three studies, including family caregivers of study one in this thesis, showed that caregivers held the same concerns about CPM. These concerns were fear of opioid addiction, opioid-related side effects, poor tolerance, and the belief that pain meant disease progression (Lin et al., 2000; Vallerand et al., 2007b; Lou and Shang, 2017). The negative attitudes and concerns about opioids for CPM are consistent with previous literature (Saifan et al., 2015). A study by Vallerand et al. (2007b) found that caregivers in the US had lower concerns about opioid-related side effects, fears of addiction, disease progression, and poor tolerance, which could mean that caregivers in the US have more knowledge and good attitudes towards CPM. However, these concerns are still counted as the main barriers to effective CPM (Reddy et al.,
2013). Therefore, it seems that to improve CPM, caregivers should have general awareness and adequate knowledge about opioids and cancer pain.

6.3.1.4 Public's Knowledge and Attitudes Towards CPM

Results from studies that identified with the general public’s attitudes and knowledge towards CPM showed that many people were concerned about disease progression and believed that pain was usually associated with this progression. However, some people had significant concerns about opioid side effects, poor tolerance, and drug addiction (Levin et al., 1985). However, this outcome is in contrast to the previous literature, which illustrated that the percentage of people who were not afraid of becoming addicted to morphine if prescribed for managing cancer pain increased from 26% in 1990 to 69% in 1996 (Larue et al., 1999). Surprisingly, only two studies were found in the general public’s attitudes and knowledge towards CPM, and both articles were published before 2000; consequently, updated studies about this area are needed. It can thus be suggested that based on the results from these two studies, people’s awareness about the use of opioids for CPM has increased and negative concern about opioids has decreased. This could be due to increasing general awareness and adequate knowledge about CPM.

6.3.1.5 Summary of discussion from study one

Overall, the result from study one has found some evidence that there are negative attitudes and a lack of knowledge towards CPM among the four groups (HCPs, patients, caregivers, and the public) included in study one. These findings are consistent with those of recent literature reviews (Bouya et al., 2018; Saifan et al., 2015; van den Beuken-van Everdingen et al., 2007b; Van den Beuken-van Everdingen et al., 2016b; Colak et al., 2014b; Breivik et al., 2009; Greco et al., 2014; Saifan et al., 2019). Therefore, it can be argued that due to these negative attitudes and lack of knowledge about effective CPM, the management of cancer pain remains a significant problem worldwide, especially in countries in Europe, Africa, and Asia (Saini and Bhatnagar, 2016; Breivik et al., 2009; Van den Beuken-van Everdingen et al., 2016b; Li et al., 2018; Reis-Pina et al., 2015; 2018;
Thinh et al., 2018). This could be due to a lack of education and training about CPM among HCPs and a lack of general awareness and adequate knowledge about CPM among patients, caregivers, and the public, as stated in all of the included studies. Accordingly, HCPs expressed a desire for additional education and training on CPM. A review indicated that educational programmes on CPM, including CPM topics in nursing curricula, and training programmes on CPM, are the most important factors for enhancing nurses’ knowledge and attitudes towards CPM (Bouya et al., 2018). It has also been argued that nurses who had received educational programmes on CPM reported a significantly higher mean of scores on CPM knowledge than those who did not have pain education (Bernardi et al., 2007b). It is possible, therefore, that professional education and continued training in CPM are needed to enhance HCPs’ knowledge and attitudes about CPM. Furthermore, patients, caregivers, and the public need general awareness and adequate knowledge about CPM. A review reported that providing educational sessions on CPM can improve caregivers’ knowledge and reduce their attitudinal barriers to effective CPM (Meeker et al., 2011). Regarding the general public’s views, it is expected and inevitable that the general public will know very little about CPM unless they have cancer or someone close to them does. Thus, wider general awareness and increased knowledge about CPM are desirable.

In general, however, it was unclear how these attitudinal barriers and factors negatively influenced the HCPs, cancer patients, and family caregivers’ attitudes and knowledge towards CPM. Hence, a more in-depth understanding of the conceptions and attitudes towards CPM was required (Ung et al., 2016). Furthermore, given the similarities in religious and cultural practices between Libya, Turkey, and Jordan, Libyan patients and their family caregivers’ perceptions, beliefs, and attitudes towards CPM may also be similar to those described in the Turkish and Jordanian studies (Al Qadire, 2012a; Colak et al., 2014c). Moreover, Libyan HCPs might be influenced by their religious and cultural beliefs, similar to HCPs from other countries (Al Khalailah and Al Qadire, 2012b; Al Qadire, 2011b; Rajeh Saifan et al., 2019), resulting in further CPM barriers. Additionally, although knowledge about potential barriers to effective CPM due to HCPs,’ patients,’ caregivers’ views, perceptions, beliefs, and attitudes was
documented in many studies from different countries (Al-Ghabeeesh et al., 2020; Kwon, 2014a; Darawad et al., 2019a; Lou and Shang, 2017; Vallerand et al., 2007b), there is no published research on this subject in Libya. Likewise, the CPM situation among Libyan HCPs has not been previously assessed, despite the poor QoL, which has been found among cancer patients in Libya (Nouh et al., 2018; Agila, 2020; Hashemi et al., 2019). Consequently, these reasons collectively formed the foundations for the exploratory nature of study two aims of the thesis.

6.3.2 Discussion of findings from study two

Based on the findings discussed in study one in this thesis and to answer the research question in study two, this study (qualitative study) was conducted to explore Libyan HCPs’, patients’, and caregivers’ views and perceptions about cancer pain and its management. This is the first qualitative study that explores Libyan HCPs’, cancer patients, and family caregivers’ views and perceptions about CPM to the best of the researcher's knowledge. The qualitative analysis of interviews revealed six categories representing the perceived barriers to CPM among Libyan HCPs, cancer patients, and their caregivers. These categories were barriers to effective CPM related to the influence of religious, cultural, and economic factors on CPM and barriers related to patients, caregivers, HCPs, and the healthcare system. The following sub-sections present a discussion of each of these categories.

6.3.2.1 Influence of religion on CPM

The findings obtained from the analysis of interviews in this study showed that many cancer patients and their caregivers relied on their religious beliefs, including belief and trust in Allah, and a divine fate, to cope with cancer and pain. This outcome may be explained by the fact that patients might cope with their disease and tolerate their suffering as they seek help from Allah through prayer (Videbeck, 2011; Sollgruber et al., 2018). Furthermore, caregivers might help their patients by supporting them with spiritual needs and providing hope and peace (Magill, 2009; Kiyancicek and Caydam, 2017; Mendieta and Buckingham,
However, such religious beliefs could be a barrier to the medical management of cancer and pain because most Libyan patients and their caregivers were reluctant to use pain medication in the current study.

Similar to the findings of earlier literature (Hatamipour et al., 2015; Hosseini et al., 2016; Erol et al., 2018; Makhlouf et al., 2020), many patients and their caregivers in study two of this thesis believed that Qur'an could cure diseases, such as cancer, and relieve physical suffering like pain. Thus, the Qur'an was often used by Libyan patients and their caregivers to help patients cope with their disease, anxiety, and pain, which is consistent with the existing literature. Although some studies with Muslim cancer patients show positive beliefs about their disease and pain (Hatamipour et al., 2015), these beliefs may influence CPM despite reluctance to use medical treatment, such as opioids for CPM (Bosch and Baños, 2002). In this study, although reciting verses from the Qur'an was helpful to support Libyan patients and their caregivers in coping with their condition and specifically with cancer pain, this could negatively influence effective CPM in Libya, as some patients and their caregivers preferred to use the Qur'an instead of medications for CPM.

Some Libyan HCPs in this study also believed that specific verses from the Qur'an could be recited and used as a coping strategy to help patients to cope with the distress associated with cancer and pain. This finding suggests that the Qur'an could be used as a coping strategy to help patients with their distress related to disease and anxiety, as was shown in previous literature (Sulaiman et al., 2001; Nolen-Hoeksema et al., 2008). However, religious beliefs could be a barrier to effective CPM, as some patients and their caregivers might refuse to use opioids for CPM due to the misconception that the Qur'an will cure their cancer and relieve their suffering. Attia (2015), who is one of the well-known Islamic scholars of Al Azhar University in Egypt, has clearly explained the misunderstanding of this verse “(And We send down of the Qur'an that which is a cure and a mercy for the believers).” Verse (17:82 Surat AL-Isra). He stated that the meaning of cure as expressed in this verse does not mean that the Qur’an cures the diseases like cancer and relieves physical pain, as some Muslims have
thought. However, the verse means that the Qur’an cures spiritual diseases in people’s chests and hearts, such as jealousy, animosity, and hate (Attia, 2015).

Study two in this thesis also illustrates that some Libyan HCPs described religious practices as applicable to support patients alongside, and complementary to, medical intervention. This result confirms evidence from the existing literature, which suggests that HCPs should recognise and understand that patients often turn to their religious and spiritual beliefs when considering medical treatment (Dedeli and Kaptan, 2013; Swihart and Martin, 2020). Several studies showed that patients with pain, most likely to have better well-being psychologically and used positive coping strategies to cope with their suffering, were either religious or spiritual individuals (Dedeli and Kaptan, 2013; Baetz and Bowen, 2008). Nevertheless, such coping strategies were related to better pain tolerance rather than pain relief (Baetz and Bowen, 2008).

In the present study, although some Libyan HCPs emphasised that patients should use medications for CPM alongside copying strategies (religious beliefs), some patients and their caregivers preferred to use religious beliefs exclusively as a coping strategy to tolerate pain; thus, they refused to use opioids for CPM. It can thus be suggested that patients who used only religious beliefs as a coping strategy for cancer pain might suffer from cancer pain as such strategy was used to tolerate the pain instead of relieving the pain as opioid analgesics usually do (Baetz and Bowen, 2008). It is possible, therefore, that using religious beliefs as a coping strategy by patients and caregivers can be a barrier to effective CPM in Libya.

6.3.2.2 Influence of culture on CPM
Another unanticipated finding in study two was Arabic traditional cautery (Kaï – ironing the place of cancer or pain with fire), which was commonly used by some Libyan patients and their caregivers as an alternative therapy to manage cancer and pain. The current thematic analysis indicated that the use of cautery could have a negative impact on CPM in Libya. For example, some Libyan patients and
their caregivers believed that cautery was the faster way to treat the disease and consequent pain. Therefore, they preferred to use it instead of medical CPM. It seems that it is complicated to explain this result, but it might be related to a narration, which they thought was narrated by the Prophet Muhammed (PBUH). However, there was probably a misunderstanding about this narration, as the authentic narration was that the Prophet (PBUH) said: "Healing is in three things: A gulp of honey, cupping and branding with fire (cauterizing). Nevertheless, I forbid my followers to use (cauterization) branding with fire." (Al-Bukhari, 1996 cited in; Fitzpatrick and Walker, 2014, p. 264). Unfortunately, it seems that because of the misconception about this narration, some patients and their caregivers might prefer to use cautery (Kaiy) instead of medical treatment to manage their cancer and pain. The emphasis on the use of cautery in this study is consistent with what is in the current literature regarding studies related to cultural beliefs, including the use of cautery, could be a barrier to effective cancer and pain management (Farid and El-Mansoury, 2015; Elzahaf et al., 2016b; Aboushanab and Alsanad, 2018; Abou-Elhamd, 2009a).

Although Libyan HCPs in the current study have similar religious and cultural beliefs to the patients and caregivers, most HCPs believed cultural beliefs could negatively affect cancer and pain treatments. They (HCPs) emphasised that some cancer patients and their caregivers preferred to use cautery as alternative therapy instead of medical treatments to manage their cancer and pain. Similar to a recent qualitative study (Eshete et al., 2019), most HCPs in the current study said that some patients wanted to take opioids for their cancer pain, but their caregivers usually refuse to give opioids to their patients. These results provide further support for the hypothesis that cultural beliefs could be one of the major factors resulting in barriers to CPM. A meta-analysis showed that cultural beliefs among Western and Asian patients were barriers to effective CPM (Chen et al., 2012). In study two, some Libyan patients and their caregivers perceived the use of cautery as an alternative therapy to manage cancer pain. They believed it would work as it has a cultural perspective for treatment and is preferable to opioids for CPM. HCPs were aware of such cultural beliefs, but they could not do anything as that was patients’ and their caregivers’ preferences and wishes. As mentioned in the present literature that many HCPs believed cultural beliefs had
an adverse effect on CPM (Farid and El-Mansoury, 2015; Abou-Elhamd, 2009a). For instance, a study highlighted that due to the application of cautery by some patients to cure their cancer, cancer management is usually delayed, increasing the aggressiveness of the disease associated with chronic cancer pain (Farid and El-Mansoury, 2015). In the current study, patients' and caregivers' views about the use of cautery for CPM might arise from lower education levels and a lack of general misunderstanding about cautery and CPM, as reported by some HCPs in the existing literature (Farid and El-Mansoury, 2015). Consequently, it can be suggested that the practice of cautery is another issue that influences CPM in Libya.

Study two in this thesis confirms the findings with those of other literature (Lunn, 2003; Leong et al., 2016; Kolmar and Kamal, 2018), highlighting that cultural and religious beliefs could play an essential role in cancer patients' and caregivers' attitudes towards CPM. In the current study, opioids were another social stigma among Libyan patients, their family caregivers, and newly qualified HCPs due to a fear of poor tolerance and drug addiction. This could be another reason for Libyan patients and caregivers refusing to use opioids for CPM. The results of this study would agree with the literature regarding the stigma of opioids that can be a barrier to effective CPM (Bulls et al., 2022a). Studies stated that some people might be reluctant to report pain because they might have a mistaken belief or social stigma regarding opioid medication (Oldenmenger et al., 2009a), or the use of opioids can be prohibited in their culture (Lovering, 2006). In study two, Libyan patients’ concerns about opioids might result from religious reasons or cultural prohibitions. This view is consistent with (study one) recent systematic review (Makhlouf et al., 2020), which showed the same concerns about opioids in Turkish patients (Colak et al., 2014c; Lovering, 2006) and Jordanian patients (Al Qadire, 2012a). A possible explanation for this might be that some Libyan patients might refuse to take opioids for their cancer pain, as people surrounding them (e.g., caregivers, HCPs, or support systems) might be negatively impacted by the social stigma of opioids as this was mentioned by many earlier studies in the existing literature (Corrigan et al., 2011; Earnshaw and Chaudoir, 2009; Earnshaw et al., 2013; Schenker et al., 2021a). A recent study revealed that one of the main barriers to effective CPM was that cancer patients, who received
opioids for CPM, feel stigmatised by HCPs, pharmacists, and society (Schenker et al., 2021a). These results reflect those of Lou and Shang (2017), who also emphasised that cancer patients’ attitudes towards opioids were influenced by their family caregivers’ attitudes and the patient’s knowledge about cancer pain and opioids. In study two, some Libyan patients might refuse to take opioids for their cancer pain, as their family caregivers might have negative attitudes towards opioids. In the current literature, several studies revealed that opioid stigma was one of the main barriers to effective CPM. For example, a study conducted by Bulls et al. (2019) aimed to explore opioid stigma among cancer patients undergoing active treatment in a supportive care clinic and reported that among 97 cancer patients who received a prescription of opioids for CPM, 59 (61%) of patients endorsed the social stigma of opioids, resulting in less opioid medication being taken than needed. The results of Study two of this thesis would agree with the literature, which suggested that cancer patients’ attitudes towards opioids could be highly influenced by the social stigma of opioids (Bulls et al., 2019). It can thus be suggested that the social stigma of opioids could be another reason for refusing to use opioids for CPM by the Libyan patients, caregivers, and some HCPs.

6.3.2.3 Influence of economic factors on CPM

Financial difficulties among cancer patients and their caregivers in this study were found to cause further concerns. The cost of cancer treatment in Libya is estimated that one dose can cost between 3,000 and 4,000 (Libyan dinars), which is equivalent to $2,170 to $2,900 at the official exchange rate (Reuters, 2018).

Although the financial hardships among cancer patients have now become a more familiar term to be discussed in the medical literature worldwide (Carrera et al., 2018; Kushnick, 2015; Laurance, 2013; Zhang et al., 2017), unfortunately, the financial difficulties among cancer patients seem to be ignored in developing countries (Su et al., 2020), including Libya. In this study (study two), some patients may endure cancer pain due to a lack of financial resources for cancer treatment and pain prescriptions. A study conducted in 2013 included more than 100 specialists in chronic myeloid leukaemia from different countries, including
the UK, which emphasised that many cancer patients lack access to anticancer drugs due to the high prices of cancer treatments (Laurance, 2013). Another study highlighted that cancer patients and their family caregivers were often concerned about financial hardship when anticipating the newer classes of cancer drug therapies (Delgado-Guay et al., 2015). Su et al. (2020) reported that 18% of those who faced financial difficulties had to borrow money for their anticancer drugs, which was among more than half of cancer survivors. In study two in this thesis, most cancer patients, who had experienced financial hardships, had sold their personal belongings and borrowed money to pay for their cancer procedure and treatment. The emphasis on the direct negative impact of financial difficulties on cancer and pain management in this study is consistent with what is in the existing literature regarding studies related to delayed or avoided medications by some cancer patients due to a financial issue. Zafar et al. (2013) emphasised that medical treatment and pain prescriptions are more likely to be delayed or avoided by some cancer patients who are economically affected by cancer procedures and treatment.

Comparing the existing findings with those of other studies from Western countries (Yabroff et al., 2016; Hanly et al., 2018), it can thus be suggested that Libyan cancer survivors might have more concerns about financial difficulties than those mentioned in previous studies. For instance, a study conducted in the USA by Yabroff et al. (2016) reported that only about 7% of cancer survivors had to borrow money or go into debt due to financial hardships. A systematic review conducted by Azzani et al. (2015) aimed to investigate the prevalence of perceived financial hardship and associated factors among cancer patients and their caregivers and reported that the prevalence of economic hardship perceptions in included studies was from about 15% to 79%. Their results found that financial difficulties were common among people with low income, resulting in the discontinuation of cancer treatment. A recent study conducted in Singapore aimed to evaluate the association of total pain and suffering and perceived the quality of healthcare with financial hardships among advanced cancer patients, reported that 35% of cancer patients had financial difficulties with higher scores related to total pain and suffering, including physical, social, psychological, and spiritual health outcomes (Malhotra et al., 2020). In study two, most cancer
patients and their caregivers were low-income; thus, cancer patients, who had experienced financial hardships, had sold their personal belongings and borrowed money to pay for their cancer procedure and treatment. Similar to the findings of the literature (Azzani et al., 2015; Zafar et al., 2013), cancer treatment and pain prescriptions might be terminated due to financial difficulties in the current study. It can therefore be suggested that the economic hardships of cancer treatment and cancer pain prescriptions among cancer patients and their family caregivers may be another issue that influences CPM in Libya.

6.3.2.4 Barriers to CPM related to patients and caregivers

The results in study two appear to suggest further support for the published body of the existing literature and found that cancer patients at different stages of their disease still do not receive appropriate CPM (Greco et al., 2014; Dees et al., 2011; Al Qadire et al., 2013; Chwistek, 2017; Thinh et al., 2018). For example, in this study (study two), Libyan cancer patients experienced pain either at an advanced stage of their disease or after the doses of cancer treatment (chemotherapies and/or radiotherapies). Similar to previous studies (Caraceni and Weinstein, 2001; Fainsinger et al., 2010; Knudsen et al., 2012), some patients believed pain indicated disease progression. In contrast, others thought that pain was due to cancer treatment. Several studies have shown that cancer patients, who experienced pain at an advanced stage of their disease or after the doses of cancer treatment, might be reluctant to take opioids for CPM (Caraceni and Weinstein, 2001; Fainsinger et al., 2010; Knudsen et al., 2012), as they might expect that their pain was inevitable (Liu et al., 2018; Eshete et al., 2019). This could be a reason for Libyan patients in this study who refused opioids for CPM. However, the concerns about poor tolerance and drug addiction could probably be the main reason that Libyan patients and their caregivers refused to use opioids to manage cancer pain. The results of this study would agree with the literature regarding poor attitudes and perceptions towards opioids resulting in barriers to CPM. Lou and Shang (2017) found, upon surveying 363 cancer patients and caregivers in China, that participants showed poor attitudes towards CPM, including poor tolerance, drug addiction, and side effects. It seems clear that there is a strong relationship between people’s views or perceptions of
opioids and barriers to effective CPM, as this also has been reported in the existing literature. Several studies highlighted that patients’ and caregivers’ attitudes, views, and perceptions of opioids were one of the main barriers to effective CPM (Cohen et al., 2005; Colak et al., 2014a; Lou and Shang, 2017; Kwon, 2014b). It seems possible that some people’s views, perceptions, and attitudes towards opioids are due to a misunderstanding of Islamic rules, as they might believe that taking opioids for CPM is against religious beliefs or Islamic rule because opioids known as narcotic drugs have the potential for abuse. Furthermore, recreational narcotics are forbidden in Islam (Attum et al., 2022). However, many Muslim scholars have emphasised that Islam allows using opioids for pain and CPM (Sheikh, 1998; Choong, 2015). It has been stated that unnecessary pain and suffering have no place in Islam (Sheikh, 1998). Thus, Muslim patients should not hesitate to benefit from medications for CPM, which are available to help relieve their pain and stop their suffering (Sheikh, 1998; Choong, 2015).

6.3.2.5 Barriers to CPM related to HCPs

Similar to the findings of earlier studies (Elliott and Elliott, 1992a; Bernardi et al., 2007a; Jeon et al., 2007), some HCPs in this study showed negative perceptual and attitudinal barriers to effective CPM, including fear of poor tolerance and drug addiction. The emphasis on the influences of HCPs’ poor attitudes and perceptions towards effective CPM in this study is consistent with the current literature. Nasser et al. (2016) found that fear of side effects, tolerance, and addiction to opioids was reported among newly qualified physicians with less experience in cancer care and CPM as the most common barrier to effective CPM. In this study, newly qualified physicians hesitated to prescribe opioids for CPM. It seems that Libyan HCPs, who refused to use opioids for CPM, are misled by false views or perceptions and lack of knowledge and training regarding the use of opioids and the incidence of addiction.

Another barrier to effective CPM could be related to a lack of knowledge about CPM among Libyan HCPs. In study two, most HCPs had barriers to effective CPM due to a lack of comprehensive knowledge about CPM. The results of this
study are consistent with earlier findings in the current literature (Darawad et al., 2017a; McCaffery and Ferrell, 1995; Yanjun et al., 2010a; Kim et al., 2011). It is possible; therefore, that work experience in cancer care settings might enhance HCPs' attitudes and knowledge about CPM. A study conducted in Brazil by Dos Santos Ferreira et al. (2019) found that nurses with more extensive work experience in cancer care settings had adequate knowledge about CPM in comparison with those without such experience. In this study, Libyan HCPs, who had more experience in oncology clinics, showed more knowledge and positive attitudes towards CPM than newly qualified HCPs. However, the outcomes of this study are contrary to previous studies (Bernardi et al., 2007b; Oldenmenger et al., 2009b) in the existing literature, which found that the number of years of experience with cancer HCPs was not correlated with pain knowledge scores.

It seems that there is a difference between the experience in cancer settings and the experience in palliative care units. A study found that HCPs, who had work experience in palliative care settings, reported significant mean knowledge scores about CPM (Etafa et al., 2020). Another study conducted in China by Li et al. (2021) indicated that oncology nurses who work in palliative care and have experience in CPM were associated with adequate knowledge and positive attitudes towards CPM. In this study, none of the Libyan HCPs had experience in either CPM or palliative care settings. To manage Libyan patients with cancer pain, most Libyan HCPs used textbooks and internet resources and their individual experiences in cancer care settings. It can thus be suggested that work experience in pain and palliative care settings can be the key issue in improving HCPs' knowledge and attitudes towards effective CPM.

In comparison with Canadian and American HCPs (McCaffery and Ferrell, 1995) and British HCPs (Wells et al., 2002), who have work experience in palliative care settings and follow specific guidelines for CPM, perhaps have more knowledge and positive attitudes towards CPM than Libyan HCPs. The evidence from the current literature showed that Canadian and American nurses, who have the longest experience in palliative care settings, showed positive attitudes and a better level of knowledge about CPM than Japanese and Spanish nurses, who
had less experience in palliative care units (McCaffery and Ferrell, 1995). A possible explanation for this might be that limited knowledge and poor attitudes towards CPM among Libyan HCPs were due to a lack of experience in palliative care settings, as palliative care does not exist in the Libyan healthcare system (El Ansary et al., 2014b). This view would agree with the existing literature. A study found that HCPs, who had work experience in palliative care settings, reported significant mean knowledge scores about CPM, $p < 0.05$ (Etafa et al., 2020).

However, in contrast to previous literature, it has been argued that direct experience in oncology and palliative care units without professional education and continuing training in CPM is not enough to improve HCPs' attitudes and knowledge about CPM (Darawad et al., 2019b; Li et al., 2021; Oldemenger et al., 2009b). A study by Mosich et al. (2017) indicated that participants, who scored higher on CPM knowledge, were physicians with undergraduate palliative care education and training in CPM. A similar finding was also reported by Martin-Martín et al. (2021). A study conducted by Darawad et al. (2019b) found that one of the significant barriers to effective CPM was associated with a lack of training in CPM. A survey also reported that due to a lack of education and training in cancer pain and opioids, most physicians had inadequate knowledge and poor attitudes towards optimal analgesics and prescribing opioids for CPM (Ger et al., 2000b). The outcomes of earlier studies in the current literature are consistent with what is in this study (study two). In study two, none of the Libyan HCPs had education or training in CPM, and they reported poor attitudes and a lack of knowledge about CPM, resulting in some cases of cancer pain that might not have received adequate CPM in Libya. This result reflects those of Kopf and Patel (2010), who also found that in developing countries, few HCPs received adequate education and training in pain management as an undergraduate programme.

The emphasis on the positive effect of education and training in palliative care and pain management on HCPs' attitudes and knowledge about CPM in this study is consistent with the current literature. A recent survey found that HCPs, who either had Good Pain Management (GPM) programme or participated in
advanced training in CPM, had positive attitudes and adequate knowledge about CPM (Liu et al., 2021). In contrast to earlier findings, however, a study reported that although about 50% of participants had professional training in CPM recently, fear of side effects, poor tolerance, and addiction to opioids was still reported among roughly 45% of physicians as the most common barrier to effective CPM (Nasser et al., 2016). Nevertheless, this was more common among newly qualified physicians with fewer experiences in CPM (Nasser et al., 2016). In the current study, Libyan physicians reported that newly qualified doctors usually avoid prescribed opioids for CPM, as they were concerned about poor tolerance and addiction to opioids. Therefore, it seems that positive attitudes and adequate knowledge about cancer pain and opioids among HCPs are associated with advanced professional education, continuous training, and experience in CPM. This view would agree with the existing literature regarding the importance of professional education and training in CPM. Wells et al. (2002) highlighted an improvement in HCPs' knowledge and attitudes about opioids for CPM following professional education, training, and experience in CPM. Another study also reported that most physicians, who had continued palliative care training, correctly answered about 70% of questions related to attitudes and knowledge about CPM (Rurup et al., 2010). It can thus be suggested that professional education and continuing training in CPM are needed to enhance Libyan HCPs' attitudes and knowledge about CPM.

Several studies also have suggested the positive effects of educational interventions on HCPs' attitudes and Knowledge about CPM (Alvarez and Agra, 2006; Allard et al., 2001; Bennett et al., 2011; El-Aqoul et al., 2020; Xhixha et al., 2013; Gustafsson and Borglin, 2013). For example, a recent survey reported that the mean scores of nurses' attitudes and knowledge towards CPM were significantly different between the educational intervention group and the control group ($P< 0.05$). Their findings suggested that a pain management education programme can improve nurses' attitudes and knowledge about CPM (El-Aqoul et al., 2020). However, Kasasbeh et al. (2017) argued that although educational interventions have been widely recognised to improve HCPs' knowledge and attitudes towards CPM, many HCPs still have negative attitudes towards opioids for CPM that might impact the delivery of quality care to patients with cancer pain.
McMillan et al. (2005) also asserted that HCPs’ attitudes towards cancer pain and opioids are harder to change than their knowledge. In the current study, Libyan HCPs showed poor attitudes towards strong opioids for CPM. Thus, some Libyan physicians hesitated to prescribe strong opioids for CPM as they hold concerns about opioids, such as poor tolerance and drug addiction. This finding is consistent with studies in the current literature, which showed similar concerns about opioids among HCPs in some Arab countries in the Middle East and North Africa (MENA) region (Al Khalaileh and Al Qadire, 2012b; Kaki, 2011; Nasser et al., 2016; Yildirim et al., 2008). It can thus be suggested that negative attitudes and lack of knowledge among Libyan HCPs could be another barrier to adequate CPM in Libya.

6.3.2.6 Barriers related to the healthcare system

The findings of this study are consistent with many previous studies (Kuzevli Yildirim and Uyar, 2006; Kwon, 2014a; Samara et al., 2018; Goblan et al., 2021), which highlighted those barriers related to the healthcare system, including the lack of CPM guidelines, limits of access to opioids, and unavailability of pain and palliative care specialists, as well as inadequate pain assessment are key barriers to adequate CPM. Although guidelines such as World Health Organisation (WHO) (WHO, 2019) and National Institute for Health and Care Excellence (NICE) (NICE, 2012) have been established to be used in CPM worldwide, in this study, such guidelines were not followed by Libyan HCPs because these guidelines do not exist in their clinics. Furthermore, despite the availability of valid tools for cancer pain assessment (BPS, 2019a), such tools are not available for assessing cancer pain in Libya. Most Libyan HCPs relied on the patient's facial expressions and self-reports to assess cancer pain in the present study. It is possible, therefore, that a non-standard assessment of cancer pain might impact CPM in Libya. A study suggests that one of the significant barriers to adequate CPM was associated with relying on HCPs' assessments of facial expressions or patient self-reports (Anderson et al., 2000). A cross-sectional study conducted by Samara et al. (2018) also reported that inadequate pain assessment was perceived by about (90%) of the physicians as the highest barrier to effective CPM. Another survey reported that inadequate pain assessment was cited by
approximately 77% of nurses as the most frequently perceived barrier to CPM (Toba et al., 2019). Several previous studies also highlighted that a lack of regular pain assessment by the HCPs was one of the most significant essential barriers to effective CPM (Jacobsen et al., 2009a; Breuer et al., 2011b; Haumann et al., 2017; Darawad et al., 2019b). The possible explanation for this might be that this result is due to a lack of knowledge about cancer pain and its management among HCPs. Hamdan (2019) found that nurses in educational hospitals use pain assessment tools more often than nurses in governmental and private hospitals.

Limit access to opioids for CPM could be another barrier to effective CPM in Libya. Similar to the findings of earlier studies (Kwon, 2014b; Adams, 2008), in the current study, the shortage of opioids, such as morphine for CPM, was a barrier to effective CPM in Libya. For instance, morphine was not prescribed by Libyan doctors to their outpatients for CPM in many cases, as morphine tablets did not exist in their places and morphine injections were usually unavailable. Although strong opioids, such as morphine, remain the most effective and recommended for CPM (WHO, 2019), in this study, morphine was limited access to be used for CPM, which could be a barrier to effective CPM in Libya. The current study's findings are consistent with the existing literature. Kwon (2014b), found that lack of access to opioids for CPM has been highlighted as one of the main barriers to effective CPM. Similar findings also were reported by Adams (2008). It has been estimated that around 6 million out of 8.2 million people who die annually due to advanced cancer worldwide had limited access to strong opioids, mainly due to their unavailability, particularly in developing countries (Berterame et al., 2016). A possible explanation for the lack of the availability of strong opioids for CPM in developing countries, including Libya, may be due to the lack of knowledge and poor attitudes among policymakers or governments; thus, they might reject or restrict the use of strong opioids for CPM. Shamieh and Jazieh (2010b) emphasised that access to strong opioids for CPM in developing countries is either limited or legally restricted. Even in some developed countries with good access to opioids, barriers related to limited access to opioids and excessive regulations were interfering with effective CPM in many European countries (Cherny et al., 2010), and at least 30% of patients in some developed countries are undertreated for their cancer pain (Greco et al., 2014). However,
this is likely more obvious in developing countries than in developed countries (HRW, 2011). A recent systematic review conducted in South, Southeast, East, and Central Asia, revealed that policymakers' negative attitudes and restrictive laws were more common barriers to opioid access (Clark et al., 2021). Another possible explanation for this could be that as narcotic drugs have the potential for abuse, strong opioids, including morphine, are regulated under the Single Convention on Narcotic Drugs of 1961 and the national drug control laws (INCB, 2021; HRW, 2011). Accordingly, due to an attempt to control the illegal use of strong opioids, some governments in developing countries, including Libyan, might have imposed stricter regulations than those required by the Single Convention (Shamieh and Jazieh, 2010b; Li et al., 2018). For example, in Egypt and Morocco, special licenses for the prescription of strong opioids, such as morphine, are required, and certain physicians only can prescribe them with a daily limit to the amount (HRW, 2011). Therefore, it can be suggested that there is evidence that cancer patients in developing countries still do not receive appropriate CPM (Saini and Bhatnagar, 2016; HRW, 2011), including Libya.

Additional potential barriers to effective CPM identified in this study could be the lack of specialists in oncology, palliative care, CPM, shortage of HCPs staff, and heavy workload. The results of this study match those observed in earlier studies (Alasiry and Löfvenmark, 2013; Mędrzycka-Dąbrowska et al., 2015; Scarborough and Smith, 2018; Zuccaro et al., 2012). A study found that nurses' ability to provide effective CPM was negatively influenced by a heavy workload, resulting in a delay in administering medications for CPM, poor pain assessment and management documentation, and neglecting patients' complaints about cancer pain (Alqahtani, 2014a). Other studies have indicated that limited access to pain and palliative care specialists was one of the common barriers to effective CPM (Scarborough and Smith, 2018; Kwon, 2014a; Oruļļu et al., 2021). It is difficult to explain this result, but the shortage of medical staff, the lack of specialists in oncology, palliative care, CPM, and the heavy workload in Libyan oncology settings might result in similar factors that were mentioned in previous literature, which could influence effective CPM in Libya.
6.3.2.7 Summary of discussion from study two

Overall, the results of this study have found some evidence that there are negative attitudes and a lack of knowledge towards CPM among Libyan HCPs, cancer patients, and their family caregivers. These findings are consistent with a study one (systematic review) in this thesis (Makhlof et al., 2020). The current study also found that religious, cultural, and economic factors could be barriers to CPM in Libya. Another possible barrier to effective CPM might be related to the healthcare system, including lack of guidelines, adequate knowledge and training in CPM, lack of opioids for CPM, shortage of specialists in oncology, palliative care, CPM, and heavy workload. Accordingly, it can be argued that due to these abovementioned potential factors, the management of cancer pain remains a significant problem in Libya. Especially as mentioned in the current literature review, the Libyan healthcare system being heavily damaged and underfunded since the revolution in 2011 (El Oakley et al., 2013b). Furthermore, palliative care (El Ansary et al., 2014a) and pain management services (Petropoulos et al., 2016; Elzahaf et al., 2016b) do not exist in the Libyan healthcare system.

In all, study two in this thesis built on study one and provided some deeper contextual understanding of how Libyan HCPs, patients, and caregivers' views and perceptions of cancer pain and strong opioids may influence CPM in Libya. The next step will be to quantitatively further examine interpreted propositions of Libyan nurses' and physicians' knowledge, attitudes, and potential barriers regarding CPM and determine whether these could be transferred to a wider population.

6.3.3 Discussion of findings from study three

Based on the findings discussed in study two and to answer the research questions in study three in this thesis, study three was conducted to examine the nurses' and physicians' knowledge, attitudes, and potential barriers regarding cancer pain and its management in Libya. This is the first survey to evaluate knowledge, attitudes, and potential barriers regarding CPM among Libyan nurses and physicians to the best of the researcher's knowledge. Similar to previous
In this study, although Libyan nurses showed more attitudinal barriers to effective CPM than physicians, both Libyan nurses and physicians had higher attitudinal barriers to CPM than HCPs in other countries (Al Qadire, 2011a; Al Khalaileh and Al Qadire, 2012a; Saifan et al., 2019; Xhixha et al., 2013). Libyan HCPs’ negative attitudes towards opioids were related to side effects of opioids, poor tolerance, and drug addiction. The findings of the current study would agree with earlier studies in this literature (Bernardi et al., 2007a; Darawad et al., 2017a; Kim et al., 2011; Jeon et al., 2007; Nasser et al., 2016). The result of this study fully supported that HCPs’ negative attitudes towards opioid analgesics can be a barrier to adequate CPM. This finding suggested that due to negative attitudes among Libyan HCPs about using opioids for CPM, opioids could be reluctant to be used by some Libyan oncology nurses and physicians for CPM. A recent survey conducted by Vranken et al. (2020) found that physicians, who were reluctant to prescribe opioids, were associated with attitudinal barriers to opioids. Another study also reported that about 70% of physicians acknowledged negative attitudes about opioids (opiophobia) as one of the main barriers to effective CPM (Charalambous et al., 2019). It has been stated that HCPs who have poor attitudes (e.g., poor tolerance, drug addiction, and side effects) about strong opioids for CPM are more likely to undertreat patients with cancer pain (Nasser et al., 2016; Makhlof et al., 2020). The emphasis on the impact of HCPs’ attitudes towards opioids on effective CPM in this study is consistent with the existing literature. A study found that about 73% of physicians hesitated to increase opioid dosage and frequency for CPM due to poor attitudes towards opioids, including the undue fear of poor tolerance and drug addiction (Ger et al.,
Therefore, the result of this study suggests that nurses' and physicians' attitudes about the role of opioids for CPM might impact CPM in Libya.

6.3.3.2 Barriers to CPM related to HCPs' Knowledge

The results of this study (study three) would agree with many earlier studies in the current literature regarding the lack of HCPs' knowledge about CPM is one of the main barriers to effective CPM (Bernardi et al., 2007b; Darawad et al., 2017b; Elliott and Elliott, 1992b; Jeon et al., 2007; Kim et al., 2011; McCaffery and Ferrell, 1995; Wells et al., 2001; Yanjun et al., 2010b). A survey reported that lack of knowledge about CPM among approximately 61% of HCPs was one of the most frequently cited barriers to CPM (Zhang et al., 2015). In this study, Libyan HCPs showed higher barrier scores on the BQ-II subscale items ‘physiological effects’ and ‘harmful effects’ than other HCPs in Jordan and Albania (Al Qadire, 2011a; Xhixha et al., 2013; Saifan et al., 2019; Al Khalaileh and Al Qadire, 2012a). Moreover, they (Libyan HCPs) showed higher barrier scores on the BQ-II subscale ‘communication’ than other HCPs in previous studies (Al Qadire, 2011a; Al Khalaileh and Al Qadire, 2012b; Xhixha et al., 2013). Although the fatalism subscale mean scores for Libyan HCPs, Jordanian HCPs, and Albanian HCPs were the lowest compared to other subscales, in this study, Libyan HCPs also had higher barriers scores on subscale ‘fatalism’ than Jordanian HCPs (Al Qadire, 2011a) and Albanian HCPs (Xhixha et al., 2013). All these differences in barrier scores indicate that oncology HCPs in Libya showed a lower knowledge of CPM than HCPs in other countries. Arslan et al. (2014) suggested that HCPs, who are dealing with cancer patients, should have adequate knowledge about cancer pain and its management to improve CPM. El-Aqoul et al. (2020) also argued that positive attitudes and a sufficient level of knowledge about CPM are essential to providing high-quality nursing care for patients with cancer pain. It can thus be suggested that cancer pain in Libya might be inadequately managed due to a lack of knowledge about CPM among Libyan HCPs.

Although many studies in the existing literature have confirmed that training in CPM was very beneficial for enhancing the practice, attitudes, and knowledge of HCPs (Yang et al., 2014; Liu et al., 2021; Yanjun et al., 2010a), Libyan HCPs
who had a short period of training in CPM and those who did not report similar barrier scores on the overall BQ-II and its subscales in this study. The results of this study (study three) are consistent with previous studies (Xue et al., 2007; Howell et al., 2000a; Ou et al., 2021). It can thus be suggested that short training in CPM did not enhance Libyan HCPs' attitudes and knowledge about CPM. However, only 19 out of 152 Libyan HCPs in this study had training in CPM. Thus, it can be said that Libyan HCPs had lack training in CPM. The results of this study would agree with the current literature, which highlighted that a lack of training in CPM among HCPs had been reported as a significant barrier to effective CPM (Darawad et al., 2019b; Liu et al., 2021; Yanjun et al., 2010a; Zhang et al., 2015).

The emphasis on the positive influence of continuous training in CPM on HCPs' knowledge and attitudes towards CPM in this study is consistent with what is in the existing literature. Liu et al. (2021) found that HCPs who reported receiving advanced training in CPM showed a positive impact on CPM compared with those who did not. Another study by Yanjun et al. (2010a) shared the same findings, indicating that HCPs who reported having received training in CPM demonstrated significantly higher mean scores about knowledge of CPM than physicians who never had such training. Many studies have emphasised that training in CPM can enhance HCPs' attitude, knowledge, and practice about CPM (Alnajar et al., 2019; Gustafsson and Borglin, 2013; Jeon et al., 2007; Utne et al., 2019; Yanjun et al., 2010a). A systematic review emphasised that professional education and training programmes on CPM are the most important factors for enhancing nurses' knowledge and attitudes towards CPM (Bouya et al., 2018). It seems that the lack of professional training and education in CPM among Libyan HCPs can be a further barrier to effective CPM. It can thus be suggested that professional training and education in CPM are needed to enhance Libyan HCPs' knowledge and attitudes towards CPM.

While several studies in the current literature have shown that an experience in cancer care settings can develop the standard of CPM services (Yanjun et al., 2010a; Utne et al., 2018; Jeon et al., 2007), in this study, both groups of HCPs who had short-term (less than one year) and long-term (more than one year)
experience in cancer settings, showed a similar level of barriers to CPM. However, in contrast to the previous studies (Jeon et al., 2007; Utne et al., 2018; Yanjun et al., 2010a), the results of this study would agree with other findings in the literature. A study by Bernardi et al. (2007b) reported that the years of experience of cancer nurses were not related to pain knowledge scores. Another study showed that years of experience of oncology nurses were not associated with the ‘knowledge and attitudes survey regarding pain (KASRP)’ scores (Al-Atiyyat et al., 2019). The results from the current study may explain that Libyan HCPs could have inadequate knowledge and poor attitudes towards CPM due to a lack of experience in palliative care (El Ansary et al., 2014b; Silbermann et al., 2014; Fadhil et al., 2017) and pain management settings (Petropoulos et al., 2016; Elzahaf et al., 2016b) because such services do not exist in the Libyan healthcare system.

The confirmation on the experience in CPM or palliative care setting is desirable to improve CPM in this study is consistent with what is in the existing literature. Evidence indicated that HCPs, who have experience in pain clinics and palliative care settings showed better attitudes towards opioids and knowledge about CPM than those who did not (Darawad et al., 2019b; Li et al., 2021; Martín-Martín et al., 2021; Rurup et al., 2010). For instance, a recent study by Martín-Martín et al. (2021) found that physicians with more extended experience in palliative care and CPM settings scored higher with knowledge about palliative care and CPM than those who did not. However, as mentioned in the current literature, it seems that professional education in CPM can be the key issue with experience in palliative care and CPM to improve HCPs’ attitudes and knowledge about CPM. A survey found that HCPs who worked in clinics with academic attachments (training and education) showed adequate knowledge and positive attitudes towards CPM than those in non-academic hospitals (Zhang et al., 2015). Another study also found a significant relationship between adequate pain assessment by HCPs and hospital type, through which nurses who work in educational hospitals used pain assessment tools more often than nurses in governmental and private hospitals (Hamdan, 2019). It is possible, therefore, that professional education, continuing training, and experience in palliative care and CPM settings are needed to improve Libyan HCPs’ attitudes and knowledge about CPM.
Nevertheless, in contrast to the existing literature, previous studies conducted in North America (Erkes et al., 2001) and Turkey (Tufekci et al., 2013) found that there was no statistically significant difference between the level of education and the average correct answers in the ‘knowledge and attitudes survey regarding pain (KASRP)’ among North American and Turkish nurses. In contrast to earlier findings, however, the results of the current study would agree with the literature. In this study, Libyan HCPs with higher educational levels (postgraduate degrees) were associated with lower barrier scores on the BQ-II questionnaire than those with high-school and undergraduate degrees. The finding of this study would also agree with that of previous studies (Lai et al., 2003; Patiraki et al., 2006a; Alqahtani, 2014c), which found that nurses with higher levels of education (i.e., Master’s degrees) scored an increase in the average number of correct answers on the instruments for assessing their knowledge about CPM.

Several studies have shown that pain education can enhance HCPs’ attitudes and knowledge about CPM (Alvarez and Agra, 2006; Gustafsson and Borglin, 2013; Xhixha et al., 2013). For example, a study by Gustafsson and Borglin (2013) found that a theory-based educational intervention in CPM can be used to enhance nurses’ attitudes and knowledge about CPM. In this study, HCPs who had pain education at the postgraduate level showed more knowledge about CPM than those who did not. It can thus be suggested that professional education in CPM can enhance Libyan HCPs’ Knowledge and attitudes towards CPM.

Although various studies have considered the effects of educational interventions on HCPs’ attitudes and Knowledge towards CPM (Alvarez and Agra, 2006; Allard et al., 2001; Bennett et al., 2011; Gustafsson and Borglin, 2013; Xhixha et al., 2013), some HCPs still have negative attitudes towards opioids for CPM that might negatively impact effective CPM (Kasasbeh et al., 2017; Murnion et al., 2010; McMillan et al., 2005). A study conducted in Australia showed that patients received inadequate pain management due to poor attitudes towards opioids and pain relief among HCPs (Murnion et al., 2010). It seems that people who hold poor attitudes and perceptions towards opioids and cancer pain could be due to their cultural and religious beliefs. This view is consistent with the current
literature (Al Khalaileh and Al Qadire, 2012b; Kaki, 2011; Nasser et al., 2016; Rajeh Saifan et al., 2019; Yildirim et al., 2008). Similar findings were reported in studies one (Makhlouf et al., 2020), two (Makhlouf et al., 2022), and three in this thesis. For example, results in study one showed that Turkish and Jordanian patients rejected strong opioids (morphine) for CPM because of their negative attitudes towards them, and in particular, they fear addiction citing religious and cultural reasons for rejecting such opioids for CPM (Al Qadire, 2012a; Colak et al., 2014c). In studies two and three in this thesis, Libyan patients, caregivers, and newly qualified HCPs also showed negative attitudes and concerns towards opioids for CPM, which could be due to their religious or cultural beliefs. The results of this study would agree with the existing literature regarding the influence of religious and cultural beliefs on CPM. Silbermann and Hassan (2011) argued that religious and cultural beliefs could affect peoples' interpretation of the pain and consideration of the treatment. It can thus be suggested that to improve CPM in Libya, a multidisciplinary team, including oncologists, clinical nurses, CPM specialists, psychiatrists, social workers, and religious scholars, should be located at each hospital and oncology centre. Furthermore, continuing professional education and training in CPM are required to improve Libyan HCPs' attitudes and knowledge about CPM.

6.3.4 Summary of key discussion from three studies

Studies one, two, and three in this thesis confirmed that there are still barriers to effective CPM in Libya, which are caused by HCPs', cancer patients', and family caregivers' lack of knowledge and/or poor attitudes towards CPM, resulting in unalleviated pain with cancer. Furthermore, study two showed that several factors had influenced CPM in Libya, including religion, culture, economy, and the healthcare systems. The findings of this study are consistent with previous studies in the current literature (Greco et al., 2014; Saifan et al., 2019; Kwon, 2014a; Oldenmenger et al., 2009b; Al Qadire, 2012b; Colak et al., 2014b). In study three, Libyan HCPs showed higher barrier scores on the BQ-II overall and subscale items than other HCPs in previous studies (Al Qadire, 2011a; Saifan et al., 2019; Xhixha et al., 2013; Al Khalaileh and Al Qadire, 2012a). This indicates that oncology HCPs in Libya have more barriers to CPM than HCPs in other
countries. Thus, it can be argued that due to these abovementioned factors, the management of cancer pain remains a significant problem in Libya.

Moreover, studies two and three in this thesis showed that Libyan HCPs lacked adequate knowledge and experience in CPM, which could be a barrier to effective CPM in Libya. Many studies in the existing literature emphasised that work experience in palliative care and CPM settings can enhance adequate knowledge and attitudes towards CPM among HCPs (McCaffery and Ferrell, 1995; Darawad et al., 2017a; Nasser et al., 2016). A study found that HCPs from countries such as the United States and Canada, which have the most extended work experience in palliative care and CPM settings, showed a better level of knowledge and positive attitudes towards CPM than HCPs from Spain and Japan that, at the time of the study had only recently updated the healthcare infrastructure to include palliative care facilities (McCaffery and Ferrell, 1995). Although the study may not be up to date (1995) when were the US and Canadian studies undertaken, it showed a clear comparison between HCPs from different countries regarding their knowledge and attitudes towards CPM and work experience in palliative care, and CPM units. It can thus be suggested that continuing professional education and training in CPM, including opioid treatment, phobia, and myths on opioid usage among HCPs (Hooten and Bruce, 2011b), and a multidisciplinary team, including oncologists, clinical nurses, CPM specialists, psychiatrists, social workers, and religious scholars, and establishing policies and procedures for palliative care and CPM services are needed to improve CPM in Libya.

6.4 Research strengths and limitations

6.4.1 Strengths and limitations for mixed-methods design

The mixed-methods research has many strengths that make such design recommended to be used (Creswell and Clark, 2011). Firstly, a mixed-methods study is usually conducted to answer broader research questions, as the researchers are not confined to a single approach or method. Secondly, to overcome the weaknesses in a specific method, the researchers can use the
strengths of an additional method in the same research study. Thirdly, stronger evidence for a conclusion can be provided by conducting a mixed-methods study, as such design allows convergence and corroboration of the findings. Furthermore, insight and understanding might be missed when using a single method; thus, such missing insight can be compensated for by using a mixed-methods approach.

In a mixed-methods study, the researcher is not restricted to a single data collection method. A mixed-methods study design can answer research questions that cannot be answered by either qualitative or quantitative research alone. Moreover, qualitative and quantitative methods in the same research can produce complete knowledge, which is needed to inform practice and theory (Creswell and Clark, 2017; Creswell, 2013c).

As a research methodology in mixed-methods design, pragmatism has its strengths and weaknesses like other methodologies (Creswell, 2013a; Morgan, 2014; Feilzer, 2010a; Pansiri, 2005). Firstly, it focuses on the results of the study situations and inquiry consequences rather than predecessor circumstances. Secondly, pragmatism can support researchers in choosing between different methods required to address a specific research question, and it helps determine which methods are the best for the target study. Finally, in adopting pragmatism, the researchers are actively involved in creating data and theories, as it is typically associated with abductive reasoning, which allows the researcher to move back and forth between deduction and induction.

The mixed-methods design has weaknesses (Teddlie and Tashakkori, 2011; Creswell and Clark, 2011), including multiple methods and approaches that need to be learnt by the researcher and understanding the way how to integrate them appropriately. As the rationales of methodological decisions are often justified by the research questions and the way of data analysis, applying a mixed-methods design can be a problematic issue, especially if the researcher lacks knowledge about multiple methods and how to mix each method effectively (e.g., problems of paradigm mixing, analysing qualitative data, interpreting conflicting results, and
reporting them). Furthermore, for a single researcher, a mixed-methods study is complex to conduct, especially if the two approaches are expected to be utilized concurrently. Finally, mixed-methods design is more time-consuming and more expensive.

Pragmatism, as a research methodology in mixed-methods design, also has some limitations: Firstly, pragmatism as philosophy has been rejected by some philosophers because such philosophy chooses not to engage in the debating of meta-theory as a solution to some philosophical debates (Johnson and Onwuegbuzie, 2004). Secondly, pragmatism has been criticised for ignoring philosophy and theory; however, it focuses on practical results (McCready, 2010). Finally, pragmatists argued that the research paradigms could be combined into another research paradigm, but they cannot remain separate (Onwuegbeuzie et al., 2009).

6.4.2 Strengths and limitations for study one

To the best of the researcher's knowledge, this is the most up-to-date systematic review of the nature and impact of HCPs' attitudes and knowledge towards CPM. Furthermore, this SR was the first study that synthesized the results about barriers to CPM among HCPs, cancer patients, caregivers, and the general public.

In terms of the systematic review, there were two design limitations and four limitations associated with the data analysis and interpretation of the data. Firstly, as only studies published in English were considered within the inclusion criteria, as well as only including published studies, it is possible that there are studies that have been published in other languages and unpublished articles that could have been included in this review. The exclusion of such unpublished studies may have led to bias (Moher et al., 1996). Secondly, even though all included studies used the same design (cross-sectional design), the questionnaires used to conduct surveys in this particular area were different, and some studies did not state which questionnaire was used or failed to provide information regarding the
validity of the tools. Therefore, it was difficult to compare studies directly, and the reliability of these included studies in this review could be compromised (Poudel et al., 2018; JBI, 2016). Thirdly, in the quality analysis, 15 of the 36 included studies were judged to be fair quality – see Appendix 4. The reason for a fair quality score instead of a good quality score is that these articles had some methodological limitations. However, almost two-thirds of the identified studies, 25 out of the 36 studies (69.44%), were rated as good quality. Fourthly, a major concern about the narrative synthesis was that it lacks transparency and therefore introduces bias into the synthesis (Higgins et al., 2016; Valentine et al., 2017). Fifthly, studies from a number of important countries and regions, such as Africa (except Ethiopia), India, south America, central America were not included in this study because such studies from these countries were not identified by six electronic databases (the Cochrane Library, MEDLINE, PsycINFO, CINAHL, Web of Science, and EMBASE). Finally, included studies were from high and low-income countries, and thus, different healthcare systems and cultural beliefs across people from these countries could have affected their attitudes and knowledge of CPM.

6.4.3 Strengths and limitations for study two

To the best of the researcher’s knowledge, this was the first qualitative study to explore Libyan HCP, patient, and caregiver views and perceptions about CPM. One limitation is that although the researcher sampled for maximum diversity, the range of views and perceptions that the researcher found may not reflect the views and perceptions of HCPs, cancer patients, and caregivers in all parts of Libya because the inclusion of participants was from Eastern Libya only. Another limitation is that the focus of this study did not include hospital managers and policymakers. A study conducted in Thailand reported that among 47 policymakers, about 75% of them had inadequate knowledge, and 66% had negative attitudes towards opioids for CPM (Srisawang et al., 2013). Another survey reported that strict regulation on the use of opioids was perceived by approximately 70% of nurses as the most common barrier to CPM related to the healthcare system (Toba et al., 2019). These barriers likely intersect to affect CPM among many HCPs, patients, and caregivers (Redmond, 1997; Gee and
Fins, 2003; Srisawang et al., 2013). It seems possible that these results are due to policymakers or governments rejecting or restricting the use of strong opioids for CPM, especially in developing countries, including Libya. A study highlighted that access to strong opioids for CPM in developing countries is limited or legally restricted (Shamieh and Jazieh, 2010b). A recent systematic review also showed that the common barriers to opioid access were policymakers’ negative attitudes towards opioids and law restrictions about using strong opioids (Clark et al., 2021). Thus, the effect of policymakers’ and hospital managers’ roles on CPM should be examined in future research. A further limitation in this study is that as the public’s attitudes and knowledge about cancer pain and opioids were highlighted as an under-researched area in study one, the current researcher could not include the views of the Libyan general public in this study, as it was difficult to gain ethical approval for the participation of general public from the Libyan government.

6.4.4 Strengths and limitations for study three
To the best of the researcher’s knowledge, this was the first survey to evaluate knowledge, attitudes, and potential barriers regarding CPM among nurses and physicians in Libya. Furthermore, considering the multicentre settings in three different geographical regions of Libya (Eastern, North-western, and Western), outcomes can be better generalised to represent the sample population in question. This study has some limitations: Firstly, only oncology nurses and physicians were surveyed, and other HCPs, who might prescribe opioids for CPM, such as surgeons, anaesthesiologists, and general practitioners (GP), were excluded. Secondly, the use of convenience sampling could be another limitation, as it can lead to sampling bias and limit findings’ generalisability (Bhattacherjee, 2012b). Thirdly, among the limitation of the current study is that the use of the BQ-II questionnaire with HCPs has been found in only six studies, and the psychometric properties and findings of the BQ-II are not known when used for HCPs (Al Khalaileh and Al Qadire, 2012a; Al Qadire, 2011a; Saifan et al., 2019; Xhixha et al., 2013; Sakakibara et al., 2020; Sedeghy et al., 2016), as it was originally designed as a self-assessment instrument for patient-related barriers to CPM (Gunnarsdottir et al., 2002). Thus, the BQ-II is a reliable and valid
measure of patient-related barriers to CPM. However, the BQ-II has been recently validated and commonly used to measure HCPs-related barriers to CPM, including the Arabic version (Al Khalaileh and Al Qadire, 2012b; Saifan et al., 2019). Fourthly, using an Arabic non-validated questionnaire (BQ-II) can be another threat to external validity. Nevertheless, such a questionnaire (Arabic version) was previously validated and used in previous studies (Al Qadire, 2011a; Al Khalaileh and Al Qadire, 2012a; Saifan et al., 2019). Finally, another limitation is that the analyses are intended to be exploratory and hypothesis-generating. Consequently, no correction (e.g., Bonferroni correction) has been made, and the results are interpreted with caution.

6.5 Reflections on Undertaking the Study

My first experience with research was during my Master's degree in pain management in the UK. After completing my master's degree, I applied for a Doctor of Philosophy (Ph.D.) in the School of Medicine, University of Leeds. While writing the proposal, my supervisors and I agreed on the research title “Healthcare professionals,’ patients,’ caregivers,’ views about cancer pain and its management in Libya.” I chose this topic as my father died in 2005 due to lung cancer, and he suffered from cancer pain because adequate pain management and palliative care services have not existed in the Libyan healthcare system. Thus, cancer pain and its management have become my area of interest, as I do not want Libyan patients to suffer from cancer pain as my father did.

In the past, I had limited experience in quantitative research and systematic review and no expertise in qualitative and quantitative research and mixed-methods design. Throughout my Ph.D. journey, I was privileged and lucky to work with my supervisors on my thesis, a mixed-methods study consisting of a systematic review, qualitative study, and quantitative study. I have gained valuable academic skills and knowledge, including experience using different methods and methodologies, systematic review, research ethics, and submitting abstracts for conferences and publications, and my knowledge about cancer pain and its management improved during my Ph.D. journey.
Overall, I enjoyed and learnt a lot during my Ph.D. journey. (See appendix 42). However, there were some hard and long days as well. For example, from developing the research proposal to submitting the applications for ethics and research governance approval, recruiting participants, undertaking the qualitative and quantitative analysis, suspension of my scholarship due to corruption in Libya, and finally writing up the thesis, which was a series of challenges one after another.

Furthermore, the COVID-19 pandemic has slightly impacted my study progress, as some people might have. Especially as I needed to return to Libya in December 2020 for family reasons, and due to lockdown, I could not return to the UK. Hence, my study was suspended for three months between December 2020 and February 2021. Nevertheless, I received excellent support and guidance from my supervisors and the supportive community at the university, which helped me overcome these challenges. Publication of my work gave me motivation and pushed me forward. Thus, overall, I can say that the Ph.D. learning with admirable support from my supervisors has enabled me to become an independent person and complete my research journey, which marks the beginning of a future research career.

6.6 Research contributions

6.6.1 Contributions to research

To the best of the researcher's knowledge, study two in this thesis was the first study to explore Libyan HCP, patient, and caregiver perceptions about CPM. Based on the limitations of study two, further research with other HCPs, including surgeons, anaesthesiologists, and general practitioners (GP), is required. Furthermore, the cross-sectional design used in study three in this thesis provided an understanding that lack of knowledge and poor attitudes among Libyan HCPs were barriers to effective CPM in Libya. However, it is not clear if these barriers to CPM would differ across Libyan HCPs after educational interventions and experience in CPM over time. Therefore, a longitudinal examination is needed to explore the change in the HCPs' attitudes and
knowledge about cancer pain and opioids and the contributions of these barriers related to lack of knowledge and negative attitudes towards CPM over longer follow-up.

Moreover, as mentioned in the literature, it has been highlighted that pain associated with cancer negatively affects patients' and their caregivers' quality of life (QoL) (Yamagishi et al., 2012b). Although poor QoL has been found among cancer patients in Libya (Nouh et al., 2018; Agila, 2020; Hashemi et al., 2019), which also could be due to unrelieved cancer pain, there is no published research on the prevalence of cancer pain and consumption of opioids for CPM in Libya. Thus, it would be helpful to future studies on the prevalence of cancer pain and consumption of opioids such as morphine for CPM in Libya. The results of these studies will be really important for future policy in CPM programmes in Libya.

The findings of this study also found that Libyan HCPs' knowledge and attitudes towards opioids and cancer pain were influenced by their cultural and religious beliefs. As discussed earlier in this chapter, negative CPM attitudes and lack of knowledge can be managed by continuing professional education. Several studies have considered the effects of educational interventions on HCPs' attitudes and knowledge towards CPM (Alvarez and Agra, 2006; Allard et al., 2001; Bennett et al., 2011; Xhixha et al., 2013). However, it has been argued that although educational interventions enhanced HCPs' knowledge about CPM, their attitudes towards cancer pain and opioids can be hard to change (McMillan et al., 2005). Accordingly, intervention regarding HCPs’ attitudes and beliefs about cancer pain and opioids would be a future consideration.

It has been emphasised that the lack of educational programmes on CPM, including CPM topics in medical and nursing curricula, are barriers to enhancing HCPs' knowledge and attitudes towards CPM (Bouya et al., 2018; Nimmaanrat et al., 2010; Manalo, 2008). Thus, more research is required to explore the role of education and training in nursing and medical schools in Libya in establishing and enhancing awareness about CPM within the healthcare system.
6.6.2 Contributions to practice

This research on the views and perceptions of Libyan HCPs, patients, and caregivers about CPM can contribute to the design of future interventions for CPM. Hence, the findings of this study have several important implications for future practice. Firstly, educational and training interventions in CPM are needed to enhance Libyan HCPs’ knowledge and attitudes towards CPM. As discussed earlier in this chapter, several authors have considered the effects of educational interventions on HCPs’ attitudes and knowledge towards CPM (Omran et al., 2014; Lai et al., 2003; Patiraki et al., 2006b; Allard et al., 2001; Alvarez and Agra, 2006; Bennett et al., 2011; Bouya et al., 2018). A systematic review indicated that educational programmes on CPM, including CPM topics in nursing curricula and training programmes on CPM, are the most important factors for enhancing nurses’ knowledge and attitudes towards CPM (Bouya et al., 2018). Another study found that nurses who had received educational programmes on CPM reported significantly higher mean scores on knowledge about CPM than those who did not have pain education (Bernardi et al., 2007b).

Furthermore, many studies highlighted that continuing training in CPM can enhance HCPs’ attitudes and knowledge towards CPM (Darawad et al., 2017a; Nasser et al., 2016). Secondly, Libyan HCPs should follow CPM policy and guidelines such as the WHO (The WHO, 2018) and NICE (NICE, 2018; Bennett et al., 2012a) and use such guidelines in practice (Kim et al., 2020) as this is needed to improve CPM in Libya. Zech et al. (1995) emphasised that WHO guidelines should be widely distributed among HCPs working in cancer care and palliative care settings, as such guidelines are necessary to improve CPM. Another study found that oncology HCPs who work in hospitals using CPM guidelines were more knowledgeable and had positive attitudes towards CPM than (family HCPs and other practitioners) who did not use such guidelines (Levin et al., 1998). Finally, although it has been recommended by the WHO that each country should adopt a national policy for implementing palliative care services (Sepúlveda et al., 2002; WHO, 2020b), palliative care services do not exist in the Libyan healthcare system (El Ansary et al., 2014b). Many studies indicated that HCPs, who have experience in pain clinics and palliative care settings showed a better level of attitudes towards opioids and knowledge about CPM than those
who did not (Rurup et al., 2010; Darawad et al., 2019b; McCaffery and Ferrell, 1995). Therefore, palliative care and pain management services should be adopted into the Libyan health system to improve CPM in Libya.

Subsequently, improving and evaluating specific educational interventions and CPM guidelines and continuing training on opioids and CPM for Libyan HCPs that can be delivered briefly and easily in the Libyan context of CPM are needed (Bennett et al., 2009; Kim et al., 2020) to ensure such interventions meet cancer patient's needs and preferences for improving CPM in Libya (Latter et al., 2016; Kim et al., 2020). Likewise, cancer patients and caregivers will need different approaches to improve general awareness and CPM knowledge. The evidence indicated that family caregivers play an important role in managing their cancer patients' pain (Aranda et al., 2004; Lin et al., 2000; Porter et al., 2008). Caregivers might hold their own beliefs about cancer pain and opioids, influencing their role in CPM in home settings (Meeker et al., 2011; Riley-Doucet, 2005). For instance, it has been found that patients’ attitudes towards CPM were influenced by their caregivers’ attitudes and the patient’s pain knowledge (Lou and Shang, 2017). Vallerand et al. (2007b) also indicated that caregivers with higher pain and opioid knowledge had significantly fewer barriers to CPM than those who did not. It can thus be suggested that HCPs could help and teach patients and caregivers about CPM to overcome myths/misconceptions about opioids and cancer pain, especially concerning poor tolerance and drug addiction. Additionally, caregivers need general awareness and an adequate level of knowledge about CPM to participate in CPM and enable them to assess pain and help their patients take adequate doses of opioids.

6.7 Conclusion and recommendations

6.7.1 Conclusion
The main purpose of this mixed-methods study was to explore Libyan HCPs', patients', and caregivers' views about cancer pain and its management. In order to achieve this aim, a mixture of systematic review, qualitative, and quantitative methods were conducted. Study one in this thesis (systematic review) confirmed
that there are still barriers to effective CPM by HCPs, patients, caregivers, and the general public's lack of knowledge and/or poor attitudes towards CPM, which might result in unalleviated cancer pain. More detailed understanding of how these attitudes arise within different contexts and tailoring educational initiatives to address these are likely to have the most impact on improving CPM.

Study two (qualitative study) shows that Libyan patients, caregivers, and HCPs hold negative attitudes and views about opioids and cancer pain due to religious and cultural beliefs. Furthermore, lack of knowledge, training in CPM, and experience in palliative care settings among Libyan HCPs might prevent effective CPM in Libya. Moreover, the economic and the Libyan healthcare system-related factors are barriers to effective CPM. To address these concerns, developing and evaluating interventions, such as CPM education and training, would be necessary to improve patients' outcomes with cancer pain in Libya.

Study three (quantitative study) showed that oncology HCPs in Libya perceived barriers to CPM related to lack of knowledge and poor attitudes towards CPM. Based on the results of study three, the researcher recommends developing strategies, including professional education and continuing training in CPM, addressing phobia and myths on opioid usage, and the benefits and complications of using opioids for CPM for HCPs involved in the care of cancer patients.

This thesis has provided a deeper insight into potential barriers to CPM in Libya, including HCPs,' patients,' and caregivers' lack of knowledge and/or poor attitudes towards CPM, as well as limited access to strong opioids and lack of guidelines for CPM and pain assessment tools and absence of CPM education, training, and experience in pain and palliative care settings, resulting in unalleviated cancer pain in Libya. Thus, the conclusions of this study support previous studies that suggest that there are still barriers to effective CPM. It can also be suggested that based on the existing evidence, educational interventions, general awareness about CPM, and continuing training and experience in pain clinics and palliative care settings should be continuously applied as they can
positively affect and enhance HCPs’, patients,’ and caregivers’ attitudes and knowledge towards CPM.

6.7.2 Future areas for development

The following recommendations for policy and practice in developing countries, including Libya, should be achieved to improve CPM:

i. There is a need to revise the medical curriculum to include a training programme to enable all medical and nursing students in Libya to graduate with basic CPM and palliative care competency.

ii. Libyan HCPs should follow guidelines, such as WHO and NICE for CPM.

iii. Pain assessment tools should be used to assess cancer pain in Libya.

iv. Strong opioids, such as morphine (tablets and injections), should be acceptable for CPM in Libyan hospitals.

v. Since cancer pain is primarily managed in primary care and oncology settings in Libya, there is a need to teach and train GPs, oncologists, nurses, and pharmacists in CPM.

vi. Libyan nurses and pharmacists involved in cancer care should be encouraged to become independent prescribers as this can help improve patients' access to pain medications for CPM.

vii. The participation of a multidisciplinary team in CPM at the Libyan hospitals is considered to meet the needs of cancer patients.

viii. Libyan caregivers need general awareness and an adequate level of knowledge about opioids and cancer pain to participate in CPM which enables them to assess pain and help their patients take adequate doses of opioids.
ix. Since Libya lacks certain healthcare infrastructure, such as pain management and palliative care, such health services are needed to improve CPM in Libya.

x. A study to explore the views of the general public about cancer pain and the use of opioids for CPM

xi. A study with a documentary analysis about cancer care and pain management in Libya
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## Appendix 1

**Search strategy for six databases**

### CINAHL search screen strategy

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<th>Search ID #</th>
<th>Search Terms</th>
<th>Results</th>
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<tbody>
<tr>
<td>S17</td>
<td>(adult*) AND (S3 AND S7 AND S10 AND S15 AND S16)</td>
<td>243</td>
</tr>
<tr>
<td>S16</td>
<td>adult*</td>
<td>888,224</td>
</tr>
<tr>
<td>S15</td>
<td>(morphine* OR opioid* OR opioid OR bupivacaine* OR bupivacaine OR cefazolin* OR cefazolin OR alfentanyl* OR alfentanyl OR oxycodone* OR oxycodone) AND (S11 OR S12 OR S13 OR S14)</td>
<td>25,776</td>
</tr>
<tr>
<td>S14</td>
<td>morphine* OR opioid* OR opioid OR bupivacaine* OR bupivacaine OR cefazolin* OR cefazolin OR alfentanyl* OR alfentanyl OR oxycodone* OR oxycodone)</td>
<td>25,776</td>
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<tr>
<td>S13</td>
<td>(MH &quot;Narcotics&quot;).</td>
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<td>(MH &quot;Morphine&quot;).</td>
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<td>cancer* OR tumor* OR carcinoma* OR leukemia* OR metastasis* OR lymphoma* OR melanoma* OR cancer)</td>
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<tr>
<td>S8</td>
<td>(MH &quot;Neoplasms&quot;).</td>
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<tr>
<td>S7</td>
<td>(pain*) AND (S4 OR S5 OR S6)</td>
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<td>S6</td>
<td>pain*</td>
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<td>S5</td>
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<td>15. 1 and 2 and 8 and 9 and 14</td>
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EMBASE search strategy

1. *(view* or opinion* or attitude* or concern* or belief* or feeling* or idea* or perception* or perspective* or experience* or knowledge* or perspective* or standpoint* or expectation* or preference* or need* or satisfaction* or interaction*) af.

2. exp. pain /

3. pain, exp, [topic-title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

4. 2 or 3

5. exp. neoplasms

6. *(cancer* or tumor* or carcinoma* or leuk* or metastas* or lymphoma* or melanoma* or neoplasm*) af.

7. 5 or 6

8. exp. analgesic agent /

9. exp. morphine /

10. exp. narcotic agent /

11. *(morphine* or opium* or opioid* or oplete* or buprenorphine* or codeine* or dinitrophenoxine* or dicycloverine* or alfevent* or fentanyl* or oxycodone* or hydrocodone*) af.

12. 6 or 7 or 8 or 10 or 11

13. adult, exp, [topic-title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]

14. 1 and 4 and 7 and 12 and 13

15. limit 14 to (human and male and female and english language and english and english and article and journal and adult <18 to 64 years)
Cochrane Search Strategy

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### Appendix 3

The JBI-ACSSA tool

The Joanna Briggs Institute Analytical Cross-Sectional Studies Assessment (JBI-ACSSA) tool.

#### JBI Critical Appraisal Checklist for Analytical Cross Sectional Studies

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</table>

1. Were the criteria for inclusion in the sample clearly defined? □ □ □ □
2. Were the study subjects and the setting described in detail? □ □ □ □
3. Was the exposure measured in a valid and reliable way? □ □ □ □
4. Were objective, standard criteria used for measurement of the condition? □ □ □ □
5. Were confounding factors identified? □ □ □ □
6. Were strategies to deal with confounding factors stated? □ □ □ □
7. Were the outcomes measured in a valid and reliable way? □ □ □ □
8. Was appropriate statistical analysis used? □ □ □ □

**Overall appraisal:** Include □ Exclude □ Seek further info □

Comments (Including reason for exclusion):

--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

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## Appendix 4

### Appraisal quality of 36 included studies

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<td>Zhang et al. (2015)</td>
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Note: + indicates satisfies criteria; – indicates does not satisfy criteria; N/A = Data Not Available.

Source: Adapted from (Poudel et al. 2018).
Appendix 5
List of excluded studies with reasons

Not related to attitudes or knowledge: n = 42


Not published in English: n=6


SAITO, Y. 2007. [An attitude survey on the medical use of narcotics for cancer pain relief]. 

SATO, T., N. ASADA, Y. WATANABE, K. TSUJIMURA, and T. ENDO. 2000. [Knowledge and attitudes of family physicians in Japan with regard to chronic pain management in cancer]. 


Not include adults: n=5


Not cross-sectional design: n=5


Same data were used in another study: n=2


Full-text article were cited: n=1

*Letter to the editor* (not enough information were stated): n=1
Appendix 6
Permission letter for Libyan Consulate (for recruiting Libyan patients and caregivers)

To Libyan Consulate of Alexandria

Dear Sir/Madam: 27/06/2019

Warmest greetings!

I would like to ask your permission to allow me to conduct interviews with Libyan cancer patients and their family caregivers who are seeking oncology medication at SUN oncology centre in Alexandria, Egypt. This is in view of my thesis, entitled, “Professionals, patients, and caregivers’ views surrounding cancer pain and its management in Libya.” I am conducting interviews with about 24 participants from the SUN oncology centre in Alexandria.

The interview would last only about 30 to 45 minutes and would be arranged at a time convenient to participants’ schedules (e.g., during the break). Participation in this research study is entirely voluntary, and there are no known or anticipated physical risks to participating in this study. All information provided will be kept in utmost confidentiality and would be used only for academic purposes. The names of participants and the name of the hospital will not appear in any thesis or publications resulting from this study unless agreed to.

If you agree, kindly write a letter acknowledging your consent and permission for me to conduct this study at SUN oncology centre and send it by email to my email: umsmam@leeds.ac.uk

Your approval to conduct this study will be greatly appreciated. Thank you in advance for your interest and assistance with this research. Please see further attached documents including an information sheet about this study.

Sincerely,
Salim M. Makhlouf
A Ph.D. candidate in cancer pain
Room 10.31, Level 10 Worsley Building
Academic Unit of Palliative Care Care,
School of Medicine
University of Leeds

Note by:
Professor Mike Bennett
Director, Academic Unit of Palliative Care
Leeds Institute of Health
School of Medicine
University of Leeds
To Specialized Universal Network (SUN) of Oncology, Egypt.

Dear Sir/Madam:

Warmest greetings!
I would like to ask your permission to allow me to conduct interviews with Libyan cancer patients and their family caregivers who are seeking oncology medication at your centre. This is in view of my thesis, entitled, “Professionals, patients, and caregivers’ views surrounding cancer pain and its management in Libya.” I am conducting interviews with about 24 participants from your oncology centre in Alexandria. The interview would last only about 30 to 45 minutes and would be arranged at a time convenient to participants’ schedules (e.g., during the break). Participation in this research study is entirely voluntary, and there are no known or anticipated physical risks to participating in this study. All information provided will be kept in utmost confidentiality and would be used only for academic purposes. The names of participants and the name of your hospital will not appear in any thesis or publications resulting from this study unless agreed to.
If you agree, kindly write a letter acknowledging your consent and permission for me to conduct this study at your oncology medical centre and send it by email to my email: umsmam@leeds.ac.uk
Your approval to conduct this study will be greatly appreciated. Thank you in advance for your interest and assistance with this research. Please see further attached documents including an information sheet about this study.
Sincerely,
Salim M. Makhlouf

A Ph.D. candidate in cancer pain
Room 10.31, Level 10 Worsley Building
Academic Unit of Palliative Care
Care, School of Medicine
University of Leeds
☎️ + 44 (0) 1133436354
E-mail: umsmam@leeds.ac.uk

Note by:
Professor Mike Bennett

Director, Academic Unit of Palliative Care
Leeds Institute of Health Sciences
School of Medicine
University of Leeds
Appendix 8
Permission letter for data collection to SUN (for recruiting Libyan HCPs)

To Specialized Universal Network of Oncology, Egypt.

Dear Sir/Madam: 06/08/2019

Warmest greetings!

I would like to ask your permission allow me to conduct interviews with Libyan professionals (oncology nurses and doctors) who are doing a training course at your oncology centre. This is in view of my thesis, entitled, “Professionals, patients, and caregivers’ views surrounding cancer pain and its management in Libya.” I am conducting interviews with about 12 Libyan participants from the SUN oncology centre in Alexandria.

The interview would last only about 30 to 45 minutes and would be arranged at a time convenient to participants’ schedules (e.g., during the break). Participation in this research study is entirely voluntary, and there are no known or anticipated physical risks to participating in this study. All information provided will be kept in utmost confidentiality and would be used only for academic purposes. The names of participants and the name of the hospital will not appear in any thesis or publications resulting from this study unless agreed to.

If you agree, kindly write a letter acknowledging your consent and permission for me to conduct this study at SUN oncology centre and send it by email to my email: umsmam@leeds.ac.uk

Your approval to conduct this study will be greatly appreciated. Thank you in advance for your interest and assistance with this research. Please see further attached documents including an information sheet about this study.

Sincerely,

Salim M. Makhlouf

A Ph.D. candidate in cancer pain
Room 10.31, Level 10 Worsley Building
Academic Unit of Palliative Care
School of Medicine
University of Leeds
☎ + 44 (0) 1133436354
E-mail: umsmam@leeds.ac.uk

Note by
Professor Mike Bennett

Director, Academic Unit of Palliative Care
School of Medicine
University of Leeds

School of Medicine
Leeds Institute of Health

+44 (0) 1133436354
E-mail: umsmam@leeds.ac.uk
Appendix 9
Permission letter for data
collection to Libyan Consulate (for
recruiting Libyan HCPs)

To Libyan Consulate of Alexandria

Dear Sir/Madam: 14/08/2019

Warmest greetings!

I would like to ask your permission allow me to conduct interviews with Libyan professionals (oncology nurses and doctors) who are doing a training course at SUN oncology centre in Alexandria, Egypt. This is in view of my thesis, entitled, “Professionals, patients, and caregivers’ views surrounding cancer pain and its management in Libya.” I am conducting interviews with about 12 Libyan participants from the SUN oncology centre in Alexandria.

The interview would last only about 30 to 45 minutes and would be arranged at a time convenient to participants’ schedules (e.g., during the break). Participation in this research study is entirely voluntary, and there are no known or anticipated physical risks to participating in this study. All information provided will be kept in utmost confidentiality and would be used only for academic purposes. The names of participants and the name of the hospital will not appear in any thesis or publications resulting from this study unless agreed to.

If you agree, kindly write a letter acknowledging your consent and permission for me to conduct this study at SUN oncology centre and send it by email to my email: umsmam@leeds.ac.uk

Your approval to conduct this study will be greatly appreciated. Thank you in advance for your interest and assistance with this research. Please see further attached documents including an information sheet about this study.

Sincerely,
Salim M. Makhlouf

A Ph.D. candidate in cancer pain
Room 10.31, Level 10 Worsley Building
Academic Unit of Palliative Care
Care,
School of Medicine
Sciences
University of Leeds

Note by:
Professor Mike Bennett
Director, Academic Unit of Palliative Care
Leeds Institute of Health
School of Medicine
University of Leeds

☎ + 44 (0) 1133436354
E-mail: umsmam@leeds.ac.uk
Appendix 10
An invitation letter
12/05/2019

This is a letter of invitation to participate in this research study entitled “Professionals, patients, and caregivers’ views surrounding cancer pain and its management in Libya.” Due to the current war in Libya, the data collection will be done in Egypt, which is phase one. The data will be collected via face-to-face interviews with Libyan cancer patients and their family caregivers who are seeking oncology medication in Egypt. In phase two, the data will be collated via face-to-face interviews with Libyan professionals who are doing training courses in Egypt.

Dear Sir/ Madam:
I am writing as a Ph.D. candidate from the School of Medicine at the University of Leeds in the UK to ask if you would be kind enough to take part in this research study. This will involve me asking you some questions through a face-to-face interview, aiming to explore and understand the attitudes of Libyan cancer patients and their family caregivers regarding cancer pain and its management. At the same time, a background information sheet for participants will be given to you, which will take between 5 and 10 minutes to complete. You will be asked to kindly provide answers to a series of questions related to cancer pain and its management. The interview will be recorded and will require about 30 to 45 minutes of your time. All information will be anonymised and securely stored once the interview is complete. It will not affect you in any way should you not wish to participate in this study. Thank you for taking the time to read this letter.

Kind regards,
Salim M. Makhlouf
A Ph.D. candidate in cancer pain
Room 10.31, Level 10 Worsley Building
Academic Unit of Palliative Care
School of Medicine
University of Leeds
☎ +44 (0) 1133436354
E-mail: umsmam@leeds.ac.uk
Appendix 11
Information sheet for Participants

Professionals, patients, and caregivers' views surrounding cancer pain and its management in Libya.
Due to the current war in Libya, the data collection will be done in Egypt. The data will be collected via face-to-face interviews with Libyan cancer patients and their family caregivers, who are seeking oncology medication in Egypt.

Salim M. Makhlouf, School of Medicine, University of Leeds.
You are kindly invited to take part in this research study. It is important that you understand why the research is being done and what it involves. Therefore, please take your time to carefully read the following information before you decide to continue. Please ask if there is anything that is not clear or understandable or if you would like further information. Take as much time as you would like to decide if you want to take part in this study or not.

1- What is the purpose of the study?
Recent reviews and studies reported a lack of knowledge and negative attitudes towards cancer pain management among professionals, cancer patients, and family caregivers as one of the most common barriers to effective cancer pain management. However, there is still no clear evidence to show what underpins people's attitudes, beliefs, and knowledge towards cancer pain and its management. Therefore, this study aims to explore professionals, patients, and family caregivers' views about cancer pain and its management in Libya. This aim will be achieved by accomplishing the following objectives: 1- To systematically review research on the nature and impact of attitudes and knowledge towards cancer pain management. 2- To determine the prevalence and management of cancer pain among patients with cancer in Libya.

2- Why do we need this information?
This information will help us understand the Libyan professional, patients, and family caregivers' views surrounding cancer pain and its management to guide the future development of relevant educational programs for healthcare professionals to assist cancer patients in managing their pain.

3- Who will be involved in the research, and where will the research occur?
The research will be undertaken in two phases: Phase one will be face-to-face interviews with up to a total of 18 Libyan cancer patients with advanced cancer and 6 Libyan family caregivers who are seeking oncology medication in Egypt. In stage two, data will be collected via face-to-face interviews with approximately 12 professionals (Libyan oncologists and oncology nurses) who are doing a training course in Egypt.

4- How will the research be carried out?
One-to-one semi-structured interviews with Libyan patients and their family caregivers, who are seeking oncology medications in Egypt, and Libyan professionals who are doing training courses in Egypt will be used to collect data. All interviews will take place in a private room for patients' privacy and confidentiality. This interview will take about 30 to 45 minutes in length. At the same time, the background information sheet for the participants will be distributed before the interview, which will take between 5 and 10 minutes to complete.

5- Do I have to take part in this study?
No, as you are a volunteer, you have the right to withdraw consent from the study at any time during the interview. Also, you can decline to answer any particular question without giving any reason. After the interview, you will be able to withdraw your data from the study during the first seven days only. After this time, the withdrawal will be no longer possible because your data will be anonymised and embedded within our data analysis.
6- What will happen to me if I take part in this study?
If you are willing to participate in the study, you will be asked to read this information sheet and ask any questions before signing a consent form. You will then participate in a face-to-face interview, which takes about 30 to 45 minutes.

7- Will the interview be recorded?
Yes, the interview will be recorded for the purpose of the study, but your name will not be linked with any research materials. Consent for using an encrypted audio recorder will be taken.

8- What circumstances and actions may be considered when interviewing sensitive subjects?
Cancer pain can be a sensitive issue for patients and their families to discuss. Furthermore, asking participants questions about their views, knowledge, attitudes, or life experiences may generate emotional responses that should be acknowledged by the researcher. Therefore, the researcher will make sure that the participants are okay by regularly asking if he/she is fine. Interviewees who appear to be distressed will be asked if they would prefer to end the interview, and the researcher will have tissues and water available at any time. Moreover, the chaperone (a female staff nurse from the oncology unit) will provide reassurance and emotional support for all participants during the interview.

9- Are there any risks or benefits involved in the study?
There will be no physical risks, as there will be no invasive procedures as a part of this study. You will not directly benefit from taking part, but the findings of the study may help to improve cancer pain management in the future.

10- What will happen to the research results?
The results collected from you will be securely and anonymously stored for use in this and future research.

11- Will my taking part in this study be kept confidential?
Yes, all data will be kept strictly confidential, and nobody will have access to data except the researcher and their supervisors. Any personal information obtained from participants will be stored for a period of five years following completion of the study, after which it will then be destroyed by electronic deletion and shredding as appropriate.

12- Does this research have sufficient ethical approvals?
Ethical approval has been sought from the School of Medicine Research Ethics Committee (in Leeds, UK) and includes the SoMREC application reference number (MREC 18-064). Furthermore, the Intuitional Review Board for ethics protocol approvals was sent to Oncology Centres in Egypt.

Thank you for taking the time to read this information sheet.

Researcher’s contact details
I will always be happy to clarify any things which are not clear or give more information regarding this study. Thus, please do not hesitate to contact me with the following details:

Salim M. Makhlouf
School of Medicine, University of Leeds,
Worsley Building, Leeds, LS2 9JT
Email: umsmam@leeds.ac.uk

Noted by:
professor Mike Bennet
Director, Academic Unit of Palliative Care
School of Medicine, University of Leeds
Appendix 12

Background information for participants

Participant Number: ---------

Date: ---------------

1. Gender:   (1) Male □           (2) Female □
2. Your Age:  ------------
3. Check the box for the highest educational qualifications:
   (1) Uneducated □ (2) Elementary □ (3) Undergraduate □ (4) Postgraduate □
4. What is your current marital status?
   (1) Married □ (2) Widowed □ (3) Divorced □ (5) Not married □
5. Are you currently in paid employment?
   (1) Yes □ (2) No □
6. Approximately what is your monthly income (convert to Pound Sterling)?
   (LYD, convert to Pound Sterling will be done by the researcher)
   (1) No income □ (2) less than £20,000 □ (3) £20,000~£39,999 □
   (4) £40,000~£59,999 □ (5) £60,000~£79,999 □ (6) £80,000~£99,999 □
   (7) £100,000~£149,999 □ (8) £150,000~£199,999 □ (9) 3 more than 200,000 □
7. Who is/are your major caregiver(s)?
   (1) None □ (2) Parent □ (3) Child/children □ (4) Spouse/partner □ (5) Friend □
   (6) Sibling □ (7) Nursing Aid □ (7) Other □ (specify): ------------------------------------
8. What is the type of cancer? (1) Lung cancer □ (2) Colorectal cancer □ (3) Bladder cancer □
9. What is the Stage of cancer? (1) Early-stage cancer □ (2) Stage II & III □
   (3) Stage IV □
10. What current medications are used for cancer pain management?
    (1) Non-Opioid: (a) Paracetamol □ (b) NSAIDs □
    (2) Weak opioid: (a) codeine or dihydro-codeine □
    (3) Strong opioid: (a) Morphine □, (b) Alfentanil □, (d) Diamorphine □, (e) Fentanyl □, (f) Oxycodeone □

Thank you for taking your time to complete this questionnaire

If you have any comments regarding this survey do not hesitate to contact me on the following contact details: Salim M. Makhlouf, Phone No: 0044 (0) 11334326354, E-mail: umsmam@leeds.ac.uk
Appendix 13
Participant Consent Form

HCPs, patients, and caregivers’ views surrounding cancer pain and its management in Libya

Salim M. Makhlouf, School of Medicine, University of Leeds

Please tick each box or leave blank space (□) or (☑)

1. I confirm that I have read and understood the information provided for the above study. I have had the opportunity to consider the information that was given in the information sheet, version 5, dated 12/05/2019. I have had the opportunity to ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time from the study without giving a reason and that this will not affect my legal rights. Should I not wish to answer any particular question or questions, I am free to decline. I also understand that interview participants will be able to withdraw their data from the study up to one week after the interview. After this period, the withdrawal will no longer be possible because my data will be anonymised and embedded within the data analysis.

3. I understand that any personal information collected during the study will be anonymized and remain confidential. I permit the researcher to have access to my anonymized responses and directly quote me.

4. I agree with my anonymized data being used in future related research.

5. I agree to take part in this study.

6. I agree with the interview being audio recorded on an encrypted device. Yes □ No □

7. I agree that the researcher can directly quote me (anonymously) as part of any future publications. Yes □ No □

Name of participant: Date: Signature:

Name of researcher: Date: Signature:
Appendix 14
Questions for the interview with caregivers

Semi-structured interview guidelines and questions for family caregivers

N.B. This is a guide and the questions will vary depending on individual responses, which are family caregivers.

This interview asks for your opinions and understanding of cancer pain and its management, and it will take about 30 to 45 minutes of duration.

Interview questions for family caregivers
Q1. Can you tell me about yourself?

Caregiver’s understanding of cancer pain and its management.
Q2. Can you tell me about your cancer pain experience and how you have managed your family member’s cancer pain?

Caregiver’s perception of pain and opioids.
Q3. Can you tell me about your thought on cancer pain?
PROBES:
   a. Do you think cancer pain is part of disease progression?
   b. Do you think cancer pain can be relieved?
Q4. Can you tell me your opinion about opioids?
PROBES:
   a. Do you think pain medicine can effectively control cancer pain?
   b. Do you think there is a danger of the patient becoming addicted to pain medicine?
   c. Do you think opioid tolerance and/or addiction are the main reason the patient rejects opioids for his/her pain?
   d. Do you think opioid side effects are barriers to cancer pain management?

Caregiver’s attitudes and knowledge towards cancer pain management.
Q5. Can you tell me what you usually do when your family member has cancer pain?
PROBES:
   a. Who do you talk to when the patient is having pain?
   b. How do you manage his/her pain?
   c. When does the patient last time asked for treatment for cancer pain? Why did he/she ask for it?
   d. What kind of medications has the patient used before and now for the cancer pain?

Caregiver’s general views about cancer pain and its management.
Q6. How do you think your community perceives cancer pain management?
PROBES:
   a. Do you think people more generally believe cancer pain should be managed?
   b. Do you think religion and culture can influence in some way with cancer pain management?
   c. To what extent do these beliefs influence how you manage cancer pain?
Q7. Do you think doctors usually focus on treating the disease more than controlling pain?
Q8. Do you think doctors prefer not to talk about cancer pain? If so, why?
Q9. Do you think doctors might find it annoying to be told about pain?
Q10. Do you think nurses prefer not to talk about cancer pain? If so, why?
Q11. Do you think patients usually prefer not to talk about their pain? If so, why?
Q12. Do you think doctors are influenced by their culture and beliefs when interpreting or managing your cancer pain?
Q13. Do you think nurses are influenced by their culture and beliefs when interpreting or managing your cancer pain?
Q14. Do you think patients are influenced by their culture and beliefs when interpreting or using medications for cancer pain?
Q15. Can you tell me anything else about cancer pain and its management, which we did not cover during this interview?

Thank you for your participation in this interview
Appendix 15
Questions for the interview with patients

Semi-structured interview guidelines and questions for cancer patients

N.B. This is a guide, and the questions will vary depending on individual responses, which are cancer patients.
This interview asks for your opinions and understanding of cancer pain and its management, and it will take about 30 to 45 minutes of duration.

Interview questions for patients

Q1. Can you tell me about yourself?

Patient's understanding of cancer pain and its management.
Q2. Can you tell me about your cancer pain experience and how you have managed your cancer pain?

Patient's perception of pain and opioids.
Q3. Can you tell me about your thought on cancer pain?
   PROBES:
   a. Do you think cancer pain is part of disease progression?
   b. Do you think cancer pain can be relieved?

Q4. Can you tell me your opinion about opioids?
   PROBES:
   a. Do you think pain medicine can effectively control your cancer pain?
   b. Do you think there is a danger for you to becoming addicted to pain medicine?
   c. Do you think opioid tolerance and/or addiction are the main reason for you to reject opioids for your pain?
   d. Do you think opioid side effects are barriers to cancer pain management?

Patient's attitudes and knowledge towards cancer pain management.
Q5. Can you tell me what you usually do when you have cancer pain?
   PROBES:
   a. Who do you talk to when you have pain?
   b. How do you manage your pain?
   c. When do you last time asked for treatment for cancer pain? Why did you ask for it?
   d. What kind of medications have you used before and now for cancer pain?

Patient's general views about cancer pain and its management.
Q6. How do you think your community perceives cancer pain management?
   PROBES:
   a. Do you think people more generally believe cancer pain should be managed?
   b. Do you think religion and culture can influence in some way with cancer pain management?
   c. To what extent do these beliefs influence how you manage your cancer pain?
Q7. Do you think doctors usually focus on treating the disease more than controlling pain?
Q8. Do you think doctors usually prefer not to talk about cancer pain? If so, why?
Q9. Do you think doctors might find it annoying to be told about pain?
Q10. Do you think nurses usually prefer not to talk about cancer pain? If so, why?
Q11. Do you think patients usually prefer not to talk about their pain? If so, why?
Q12. Do you think doctors are influenced by their culture and beliefs when interpreting or managing your cancer pain?
Q13. Do you think nurses are influenced by their culture and beliefs when interpreting or managing your cancer pain?
Q14. Do you think family caregivers are influenced by their culture and beliefs when interpreting or using medications for your cancer pain?
Q15. Can you tell me anything else about cancer pain and its management, which we did not cover during this interview?

Thank you for your participation in this interview
Appendix 16
Questions for the interview with HCPs

Semi-structured interview guidelines for oncology (physicians and nurses)

N.B. This is a guide and the questions will vary depending on individual responses, which are oncologists and oncology nurses.
This interview asks for your opinions and understanding of cancer pain and its management, and it will take about 30 to 45 minutes of duration.

Interview questions for oncology physicians
Q1. Can you tell me about yourself?

Oncologist’s understanding of cancer pain and its management.
Q2. Can you tell me your experience with cancer pain and how you have managed your patients’ cancer pain?

Oncologist’s perception of pain and opioids.
Q3. Can you tell me about your thought on cancer pain?
PROBES:
  a. Do you think cancer pain is part of disease progression?
  b. Do you think cancer pain can be relieved?

Q4. Can you tell me your opinion about opioids?
PROBES:
  a. Do you think pain medicine can effectively control cancer pain?
  b. Do you think there is a danger of the patient becoming addicted to pain medicine?
  c. Do you think opioid tolerance and/or addiction are the main reason the patient rejects opioids for his/her pain?
  d. Do you think opioid side effects are barriers to cancer pain management?

Oncologist’s attitudes and knowledge towards cancer pain management.
Q5. Can you tell me what you usually do when a patient is having cancer pain?
PROBES:
  a. How do you control cancer pain?
  b. When does the patient last time asked for treatment for cancer pain? Why did he/she ask for it?
  c. Do patients and their caregivers usually request a specific kind of medication for cancer pain management?
  d. What kinds of medications have the patient used before and now for cancer pain?
  e. Do you prescribe morphine for cancer pain management? If not, why not?
  f. Do patients and their caregivers easily accept morphine for cancer pain management? If the answer is no, why not?
Oncologists' general views about cancer pain and its management.

Q6. How do you think your community perceives cancer pain management?

PROBES:

a. Do you think people more generally believe cancer pain should be managed?

b. Do you think religion and culture can influence in some way with cancer pain management?

c. To what extent do these beliefs influence how you manage your patient's cancer pain?

Q7. Do you think doctors usually focus on treating the disease more than controlling pain?

Q8. Do you think doctors usually prefer not to talk about cancer pain? If so, why?

Q9. Do you think doctors might find it annoying to be told about pain?

Q10. Do you think nurses usually prefer not to talk about cancer pain? If so, why?

Q11. Do you think patients usually prefer not to talk about their pain? If so, why?

Q12. Do you think doctors are influenced by their culture and beliefs when interpreting or managing your cancer pain?

Q13. Do you think nurses are influenced by their culture and beliefs when interpreting or managing your cancer pain?

Q14. Do you think caregivers are influenced by their culture and beliefs when interpreting or using medications for cancer pain?

Q15. Do you think patients are influenced by their culture and beliefs when interpreting or using medications for cancer pain?

Q16. Do you think patients and their caregivers hold some concerns about cancer pain management?

Q17. Do you think patients' attitudes towards cancer pain management are influenced by their caregivers' attitudes and the patient's pain knowledge?

Training and experience in cancer pain management.

Q18. What training or experience do you have in cancer pain management?

Q19. From where do you learn about cancer pain and its management?

Q20. Can you tell me anything else about cancer pain and its management, which we did not cover during this interview?

Thank you for your participation in this interview
Appendix 17

Approval letter from University of Leeds for study two

Mr. Salim Makhfouf
Ph.D. Candidate
Academic Unit of Palliative Care
Leeds Institute of Health Sciences
School of Medicine
Faculty of Medicine and Health
University of Leeds
Room 10.46, Level 10 Worsley Building
Clarendon Way
LEEDS LS2 9NL

23 May 2019

Dear Salim

Ref no: MREC 18-064
Study Title: Professionals, patients, and caregivers’ views surrounding cancer pain and its management in Libya

Thank you for submitting your documentation for the above project. Following review by the School of Medicine Research Ethics Committee (SoMREC), I can confirm a conditional favorable ethical opinion based on the documentation received at the date of this letter and subject to the following conditions, which must be fulfilled before the study commencing:

- Please submit a copy of the final version of the application form signed by one of your supervisors

The study documentation must be amended as required to meet the above conditions and submitted for file and possible future audit. Once you have addressed the conditions and submitted them for file/future audit, you may commence the study, and further confirmation of approval is not provided.

Please note failure to comply with the above conditions will be considered a breach of ethics approval and may result in disciplinary action.
please notify the committee if you intend to make any amendments to the original research as submitted at the date of this approval. this includes recruitment methodology and all changes must be ethically approved prior to implementation. please contact the faculty research ethics administrator for further information at FMHUniEthics@leeds.ac.uk

ethical approval does not infer you have the right of access to any member of staff or student or documents and the premises of the university of Leeds. Nor does it imply any right of access to the premises of any other organisation, including clinical areas. The SoMREC takes no responsibility for you gaining access to staff, students, and/or premises prior to, during, or following your research activities.

You are expected to keep a record of all your approved documentation, as well as documents such as sample consent forms, risk assessments, and other documents relating to the study. This should be kept in your study file and may be subject to an audit inspection. If your project is to be audited, you will be given at least 2 weeks’ notice.

It is our policy to remind everyone that it is your responsibility to comply with health and safety, data protection, and any other legal and/or professional guidelines there may be. The committee wishes you every success with your project.

Yours sincerely

Dr. Naomi Quinton
Co-Chair, School of Medicine Research Ethics Committee
Appendix 18

Authorisation letter from the Libyan Consulate of Alexandria (for study two)
Appendix 19
Approval from SUN for pts and CGs (for study two)

An approval letter from SUN for Libyan patients and their caregivers
Appendix 20

Approval letter from SUN for HCPs
(for study two)

An approval letter from SUN for Libyan healthcare professionals
An approval letter from National Cancer Centre Benghazi (NCCB) for Libyan HCPs to SUN

TO WHOM IT MAY CONCERN

We are more than happy to help Dr. Salim Makhlof with his data collection using interviews with oncology nurses and physicians, who are working at our National Cancer Centre Benghazi (NCCB) and oncology department, Benghazi Medical Centre (BMC). That will be organized by Libyan Embassy at Alexandria, Egypt during the training. We have the largest oncology centre in Eastern of Libya.

Best wishes,

Dr. Ali M. Elzanati
Director of National Cancer Centre, Benghazi
Appendix 22

Approval letter from NCCB (for study three)

To Dr. Salim M. Makhlouf,
Academic Unit of Palliative Care,
School of Medicine, University of Leeds,
Te United Kingdom (UK),
T: 001133436354
E: umsmam@leeds.ac.uk

I am happy to grant full ethical approval for conducting this survey, entitled “Attitudes, knowledge, and perceived barriers towards cancer pain management among healthcare professionals in Libya: A national multicentre survey,” at our National Cancer Centre (NCCB) and oncology department in Benghazi Medical Centre (BMC). This will include oncology physicians and nurses, who are working at our clinics.

Sincerely,

Prof. MD. DR. Ali M. Elzanati

Director of National Cancer Centre (NCCB) and Head of Oncology Department in Benghazi Medical Centre (BMC)
Appendix 23

Approval letter from NCIS (for study three)

Dr. Salim Makhloof
A Ph.D. candidate in Cancer Pain Management (CPM)
Academic Unit of Palliative Care
School of Medicine
The University of Leeds, the UK
Level 10 Worsley Building
Clarendon Way
LEEDS LS2 9NL.

We are pleased to inform you that we give you permission concerning your survey entitled “Attitudes, knowledge, perceived barriers towards cancer pain management among health care professionals in Libya: A national multicentre survey,” to conduct it at our National Institute of Oncology- Sabratha (NIO). We wish you to gain essential information from our oncology physicians and nurses that may help in your survey.

We wish you all the best in your study.

Yours sincerely,

Dr. Abdujallia Aljuma
Head of Medical Services
National Cancer Institute – Sabratha/Libya

023.36209662 - 023.36209665 - 023.36209660 - 023.36209661
Appendix 24
Approval letter from NCIM (for study three)

Professor Mike Bennett
Director of Academic Unit of Palliative Care
School of Medicine
The University of Leeds, the UK
Level 10 Worsley Building
Clarendon Way
LEEDS LS2 9NL

I am delighted to inform you that my permission is given to the researcher to distribute the questionnaire among oncology physicians and nurses, who are working at our National Cancer Institute of Minarat (NCIM). The survey entitled "Attitudes, Knowledge, perceived barriers towards cancer pain management among healthcare professionals in Libya: A national multicentre survey." We wish you the best in your survey.

Yours sincerely,
Dr. Jummaa Jamal Mufidh
Head of Pain Management Unit at NCIM
Appendix 25
Approval letter from TMC (for study three)

Dr. Salim Makhlof
A Ph.D. candidate in cancer pain management
Academic Unit of Palliative Care
School of Medicine
The University of Leeds, the UK
Level 1D Worsley Building
Clarendon Way
LEEDS LS2 9NL

Subject: permission for conducting a survey

Dear Dr. Makhlof,

I am pleased to inform you that I permit you with respect to your study under the title of “Attitudes, knowledge, perceived barriers towards cancer pain management among healthcare professionals in Libya: A national multicentre survey,” to conduct your survey at our Tūrūk Medical Centre (TMC).

We wish our oncology physicians and nurses give you important information that may help in your study.

We wish you all the best in your research.

Kind regards,

Dr. Khalid el Mandid
Head of Oncology Department at TMC
Appendix 26

Approval letter from TMC (for study three)

To Whom it May Concern,

I am happy to grant full ethical approval for conducting this survey, entitled “Attitudes, knowledge, and perceived barriers towards cancer pain management among healthcare professionals in Libya: A national multicentre survey,” at our oncology department, Tripoli Medical Centre (TMC). It will be a short questionnaire, including oncology physicians and nurses, who are working at our clinic.

Sincerely,

Dr. Nagi Jornaz
Head of Oncology Department at Tripoli Medical Centre (TMC)
Appendix 27

Information sheet for participants (for study three)

Academic Unit of Palliative Care
Leeds Institute of Health Sciences
School of Medicine
Level 10, Wesley Building, University of Leeds

UNIVERSITY OF LEEDS

Information sheet for Participants (Survey)

Research title: Attitudes, knowledge, and perceived barriers towards cancer pain management among healthcare professionals in Libya: A national multicentre survey

Salim M. Makhlof, School of Medicine, University of Leeds.

You are kindly invited to take part in this research study; it is crucial that you understand why the research is being done and what it involves. Therefore, please take your time to read the following information carefully before you decide to continue. Please ask if there is anything that is not clear or understandable, or if you would like further information. Take as much time as you would like to decide if you want to take part in this study or not.

1. What is the purpose of the study?
Recent reviews and studies reported a lack of knowledge and negative attitudes towards cancer pain management (CPM) among Health care professionals (HCPs) (oncology nurses and physicians) as one of the most common barriers to effective CPM. However, there is still no published study about HCPs attitudes, knowledge, and perceived barriers towards CPM in Libya. Therefore, this study evaluates HCPs knowledge, attitudes, and potential barriers regarding CPM in Libya.

2. Why do we need this information?
This information will help us to recognize the potential attitudes, knowledge, and perceived barriers about CPM among HCPs in Libya. The findings of this survey will help us in the future, in order to establish palliative care services in Libya, as well as to guide the future development of relevant educational programs for HCPs to assist cancer patients in managing their pain.

3. Who will be involved in the research, and where will the research take place?
The survey will be undertaken at the five different cancer national institutes and centres in Libya. The participants will be the Libyan HCPs (oncology nurses and physicians).
4. How will the research be carried out?
   After the approval from the University of Leeds, information sheets will be distributed by the survey co-ordinators (oncology doctors, not senior or manager) to all potential participants during their break-time. The DQ-II has included a 27-item self-report questionnaire that assesses concerns about cancer pain and using pain medication for CPM. All questionnaires will take place in 5 national oncology centres in Libya. This questionnaire will take about 10 minutes in length. Simultaneously, the background information sheet for participants will be distributed before the survey, which will take about 5 minutes to complete.

5. Do I have to take part in this study?
   The participant is anonymous, and as the participants are a volunteer, so they do not have to take part in the survey. The questionnaires cannot be withdrawn once they have been returned to the co-ordinator as they are anonymous.

6. What will happen to me if I take part in this study?
   If you are willing to participate in the survey, you will be asked to read this information sheet and ask any questions before you sign a consent form. You will then participate in filling the questionnaire, which takes about 10 minutes.

7. Are there any risks or benefits involved in the study?
   There will be no physical risks, as there will be no invasive procedures as a part of this study. You will not directly benefit from taking part, but the findings of the study may help to improve CPM in the future.

8. What will happen to the research results?
   The results collected in this survey will be used in the thesis and for future publication.
9. Will my taking part in this study be kept confidential?
   Yes, all data will be kept strictly confidential, and nobody will have access to data except the
   researcher and their supervisors. Any personal information obtained from participants will be
   stored for a period of three years following completion of the study, after which it will then be
   destroyed by electronic deletion and shredding as appropriate.

10. Does this research have sufficient ethical approval?
    Ethical approval has been sought from the School of Medicine Research Ethics Committee
    (The 50/06/32 reference is MRDC 20-059, in Leeds, the UK). Besides, approval letters have
    been received from three national cancer institutes and centres in Libya: Tobruk Medical Centre
    (TMC), National Cancer Institute of Misrata (NCIM), Sabha Oncology Centre (SOC).

Thank you for taking the time to read this information sheet.

Researcher's contact details
I will be always happy to clarify any things, which is not clear or giving more information regarding this
study. Thus, please do not hesitate to contact me on the following details:

Salim M. Mokhla
School of Medicine, University of Leeds,
Worsley Building, Leeds, LS2 9JT
Tel: 0113 3436354
Email: s-mamum@leeds.ac.uk

Noted by:

professor Michael Bennett
Director, Academic Unit of Palliative Care
School of Medicine, University of Leeds
Appendix 28

Background information for participants (for study three)

Background information for participants (Survey)

Participant Number: ————

Date: ————

1. The participant is a:  (1) Nurse ☐  (2) Physician ☐

2. Gender:  (1) Male ☐  (2) Female ☐

3. Age in years: ————

3. Check the box of the highest educational qualifications:
   (1) Secondary school ☐  (2) Intermediate Diplom ☐  (3) Undergraduate ☐
   (4) Postgraduate ☐

4. What is your current marital status?
   (1) Married ☐  (2) Widowed ☐  (3) Divorced ☐  (4) Not married ☐  (5) Engaged ☐

5. Where do you live?
   (1) City ☐  (2) Village ☐  (3) Camp ☐

6. Approximately what is your monthly income (L.Y.O, convert to Pound Sterling will be done by researcher)?
   (1) No income ☐  (2) less than £20,000 ☐  (3) £20,000-£39,999 ☐
   (4) £40,000-£59,999 ☐  (5) £60,000-£79,999 ☐  (6) £80,000-£99,999 ☐
   (7) £100,000-£149,999 ☐  (8) £150,000-£199,999 ☐  (9) more than 200,000 ☐
7. Have you attended any training or education courses in CPM?
   (1) Yes □      (2) No □

8. How long have you been in this job?
   (1) Six months □    (2) Less than one year □    (3) Greater than one year □

9. Do you follow any specific guidelines for palliative care/CPM?
   (1) Yes □      (2) No □
   (3) If the answer "yes," which one: (a) NICE’s guidelines □    (b) WHO’s guidelines □
   (4) If the answer "No," Why not ..............................................................

10. What are the current medications you prescribe/give for CPM?
    (1) Non-Opioid:     (a) Paracetamol □    (b) NSAIDs □
    (2) Weak opioid:   (a) codeine or dihydro-codeine □    (b) Tramadol □
    (3) Strong opioid:  (a) Morphine □    (b) Alfentanil □    (d) Diamorphine □
    (e) Fentanyl □    (f) Oxycodone □
    (4) Others: ........................................

Thank you for your time to complete this questionnaire.

If you have any comments regarding this survey do not hesitate to contact me on the following contact details: Saim M. Makhlouf, phone No: 0044 (0) 11334326354, E-mail: umsmam@leeds.ac.uk
Appendix 29

An invitation letter for study three

An invitation letter
This is a letter of invitation to participate in this survey entitled “Attitudes, knowledge, and perceived barriers towards cancer pain management among healthcare professionals in Libya: A national multicentre survey.”

Dear Sir/Madam:
I am writing as a Ph.D. candidate from the School of Medicine at the University of Leeds in the UK to ask if you would be kind enough to take part in this study. This will involve a short questionnaire, which will take about 10 minutes of your time, aiming to evaluate healthcare professionals’ (HCPs) knowledge, attitudes, and potential barriers regarding cancer pain management (CPM) in Libya. At the same time, a background information sheet for participants will be given to you, which will take about 5 minutes to complete. All information will be anonymised and securely stored once the questionnaire is complete.

Thank you for taking the time to read this letter

Kind regards,

Salim M. Makhlouf
A Ph.D. candidate in cancer pain management
Room 10.31, Level 10 Worsley Building
Academic Unit of Palliative Care
School of Medicine
University of Leeds
☎ +44 (0) 1133430354
E-mail: umasim@leeds.ac.uk
Appendix 30

Approval letter from the University of Leeds for study three

Dear Selim,

MREC 20-005 - Attitudes, knowledge, and perceived barriers towards cancer pain management among healthcare professionals in Leeds: A national multicentre survey.

I am pleased to inform you that the above research ethics application has been reviewed by the School of Medicine Research Ethics Committee and on behalf of the Chair, I can confirm that the documentation received at date of this email.

Please retain this email as evidence of approval in your study file.

Please note: on the advice of the committee, you need to make any amendments to the original research protocol and approved to date. This includes recruitment methodology, all changes in the protocol. Please see https://medsci.leeds.ac.uk/sites/ResearchEthicsSection/Services/SitePages/ApprovedForms.aspx or contact the Research Ethics Administrator for further information.

This approval does not infer you have the right of access to any member of staff/students or documents and the premises of the University of Leeds. Nor does it imply any right, including clinical access. The committee includes no responsibility for you gaining access to staff, students and/or premises prior to, during or following your research activities.

Please note: You are expected to keep a record of all your approved documentation, as well as documents such as module contact forms, risk assessments and other documents which should be readily available for audit purposes. You will be given a two-week notice period if your project is to be reviewed.

It is my policy to remind everyone that it is your responsibility to comply with Health and Safety, Data Protection and any other legal and/or professional guidelines that may be.

I hope the study goes well.

Best wishes,

John Hart
On behalf of SOMREC
Appendix 31
Barriers Questionnaire II (BQ-II) English version

Barriers Questionnaire II (BQ-II)

[English version]

We are interested in learning about your attitudes toward the treatment of pain. We want to know what you think. Some of the questions may seem similar to other ones, but please answer all of the questions. For each of the items below, please circle the number (0, 1, 2, 3, 4, or 5) that comes closest to how much you agree with that item.

1) Cancer pain can be relieved.
   
   [0] Do not agree at all
   [1]  
   [2]  
   [3]  
   [4]  
   [5] Agree very much

2) There is a danger for patients to become addicted to pain medicine.
   
   [0] Do not agree at all
   [1]  
   [2]  
   [3]  
   [4]  
   [5] Agree very much

3) Drowsiness from pain medicine is difficult to control.
   
   [0] Do not agree at all
   [1]  
   [2]  
   [3]  
   [4]  
   [5] Agree very much

4) Pain medicine weakens the immune system.
   
   [0] Do not agree at all
   [1]  
   [2]  
   [3]  
   [4]  
   [5] Agree very much
5) Confusion from pain medicine can not be controlled.

   | 0 | 1 | 2 | 3 | 4 | 5  |
---|---|---|---|---|---|----|
   Do not agree at all | Agree very much

6) When the patient uses pain medicine, his/her body becomes used to its effects, and pretty soon, it will not work anymore.

   | 0 | 1 | 2 | 3 | 4 | 5  |
---|---|---|---|---|---|----|
   Do not agree at all | Agree very much

7) Using pain medicine blocks the patient's ability to know if he/she has any new pain.

   | 0 | 1 | 2 | 3 | 4 | 5  |
---|---|---|---|---|---|----|
   Do not agree at all | Agree very much

8) Pain medicine can effectively control cancer pain.

   | 0 | 1 | 2 | 3 | 4 | 5  |
---|---|---|---|---|---|----|
   Do not agree at all | Agree very much

9) Many people with cancer get addicted to pain medicine.

   | 0 | 1 | 2 | 3 | 4 | 5  |
---|---|---|---|---|---|----|
   Do not agree at all | Agree very much

10) Nausea from pain medicine can not be relieved.

    | 0 | 1 | 2 | 3 | 4 | 5  |
---|---|---|---|---|---|----|
   Do not agree at all | Agree very much
11) It is important for the patient to be strong by not talking about his/her pain.

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do not agree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Agree very much</td>
</tr>
<tr>
<td></td>
<td>at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>much</td>
</tr>
</tbody>
</table>

12) It is important for the doctor to focus on curing illness, and not waste time controlling pain.

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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Do not agree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Agree very much</td>
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<td></td>
<td>at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>much</td>
</tr>
</tbody>
</table>

13) Using pain medicine can harm patient’s immune system.

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<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do not agree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Agree very much</td>
</tr>
<tr>
<td></td>
<td>at all</td>
<td></td>
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<td></td>
<td></td>
<td>much</td>
</tr>
</tbody>
</table>

14) Pain medicine makes patients say or do embarrassing things.

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<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do not agree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Agree very much</td>
</tr>
<tr>
<td></td>
<td>at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>much</td>
</tr>
</tbody>
</table>

15) If a patient takes pain medicine when he/she has some pain, then it might not work as well if the pain becomes worse.

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<thead>
<tr>
<th></th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do not agree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Agree very much</td>
</tr>
<tr>
<td></td>
<td>at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>much</td>
</tr>
</tbody>
</table>

16) Pain medicine can keep patients from knowing what is going on in their bodies.

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<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do not agree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>Agree very much</td>
</tr>
<tr>
<td></td>
<td>at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>much</td>
</tr>
</tbody>
</table>
17) **Constipation from pain medicine can not be relieved.**

0 1 2 3 4 5  
Do not agree at all Agree very much

18) **If doctors have to deal with the pain, they will not concentrate on curing the disease.**

0 1 2 3 4 5  
Do not agree at all Agree very much

19) **Pain medicine can hurt a patient’s immune system.**

0 1 2 3 4 5  
Do not agree at all Agree very much

20) **It is easier for a patient to put up with pain than the side effects that come from pain medicine.**

0 1 2 3 4 5  
Do not agree at all Agree very much

21) **If the patient use pain medicine now, it will not work as well if he/she needs it later.**

0 1 2 3 4 5  
Do not agree at all Agree very much

22) **Pain medicine can mask changes in the patient’s health.**

0 1 2 3 4 5  
Do not agree at all Agree very much
<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>23) Pain medicine is very addictive.</td>
<td>0 Do not agree at all 1 2 3 4 Agree very much</td>
</tr>
<tr>
<td>24) Medicine can relieve cancer pain.</td>
<td>0 Do not agree at all 1 2 3 4 Agree very much</td>
</tr>
<tr>
<td>25) Doctors might find it annoying to be told about pain.</td>
<td>0 Do not agree at all 1 2 3 4 Agree very much</td>
</tr>
<tr>
<td>26) Reports of pain could distract a doctor from curing cancer.</td>
<td>0 Do not agree at all 1 2 3 4 Agree very much</td>
</tr>
<tr>
<td>27) If the patient talks about pain, people will think he/she is a complainer.</td>
<td>0 Do not agree at all 1 2 3 4 Agree very much</td>
</tr>
</tbody>
</table>

Thank you for completing this survey.
## Appendix 32

Mean scores for Libyan nurses’ and physicians’ responses in the BQ-II

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Items</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiological Effects</td>
<td>Drowsiness from pain medicine is difficult to control</td>
<td>2.7 (1.8)</td>
</tr>
<tr>
<td></td>
<td>Confusion from pain medicine cannot be controlled</td>
<td>2.5 (1.5)</td>
</tr>
<tr>
<td></td>
<td>When the patient uses pain medicine, his/her body becomes used to its effects, and pretty soon, it will not work anymore</td>
<td>3.7 (1.3)</td>
</tr>
<tr>
<td></td>
<td>Using pain medicine blocks the patient’s ability to know if he/she has any new pain</td>
<td>3.4 (1.7)</td>
</tr>
<tr>
<td></td>
<td>Nausea from pain medicine cannot be relieved</td>
<td>1.8 (1.7)</td>
</tr>
<tr>
<td></td>
<td>Pain medicine makes patients say or do embarrassing things</td>
<td>2.0 (1.7)</td>
</tr>
<tr>
<td></td>
<td>If a patient takes pain medicine when he/she has some pain, then it might not work as well if the pain becomes worse</td>
<td>3.3 (1.5)</td>
</tr>
<tr>
<td></td>
<td>Pain medicine can keep patients from knowing what is going on in their bodies</td>
<td>2.6 (1.7)</td>
</tr>
<tr>
<td></td>
<td>Constipation from pain medicine cannot be relieved</td>
<td>1.8 (1.6)</td>
</tr>
<tr>
<td></td>
<td>It is easier for a patient to put up with pain than the side effects that come from pain medicine</td>
<td>2.5 (1.5)</td>
</tr>
<tr>
<td></td>
<td>If the patient use pain medicine now, it will not work as well if he/she needs it later</td>
<td>2.9 (1.7)</td>
</tr>
<tr>
<td></td>
<td>Pain medicine can mask changes in the patient’s health</td>
<td>2.8 (1.7)</td>
</tr>
<tr>
<td>Fatalism</td>
<td>Cancer pain can be relieved</td>
<td>1.2 (1.3)</td>
</tr>
<tr>
<td></td>
<td>Pain medicine can effectively control cancer pain</td>
<td>1.5 (1.4)</td>
</tr>
<tr>
<td></td>
<td>Medicine can relieve cancer pain</td>
<td>1.2 (1.3)</td>
</tr>
<tr>
<td>Communication</td>
<td>It is important for the patient to be strong by not talking about his/her pain</td>
<td>2.4 (1.9)</td>
</tr>
<tr>
<td></td>
<td>It is important for the doctor to focus on curing illnesses, and not waste time controlling pain</td>
<td>2.4 (2.2)</td>
</tr>
<tr>
<td></td>
<td>If doctors have to deal with the pain, they won’t concentrate on curing the disease</td>
<td>1.5 (1.8)</td>
</tr>
<tr>
<td></td>
<td>Doctors might find it annoying to be told about pain</td>
<td>1.4 (1.8)</td>
</tr>
<tr>
<td></td>
<td>Reports of pain could distract a doctor from curing the cancer</td>
<td>1.5 (1.8)</td>
</tr>
<tr>
<td></td>
<td>If the patient talks about pain, people will think he/she is a complainer</td>
<td>2.3 (2.0)</td>
</tr>
<tr>
<td>Harmful Effects</td>
<td>There is a danger for patients to become addicted to pain medicine</td>
<td>3.5 (1.5)</td>
</tr>
<tr>
<td></td>
<td>Pain medicine weakens the immune system</td>
<td>2.3 (1.8)</td>
</tr>
<tr>
<td></td>
<td>Many people with cancer get addicted to pain medicine</td>
<td>3.6 (1.5)</td>
</tr>
<tr>
<td></td>
<td>Using pain medicine can harm patient’s immune system</td>
<td>2.3 (1.9)</td>
</tr>
<tr>
<td></td>
<td>Pain medicine can hurt a patient’s immune system</td>
<td>2.3 (1.9)</td>
</tr>
<tr>
<td></td>
<td>Pain medicine is very addictive</td>
<td>3.3 (1.5)</td>
</tr>
</tbody>
</table>
Appendix 33
Interpreting Alpha for Likert scale question

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>Internal consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.90 and above</td>
<td>Excellent</td>
</tr>
<tr>
<td>0.80 – 0.89</td>
<td>Good</td>
</tr>
<tr>
<td>0.70 – 0.79</td>
<td>Acceptable</td>
</tr>
<tr>
<td>0.60 – 0.69</td>
<td>questionable</td>
</tr>
<tr>
<td>0.50 – 0.59</td>
<td>Poor</td>
</tr>
<tr>
<td>Below 0.50</td>
<td>Unacceptable</td>
</tr>
</tbody>
</table>

# Appendix 34

**Interval Scale**

<table>
<thead>
<tr>
<th>Likert-Scale</th>
<th>Interval</th>
<th>Difference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.00 – 0.99</td>
<td>0.99</td>
<td>Do not agree at all</td>
</tr>
<tr>
<td>1</td>
<td>1.00 – 1.79</td>
<td>0.79</td>
<td>Disagree</td>
</tr>
<tr>
<td>2</td>
<td>1.80 – 2.59</td>
<td>0.79</td>
<td>Neither agree nor disagree</td>
</tr>
<tr>
<td>3</td>
<td>2.60 – 3.39</td>
<td>0.79</td>
<td>Mostly agree</td>
</tr>
<tr>
<td>4</td>
<td>3.40 – 4.19</td>
<td>0.79</td>
<td>Agree</td>
</tr>
<tr>
<td>5</td>
<td>4.20 – 5.00</td>
<td>0.80</td>
<td>Agree very much</td>
</tr>
</tbody>
</table>
Appendix 35
Barriers Questionnaire II (BQ-II) Arabic version

Barriers Questionnaire (Arabic Version)

1. من السكن علاج الأم المبتعد عن مرض السرطان
   - لا أوافق أبداً
   - أوافق بشدة
   - أوافق
   - لا أوافق
   - لا أوافق أبداً

2. فقد تُجبر على الرملي للإبقاء على الأدوية لمسكنة للألم
   - لا أوافق أبداً
   - أوافق بشدة
   - أوافق
   - لا أوافق
   - لا أوافق أبداً

3. يصعب السيطرة على الحمول الناتجة عن الأدوية المستخدمة للألم
   - لا أوافق أبداً
   - أوافق بشدة
   - أوافق
   - لا أوافق
   - لا أوافق أبداً

4. تضيق الأدوية المستخدمة لعلاج مُبرد المزاج
   - لا أوافق أبداً
   - أوافق بشدة
   - أوافق
   - لا أوافق
   - لا أوافق أبداً

5. يصعب السيطرة على حالة الشوبة التي تنتج عن الأدوية المستخدمة للألم
   - لا أوافق أبداً
   - أوافق بشدة
   - أوافق
   - لا أوافق
   - لا أوافق أبداً

6. عندما يستخدم المريض الأدوية المستخدمة للألم فإنه جسمه يرجع عليها وينصح عبر قناة بسرية
   - لا أوافق أبداً
   - أوافق بشدة
   - أوافق
   - لا أوافق
   - لا أوافق أبداً

7. يعتبر استخدام الأدوية المستخدمة للألم فقرة سريعة وسريعة مثيرة إذا ما كانت فيه ما لا
   - لا أوافق أبداً
   - أوافق بشدة
   - أوافق
   - لا أوافق
   - لا أوافق أبداً

8. مستقبل الأدوية المستخدمة لعلاج الأم المبتعد عن مرض السرطان
   - لا أوافق أبداً
   - أوافق بشدة
   - أوافق
   - لا أوافق
   - لا أوافق أبداً

9. بغض الاعتبار من شروط السرطان للجنس على الأدوية المستخدمة للألم
   - لا أوافق أبداً
   - أوافق بشدة
   - أوافق
   - لا أوافق
   - لا أوافق أبداً

10. لا يمكن مطالبة الأطباء بقياس الأدوية المستخدمة للألم
    - لا أوافق أبداً
    - أوافق بشدة
    - أوافق
    - لا أوافق
    - لا أوافق أبداً

11. من المهم أن يكون المريض فيما وفقه بعد التحدث عن لدنه
    - لا أوافق أبداً
    - أوافق بشدة
    - أوافق
    - لا أوافق
    - لا أوافق أبداً

12. من المهم أن يكون الأطباء على علم بالمرض نفسه وحادي ابتعاث الفرد بعلاج الأم
    - لا أوافق أبداً
    - أوافق بشدة
    - أوافق
    - لا أوافق
    - لا أوافق أبداً

13. أن استخدام الأدوية المستخدمة للألم بعض التهيج المناعي للمرض
    - لا أوافق أبداً
    - أوافق بشدة
    - أوافق
    - لا أوافق
    - لا أوافق أبداً
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<tr>
<th>المتغير</th>
<th>القيمة</th>
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<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
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<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
### Appendix 36

**Consolidated criteria for reporting qualitative studies (COREQ): a 32-item checklist**

Table. Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist.

Developed from:

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Guide questions/description</th>
<th>Reported on Page #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Domain 1: Research team and reflexivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personal Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Inter viewer/facilitator</td>
<td>Which author’s conducted the interview or focus group?</td>
<td>Salim Makhlof (SM; page 3).</td>
</tr>
<tr>
<td>2.</td>
<td>Credentials</td>
<td>What were the researcher’s credentials? E.g. PhD, MD</td>
<td>Salim M. Makhlof, BSc, MSc, Ph.D. candidate.</td>
</tr>
<tr>
<td>3.</td>
<td>Occupation</td>
<td>What was their occupation at the time of the study?</td>
<td>A Ph.D. candidate.</td>
</tr>
<tr>
<td>4.</td>
<td>Gender</td>
<td>Was the researcher male or female?</td>
<td>Male (page 3).</td>
</tr>
<tr>
<td>Experience and training</td>
<td>What experience or training did the researcher have?</td>
<td>As researcher is a Ph.D. candidate, he has had many courses including qualitative research methods. Data collection, e.g. interviews. Data analysis, e.g. NVivo 12 Plms.</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Relationship with participants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Relationship established</td>
<td>Was a relationship established prior to study commencement?</td>
<td>No (page 3).</td>
<td></td>
</tr>
<tr>
<td>7. Participant knowledge of the interviewer</td>
<td>What did the participants know about the researcher? e.g. personal goals, reasons for doing the research</td>
<td>See included information sheet.</td>
<td></td>
</tr>
<tr>
<td>8. Interviewer characteristics</td>
<td>What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic</td>
<td>Page 3.</td>
<td></td>
</tr>
<tr>
<td><strong>Domain 2: study design</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Theoretical framework</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Methodological orientation and Theory</td>
<td>What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis</td>
<td>A pragmatic approach.</td>
<td></td>
</tr>
<tr>
<td><strong>Participant selection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Sampling</td>
<td>How were participants selected? e.g. purposive, convenience, conservative, snowball</td>
<td>Purposive sampling.</td>
<td></td>
</tr>
<tr>
<td>11. Method of approach</td>
<td>How were participants approached? e.g. face-to-face, telephone, mail, email</td>
<td>See page 3.</td>
<td></td>
</tr>
<tr>
<td>12. Sample size</td>
<td>How many participants were in the study?</td>
<td>36 participants.</td>
<td></td>
</tr>
<tr>
<td>13. Non-participation</td>
<td>How many people refused to participate or dropped out? Reasons?</td>
<td>No one refused (page 3).</td>
<td></td>
</tr>
<tr>
<td><strong>Setting</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Setting of data collection</td>
<td>Where was the data collected? e.g. home, clinic, workplace</td>
<td>Clinic (page 3).</td>
<td></td>
</tr>
<tr>
<td>Quotation identified? e.g. participant number</td>
<td>30. Data and findings consistent</td>
<td>Was there consistency between the data presented and the findings?</td>
<td>Yes. See Discussion (pages 9-13)</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------------------------------</td>
<td>----------------------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>31. Clarity of major themes</td>
<td>Were major themes clearly presented in the findings?</td>
<td>Yes. See Results (pages 5-8)</td>
<td></td>
</tr>
<tr>
<td>32. Clarity of minor themes</td>
<td>Is there a description of diverse cases or discussion of minor themes?</td>
<td>Yes. See Results (pages 5-8)</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 37

Normal Q-Q Plot of all BQ-II scores for males and females
Appendix 38

Normal box plots for males and females
Appendix 39

Permission from Ward for using the BQ-II in this study

---

Hello Mr Makhlof,

You have permission to use the BQ in your research. I've attached a copy of the questionnaire, scoring instructions and a bibliography.

Best wishes in your work,
Sandy

Sandra Ward, PhD, RN, FAAN
Professor Emerita
UW-Madison

From: Salim Makhlof <unimers@leeds.ac.uk>
Sent: Monday, August 31, 2020 9:44 AM
To: SANDRA E WARD <award@wisc.edu>
Subject: Request for adopting the BQ into my study

Deer Dr. Ward

Hi, I am Salim Makhlof, a PhD candidate at the School of Medicine, University of Leeds, the UK. I intend to do my research, titled “Healthcare professionals' attitudes, knowledge, and perceived rational multicentre survey.” I would like to ask you for permission to adopt the barriers questionnaire into my research. Also, could you please send me a copy of the barriers questionnaire if possible.

Thank you in advance,

Kind regards,

Salim Makhlof, PGc, MSc.

A PhD candidate in Cancer Pain Management (CPM)
Academic Unit of Palliative Care
Leeds Institute of Health Sciences
School of Medicine

---

(End of email message and attachment)
Appendix 40

Permission for using the Arabic version of the BQ-II in this study

Dear Salim,

You have my permission to use the Arabic version of the BQ and yes I have used it for Healthcare providers.

With you the best in your endeavor.

On Thu, 23 Aug 2020 at 18:55, Salim Mahlhoufi <salim.mahlhoufi@leeds.ac.uk> wrote:

Dear Dr. Al Gadr:

Hi, I am Salim Mahlhoufi, a Ph.D. candidate at the School of Medicine, University of Leeds, the UK. I intend to do my research, titled “Healthcare professionals’ attitudes, knowledge, and perceived national multilevel survey” I would like to ask you for permission to adapt the barriers questioner, and knowledge and attitudes survey Arabic versions into my research. Also, could you please provide me with the Knowledge and attitudes survey Arabic version if possible. Please. I still not know which one I should use. My supervisor wants me to use the BQ as he thought the BQ had been used for HCP’s and detailed. However, I believe the BQ just used for patients, not for HCPs. Please, I need your advice as well, if possible.

Thank you in advance,

Kind regards,

Salim Mahlhoufi, PGC, MSc.

A Ph.D. candidate in Cancer Pain Management (CPM)
Managing pain in people with cancer—a systematic review of the attitudes and knowledge of professionals, patients, and caregivers

Salim M. Makhlouf 1, 3, Simon Pratl 1, Sharon Ahmed 1, 3 & Michael I. Bennett 4

Academic Unit of Palliative Care, Leeds Institute of Health Sciences, School of Medicine, University of Leeds, Leeds, U.K.

Address correspondence and reprint requests to: Salim M. Makhlouf, MSc, Academic Unit of Palliative Care, School of Medicine, LIHS, University of Leeds, Level 10 Worsley Building, Clarendon Way, Leeds LS2 9NL, U.K. Phone No: 0044 (0) 1133436354, E-mail: umsmam@leeds.ac.uk

ORCID identifier is 0000-0002-1567-7797.

Abstracts for poster presentations (Conferences)

North-East Postgraduate Conference, Diversity; November 13/2020;
United Kingdom [Accepted]

Introduction

- Cancer pain caused by the disease or its treatment.
- Morphine remains the recommended CPM.
- Cancer pts still do not receive appropriate CPM, and under-treatment is common.

Methods

- To systematically review research on the nature and impact of attitudes and knowledge towards CPM.
- A systematic literature search of 6 databases (the Cochrane Library, MEDLINE, PsycINFO, CINAHL, Web of Science, and EMBASE) in July 2019.
- Critically appraised by 2 researchers (the Joanna Briggs Institute Analytical Cross-Sectional Studies Assessment).

Results

- 36 studies met the inclusion criteria.
- Findings among HCPs, pts, and caregivers, similar attitudinal barriers to effective CPM.
- Most commonly cited barriers: fear of addiction, tolerance, and side effects of opioids.
- We found differences among HCPs and different countries based on their potential exposure to palliative care training and services.

Discussion

- Our findings consistent with those of recent studies.
- CPM remains a significant problem worldwide, especially in countries within Europe, Africa, and Asia.
- Still barriers to effective CPM, result in unrelieved CP.
- More educational programmes and training for HCPs and general awareness with an adequate level of knowledge for pts and caregivers in CPM needed.

References


Acknowledgments

Authors acknowledge the Ministry of Education in Libya for funding.
Libyan healthcare professionals’, patients’ and caregivers’ perceptions about cancer pain and its management: A qualitative study

Salim M. Maleh-Shabir 1 & Shamir Ahmed 1 & Michael I. Bennett 1

Academic Unit of Palliative Care, Leeds Institute of Health Sciences, School of Medicine, University of Leeds, Leeds, U.K. Address correspondence and request for reprints to: Salim M. Maleh-Shabir, MSc, Academic Unit of Palliative Care, School of Medicine, LS1 5NL, U.K. Phone No: 0044 (0) 1133456354, E-mail: unsmah@le.ac.uk

Cancer Pain Management

Introduction

- Cancer pain (CP) remains a major problem worldwide.
- CP presents in about 50% of cases.
- CP is inadequately assessed and undertreated globally, especially in developing countries.
- HCPs, Pts, Caregivers perceptions of CP & its management are barriers towards CP management globally.
- No Palliative care in Libya.

Methods

- Ethical approval School of Medicine Research Ethics Committee.
- Qualitative study to explore Libyan HCPs’, Pts’, and Caregivers’ views about CP.

Results

- Interviews with 16 Libyan cancer pts. & 12 HCPs.
- Data analysis (Thematic analysis).
- Pts concerned about social stigma of opioids, drug addiction & unable to pay for medicines as financial difficulties.
- Pts & Caregivers used religious & cultural beliefs for managing CP & used Qur’an & Quraqy as a coping strategies.
- HCPs perceived lack of policies & guidelines, pain rating scales, & education & training as CP barriers.

Discussion

- Similar earlier studies’ pts & Caregivers in this study believed Qur’an cure cancer & relieve pain.
- Pts & Caregivers used religious beliefs as coping strategy tolerate pain; they refused opioids for CP.
- As cancer progresses, cancer management delayed & disease progresses with CP.
- Medical & pain prescriptions delayed/avoided as economic issues.
- WHO & NICE guidelines

Conclusion

- Our results religious & cultural beliefs, lack knowledge & training HCPs affect CP in Libya.
- Economic & healthcare system-related factors affect CP in Libya.

Acknowledgments

- Authors acknowledge the Ministry of Education in Libya for funding.

References


North-East Postgraduate Conference, Diversity; November 11-12/2021; United Kingdom [Accepted]
Appendix 42
Gantt Chart shows study progress during 4 years for this a Ph.D. study

Gantt Chart (timetable) shows study progress during 4 years for this a Ph.D. study

<table>
<thead>
<tr>
<th></th>
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<tr>
<td>Background of health system in Libya</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Reviewing the literature</td>
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<tr>
<td>Defining research gap and methods</td>
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<tr>
<td>Conducting a systematic review (phase 1)</td>
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<tr>
<td>Developing information sheet (phase 2)</td>
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<tr>
<td>Writing informed consent form (phase 2)</td>
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<td>Developing and writing questions (phase 2)</td>
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<td>Writing research protocol for ethics (Ph 2)</td>
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<tr>
<td>Applying for ethical approvals (phase 2)</td>
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<tr>
<td>Developing &amp; piloting the questions (Ph 2)</td>
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<td>Writing proposal for transfer report</td>
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<td>Preparing for transfer viva</td>
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<tr>
<td>Data analysis for phase 2</td>
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<tr>
<td>Interpreting the findings (phase 2)</td>
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<td>Publication</td>
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</tr>
<tr>
<td>Participation in conferences</td>
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<tr>
<td>Developing information sheet for phase 3</td>
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<td>Developing and writing questions: Phase 3</td>
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<td>Applying for ethical approvals (phase 3)</td>
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<td>Data collection for phase 3</td>
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<td>Pauses in my study</td>
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<tr>
<td>Writing up the thesis</td>
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<tr>
<td>Preparing for Viva</td>
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