PAIN MANAGEMENT IN HAIL REGION HOSPITALS IN SAUDI ARABIA

By

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Abstract

Background and aims: Pain is a human experience that affects the overall quality of life, and it is known to be the most common reason for people seeking healthcare. Nurses play a crucial role in assessing and managing patients' pain. Effective pain management requires precise knowledge, attitudes and competent assessment skills. Knowledge deficits and inappropriate attitudes are major contributing factors to the under-treatment of pain. Pain management is a multifaceted problem that may become even more complicated in situations where there are cultural variances and differences between patients and nurses. This study aimed to determine nurses' knowledge and attitudes regarding pain management, and to identify possible barriers to achieving optimal pain management in Hail region hospitals in Saudi Arabia.

Sample and methods: This is an explorative, descriptive, mixed-methods (quantitative and qualitative) study conducted in the Hail region hospitals to identify nurses' knowledge and attitudes towards pain management. The first phase involved administering a questionnaire to a sample of 303 nurses to explore their knowledge and attitudes regarding pain management. The questionnaire used in the study is the 'Knowledge and Attitudes Survey Regarding Pain' (KASRP) tool. The second phase involves semi-structured interviews with 28 nurses who had previously completed phase one to further explore their perceived facilitators and barriers to proper pain management. The interviews elicit information on how cultural differences among Saudi national and expatriate nurses might affect the assessment and interpretation of patients' pain, and how it will affect the delivery of effective pain management, as well as identifying the barriers to achieving optimal pain management in Hail region hospitals. Data

are analysed using descriptive statistics, measures of variability and inferential statistics, and thematic analysis for qualitative data.

Results: In this study, the average correct response rate to the KASRP questionnaire was 41.75 %, with rates ranging from 5–87 %. The findings indicate inadequate knowledge regarding pain, pain assessment, pain management and pain medications. When analysed using thematic analysis, the qualitative data highlight some barriers that affect nurses' ability to provide effective pain management; these include language, workload, inadequate numbers of staff, lack of education and cultural orientation courses, and religious and cultural factors.

Recommendations: Nurses require a greater knowledge base regarding pharmacological and non-pharmacological interventions in pain management, as well as training to acquire culture competence to care for patients with different cultural backgrounds. This study recommends increased education regarding pain management, as well as an annual assessment of skills for all clinical nurses. Strategies to recruit and retain experienced staff should be implemented.

Conclusion: This study provides a unique insight into pain management practice by assessing overall knowledge scores and exploring the barriers and facilitating factors that exist within a multinational workforce of nurses working in five major Saudi health services. As such, this study is able to make a claim for new and unique knowledge that is relevant to nursing practices. The results of this study indicate problems in nurses' knowledge and negative attitudes regarding pain and pain management. A lack of knowledge regarding pharmacological and non-pharmacological interventions is evident, and educational and training programs should be implemented to correct these deficiencies.

Declaration

I certify that:

a) except where due acknowledgement has been made, the work is that of the author alone;

b) the work has not been submitted previously, in whole or in part, to qualify for any other academic award;

c) the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program;

d) any edited work, paid or unpaid, carried out by a third party is acknowledged; and,

e) ethics procedures and guidelines have been followed.

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Hamdan Albaqawi

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Completing my PhD degree is probably the most challenging activity of the first 31 years of my life. However, it is a challenge that I had to undertake, and I consider this thesis the beginning of my journey.

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Dedication

This thesis is dedicated to my father, who was my first teacher in this world and who taught me letters and numbers when I was very young. It is also dedicated to my mother, who taught me patience and tolerance. I also dedicate this work to my brothers and sisters for their constant encouragement and support. I dedicate this achievement to my beloved wife and to my children for their love, patience and unlimited support during this journey. I would not have been able to accomplish this without you all.

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Chapter 1: Introduction and Background

1.1 Introduction

It can safely be said that no one can escape pain. Everyone will experience pain at some point in their lives; sometimes it is transient and sometimes longstanding (chronic pain). Pain is the main reason for people seeking healthcare (Lewis, Heitkemper & Dirksen, 2004; Polomano et al., 2008) either in a medical clinic or in the hospital setting (McLean et al., 2004). Despite the development of new techniques and new guidelines for adequate pain management, many patients continue to suffer from pain (Schechter, Berde & Yaster, 2003; Sloman et al., 2005; Sloman et al., 2006; Pasero & McCaffery, 2007; Horgas & Yoon, 2008; Layzell, 2008). Pain has often been poorly assessed and inadequately managed, and the under-treatment of pain has been reported for many decades as a major and persistent clinical problem (Brown, Bowman & Eason, 1999; Fosnocht, Swanson & Barton, 2005; McCaffery & Ferrell, 1997; McCaffery & Pasero, 1999; Schafheutle, Cantrill & Noyce, 2001;Duignan &Dunn, 2009).

A Swedish study was conducted to identify the prevalence and diagnostic pattern of pain over a period of one year at the primary care level. The study found that 25 % of patients that visit general practitioners do so because of a variety of pain conditions (Mantyselka et al., 2001; Hasselstrom et al., 2002). In Australia, it is estimated that one in five people (about 3.2 million Australians), including children and adolescents, will suffer chronic pain in their lifetime (Walsh et al., 2008). In Saudi Arabia, the situation is not clear because there is a lack of published studies identifying the prevalence of pain in healthcare settings and the level of nurses' knowledge regarding pain. Nonetheless, one study by Kaki, Daghistani and Msabeh (2009) to assess nurses' knowledge of acute pain management in a tertiary hospital in Jeddah, has drawn attention to the deficits in many aspects of pain such as physical dependence,

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tolerance, addiction, self-report and pharmacological knowledge. Pain assessment is considered by the Joint Commission as the fifth vital sign and it is an essential human indicator (Lorenz et al., 2009). Pain assessment and management is the most fundamental aspect of a nurse's responsibility when attending to a patient complaining of pain (Innis, Bikaunieks, Petryshen, Zellermeyer & Ciccarelli, 2004; Rejeh, Ahmadi, Mohammadi, Kazemnejad & Anoosheh, 2009). However, the task can be highly influenced by nurses' knowledge, perceptions and attitudes regarding pain. Therefore, this study proposes to explore nurses' knowledge and attitudes regarding pain management practices in Hail region hospitals in Saudi Arabia, and to identify possible barriers to effective pain management for service providers' and patients' levels.

During their nursing careers, all nurses will manage patients who suffer from pain (Matthews & Malcolm, 2007). Therefore, nurses should be well equipped with knowledge on how to assess pain, implement and evaluate interventions. Moreover, nurses are required to participate in decision-making processes regarding pain treatment (Katsma & Souza, 2000). Jones et al. (2004) identified that nurses often have knowledge deficits and incorrect beliefs about pain assessment and management. These misconceptions and deficits can lead to inappropriate, incorrect and inadequate pain management practices (McCaffery & Ferrell, 1996; McCaffery & Pasero, 1999; Molony, Kobayashi, Holleran & Mezey, 2005; Twycross, 2002). A lack of knowledge about pain and pain treatment, as well as misplaced beliefs about addiction to pain medications, are considered significant barriers to effective pain management among nursing providers'. This thesis will make an original and important contribution to nursing knowledge, as it explores knowledge and attitudes concerning pain management practices in an Islamic country.

1.2 Statement of the Problem

The primary responsibility of healthcare professionals, including nurses, is to relieve pain and suffering. It is a moral and ethical responsibility and a fundamental human right for patients (Cousins, Brennan & Carr, 2004). Although pain can, in most instances, be effectively treated and relieved, the under-treatment of pain remains a significant clinical problem, and it continues to be an area of concern among health professionals, patients and healthcare organisations. Even in hospital settings, where pain should be treated effectively, research shows that pain is managed inadequately and that a large number of patients suffer from unrelieved pain (Huang et al., 2001; Dolin, Cashman& Bland, 2002). Elliot et al. (1999) conducted a study to find out the prevalence of chronic pain in the Grampian region of the UK with a random sample of (N = 5036) patients aged 25 and over. The study surveyed 29 general practices using a postal self-completion questionnaire. A total of 3,605 questionnaires were completed and returned by the participants. The results showed that half of the sample suffered from chronic pain. Furthermore, one half of the pain sufferers were categorised as having severe pain, and the authors concluded that the pain of those who continued to suffer had been inadequately managed. Unrelieved pain can negatively affect patients' sleep functions, moods and relationships with family, and it can have a significant economic effect on patients and their families (Schopflocher et al., 2010). Absenteeism from work among adults as a result of pain-related causes can have a significant negative effect on productivity and consequently on a country's economy (Phillips & Schopflocher, 2008).

Numerous studies indicate that nurses are not managing pain properly due to deficits in their knowledge and beliefs (Molony et al., 2005; Twycross, 2002). These studies have identified notable knowledge deficits and incorrect beliefs among nurses about pain assessment and its treatment. Furthermore, Twycross (2004) considered insufficient nursing educational

preparation during their studies at college, as a significant obstacle to effective pain management. Regarding the use of pain medication, a number of studies have found that one reason for inadequate treatment by nurses is their unfounded concerns about the possibility of addiction, in addition to the underestimation of patients' pain (McCaffery & Ferrell, 1996; Schafheutle, Cantrill & Noyce, 2001). Many studies have revealed that some nurses are reluctant to administer opioids due to a general 'opiophobia', compounding their negative attitudes towards pain (Drayer, Henderson& Reidenberg, 1999; Edwards et al., 2001; McCaffery & Ferrell, 1996; Furrow, 2001; Yates et al., 1998). Other studies have found that some nurses aim only to reduce pain rather than totally relieve it (Edwards et al., 2001; Twycross, 2002). Despite numerous studies identifying knowledge deficits in general pain management, the problem of patients suffering from unnecessary pain continues (Schechter, Berde& Yaster, 2003; Sloman et al., 2005; Sloman et al., 2006; Pasero & McCaffery, 2007).

The consequences of pain mismanagement result in both human suffering and increase in economic costs, to the extent that in 1999, the Joint Comission has established pain assessment as the fifth vital sign (Brennan, Carr & Cousins, 2007; Innis et al., 2004; Maclaren & Cohen, 2005). Pain is the third most costly health problem in Australia, costing the Australian economy over $34.3 billion per annum or $10,847 per person affected (Cousins, Bridenbaugh, Carr& Horlocker, 2009). In the United States (US), chronic pain affects more than one-third of the population, with an estimated annual cost of US$100 billion (National Institutes of Health, 1998). In Canada, the economic effect of pain is over $6 billion per year and around $37 billion in productivity costs resulting from job losses and sick days (Phillips & Schopflocher, 2008). Adequate pain assessment and management has been found to reduce medication costs, improve patient outcomes and satisfaction with care, and shorten hospital stays (Innis et al., 2004; Polomano et al., 2008).

1.3 Definition of Pain

In 1968, McCaffery defined pain as 'whatever the experiencing person says it is, existing whenever she/he says it does' (McCaffery & Pasero, 1999, p. 17). This definition emphasises that patients' self-report is the most reliable indicator of pain, and only patients have the authority on their pain. Moreover, it emphasises that pain is a subjective experience. In 1979, the International Association for the Study of Pain (IASP) proposed the most broadly used definition of pain as 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage' (Tracey & Mantyh, 2007, p. 377). This definition not only focuses on the pathophysiological origin of pain, but it also highlights the psychological aspects of the experience of pain. While this is a useful definition, it does not highlight the definition of chronic pain, which McCaffery and Beebe (1989) defined as:

> Pain that has lasted 6 months or longer, is ongoing on a daily basis, is due to non-threatening causes, has not responded to currently available treatment methods, and may continue for the remainder of the patient's life (Dunajcik, 1999, p. 471).

Pain management is defined as 'the process of providing health care that alleviates or reduces pain' (Janmohamed & College, 2009, p. 13).

1.4 Context

As the current study relate to a particular region (Hail region) of the Kingdom of Saudi Arabia, it is prudent to provide a brief description of the country and its healthcare service. Saudi Arabia is a developing country located in the Middle East, and it occupies four-fifths of the land area of the Arabian Peninsula. The Kingdom's population is estimated to be around 27 million, 20 % of which are non-Saudi-born citizens. Ninety per cent of Saudi citizens are

Arabs in ethnicity, and all are Muslims (Central Intelligence Agency, 2013). The annual population growth rate of the country is 3.19 %, with a fertility rate of 2.93 % (Ministry of Health (MOH), 2011).

The total area of Saudi Arabia is 2,240,000 square kilometres (Al-Shahri, 2002). The capital city of Saudi Arabia is Riyadh, and the country is divided into 13 provinces. Saudi Arabia was established in 1932 under the leadership of King Abdul Aziz ibn Saud (Central Intelligence Agency, 2013). In 1934, exploration for oil was conducted throughout the Kingdom, and since the discovery of vast reserves of oil, Saudi Arabia has become one of the world's most prosperous oil-based economies. Saudi Arabia has become the largest proven oil reserve in the world, containing around 20 % of the world's proven oil reserves (Central Intelligence Agency, 2013). Exploration for oil and oil revenues has changed the country from one of the poorest countries to one of the highest in per capita income.

Saudi Arabia is an Islamic country and is considered the birthplace of Islam. The system of government is a monarchy, with the constitution guided by strict instructions of Islamic law (Vidyasagar & Rea, 2004). Islamic law forms the basis of the country's constitution and civil law, and it guides Saudis' daily lifestyles, including morals, dress, eating habits and business dealings. Makkah is an important and sacred city for Muslims, and it has been the centre of attraction for millions of pilgrims from all over the world for nearly 1,400 years. In Islam, there are two major denominations: Sunni and Shia. In Saudi Arabia, the majority of Saudis are Sunni and 10 % are Shia (Majidyar, 2013). It is also relevant to refer to certain cultural aspects that are unique to Saudi Arabia—particularly those that are gender-based—as they affect all spheres of life. Women are not allowed to drive cars; they have to rely on a male member of the family for transportation needs. Men and women do not mix in public, and facilities such as health services, banks and restaurants do provide separate sections for male

and female customers. Defrin, Eli & Dorit (2011) surveyed men and women (N 548) from Jewish, Muslim-Arab and Christian-Arab backgrounds concerning pain experience and willingness to report pain. They found that the men from the three ethno groups to be more stoic than women. Muslims believe that pain is the will of God and a trial of the person's faith and, therefore, ability to endure pain will be aptly remunerated (Mills, 2004; Lovering, 2006).

The Ministry of Health (MOH) was established in 1954 to provide free healthcare services to all Saudi citizens (Al-Osimy, 1994). The aim of the MOH is to provide a range of health services, such as preventive, curative, educational and rehabilitative, to the entire population through a network of hospitals and primary healthcare centres that are distributed throughout the country.

1.5 Health System in Saudi Arabia

Saudi Arabia is divided into 18 health service regions, and each region is directed by a general director who is attached to the MOH (Aboul-enein, 2002). The responsibility of the MOH is to supervise the regions' public and private healthcare sectors. Patient visits to MOH hospitals and health centres account for 50 % of the total visits, while those to other governmental sectors such as the military hospitals represent 17.6 % and the private sector represents 32.4 % (MOH, 2011). There are 420 MOH hospitals with a total of 58,696 beds (MOH, 2011). In most hospitals, the language spoken by the staff is English; however, a large percentage of Saudi patients and families only speak Arabic.

Saudi Arabia is rapidly developing and is witnessing significant improvements in many sectors, including the health sector. The Saudi Arabian government aims to provide all Saudi citizens with free, high-standard healthcare services (Alharthi et al., 1999). During the past

few decades, the nation has experienced significant growth and improvement in healthcare provisions, both in quantity and quality (Gallagher, 2002). Mitchell (2009) noted that Saudi Arabia had continued to invest and expand services in healthcare infrastructure and human resources in an effort to address the shortage of nurses. However, despite these developments in health services, there are still delays and deficits in health professional resource development. The healthcare system of Saudi Arabia has two branches. The first branch comprises the primary healthcare centres and clinics, which provide preventive, curative, prenatal, emergency and basic services. The second branch is represented by the hospitals and specialised treatment facilities located in urban areas. The budget of the MOH is 6.9 % of the total annual government budget (MOH, 2011). At present, the Saudi MOH is the main government source and financing body of healthcare assistance in Saudi Arabia. Each institution associated with the Saudi MOH (except for referral hospitals, teaching hospitals and the Red Crescent Society) delivers services to a particular population, which includes employees and their dependents. In addition, the majority of these agencies provide health services to all residents in times of calamities and emergencies (Mufti, 2000).

The progress in the provision of high standard healthcare services, coupled with components such as an enhanced and more open educational system, greater utilisation of health services, and an augmented social environment, have all played a substantial role in the significant enhancement of health indicators of the population (Al-Homayan, Shamsudin, Subramaniam & Islam, 2013). However, it should be noted that although there is a growth in the volume of health service providers, there is still a lack of collaboration among various institutions, leading to the failure in the optimal use of resources and unnecessary duplication of efforts (Alhusaini, 2006).

To be effective and provide the community with updated, cost-effective, affordable and well-arranged intensive healthcare services, a state ruling incorporating the health strategy was implemented in 2002, by the Council of Health Services in coordination with other government authorities, the MOH and representatives from private health organisations (MOH, 2008). The aims of the health facilities were centred on the eight components of the Primary Health Care (PHC) strategy: providing awareness to the community regarding existing health concerns and various ways of preventing and managing them; providing a sufficient quantity of safe water and essential sanitation; promoting food supply and adequate nutrition; providing complete maternal and child health management; making children's immunisation programs available for infectious diseases; preventing and controlling local endemic diseases; providing adequate management of typical diseases and ailments; and providing a sufficient supply of vital medications (Al Mazrou & Salem, 2004).

Despite all of the advancements and successes associated with the implementation of better healthcare provisions, budgetary control remains a major concern for the Saudi MOH. Given that the total expenses for local healthcare provisions are sourced from the government and that health services are free to the public, there is significant pressure on the government's budget, especially in view of the rapid population growth, high costs of modern technology and the public's increasing awareness of health-related matters (Walston, Al-Harbi & Al-Omar, 2008). In response to the community's increasing demand for healthcare, and to guarantee the quality of services delivered, the government established the Council for Cooperative Health Insurance in 1999 (Walston, Al-Harbi & Al-Omar, 2008). The main functions of the council include the introduction, regulation and supervision of a health insurance plan for the Saudi healthcare market.

1.6 Nursing in Saudi Arabia

Nurses are the primary caregivers for patients and are considered the main professional branch of frontline staff in the healthcare system. Nurses play an essential role in delivering safe and effective care. However, an ageing population worldwide, along with the resulting demand on healthcare and the strain on the capacity of nurse-training institutions, has resulted in most countries having difficulties in recruiting and retaining qualified nursing staff (Cohen & Van Nostrand, 1995). In Saudi Arabia, the population is growing rapidly, and the need for better-prepared nurses and high-quality health services is necessary to meet the health needs of the country. A primary concern for the effective transformation of the Saudi healthcare structure is the need to create and implement practical strategies to retain and attract more Saudi nationals to medical and healthcare professions—particularly nursing. Several initiatives have been implemented by the local government to educate and train Saudi nationals for health-related jobs. Since 1958, several medical, nursing and healthcare institutions have been established around the country to meet this target (Aldossary, While & Barriball, 2008). Mebrouk (2008) suggests that Saudi Arabia's dependents on immigrant nurses is due to the following factors: the poor public image of the nursing profession and rapid population growth.

Over the past few years, the nursing shortage has become a worldwide dilemma, and Saudi Arabia is no exception. However, the situation in Saudi Arabia is unique. Despite nursing education being available in Saudi Arabia since 1961, the number of Saudi nurses is only slowly increasing (Al-Ahmadi, 2009). There are many reasons for this, including low salaries compared to workloads, shift schedules and social perceptions of the nursing profession (Al-Ahmadi, 2002). To fill this gap, Saudi Arabia is still extensively dependent on expatriate nurses who are recruited from countries such as India, the Philippines, North America, the

United Kingdom, Australia, South Africa, Malaysia and other Middle Eastern countries to provide care for the Saudi Arabian population (Miller-Rosser, Chapman & Francis, 2006; Tumulty, 2001). Large numbers of expatriates come to work in Saudi Arabia; they are attracted by the low cost of living, tax-free salaries, annual leave of up to 54 days, yearly service awards, provision of free food and furnished accommodation, an annual round trip ticket to the home country from point of hire, and free medical coverage. However, the principal disadvantage is that they come from traditions and cultures that differ from those of the Saudi nationals for whom they are expected to provide care. Migrant nurses often arrive with only a partial awareness of the culture, traditions and religion of Saudi nationals. Aldossary, While and Barriball (2008) outlined this issue and highlighted the challenges faced by migrant nurses in attending to Saudi patients.

The government introduced the concept of 'Saudization', which means finding local workers to perform specific jobs that only immigrants have been willing to handle—particularly at the prevailing wage rates. Saudization has been implemented since the year 2000, and has been applied to the nursing profession as well with the view to replace the largely expatriate nurses with those of Saudi origin (Tumulty, 2001). Healthcare is one of the largest sectors in Saudi Arabia that engaged in the process of Saudization to increase the number of Saudi workers by targeting nurses for recruitment and training (Aboul-enein, 2002). In this regard, the budgetary allocation for training and scholarships has been augmented, and several employees within the MOH have been offered an option to continue their studies abroad (Tumulty, 2001). This strategic plan aims to enhance the skills of current employees, increase the quality of healthcare and lower the turnover rate among healthcare professionals. The King Abdullah international scholarship program, which was founded by the Ministry of Higher Education, seeks to encourage Saudis to enter medical professions such as medicine, nursing, pharmacy and other health majors (Alamri et al., 2006).

In 1996, Saudi nurses comprised only 9 % of the total nurse workforce (Jackson & Gary, 1991). By 1999, it had increased slightly to 17 % (Marrone, 1999). In 2004, the fraction increased dramatically to 35 %, with further progress annually leading to 51.9% of the nursing work force in 2011 being Saudi nurses. (MOH, 2011). The total number of nurses in Saudi Arabia is now 55,429.

The Nursing Board was established in 2002 as a professional regulatory board under the supervision of the Saudi Council of Health Specialties. The aims of the Nursing Board are to: define the nursing profession and its members; determine the scope of practice; develop educational and ethical competency standards and practice them; and establish accountability systems and credentialing processes (Abu-Zinadah, 2006).

1.7 Rationale of the Study

Although there is a large volume of literature on nurses' knowledge and attitudes regarding pain management (Gunningberg & Idvall, 2007; Matthews & Malcolm, 2007; Vallerand et al., 2007; Young et al., 2006), these studies have generally been conducted in Western countries. Only a few studies have investigated this subject in the context of the Middle East region, where Saudi Arabia is located (Yava et al., 2013; Rahimi-Madizeh, Tavakol & Dennick, 2010; Yildirim, Cicek & Uyar, 2008). The present study is significant because of the scarcity of data pertaining to this region in general, and to Hail region hospitals in particular. Therefore, this study's findings will contribute new information concerning nurses' knowledge and attitudes towards pain management in an Islamic society. As the study is conducted in Hail region hospitals and hence involves nurses from different cultures, it will provide data on how different demographics affect the delivery of effective pain management.

The findings will complement the existing non-Saudi data on the subject. This project identifies additional barriers to effective pain management, and accordingly proposes further areas of research and recommendations for changes to policies, practices, and education and training for nurses.

1.8 Purpose of the Study

The purpose of this explorative, descriptive study is to determine nurses' knowledge and attitudes towards pain management and to identify possible barriers to achieving optimal pain management in Hail region hospitals in Saudi Arabia. A central concept for examination relates to how nurses from different cultures affect the delivery of effective pain management within a largely Muslim population.

1.9 Research Questions

The research questions are:

- What knowledge and attitudes do nurses hold regarding pain management in Hail region hospitals?
- What are the barriers to achieving optimal pain management as perceived by nurses working in Hail region hospitals?
- What demographic and cultural factors affect the delivery of effective pain management?

1.10 Organisation of the Thesis

This thesis is structured in six chapters. Chapter 1 is the introduction, which comprises the background and definition of pain, a statement of the problem, an overview of Saudi Arabia and its health system, the justification and purpose of the study, and the research questions. Chapter 2 contains a review of the available literature related to the study and the theoretical framework. Chapter 3 sets out the methodology, setting, sample and methods of data collection and analysis. Chapters 4 and 5 outline the quantitative and qualitative results. Chapter 6 discusses the findings of the study. Chapter 7 presents the conclusion, recommendations for future work and limitations of the study.

Chapter 2: Literature Review

2.1 Introduction

This chapter presents a review of the literature related to the subject of pain and is presented in three parts. The first part provides a contextual background for this study, including the prevalence of pain, types of pain and theories on the physiology of pain, pain assessment and management, nurses' roles in pain management, under-treatment and barriers to effective pain management. The second part reviews the existing literature on nurses' knowledge and attitudes regarding pain. The third part considers culture and pain, and it introduces Leininger's theoretical model, which is reputed to be useful when considering pain in a cultural context. This literature will be further considered in the discussion chapter.

2.2 Part 1: Contemporary Literature on the Human Experience of Pain

Pain is a common human experience, and it is the most notorious symptom presented by patients seeking medical assistance (Rosdahl & Kowalski, 2008). Therefore, it is considered a major health burden (Argoff &Fine, 2010). The phenomenon of pain serves a physiological function and warns humans about the actual condition of their bodies (Chaudhari &Feaver, 2011). Pain is identified by the American National Chronic Pain Outreach Association to be a reactive indicator of an injury (Foster et al., 2008). Thus, pain serves as a clinically vital indicator not only for diagnosing and assessing a disease, but also as a warning to prevent possible damage. Moreover, it indicates the limits that should not be exceeded (Brennan et al., 2007).

As it is a personal experience, there is no definite objective means for the quantification of pain. Any discussion of pain must consider all of its different aspects, such as physical, emotional and mental (Shannon, 2011). Moreover, the quality of pain assessment differs depending on various factors, including the aim of the assessment, the environment, patients' health status and healthcare professionals. Therefore, no single strategy can be considered suitable for all patients in all circumstances.

Although pain is a helpful indicator of possible disease, injury or danger, it interferes with the internal balance of a person and consequently affects the quality of a person's life (Vitor et al., 2008). When pain is persistent in nature, it may result in transmission to the nervous system, leading to intense phases that can prolong and aggravate pain (Foster et al., 2008). For instance, when surgical pain is not managed effectively, the outcome might be a longer stay in hospital, a longer cycle of recovery and higher medical expenses (Wells, Pasero & McCaffery, 2008;Wu, Naqibuddin & Rowlingson, 2003; Young et al., 2008). Persistent pain can lead to more critical physical predicaments, such as the direct or indirect suppression of an individual's immune system, which protects the body against harmful infections, or even tumours (Foster et al., 2008).

The occurrence of pain entails two elements: 1) sensory-selective, which provides knowledge on the position, type and concentration of stimuli; and 2) emotional-motivating, which represents behavioural reactions to pain. The sensory-selective element is characterised by a withdrawal impulse or fight-escaping response (Almeida, Roizenblatt &Tufik, 2004).

Pain is a common phenomenon of human existence and can be experienced by people of all ages, cultures and social status (Gregory &Haigh, 2008). It can significantly affect not only the sufferer's life, but also those of his or her family and friends. Providing relief from pain is

considered one of the most basic responsibilities of medical personnel, and it is a fundamental human right (Brennan et al., 2007). However, there is still minimal current information on the worldwide prevalence and outcomes of acute pain. This is partly due to the perception that pain is a symptom of a probable disease or underlying injury, and also due to the nature of pain itself, which is generally not documented in national statistics (Helms, Quan, Herfindal & Gourley, 2006).

2.2.1 Types of Pain

As previously mentioned, pain is the body's natural alarm system to injury or malfunction. This alarm alerts the individual to injury and makes him or her stop a harmful behaviour or seek medical attention if needed (American Pain Foundation, 2009). Pain assessment was considered extremely important by the Joint Commission for Accredited Hospitals (JCAHO) that it has established standards for its assessment calling it the fifth vital sign. There are different experiences and intensities of pain. Pain can be categorised based on its duration such as acute or chronic. Pain may occur for less than three months and thus be classified as 'acute', whereas pain that lasts longer than three months is classified as 'chronic'. In addition, the cause of pain can also be the basis for its classification. For example, pain caused by damage to tissue is classified as 'nociceptive', while pain caused by nerve damage or an ailment is called 'neuropathic pain' (Macintyre &Schug, 2007).

A proper understanding of the different types of pain, their causes and mechanisms can lead to the selection of adequate pain treatment strategies. Effective pain management can therefore be beneficial in reducing the effects of pain. This also entails the effective management of acute pain in its initial phase in order to prevent it from turning into chronic pain.

2.2.1.1 Acute Pain.

Pain is the defensive reaction of the body, warning the system of an imminent or actual tissue injury. In this case, it stimulates synchronised reflexes and behavioural reactions that are intended to control the tissue damage within its boundaries (Woolf, 2004). This type of pain is also referred to as 'acute pain' (Janssen, 2002), and it is the most frequent type of pain experienced by people throughout the world. It is an important component and indicator of injury, medical operations, childbirth and acute illness. In fact, acute pain is the leading cause of more than two-thirds of patients' visits to hospitals (Cordell et al., 2002). Acute pain can also result from surgery: Sommer et al. (2008) assessed 1,490 surgical patients in the Netherlands and found that 41 % suffered from moderate to severe pain on the first day of the surgery. On the fourth day after surgery, 15 % of patients were still suffering from moderate to severe pain despite the pain protocols that had been followed to manage their pain.

Generally, acute pain is mostly nociceptive, but it can also be neuropathic. The most frequent causes of acute pain include shock, childbirth, surgery, postoperative and acute disease conditions. Acute pain usually accompanies serious events, such as injury, along with other involuntary reactions, which may include muscle contractions (Jänig, 2012). Nonetheless, the stress hormone reaction induced by acute damage can also result in negative physiological and emotional outcomes (Solowiej, Mason & Upton, 2009). Moreover, the sensation caused by a heart attack or the pain experienced after an operation may result in a succession of involuntary reactions that hinder the functioning of a patient's essential body systems— particularly the heart and lungs (Symes, 2011). The activity of the sympathetic nervous system (SNS) produces symptoms such as increased pulse rate and arterial blood pressure (Vallerand, Reily-Doucet, Hasenau&Templin, 2004). With the initiation of medication and treatment, acute pain usually diminishes and the restorative process begins (Strassels, 2008).

2.2.1.2 Chronic Pain.

When the feeling of pain continues longer than the acceptable period needed for the treatment of an ailment, or when it persists beyond the normal period of a critical ailment, the condition is regarded as 'chronic pain'. In a survey conducted on patients who suffered from postoperative pain, a high-level incidence of chronic postoperative pain was ascertained in subjects whose acute postoperative pains were ineffectively managed (Goldstein et al., 2004). This highlights the importance of proper management of this type of acute pain to minimise the occurrence of complications, including the progression to chronic pain (Hampton, 2005). However, despite significant advances in the research and management of pain, large numbers of people continue to suffer due to ineffective pain treatment. The suffering worsens when pain is experienced by people who face catastrophes, accidents or violence. Unmanaged acute pain not only leads to more distress and suffering, but it can also result in other unwanted consequences, including delayed recovery, increased chance of morbidity, extended hospitalisation and the hazard of developing chronic pain (Macrae, 2008). Even in developed countries, inappropriate assessment and ineffective treatment of pain still occurs (Benhamou et al., 2008). Researchers have indicated that an enhanced awareness of the nature of acute pain can significantly improve its clinical management and could assist in determining strategies to directly improve the understanding and management of the physiopathology of particular pain conditions (Macintyre et al., 2010).

Breivik et al. (2006) conducted a telephone survey in 15 European countries and Israel to explore the prevalence, severity, treatment and effect of chronic pain on patients. Interviews with 4,839 participants showed that 66 % had moderate pain, while the rest (34 %) had severe pain. In 46 % of patients, the pain was persistent, while the rest (54 %) had discontinuous

pain. Those who had suffered for 2–15 years comprised 59 % of the participants. The other

devastating effects resulting from chronic pain included depression (21 %), inability to work

outside the home (61 %), loss of employment (19 %) and having to change jobs (13 %).

Moreover, at the time of the survey, one-third of participants were not being treated and were

still suffering from chronic pain (Breivik et al., 2006). In addition, surveys of diverse

households showed that over one-third of people suffered from chronic pain, with a 36 %

occurrence rate in Europe and 43 % in the US (International Association for the Study of Pain

& European Federation of IASP Chapters, 2005). Further, pain prevalence increases among

people with advancing age, especially in women engaged in physically demanding work.

Leaving a disease untreated can result in chronic pain, and this type of pain may persist even

after recovery. Chronic pain associated with a disease condition may subside when the

primary disease is cured (McLean, Clauw, Abelson &Liberzon, 2005). Chronic pain may

have a debilitating effect on patients, significantly influencing their capacity to carry out day-

to-day activities. Untreated chronic pain can not only result in continued, unnecessary

suffering for the patient, but it can also lead to excessive medical expenses (Disorbio, Bruns

& Barolat, 2006).

2.2.1.3 Nociceptive Pain.

Pain can be classified according to its cause. The outcome of continued chemical and

involuntary impulses of nociceptors is classified as 'nociceptive pain'. When activated, this

type of mechanism can send out warning indicators to the brain, thus causing the pain—for

example, as experienced by individuals suffering from cancer (Millan, 1999; Fein, 2012).

Nociceptive pain is divided into visceral and somatic pain. Visceral pain is a common pain

that affects internal organs such as ureters (ureteral colic), urinary bladder (bladder

distention), appendix (appendicitis), kidney (renal colic), prostrate gland (prostatitis), heart (myocardial infarction) etc. Somatic pain is the most common pain that affect patients with cancer or bone metastases (Gerwin, 2002).

2.2.1.4 Psychogenic Pain.

'Psychogenic pain' also called 'psychalgia' is caused by psychological factors and is commonly experienced by individuals suffering from depression or anxiety (Ganzberg, 2010). However, real psychogenic pain is very rare, but often physicians do not carry out an accurate assessment of the pain leading to misdiagnosis of it as of psychogenic origin (Winterowd, Beck & Gruener, 2003).

2.2.2 Theories of Pain

For a long time, two generally accepted theories—namely, the 'specificity theory' and the 'pattern theory'—were used to explain the phenomenon of pain. More recent research has provided insights into the nature and causes of pain. As a result, the 'Gate Control Theory of Pain' was developed.

2.2.2.1 Specificity Theory.

René Descartes, a philosopher and mathematician, put forward the specificity theory in the seventeenth century. He described pain as the movement of a particular group of perimetric nerve tissues through the spinal column up to the central area of pain, or the pineal gland in the forebrain (Wozniak, 1992). This theory posits that the pain and touch indicators on the skin are connected to the focal point of pain in the brain. Receptors transmit the feeling of

pain straight to the brain, and any resulting sensation is understood as a mere response to the initial impulse of pain. The specificity theory was broadly accepted for several years; however, the theory is biologically based and does not acknowledge any psychological elements in the occurrence of pain. This theory does not consider the phenomenon of pain when the organic basis for pain is absent. For instance, consider an athlete who continues to play, unaware of an acquired injury, until the end of the game. In this situation, although the organic basis of pain is present, the sensation is not experienced until the individual focuses attention on the painful part of the body.

2.2.2.2 Pattern Theory.

The pattern theory of pain was developed in 1894 by German neurologist Alfred Goldschneider. He argued that there was no single structure for recognising pain, and that pain receptors are distributed with those for other sensations, such as touch, throughout the body (Melzack & Wall, 2008). According to the pattern theory, individuals experience pain when particular patterns of neural movement occur—for instance, when certain forms of activity reach extremely high levels in the brain. This theory suggests that these patterns emerge only with strong stimulation, as different intensities of stimulus give rise to varied patterns of sensory activity. This can be seen in the different sensations experienced when one is hit hard (which is painful), as opposed to being merely touched (which is not painful).

2.2.2.3 Gate Control Theory of Pain.

A more recent development is the Gate Control Theory of pain proposed by Melzack and Wall (1965). This posits the perception of an entryway that exists in the main nervous system. This in turn allows or disallows the transmission of pain signals all the way to the brain. A cluster of nerve cells, identified as the 'substantia gelatinosa', exists within the spinal cord. Similar to a gate system, the substantia gelatinosa functions as a 'gate keeper'; it decides when a sensory message is allowed or not allowed to make contact with the brain (Gilman &Newman, 1992). The theory suggests that the gate serves a significant function in the pain management of the main nervous system. The pain messages that cross the gate arouse the carrying cells of the dorsal horn located in the spinal cord, which in turn aid in conveying the pain messages to the brain (Buxton, 1999).

The Gate Control Theory asserts that pain messages are transmitted to the brain through stimuli that are received based on their phase and intensity. This also seems to have a bearing on the location where they enter. The Gate Control Theory is also based on the notion that both physical and psychological elements control the manner in which the brain translates pain and the ensuing reaction. Most individuals who experience pain observe that it worsens if they are distressed and lessens when they shift their focus to something that requires concentration or that is pleasurable (McCaffrey, Frock &Garguilo, 2003).

The Gate Control Theory of pain claims that painless impulses can hinder painful impulses (Buxton, 1999; Coon & Mitterer, 2008). The perception of pain relies on whether the dominant message ascends to transmit the message of pain or descends to restrain the painful impulse (Watt-Watson, 1999). The implications of the Gate Control Theory explain the efficacy of pain relievers and other counter-irritants in modifying the sensation of pain. The

Gate Control Theory appears to be valid. Its development has resulted in considerable progress worldwide in relation to pain research (Porth, 2004).

2.2.3 Prevalence of Pain

Despite the significant advances in the understanding of pain achieved in the past 20 years, it appears that the provision of treatment is still inadequate. The considerable number of pain sufferers at any given time, as well as its effects, characterise pain as a common health concern (Perry, Nicholas &Middleton, 2010). However, it appears that pain and its consequences do not receive due attention. Among the likely reasons for this state of affairs, the most critical is the confusion associated with its occurrence. Although it is a challenge to quantify the epidemiology of pain worldwide due to the ambiguous nature of the phenomenon, there is a degree of doubt regarding whether its occurrence is too high.

The US National Centre for Health Statistics (2006) estimated the prevalence of chronic pain to be approximately 20–25 % of all individuals worldwide. In fact, the World Health Organization has estimated that one in 10 adults is affected by chronic pain symptoms annually (NCHS, 2006). Moreover, apart from the pervasiveness and occurrence of chronic pain, the seriousness of pain and the extent of its associated disabilities are regarded as major elements in the assessment of the physical problem.

Basic healthcare settings in the US, Europe, Asia and Africa have reported on the pervasiveness of persistent pain, estimating it to be as high as 10–25 %. The incidence of pain in the US is estimated to be 12–25 %, while a pain frequency of 20 % has been recorded in Europe (Breivik, Collett, Ventafridda, Cohen &Gallacher, 2006). Even in affluent environments, moderate to severe pain is prevalent at a rate of 10–25 % (Breivik et al., 2009). Meanwhile, as assessed through the impairment of daily functions, the combination of

persistent pain and simultaneous psychological ailments lead to critical disadvantages (Foley, 2011).

A systematic review conducted in the US reported a higher prevalence of pain among cancer patients, ranging from 14–100 %. Approximately 70 % of patients undergoing active therapy were ascertained to have severe pain (Christo & Mazloomdoost, 2008). These statistics confirm the severity of the phenomenon of pain for millions of individuals worldwide. They also confirm that pain is an inevitable actuality of life (Taylor, 2007).

For the above reasons, pain has become a subject of intense global research. A study conducted by Tsang et al. (2008) aimed to ascertain the frequency of typical chronic pain cases of headaches, arthritis and back pains by age and gender, and their relation to both depression and anxiety symptoms in 10 developed and seven developing countries. The study drew on data from 18 general adult population surveys using a common survey questionnaire (N = 42,249). The results indicated that the frequency of chronic pain cases for the preceding year (2007) was 37.3 % in developed countries and 41.1 % in developing countries. Among participants aged 65 and above, females showed a noticeably greater susceptibility to chronic pain. The study determined a positive correlation between chronic pain and depressive and anxiety symptoms in both developing and developed countries (Tsang et al., 2008).

Based on earlier surveys in Western and Central Europe, prevalence rates showed an increasing annual trend of 17–29 %. These statistics appear to suggest that the incidence of chronic pain may be rising globally. If the 17 countries (Colombia, Mexico, United States, Belgium, France, Germany, Italy, Netherlands, Spain, Ukraine, Israel, Lebanon, Nigeria, South Africa, Japan, People's Republic of China: Beijing, Shanghai and New Zealand) observed are regarded as representative of the global population, it would be logical to

conclude that chronic pain is prevalent internationally (Tsang et al., 2008). Other studies (e.g. Cicero et al., 2009) investigated the relationship between gender, age and the occurrence of both acute and chronic pain, as well as usage of healthcare provisions, health conditions and expertise of the health institution. The Cicero's study determined the effect of chronic pain on a group, as well as the effect on those who were chronic opioid users within that group.

A study conducted in The United Kingdom by Wand et al. (2004) to assess the consequences of pain, ailments, moods and health conditions and found that the timing of the intervention influenced the type of psychosocial outcome that was achieved. Meanwhile, a randomised controlled trial with 67 subjects who had venous leg ulcers and were treated in a public nursing institution confirmed that an all-around care strategy involving nutrition, social involvement and mental reactant, including treatment of the ailment and awareness of the treatment management, delivers more effective results compared to nursing home treatments (Edwards et al., 2009).

A recent study on the prevalence of pain among 1,134 adults in the United Arab Emirates, Bahrain, Oman and Kuwait who were suffering from chronic back pain for more than three months found that neuropathic pain was present in more than half (55.4 %) of the study's participants (El Sissi et al., 2010). Additional outcomes of the study indicated that only 11.4 % of the patients who experienced pain actually received effective treatment, which led the authors to advocate for appropriate treatment for pain.

2.2.4 Assessment of Pain

The objective of pain assessment is to ascertain the trigger points of pain, the effect on the quality of life, the most appropriate therapies and the efficacy of existing treatments. Many researchers have noted that the under-treatment of pain in US hospitals is mostly associated with the failure of healthcare professionals in assessing pain and providing pain relief (Breivik et al., 2008). Current initiatives to promote awareness have increased. Moreover, it has also been recognised that the assessment of pain should be consistently practised by healthcare professionals as a fifth vital sign and an essential human indicator (Lorenz et al., 2009) to ensure that there is increased responsibility for pain assessment and to promote awareness of pain as a significant health concern (Igumbor, Puoane, Gansky &Plesh, 2011).

An appropriate assessment of pain should include information on the patient's age, history of previous medical and surgical conditions, medications used, and physical and cognitive status. The pain assessment usually commences with enquiries regarding the patient's pain history, including a description of the pain, its initial occurrence, duration and the regularity of the sensation. Other important details that should be obtained are the factors that may worsen or lessen the effects of pain on the individual's daily life, and the usage of all prescribed medication and over-the-counter medicines and supplements. The patient's records should also include information on the possible social, ethnic and spiritual factors contributing to the pain. Ultimately, a precise physical assessment should be performed to pinpoint the probable causes of pain (Breivik et al., 2008). Another important factor of pain management that is often neglected is the need for persistent reassessment (Hader &Guy, 2004), which is crucial because it determines whether the pain management plan is effective or whether adjustments need to be made. After every intervention, a reassessment should be conducted and its results recorded. Healthcare professionals need to be aware that patients sometimes do not ask for

analgesia unless they are experiencing severe pain. In most cases, this makes the process of pain management difficult. Thus, asking patients if they are experiencing pain is a valuable strategy for starting pain evaluation and for informing the patient regarding the pain control process (Hader &Guy, 2004).

The assessment of pain is a crucial tool in providing an effective pain treatment. However, defects in pain assessment have been found in several settings (Brawley, Smith &Kirch, 2009). Several proposals and guidelines have been offered to explain the components of effective pain management. However, many guidelines are not applicable in the actual management of acute pain. For instance, nurses who attend to patients who are experiencing acute pain need to choose the appropriate elements of assessment for the existing clinical situation and to be aware of the patient's beliefs, level of knowledge, attitudes and previous experiences with pain. There should be a reassessment of pain after every intervention to analyse the results and verify whether the intervention was effective or not and whether further changes in the treatment are necessary.

The Joint Commission's core principles (Joint Commission Resources, 2010) state that patients are entitled to receive a proper assessment and management of their pain. However, pain is a sensation experienced by the patient; hence, it is challenging for the healthcare provider to assess and manage it. Therefore, it is crucial for all nurses to have the most comprehensive knowledge required to provide pain relief to patients.

An extensive pain assessment strategy outline is provided by the guidelines and serves as a useful guide during surgical operations. Part of the pain evaluation involves obtaining the patient's history of pain, where the nurse determines the patient's behaviour, including his or her cultural background, intellectual capacity and preceding encounters with pain (Powell,

Downing, Ddungu & Mwangi-Powell, 2009). The patient's anticipation, as well as the expectations of family members regarding the management of postoperative pain, could result in impractical assumptions that can be dealt with before surgery. The complete account of the occurrence of pain serves as the basis for planning appropriate pain management subsequent to surgery, which is executed together with the patient, the family and the clinicians.

2.2.4.1 Assessment Tools.

The occurrence of pain is a complicated phenomenon. It is influenced by a person's earlier experiences of pain, as well as psychosocial factors and the cognitive interpretation of the pain messages received by the brain (Newton-John, 2005). To aid in pain analysis and ascertain the efficacy of any treatment, a pain assessment tool should be utilised. In this regard, the assessment tool should be uncomplicated in order to provide a good understanding to both the healthcare provider and the patient, and it should be a justifiable and dependable gauge of pain.

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) established standards for pain evaluation and management in accordance with Acute Pain Clinical Practice Guideline (Gordon et al., 2008). Hospitals are required to choose and utilise consistent pain evaluation tools in all departments. The uniform usage of the pain evaluation tools has been set as the standard for verifying the pain experienced by patients, and for recording and measuring pain evaluations periodically. Four widely used tools for evaluating acute and chronic pain are: (1) the numerical rating scale, (2) the Wong–Baker Faces Scale, (3) the Verbal Graphic Rating Scale, and (4) the Pain Aid Scale (Daniels &Nicoll, 2011). The measurements are straightforward, and instructions for using them are given in various languages. According to the guidelines, the patient must be informed regarding the usage of

the evaluation tools, and the same tool should be consistently used every time. This will ensure the precise evaluation and recording of pain. Maio et al. (2002) established the necessity for the consistent usage of pain evaluation tools to accurately evaluate pain.

An exploratory study was conducted by Bouvette, Fothergill-Bourbonnais and Perreault (2002) to determine the feasibility of implementing the 'Pain and Symptom Assessment Record' (PSAR) in a variety of settings. PSAR is a different tool that is used to assess patients' pain based on symptoms only. The sample of this study comprised 180 nurses at 12 sites. By evaluating specific groups and utilising charts, the recorded information indicated that pain evaluation occurred 93 % of the time. With enhanced accuracy in the records of pain and indicator management, a high level of patient satisfaction occurred with the treatment of pain. The researchers concluded that patient awareness was a vital component in verifying whether pain treatment providers could carry out an efficient evaluation. After proper information was provided to the patient, the pain was gauged and managed better (Bouvette et al., 2002). After surgical operations, it is recommended that pain evaluation be conducted in a concise and straightforward manner (Abdalrahim, 2009). The treatment criteria, including the type and dosage of medication, should consider the severity of pain. Every evaluation of pain needs to include these types of measurements. In this case, various pain-complexity evaluation methods have been established and utilised. For instance, a mere one-dimensional tool with a 0–10 numerical rating scale (where zero signifies 'no pain' and 10 'worst pain') only measures the severity of pain that is appropriate for an emergency room or a recovery room. Healthcare professionals in other circumstances should be persuaded to gauge and document the trend and type of pain in conjunction with pain intensity. A nurse who evaluates the efficacy of provided pain management may need a multidimensional tool that investigates the effects and emotional consequences of the pain being experienced by the patient. In this

circumstance, the severity of pain and the McGill Pain Questionnaire may be utilised (Melzack, 1975).

In 1992, Ambuel et al. established the earliest Comfort Behaviour Scale to be utilised in evaluating the pain experiences of paediatric patients in the intensive care unit (ICU). Subsequently, it has been customised for different settings and uses. The Comfort Behaviour Scale is particularly used to evaluate the attitudes of patients who do not have sufficient capacity to react to pain evaluation scales. The components of the Comfort Behaviour Scale are used to assess a patient's attentiveness, composure, respiratory function, complaint levels, physical activities, muscular movement, facial reactions and contrast of current heart rate and arterial blood pressure with the baseline gauges (van Dijk, Peters, van Deventer &Tibboel, 2005). A range of 1–5 is assigned for each component. A visual analogue scale is utilised to demonstrate the level of a patient's pain. In utilising the Comfort Behaviour Scale, a form is used to record the details of the treatment and the condition of the patient. This enables both the nurse and the family to identify suitable treatment options and the response required to the total evaluation ratings on the scale. In a standard evaluation, pre- and post-medications are recorded on the form as well. A standard evaluation can be performed every two hours after surgery for the initial 24 hours. Further evaluations and records of the patient's responses to analgesic medication can be conducted before or after pain management procedures (van Dijk, Peters, van Deventer &Tibboel, 2005).

The pain assessment tool that is chosen should be used to check the pain and the response to the interventions. It is important to take into account a patient's mental, physical and emotional health, as well as his or her cognitive condition, before a nurse selects an assessment tool (Jamison, Serraillier &Michna, 2011). The patient's preference must also be considered, and it should be a joint decision between the care provider and the patient. It is

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advisable that this decision be taken in the pre-operative phase so that the patient becomes familiar with the instrument's scale. Patients who are awake and alert but unable to respond verbally may point to a picture of a face or a number to indicate their distress. However, the caretaker should not solely rely on the tool's measurement of pain. Instead, they must consider the patient's vital signs and combine the findings with their clinical judgment (Gordon et al., 2005).

2.2.5 Management of Pain

The objectives of successful pain management are to provide pain relief, restore functionality and improve quality of life for the patient. The aim is to intervene with the minimum use of medication. The first step in pain management is the identification of the type of pain. This will help in the diagnosis and in developing an appropriate pain management plan to suit the patient's needs (Hader &Guy, 2004). The present focus is on the application of a suitable schedule for the administration of analgesic medications, providing physical comfort evaluations and applying appropriate pain management to aid in relieving the contributing factors to pain, such as anxiety, fear, vulnerability, depression and insufficient coping strategies. Acute pain requires interventions to eliminate the discomfort by removing its cause, treating it with analgesics and other physical or behavioural medical approaches (Wells et al., 2008). In most instances, treatment with analgesic drugs is the initial approach in the treatment of acute pain.

According to Wells et al.,(2008), patients and their families can experience physical, mental and emotional suffering when the patient's pain is not managed adequately. In addition, persistent unmanaged pain stimulates the pituitary-adrenal alignment, which can weaken the body's immune system, leading to postoperative infections and compromising the wound-

healing process. Supportive stimulation can have adverse effects on the gastrointestinal, cardiovascular and renal systems, making patients susceptible to conditions such as intestinal obstruction and ischemic heart disease (Wells et al., 2008). Additionally, of particular significance to nursing care, untreated pain may reduce the patient's ability to move, leading to more clinical impediments such as sudden blockage in a lung artery, deep-vein thrombosis and pneumonia. Postoperative complications associated with insufficient pain management adversely affect the patient's well-being and the hospital's operations due to prolonged hospital stays and unnecessary readmissions, which lead to increased medical expenses (Wells et al., 2008).

Persistent, unmanaged pain also affects the mental and emotional states of patients and their families. Typical psychological reactions to pain include anxiety and dejection. The incapacity to relieve pain may create a sense of vulnerability and even depression, which may lead to a more chronic depressive state for the patient (Klauenberg et al., 2008). As a result, patients who have not been given sufficient pain treatment may be hesitant to ask for medical assistance for their other health concerns. In addition, there can be legal consequences for healthcare providers as a result of the inability to manage a patient's pain. The present benchmark for the treatment of pain—particularly the criterion established by the JCAHO— requires that pain should be treated without delay (JCAHO, 2001). The establishment of professional standards for effective pain treatment decreases the chance of legal action associated with shortcomings in pain management (Wells et al., 2008), thus ensuring that clinicians and institutions act responsibly. As members of healthcare teams accountable for treating pain, nurses may also be liable for legal action. Patients' satisfaction is highly associated with their experiences of pain management. Greater pain levels are connected with unsatisfactory experiences of treatment in ambulatory circumstances (Bair et al., 2007). Evaluation reports on medical institutions are becoming more widespread, and it seems that

performance that is relevant to the treatment of pain is one of the important considerations in such reports.

Actions to manage pain should consider aetiology, physiopathology and repercussions; they should aim to eliminate the causative factors and treat the patient with analgesic and anti-inflammatory medications. Indeed, most analgesics also have anti-inflammatory properties (Mendell & Sahenk, 2003). Such treatment should be complemented with other approaches, such as physiotherapy, psychotherapy and rehabilitation (Catalano & Hardin, 2004). In certain instances, it may be necessary to resort to anaesthetic or neurosurgical procedures when the pain is resistant to other forms of treatment.

2.2.5.1 Under-treatment of Pain

The problem of under-treatment of pain was first recognised in the remarkable research conducted in 1973 by Marks and Sachar. They interviewed 37 medical in-patients who had been treated with narcotic analgesics for pain and found that 73 % of surgical or medical patients suffered from moderate to severe pain. The American Geriatrics Society (AGS) indicated that approximately 45–80 % of elderly patients in hospitals suffer from under-treatment of pain (AGS, 2002). In 2003, 30 years after the study by Marks and Sachar, Apfelbaum et al. conducted a study in the USA that involved 250 adults who had undergone surgical procedures. The results showed that 80 % of hospitalised patients suffered acute, postoperative pain, and that 86 % of these patients experienced mild to severe pain (Wells et al., 2008). These and other studies suggest that patients suffering from mild to acute pain have only a 50 % chance of receiving sufficient relief.

The availability of Acute Pain Services (APS) with the services of advanced practice nurses specialising in pain management are limited to a few major teaching hospitals, and patients often have to endure long waiting periods for admission to one of these units (Jovey, 2008). There are greater limitations in resources in medical units because there is an assumption that patients in medical units have their pain better managed compared to those in surgical units (Sawyer et al., 2010). There is a tendency to give post-surgical pain and trauma priority, while medical patients are given less consideration.

2.2.5.2 Consequences of Under-treatment of Pain

Under-treatment of pain has many physiological and psychological consequences. According to Wu, Naqibuddin and Rowlingson (2003), under-treatment of pain increases postoperative morbidity and delays recovery. Inadequately treating pain for a prolonged time—particularly acute pain—could result in chronic pain (Wells et al., 2008). According to Joshi and Ogunnaike (2005), unrelieved pain also has many psychological consequences, such as anxiety, depression, fear, anger and reduced patient satisfaction. Effective pain management is critical in preventing negative outcomes for patients, both during and after treatment. Further, it helps alleviate the degree of suffering that a patient may be experiencing at various stages of medical intervention (Vadivelu, Mitra & Narayan, 2010). Pain control strategies must be effectively administered for effective healing. For example, Valivelu et al. (2010) stated that poor pain management can result in other problems, such as poor wound healing and insomnia.

In addition to the physical, neurosensory dimension of pain, where an individual becomes physically incapacitated due to its effects, pain has an emotional dimension. It is a complex experience that affects the mind (i.e. the thought processes of an individual) and behaviour of

an individual. Socially, pain can be a legitimising factor for isolating an individual where others view him or her as abnormal, giving society a rationale for ascribing the sick role to the individual (Arnstein & Marie, 2010).

In a state of social isolation, psychologically, the patient may experience feelings of rejection coupled with the experience of pain. If the health system is not congruent with its cultural background, then depression may appear and make the situation even worse. People with chronic pain have a very high tendency to develop psychiatric problems, which is normally in the form of mood or anxiety disorders (McWilliams, Cox & Enns, 2003). Depression is a catalyst for the development of further pain (Klauenberg et al., 2008). Excruciating pain in an individual and a lack of enough social support worsens the social situation of both healthcare givers and patients. While people in some cultures may visibly express their pain, others will withdraw inwardly and stoically accept pain, which will only worsen their emotional state as the pain becomes unbearable. This may lead to poor relationships with others, depending on how much help and attention they require. Thus, they become emotional and psychological burdens to family members and society, who may be physically drained when they are not competent to handle patients' pain (Poole, White, Blake, Murphy & Bramwell, 2009).

Financially, poor pain management may lead to the inappropriate use of resources. For example, the fact that pain has been treated does not necessarily mean that its root cause has been eliminated.

Gordon et al. (2002) found that patients' satisfaction with the care they received from healthcare givers was at a higher level when their pain was well managed. It therefore follows that poor pain management leads to a feeling of dissatisfaction regarding services and employees, and patients feel that they have not received value for their money. Patient

satisfaction becomes an integral factor in evaluating the pain management strategies that nurses and doctors use to control and manage pain in patients (Hanna, González-Fernández, Barrett, Williams & Pronovost, 2012). In this study, they conducted a survey of 4,349 adult patients who were admitted to any surgical unit over an 18-month period.

2.2.6 Nurses' Roles in Pain Assessment and Management

With regard to pain management, the involvement of nurses is highly significant, as they are responsible for pain-relieving interventions, including administering medication, evaluating procedures and implementing any required changes (Twycross, 2002). Nurses should have knowledge about the assessment and management of pain because they play an important role in clinical settings. Nurses can provide appropriate pain medication consistently and without bias towards or against any particular pain condition. Establishing accountability for pain management and creating regular functional comfort goals will decrease the interference of personal attitudes of healthcare providers regarding pain (Pasero &McCaffrey, 2004).

Patients expect nurses to be pivotal in caring for their pain. They place trust in nurses as the primary carers for pain, and patients should co-operate with nurses and provide the necessary information for an adequate assessment. Partnerships between nurses and patients can improve pain relief outcomes. Therefore, by enhancing nurses' knowledge of the methods for assessing pain and how to obtain valuable information from patients, pain management can be improved and can assist in determining various choices of care (D'Arcy, 2007). However, knowledge regarding the use of pharmacological interventions is not enough, thus highlighting the importance of existing research on pain management (Textor &Porock, 2006).

2.2.7 Nurses' Misconceptions and Negative Attitudes Regarding Pain Assessment and Management

Nurses need to be fully focused and approach the task of pain assessment and management with the appropriate attitude, regardless of the patient's age or other considerations (Lui, So &Fong, 2008). Nurses' excessive reliance on their own subjective judgement has been shown to be the greatest limitation to effective pain management (Schafheutle, Cantrill & Noyce, 2001). A nurse should trust a patient's self-report, even if it seems to be incompatible with the point of view of the nurse or the patient's own nonverbal behaviour at first. This would help in assessing and managing the pain. Nurses' knowledge of pain assessment and interventions is an essential component in promoting positive patient outcomes. It is a healthy practice to assess and manage the pain for the benefit of both nurses and patients.

Liu, So and Fong (2008) examined the knowledge and attitudes of 370 ICU nurses from 16 hospitals in Hong Kong. The results showed lower-than-expected knowledge and attitudes, with an average Knowledge and Attitudes Survey Regarding Pain (KASRP) score of 47.7 %. There were some discrepancies in the answers to specific questions. For example, although 71 % of nurses thought that patients' self-reports were the most accurate indications of pain, only 1.4 % believed that patients never overestimated the degree of pain. In this case, nurses believed that patients who grimaced were suffering more. Moreover, 71 % of participants believed that patients should tolerate the least possible amount of pain; however, 64 % would advise patients to use non-pharmacological means alone instead of using them concurrently with pain medications (Liu et al., 2008). In this study, the nurses were shown to be deficient in knowledge of pain and to have misconceptions regarding pain management. For a long time, the general view was that nurses lacked adequate knowledge in pharmacology (Sawyer et al., 2010). For instance, despite the fact that morphine is a commonly used medication,

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many nurses did not know of the duration, peak effect, ceiling effect or safe amounts to be administered. A recent descriptive and cross-sectional study conducted in Turkey by Yava et al. (2013) utilised the KASRP tool to explore nurses' knowledge and attitudes towards pain. The study sample comprised 246 nurses from different departments. The results showed that the overall mean score for participants was 39.65 %. The results also indicated that nurses' knowledge was inadequate and that they had negative attitudes towards pain management.

Generally, nurses seem to avoid administering opioids to older patients because they are uncomfortable with it (Gregory &Haigh, 2008) due to fears of overdosing and addiction (McCaffrey, Ferrell & Pasero, 2000). In addition to knowledge deficiencies, nurses' attitudes seem to stand in the way of carrying out proper pharmacological interventions, thereby leading to inconsistent and unreliable pain management. Further, there is a greater tendency for licensed practical nurses not to believe patients' pain reports and to under-document pain, and they are more hesitant to administer opioids than registered nurses.

It is equally important for nurses to ask questions and address patients' concerns (Registered Nurses Association of Ontario (RNAO), 2002). Further, some nurses and physicians may have doubts about a patient's description based on the latter's subjective assessment, particularly in situations where the patient belongs to a marginalised or under-privileged segment of society (Peter & Watt-Watson, 2002).

2.2.8 Barriers in Management of pain

Pain management is a complicated process, and it includes many variables that play an important role in the process. Pain can be inadequately treated because of a combination of cultural, societal, educational, political and religious constraints (Zuccaro et al., 2012).

Barriers that interfere with adequate pain management have been classified as problems related to nurses, patients and the healthcare system, as outlined below.

2.2.8.1 Nurse-related Barriers.

Poor assessment of pain and inadequate knowledge regarding pain have been identified as major barriers to adequate pain management (Bruera et al., 2005). Some studies suggest that nurses are not properly assessing patients. In this regard, research has shown a variety of contributing factors, such as nurses' disbelief of what patients say about their pain (Clarke & Iphofen, 2008). Nurses do not always ask patients about their pain and are not always able to assess it adequately (Watt-Watson, Stevens, Garfinkle, Steiner & Gallop, 2001). In one study, nurses said that their actions depended on how patients described their pain; however, many of them actually rely on how patients look rather than listening to them (Chang, Kim, Sjöström &Schwartz-Barcott, 2001).

In some instances, the barrier to effective nursing in pain management can result from a lack of cooperation from physicians. Van Niekerk and Martin (2003) utilised a survey to examine the barriers to providing optimal pain management. The subjects were a sample of 1,015 nurses in hospitals in Tasmania, Australia. The results showed that more than one-third of the participating nurses indicated a lack of cooperation from physicians as a barrier. In the nurses' opinion, physicians were not allowing adequate analgesic medication. In such situations, the patients' pain was inadequately treated (McCaffery, 2002). For instance, a study conducted by Sawyer et al. (2010) indicated that 50 % of medical patients were prescribed PRN, but only 14 % of these orders were administered to patients.

Several studies indicated a high nurse–patient ratio as an additional contributing factor, particularly because it affects patient education, which is an essential part of pain management (Van Niekerk &Martin, 2003; Elcigil et al., 2011). Education should extend beyond the patient and include the medical and nursing staff in training on standardised clinical pain guidelines, which will have a positive influence on pain management practices (Musclow, Sawhney &Watt-Watson, 2002). It is essential to adopt evidence-based approaches, standardised orders and protocols to ensure consistent standards of care in order to uphold the criteria of professional practice and improve patient care outcomes (Canadian Nurses Association, 2011).

Nurses provide pain education to patients during their stay in hospital. This helps patients to prevent and recognise the side effects of analgesics and enforce good pain management techniques. A lack of support from nurses' institutions and colleagues in developing knowledge, making decisions and effecting change can result in feelings of tension, learned helplessness and low self-efficacy (Wilson, 2007).

2.2.8.2 Patient-related Barriers.

Due to factors such as language, beliefs and cultural influences, as well as certain misconceptions regarding pain, not all patients are able to report their pain experience adequately (Huffman &Kunik, 2000). Further, many patients are reluctant to complain of pain unless specifically asked, or they may avoid reporting pain because of a fear of medication addiction (Erdek & Pronovost, 2004). Patients may not complain of pain because they want to be 'good' patients. Culture also affects patients' attitudes and motivation to cooperate. Some worry about being thought of as a nuisance, so they will not interrupt busy nurses, while others are afraid of not being taken seriously by staff or think they will not be believed.

Certain patient-related problems, such as economic, social and cultural barriers that prevent them from seeking health treatment, together with personal and societal beliefs, discourage patients from accessing pain management. Brennan et al. (2007) described the extent to which such defeatist views of pain are part of an individual's state and pervade belief systems. These perceptions about pain may result in patients struggling to attain credibility regarding their pain (Monsivais, 2011).

Culture can impact on the experience of pain at several levels. In some cultures, even when people are in pain, they would like to project themselves as 'good' patients, and they attempt to face pain stoically (Lasch et al., 2000). Such patients may under-report their pain to nurses for the fear of being judged as weak. Further, some people are reluctant to take opioid pain medications because of cultural taboos or fears about their use (Lovering, 2006). These patients would be more comfortable with familiar, culture-based remedies such as medicinal herbs or energy therapies (Cherniack et al., 2008). Such practices may not meet the approval of Western medical practitioners, thereby creating a conflict between the patient and the clinician, and a barrier to the latter's ability to help the patient.

A study conducted by Weech-Maldonado, Elliot, Schiller, Allyson and Hays (2012) used the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) score system to examine the relationship between the cultural competency of a hospital and in-patients' expectations of healthcare. It was a comprehensive study involving 19,583 HCAHPS respondents from 66 hospitals throughout the US. The variables being studied included caregiver–patient communication, pain control, general hospital rating and willingness by patients to recommend the hospital. The findings led to the conclusion that those hospitals with greater cultural competence provided better experiences and outcomes for patients in their interactions with nurses and other hospital staff. Not surprisingly, the survey also

revealed that minorities, such as Hispanics, scored higher in the level of satisfaction with the hospital stay and care they received at hospitals with better cultural competence (Weech-Maldonado et al., 2012). These findings lend credit to the importance of nurses having cultural competence in their approach to pain management and control in patients.

2.2.8.3 Healthcare system-related Barriers.

Organisational factors can be a hindrance to pain management. For example, people who are kept in institutions such as jails, rehabilitation centres or-care facilities for lengthy periods have a higher probability of developing comorbid conditions connected with pain, which are likely to remain undiagnosed, and consequently left untreated (Baidawi et al., 2011; Baldridge & Andrasik, 2010). Additionally,, badly designed policies, deficiencies in healthcare delivery and poor accessibility to care and pain management facilities in distant locations are all obstacles in this context. Chen, Gelgor and Bajorek (2004) drew attention to distance, the shortage of professional personnel and rural cultural factors as the main reasons that prevent a rural population from receiving appropriate care services. The nurses ranked inadequate staffing—particularly at times of overcrowding with acutely ill patients—as the number one barrier to pain intervention. Other listed barriers include methods of health service provision and service funding. Concerns have often been expressed about the financial arrangements for funding pain care centres and how such funds are managed (Gatchel &Okifuji, 2006).

A study was conducted in Iran by Rejeh, Ahmadi, Mohammadi, Anoosheh and Kazemnejad (2008) to clarify Iranian nurses' perceptions of the barriers and facilitators influencing their management of postoperative pain. This qualitative study was based on interviews with 26 nurses. The barriers to effective postsurgical pain treatment as perceived by the nurses included their powerlessness in making decisions, the policies of the organisation (Coker et

al., 2010), physicians that lead the practice, time constraints (as a result of staff shortage), limited communication and interruption of pain management activities as a result of work overload (Rejeh et al., 2008).

A recent study conducted by Elcigil et al. (2011) utilising a self-report questionnaire to explore the barriers to pain management. The sample of the study included 114 nurses working in medical, oncology and surgery clinics. The findings indicated that the most commonly perceived barriers to pain management were system-related, such as the lack of psychosocial support services, patient-to-nurse ratio and inadequate time for nurses to engage in health education with patients (65 %). The most common barriers related to physicians were inadequate assessment and management of pain by doctors (63 %) and physicians' indifference (47 %) (Elcigil, Maltepe, Esrefgil & Mutafoglu, 2011). A lack of support from nurses' institutions and colleagues in developing knowledge, involvement in decision-making and effecting change can result in feelings of tension, helplessness and low self-efficacy (Wilson, 2007).

Advanced Practice Services (APS) has introduced important changes, including creating special categories of nurses such as clinical nurse specialists (CNSs) and nurse practitioners (NPs) who are authorised to prescribe.

2.3 Part 2: Critical Review of Nurses' Knowledge and Attitudes Regarding Pain: Search Strategy

This part explains the search strategy and the process of searching for related articles in databases and other sources. A review of the literature was conducted using online databases such as ProQuest, PubMed, CINAHL, EBSCO and Google Scholar. A keyword search of

ProQuest using 'nurses knowledge and attitudes regarding pain' returned 10,712 articles. The

researcher limited the results by using keywords such as 'assessment', 'management' and

'culture', which reduced the number of results to 4,588.These were limited again to related

subjects, articles in English, full-text articles and articles published within the last 11 years

(2002–2013), which resulted in 25 articles. The aforementioned process was applied to the

other databases, and the results from all databases were combined (see Table 2.1). Duplicate

and unrelated articles were excluded. A total of 39 subject-related studies were selected and

reviewed. Twenty of these articles used the KASRP tool (Appendix A). In addition, theses

and books were used to obtain additional data and information for the literature review.

Table 2.1: Search Terms and Process

Database	Search Terms and Process				
	Nurses' knowledge and attitudes regarding pain	AND Assessment	AND Management	AND Culture	Relevant to Study (2002–2013)
PROQUEST	10,712	8,804	7,696	4,588	48
PUBMED	671	311	260	16	11
SCOPUS	57	27	26	2	2
CINAHL	46	20	20	2	2
Total					63
Included in Review					39
After Removal of Duplicates					24

2.3.1 Nurses' Knowledge and Attitudes Regarding Pain

It is important to note that having knowledge about pain and knowing how to deal with it are

two different issues. Ferrell and McCaffrey (2008) warned that nurses lacked knowledge of

pharmacology, as revealed by their answers to the pharmacology questions on the KASRP.

The KASRP tool has been validated; therefore, the results of the above studies are given

significant credence. Together, they point to a serious problem of knowledge inadequacy

among nursing staff, which is prevalent around the world, regardless of a country's economic

status. Lewthwaite et al. (2011) conducted a study of large, urban tertiary hospitals in Canada

to explore registered nurses' knowledge and attitudes using the KASRP tool, including their

knowledge of medicine. The sample included 761 nurses from a variety of clinical units. The study found that 49 % of participants scored 80 % or more on the KASRP, with a mean score of 79 %. The nurses had Bachelor degrees, although they were young and had limited work experience. In contrast, in Hong Kong, Liu et al. (2008) failed to find a significant correlation between educational level and pain management knowledge or attitudes. However, nurses with more professional clinical experience were able to apply their knowledge to daily practice and scored higher on the KASRP than those with less clinical experience (Liu et al., 2008). These authors have argued that a lack of formal pain education during nursing training was responsible for the nurses' low scores on the KASRP. Brunier et al. (1995) found a KASRP mean passing score of 41 %, while Lewthwaite et al. (2011) found a mean passing score of 79 %.

Since the introduction of the KASRP tool, it has been used extensively to explore the knowledge and attitudes of healthcare staff regarding pain management. Thus, it was an appropriate instrument to use in this current study of knowledge and attitudes towards pain management in Saudi Arabia. Lai et al. (2003) examined the knowledge of 1,797 nurses randomly drawn from nine hospitals throughout Taiwan. An overall correct response to the questions was found to be 50.5 %, indicating a substandard level of knowledge. Those who scored above average had a Bachelor of Science or higher degrees, had received pain education, had more work experience and had always worked in cancer wards. In a similar study by Tsai et al. (2007), nurse subjects (N = 249) were recruited from nine hospitals chosen by stratified sampling throughout Taiwan. Data were collected using the Nurses' Knowledge and Attitudes Survey—Taiwanese version, a scale to assess perceived barriers to pain management and a background information form. The overall average correct response rate for the knowledge scale was 49.2 %, with a range of 4.8–89.2 % for each survey question (Tsai et al., 2007). A major barrier to managing pain was identified by nurse participants as

the responsibility of caring for other acutely ill patients in addition to patients with pain. Knowledge of pain management had a significant negative relationship with perceived barriers to pain management and a significant positive relationship with the extent of clinical care experience and the total hours of prior pain management education (Tsai et al., 2007).

In another Taiwanese survey, Wang and Tsai (2010) examined the knowledge of 370 ICU nurses using the Nurses' Knowledge and Attitudes Survey—Taiwanese version. An overall correct response score of 53.4 % demonstrated poor knowledge of pain management, which was in accordance with the findings of the previous reports, indicating that the situation had not changed over time. Another study conducted in the Australian state of Tasmania by Van-Niekerk and Martin (2001) explored the knowledge of pain management practice among the state's nursing population. Based on the responses to a 29-item survey by 1,015 nurses, the authors concluded that the knowledge level was poor. Tse and Chan (2004) determined the knowledge level and attitudes regarding pain of 678 registered nurses working in three hospitals in Hong Kong. The KASRP questionnaire was used after being translated into Chinese. To ensure the contextual relevancy and consistency of the questionnaire, content validity and test–retest reliability tests were performed. The overall correct response averaged 44 %.

In a recent study conducted in Jordan, Al-Khawaldeh, Al-Hussaini and Darawad (2013) explored the knowledge and attitudes regarding pain management among baccalaureate nursing students. A sample of 240 students from three different nursing schools participated in the survey. The average correct response score of only 34.1 % (SD=9.9) provides further support for the widespread phenomenon of inadequate knowledge and attitudes among nurses in relation to pain management. Another recent study was conducted in Lebanon by Abdul Rahman, Abu-Saad and Noureddine (2013) to assess nurses' knowledge and attitudes

regarding pain. The total sample was 88 nurses working in a tertiary medical centre. Using the KASRP tool, the results showed that the mean score was 56.15 %, and only 3.4 % of the nurses obtained a passing score of 80 %. The results indicated poor knowledge regarding pain assessment and management.

A survey by Coulling (2005) included 82 nurses and doctors and found that a lack of adequate knowledge was the principal barrier to the management of postsurgical pain in patients. Results from other studies (Rieman & Gordon, 2007; Plaisance & Logan, 2006) reinforced the observation that the main constraint to pain relief treatment is healthcare professionals' lack of appropriate knowledge.

A study in the US examined both the knowledge of nurses in pain management and barriers to optimal pain management (Tapp & Kropp, 2005). Two studies explored the effects of a pain education program in altering the knowledge level and attitudes of nurses (Huth & Gregg, 2010; Howell, Butler, Vincent, Watt-Watson & Stearns, 2000). These studies were conducted in Mexico and Canada respectively, and they found that a pain intervention nurse education program significantly improved participants' skills in effective pain management. These results indirectly confirm the findings regarding nurses' lack of knowledge in pain management. It was based on responses to a survey by 23 registered nurses at an urban teaching hospital in Ohio, US. The average performance was below what it should be, with an overall score of 69.4 %. Although the nurses showed better knowledge regarding general pain assessment and management, their scores were severely reduced by their weak knowledge in the areas of analgesics and their usage.

However, more encouraging scores have emerged from a few recent studies conducted in hospitals in the US. In a survey by Moceri and Drevdahl (2012), who used the KASRP tool

on 91 nurses in the emergency departments of five hospitals in north-western America, the knowledge level (average correct score = 76 %) among nurses was comparatively higher than those of other similar studies. They found no correlation of the test score with factors such as age, education level, years of general nursing experience or duration of emergency department experience. Similarly, Al-Shaer, Hill and Anderson (2011) surveyed 129 registered nurses from 10 separate nursing units in a mid-western US metropolitan hospital. Data were collected using the KASRP. In this survey, the nurses scored relatively high (average = 81.2 %, SD = 8.1). With no significant trend in the relationship between knowledge and any of the demographics tested (age, years of experience), the reason for the superiority in performance is unclear. Perhaps it can be attributed to better preparation at the primary nurse training level. Another US study that examined the same parameters in relation to children's pain was reported by Vincent and Denyes (2004). Their survey of 67 nurses yielded an average correct response of 77 %. In relation to attitude, 55 % of nurses believed that 20 % of children generally over-reported their pain. Regarding their ability to detect pain and its severity, 82 % of nurses did well when the child's report was coupled with behavioural manifestations. However, in the absence of behavioural clues, only 49 % detected pain accurately.

Interestingly, a survey of the university curricula in medicine, nursing, dentistry, pharmacy and veterinary medicine found that two-thirds do not include specific teaching on pain in the undergraduate curriculum, with veterinary students being exposed to five times more instructions on pain management topics than medical or nursing students (Watt-Watson et al., 2009). In contrast, according to Brown et al. (1999), KASRP scores based on clinical specialty or practice setting did not correlate significantly with nurses working in various units in a hospital in the US. However, this was based on a poor response rate, and the mean KASRP score was 65 %, limiting the validity of the data. However, the study recognised the

existence of the problem of inadequate knowledge of pain management, although most nurses considered their knowledge of pain to be good (Brown et al., 1999). Problems related to inadequate knowledge and improper attitudes regarding pain management may be why there is a relatively higher prevalence of pain in medical units (Dix, Sandhar, Murdoch & MacIntrye, 2004; Whelan, Jin & Meltzer, 2004; Gregory &Haigh, 2008; Sawyer, Haslam, Daines &Stilos, 2010). Appendix A outlines recent studies that have utilised the KASRP tool to examine nurses' knowledge and attitudes regarding pain.

Students studying for a BSc (Nursing) degree in Iran were found to have limited knowledge of pain management, as revealed by Rahimi-Madizeh, Tavakol and Dennick (2010). Based on responses to a questionnaire of 36 standard items, the overall average correct score was 36.9 % (SD=7.7). However, the authors of the study suggested a possible negative bias in the results due to some issues regarding the translation of the survey tool from English to Persian, and due to the influence of cultural factors.

In a recent study conducted in the US by Duke, Haas, Yarbrough and Northam (2013), the KASRP tool was used to identify the knowledge and attitudes of nursing students and faculty regarding pain. The study surveyed a sample of 162 junior and senior students enrolled in a baccalaureate nursing program and 16 nursing faculty. The results showed that while senior students scored only 68 %, the faculty did not perform much better, with a mean score of only 71 % (Duke et al., 2013), indicating the existence of a serious problem regarding knowledge of pain and its management. A survey involving 313 nursing students in degree programs in the state of Louisiana, US, was carried out to determine their knowledge and attitudes towards pain management (Plaisance & Logan, 2006). The overall correct response rate was 64 %, again showing an unsatisfactory level of knowledge. Their performance was particularly

found wanting on analgesic administration and duration of action, and they seemed to possess an exaggerated fear of addiction to analgesics.

Kaki (2011) assessed knowledge and attitudes regarding cancer pain management among a sample of 325 medical students at the King Abdul Aziz University Hospital in Saudi Arabia using a self-conducted questionnaire. The results revealed that, overall, students' knowledge on the subject was poor. Further, they displayed a poor understanding of cancer-related pain and negative attitudes regarding pain management. This conclusion is based on the findings that 54 % of respondents believed that less than 40 % of cancer patients really had pain. Forty per cent believed that cancer pain could not be relieved with medication, while 68 % were reluctant to use opioids for pain relief because they were afraid of addiction problems.

In many of the above mentioned studies, nurses were found to be particularly deficient in certain knowledge areas, such as pharmacology, addiction, under-estimation of pain, medication withdrawal, substance abuse and cancer-related pain. Chronic conditions are viewed by nurses as conditions with less pain compared to that of acute conditions. This assumption is detrimental to older patients with chronic conditions such as diabetes and renal diseases.

2.4 Part 3: Culture and Pain

Nowadays, the populations of the majority of countries are becoming more diverse as a result of immigration and emigration between countries. Consequently, the multiculturalism extends to the work place as well. This is particularly true for the healthcare sector due to a shortage of locally qualified healthcare staff in many countries, resulting in their dependence on international recruiting and therefore ethnic and cultural diversity in many healthcare systems, including that of Saudi Arabia. In situations of culturally diverse healthcare settings, the cultural differences, language problems and diverse expectations make the pain assessment and management processes even more complex. The experience of pain and its overt expression, as well as the means of communicating pain and pain tolerance, are influenced by peoples' cultural backgrounds. Similarly, from the perspective of professional nurses, cultural factors have a bearing on their ability to assess pain and provide meaningful, appropriate and satisfying healthcare.

2.4.1 Definitions of Culture and Cultural Competence

Culture has been defined as the beliefs, values, behaviour and material objects that define people's way of life (Standage, 2005). Culture also encapsulates how people act and behave when they experience different phenomena in their social lives (Elazia, 2012). In this context, culture defines the social conditions of pain and gives it meaning. It also has a bearing on people's experience of pain and how they will deal with the problem of pain based on their cultural experiences (Low, 1985).

Despite being a small-scale study, Lovering (2006) presented evidence on the influence of culture on the experience of pain based on the knowledge and experiences of a group of culturally diverse nurses working in a Saudi Arabian hospital. Saudi Arabian, Asian, Filipino,

Irish and South African cultures were represented. The methodology of the data collection was based on Herron's (1996) model of cooperative inquiry and comprised a series of meetings with the 10 participants. The findings showed that the cultures shared some beliefs about pain, but were mostly different in their perceptions of the causes and expressions of pain and the necessity for medical intervention.

Low (1985) suggested a three-dimensional view of pain, comprising medical, social and psychological perspectives. The social perspective is rooted in the socio-cultural background of the healthcare giver and the patient or individual suffering the pain. Callister (2003) explained further that the pain experience is complex and based on multiple factors that influence the perception of pain and behaviours within the premises of the socio-cultural context of the individual experiencing it.

Magnusson and Fennell (2011) viewed pain as a multidimensional experience and explained it in terms of sensory, emotional, motivational and social factors. Pain is a universal experience and the experience is felt differently by individuals, both within and between varied cultural groups (Davidhizar & Bartlett, 2000). The interpretation of pain is based on cultural experience and a system of meanings that act as a reference for such interpretation (Elwell, 2000). In this case, social factors determine how pain will affect the individual in line with the meaning they derive from the experience of pain. Davidhizar and Giger (2004) argued that culture is pivotal in shaping the values, beliefs, norms and practices of people as individuals in the way they respond to pain.

The 'culture of pain' refers to the way a society construes the meaning and treatment of pain, while the 'culture in pain' refers to how the perceptions of individuals and their expressions of pain are developed by their cultural orientation. Culture therefore provides the patterns of

behaviour to express pain based on the significance attached to it by society. This has a bearing on the individual's perception of the experience of pain (Magnusson &Fennell, 2011). The fact that people are social in nature implies that they are:

> Greatly influenced by each of the cultural groups we belong to…Each of the groups influences the way we think and act by instilling in us both general and specific expectations of how the world works and how we should interact with it (Narayan, 2010, p. 38).

Pain will therefore be perceived from a specific cultural orientation to which the individual has been socialised, leading to the suggestion by Fenwick (2006) that pain is 'culturally constructed'. From earlier observations, Fenwick (1998) indicated that Indigenous people in Australia do not attract attention to themselves when in pain; as a result, non-Indigenous nurses considered them as 'unobtrusive' when experiencing pain. Therefore, nurses and other healthcare personnel must develop a sensitivity to the different cultural perceptions of patients relating to pain (Callister, 2003; Blaxter, 2010).

Understanding the cultural orientation of an individual will help a healthcare giver design effective pain management strategies for the patient, where the patient's cultural practices can be incorporated in the pain intervention program (Narayan, 2010; Richardson, 2012). Ignoring the cultural background of the patient may result in the failure of the applied strategies, as the patient may negatively perceive the strategy and refuse it.

Pain supersedes cultural limitations and affects everyone, but how an individual responds to pain is influenced by the individual's previous encounters in his or her experience with life, age, socioeconomic status and gender, among other factors. The expression of pain invariably differs according to the cultural settings and backgrounds of people. In some cultures, people

want to know and understand the origins of their own pain, and at the same time be concerned about its implications for healthcare professionals and consequently under-report (Fenwick, 2006). Thus, understanding the phenomenon of pain in an individual is important; however, the health professional must develop a cultural competence, especially when working in communities that are not of his or her cultural orientation (IASP, 2013). Cultural competence has numerous characteristics and involves knowledge and skills, as well as:

> Developing an awareness of one's own existence, sensations, thoughts, and environment without letting it have an undue influence on those from other backgrounds; demonstrating knowledge and understanding of the client's culture; accepting and respecting cultural differences; adapting care to be congruent with the client's nature (Purnell, 2005, p. 8).

In this context, it is important for nurses and other healthcare givers to improve their knowledge about the variety of cultures in order to understand and interpret these cultural foundations and how they influence patients. This is relevant to understand the health-seeking behaviours of patients and exploit the motivations that led them to seek healthcare services (Jones, Brownlee & Cantor, 2002; Mazzilli &Davis, 2007). This is a way of making pain intervention strategies effective in the context of the patient's perspective and interpretation of the meaning of his or her pain in his or her milieu (Narayan, 2010).

In building culturally competent care for patients, understanding the cultural orientation of the patient in the context of his or her pain is not enough. Cultural competence enables nurses to distinguish their own cultural backgrounds from those of patients, which have influenced the cultural patterns in which patients' pain is projected (Callister, 2003). Cultural competence enables healthcare givers to satisfy the diverse needs of patients in a multicultural society. Its greatest advantage is that it enables nurses to design healthcare delivery packages that meet

people's needs (Callister, 2003; Flowers, 2004). In this way, the safety of patients is enhanced and the quality of healthcare delivery improves, while medical errors are reduced—especially those that may arise out of misdiagnosis. Generally, for many adult patients with pain, cultural competence eliminates the feeling of a paternalistic relationship with healthcare givers, as they are recruited into designing the pain intervention to which they become the objects (Habiba, 2000; Williams, Haskard & DiMatteo, 2007). Nurses therefore have an ethical duty to afford their medical clients' correct appraisal of their pain and administer suitable pain relief interventions (Fenwick, 2006; Macintyre, 2001).

Cultural competency is a response strategy to the multicultural and multilingual needs of an emerging diverse population globally, and it is becoming an important approach in handling healthcare diversities and disparities (Flowers, 2004). Cultural competency is therefore a key way of improving patient outcomes in the treatment and management of pain, regardless of any cultural differences between healthcare workers and patients(IASP, 2013).

Learning about pain begins in one's childhood. In this learning and socialisation process, an understanding develops regarding the 'normal' and 'right' ways to deal with pain, as well as 'abnormal' or 'wrong 'ways (Davitz & Davitz, 1985). During their training, nurses receive additional knowledge and skills regarding the 'right' way to care for patients in pain. These lead to a strong, albeit unconscious, sense of how competent nurses think and practice (Ludwig-Beymer, 2008). The complete and thorough assessment of pain, which is a prerequisite for its successful management, requires effective nurse–patient communication. Clinicians do not generally use an interpreter service when interviewing patients, regardless of whether there is language incompatibility. Such situations make it almost impossible for caregivers to adequately assess pain and consequently treat patients and provide information on pain management principles (Wilson-Stronks et al., 2008). This problem can be overcome

to an extent by using tools designed to assess pain in children or cognitively impaired patients, but this may also be ineffective and may result in suboptimal pain outcomes. Nurses can use many cues in addition to direct communication, such as facial expression, body posture and activity level, to assess patients' pain (McCaffery, Ferrell & Pasero, 2000). However, it is well known that nonverbal communication patterns also vary across cultures and are therefore also likely to be misinterpreted (Brinkus& Narayan, 2002).

Nowadays, in most healthcare settings, accreditation and regulatory standards require healthcare providers to use competent medical interpreters for effective communication with patients whose language differs from that of the doctor or the nurse (Wilson-Stronks et al., 2008). Such formalisation is a timely need because of existing cultural diversity among healthcare providers, and it is no longer appropriate to depend on family members or other informal interpreters that may compromise patients' ability to understand and be understood (Divi, Koss, Schmaltz & Loeb, 2007). Communication lapses will invariably result in inadequate pain assessment and management.

2.4.2. Conceptual Framework of Leninger`s Cultural Care Diversity and Universality Theory (CCDU)

Culture has been explored by a number of theorists, such as Leininger, Purnell and others. Leininger's cultural care diversity and universality theory (CCDU) provides culturally congruent care to individuals, families, groups, communities and institutions. The CCDU theory has been widely used as a theoretical framework in culture-related subjects. A theoretical framework can be used to describe relations between different variables, and it can be considered the map that guides researchers through the process of their research (Sinclair, 2007). Different studies on particular subjects use different theoretical frameworks; there is

no right or wrong theoretical framework to use when examining a topic, as every topic can be examined from different perspectives. As the major component of this study is the qualitative part, which mainly focuses on barriers and cultural factors that affect pain management, Leininger's CCDU theory is useful because it describes the relations between the different variables of cultural aspects. In addition, the CCDU theory highlights the factors that influence care—especially in multicultural settings such as Saudi Arabia. Although Leininger's CCDU theory is specific for nursing care and research, it is broad enough to identify the cultural factors that influence pain. Thus, Leininger (1996) advocated that professional nurses should develop an appreciation of the cultural conceptualisation of pain in all of its different aspects, such as personal experiences, responses to it, communication about it and pain management.

Leininger's CCDU theory has its background in the concept of care as a central component of nursing (Erkes, Parker, Carr & Mayo, 2001). During the development of this theory, Leininger identified care and cultural knowledge as factors that determine nurses' understanding of the various forms of compliance, healing and wellness. This brought about Leininger's CCDU theory, which is the only theory of nursing that outlines a relationship between cultures and nursing (Al-Aameri, 2000).

Leininger later developed the Sunrise Model (1991) to serve as a cognitive map to support and guide nursing practice. The Sunrise Model (see Figure 2.1) demonstrates the interrelationships of the concepts of the CCDU theory and highlights the factors that influence care, such as religion, politics, economics, worldview, environment, cultural values, history, language and gender.
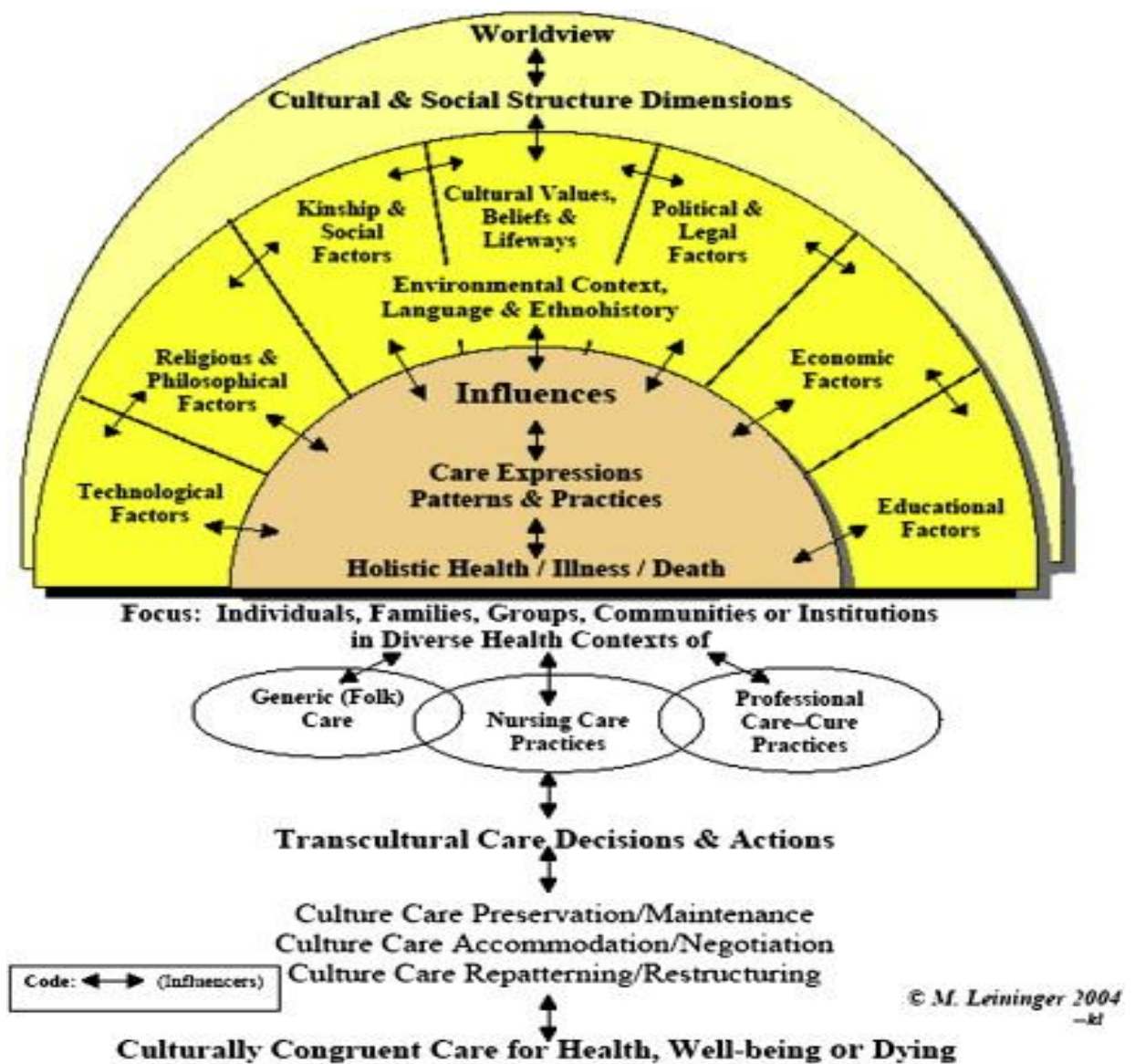
Figure 2.1: Sunrise Model

The CCDU theory assists nurses to learn about the worldview of a group or individual. A cultural group derives its cultural and social structure dimensions from its members' individual worldviews, but it is also shaped by the environment and language contexts in which it exists. There is variation among different cultural groups in relation to the manner in which each cultural and social structure dimension is lived and experienced. The CCDU lists the following seven cultural and social structure dimensions:

- technological factors
- religious and philosophical factors

- kinship and social factors

- cultural values and lifeways

- political and legal factors

- economic factors

- educational factors.

In their effort to provide culturally compatible care, nurses use a combination of aspects from generic (traditional) and professional healthcare systems. This approach ensures unique, custom-made care for each individual or group. In this regard, the following three modalities are the considerations that guide nurses' judgement, decision-making and actions:

- cultural care preservation/maintenance

- cultural care accommodation/negotiation

- cultural care re-patterning/restructuring.

Culture care preservation and maintenance implies the need to conserve existing behaviours and lifestyles that are good for health. Culture care accommodation 'refers to those assistive, supporting, facilitative, or enabling professional actions and decisions that help people of a designated culture to adapt to, or to negotiate with, others for a beneficial or satisfying health outcome with professional care providers' (Leininger, 1991, p. 48). Culture care repatterning and restructuring:

> refers to those assistive, supporting, facilitative, or enabling professional actions and decisions that help a client(s) reorder, change, or greatly modify their lifeways for new, different, and beneficial healthcare patterns while respecting the client(s) cultural values and beliefs and still providing a beneficial or healthier lifeway than before the changes were co-established with the client(s) (Leininger, 1991, p. 49).

Leininger emphasises the meaning and significance of one's culture in the process of generating health and caring behaviour for an individual (Lasch, 2000). This followed the realisation that patients from different backgrounds place greater importance on the care they receive than the nurses attending to them. Thus, there was a need to establish a theoretical framework in order to discover, explain and predict aspects of care and develop the CCDU in response to the various studies on culture care (Cairns, Thompson & Wainwright, 2003).

According to Leininger (1995), the four nursing paradigms of person, environment, health and nursing are not enough. For Leininger, nursing is both a discipline and a profession; therefore, the word 'nursing' cannot explain the phenomenon of nursing. Instead, 'care' is the word that should be used to explain the practice of nursing. This is markedly different from that of other scholars and authors. In addition, Leininger finds the term 'person' too limiting and culture-bound to explain nursing, as the concept of 'person' as an individual entity does not exist in all cultures. The word 'health' also tends to mean different things to different people, depending on the discipline through which they first knew the word (Al-Aameri, 2000). As a substitute for 'environment', Leininger prefers to use the term 'environmental context', which is more encompassing of physical, ecological, socio-political and even cultural settings.

In this case, care is seen to arise from the need to solve human problems; thus, it occurs in a cultural context (Watt-Watson et al., 2001). Culture is therefore defined as a set of behaviours that set one community apart from any other that exists on earth. This definition presents care as a universal and diverse concept. Culture is composed of emic (insider) and etic (outsider) points of view. When studying the relationship between care and culture, ethno-history is another factor that influences this relationship profoundly.

2.5 Chapter Summary

Pain is a common human experience and the most prevalent symptom associated with sickness and injury. Pain essentially arises from a signal sent from the peripheral nerves to the brain. It is part of the survival mechanism in all species of animals to advise the organism that something is wrong. However, pain is not exclusively physiological; it includes spiritual, emotional and psychosocial dimensions. Pain experiences may be acute or chronic, with chronic pain deriving from a chronic, deteriorating condition, and acute pain as one of many symptoms of a patient in palliative care. Whether acute or chronic, pain can change one's life. Regardless of the intensity of the pain, there are many treatment options available due to the vast advances made in the past few decades in understanding pain and treatment methods However, a review of the scientific literature and medical reports reveals that the majority of patients do not receive adequate pain management. A variety of factors, including inaccurate information, nurses' lack of knowledge and skills, myths, rumours, fear and cultural issues contribute to inadequate pain management.

The goal of pain management is to address all aspects of pain and to provide pain relief with minimal side effects. As frontline healthcarers, nurses have a responsibility to present and implement treatment options to patients. They also have a responsibility to ensure that patients are provided with pain management education. Topics that are relevant to nurses' roles in pain management, including assessment, treatment and barriers to effective pain management, have been discussed in this chapter.

Chapter 3: Research Methodology

3.1 Introduction

A mixed-methods research design was used to determine nurses' knowledge and attitudes towards pain management and to identify barriers to achieving optimal pain management in Hail region hospitals in Saudi Arabia.

The purpose of this chapter is to present and describe the methods and procedures that were employed in the process of data collection, including the research questions, design, sample, setting, instruments, procedure, data collection, data analysis and ethical issues.

3.2 Mixed Methods Design

Creswell and Plano Clark (2007) presented a complex and inclusive definition of mixed methods research:

> Mixed methods research is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process. As a method, it focuses on collecting, analysing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone (p. 5).

As Creswell and Plano Clark (2011) illustrated, the application of mixed methods as a research design is beneficial in promoting the validity and reliability of the outcomes being

sought, as the magnitude or effect of the outcome is usually stronger when results from different methods are brought together. At times, errors may occur in the analysis process, which may lead to faulty findings. In such a scenario, using a mixed method approach would enable the researcher to identify the existing discrepancies between the results from the two methods, and thus identify and correct any errors before presenting or publishing the information.

When dealing with complex research outcomes, Creswell (2009) asserted that the mixed-methods approach, as opposed to the single-method approach, can be highly efficient in enabling the researcher to understand the different facets of complex research outcomes. This usually promotes a better understanding of the research outcomes as opposed to when the researcher utilises a single method in the research design. The quantitative analysis method is usually efficient when dealing with pre-established research variables; as such, combining quantitative and qualitative analysis enables the researcher to capture other unanticipated information revolving around the topic of study, thereby providing the researcher with a better understanding of the research topic.

As Johnson and Onwuegbuzie (2004) suggested, the application of mixed methods in the research design is usually beneficial for the researcher to ensure that the sampling frame and sampling technique is effective in terms of being representative of the entire population. Creswell (2009) argued that when conducting a research study, no single analysis method could be more appropriate and effective than any other in terms of providing more valid and reliable information. Therefore, the use of mixed methods in research analysis provides an avenue for using both quantitative and qualitative analysis methods to promote increased validity and reliability of the research outcome.

3.2.1 Philosophical Foundation for Mixed-methods Research

As noted by Migiro and Magangi (2011), there has been continuing debate over the philosophical basis of mixed-methods research. This debate has been revolving around the question, 'Do philosophical paradigms (e.g. post-positivism and constructivism) and research methods have to fit together?' (Migiro & Magangi, 2011, p. 3758). This debate emerged in the 1960s and 1970s due to the increased popularity of qualitative research methods, as well as the identification of philosophical destinations between the traditional post-positivist and naturalistic methods.

Creswell (2003) observed that a point was reached where mixed-methods research was regarded as unachievable because the methods were not compatible. Nonetheless, Migiro and Magangi (2011) noted that some researchers refuted and countered this reasoning, arguing that different research methods and philosophical paradigms were compatible and could be combined efficiently in mixed-methods research. This perspective was supported by Greene and Caracelli (2003), who claimed that different methods could be combined and used together in a single research study as a means of capitalising on the strength of one method to reduce the weaknesses of the other.

As noted by Migiro and Magangi (2011), a significant issue in conducting mixed-methods studies lies in the question, 'What philosophical paradigm issue is the best foundation for mixed methods research?'(Migiro & Magangi, 2011, p. 3758). In this regard, Teddlie and Tashakkori (2009) argued that the issue could be addressed from several perspectives. The first perspective suggests that in mixed-methods research, the paradigms usually compete, thus giving each paradigm equal chance and merit. The competing nature of the paradigms gives mixed-methods research contradictory ideas and contentious issues that cannot be

reconciled. In this perspective, mixed-methods research is just a method that provides researchers with philosophical foundations and justifications for using this method.

According to Greene and Caracelli (2003), another perspective proposes that practicality is the best paradigm for mixed-methods research. This perspective presents for consideration the value of both objective and subjective knowledge in mixed-methods research. Migiro and Magangi (2011) stated that Rosseman and Wilson pioneered the incorporation of pragmatism into mixed-methods research. They explained the existing difference among methodological purists, pragmatists and situationalists. Purists believe that quantitative and qualitative research methods are derived from completely different research assumptions. Situationalists feel that both quantitative and qualitative methods are valuable, but the appropriateness of each depends on the prevailing circumstances. Pragmatists believe that both methods are valuable and can be used in a single research study, regardless of the prevailing circumstances.

Recently, there have been attempts to connect pragmatism and mixed-methods research. One such attempt is the work of Teddlie and Tashakkori (2009), who attempted to link pragmatism and mixed-methods research and proposed that the research question should be more important than all other research elements. These sentiments are shared by other scholars, who observe that pragmatism provides the most significant philosophical basis of mixed-methods research. In this vein, one cannot rule out the contributions of both the quantitative and qualitative methods in mixed-methods research. Nonetheless, pragmatism emerges as the best philosophical foundation that can be used in the process of justifying the use of different methods within the boundaries of a single research study.

3.3 Study Design

After reviewing the literature on mixed-methods approaches, the researcher decided that a mixed-methods approach was the most appropriate way of gaining an in-depth understanding of the current situation regarding nurses' knowledge and barriers regarding pain management. Bryman (2001) described the research design as a guide to the procedures to be used in the process of conducting a research study. In the present study, a mixed-methods research design was deemed an appropriate approach to the topic.

This explorative and descriptive mixed-methods study utilised two phases. The first phase involved the administration of a questionnaire, which aimed to determine Hail region nurses' knowledge and attitudes regarding pain. The second phase used a qualitative methodology (semi-structured interviews) to explore the barriers perceived by nurses to achieving optimal pain management. The interviews in this phase were audio-recorded. The number of participants in the first phase comprised 303 nurses working in Hail region hospitals, and the second phase included 28 participants. The inclusion criteria for the selection of participants were nurses aged 21–65 with more than six months of nursing experience in Saudi Arabia and willing to share their experience.

3.3.1 Sequential Explanatory Mixed-methods Design

This research used a sequential explanatory design. Creswell (2008) and Creswell and Clark (2007) argued that this design is one of the most popular forms of mixed-methods designs. According to Creswell (2003), it is the most straightforward approach compared to other mixed-methods designs. Creswell (2003) pointed out that the sequential explanatory mixed-methods design is a research methodology that is applied in situations where the data are

collected in two different phases. In utilising this design, the researcher began by gathering

the quantitative data and conducting statistical analysis to obtain the numeric information.

This was followed by gathering and analysing the qualitative data to provide explanations for

the numerical results from the analysis of the quantitative data gathered during the first phase.

The qualitative data provided explanations for the quantitative data, by providing the

connection between the two types of data. The rationale behind using the sequential

explanatory mixed-methods design was that the quantitative data and analysis process

provided a general understanding of the research topic. Nonetheless, the qualitative

information gave a detailed explanation of the quantitative results to provide further

understanding of the research topic by obtaining a deeper review of the views of the research

participants.

3.4 Study Setting

This study was conducted in five hospitals in the Hail region, which is located in the northern

region of Saudi Arabia. There are 11 hospitals in the region—including four central and seven

peripheral hospitals—including general, maternity and psychiatric hospitals. The survey was

distributed to five general hospitals—two of which are central and three are peripheral.

Hospital A (King Khalid Hospital) is the largest hospital in the region, with a capacity of 210

beds. Hospital B (Hail General Hospital) is the second largest and has 200 beds. Hospital C

(Bagaa General Hospital) is a peripheral hospital with 30 beds. Hospital D (Al Ghazala

Hospital) is a peripheral hospital with 50 beds. Hospital E (Alshamli Hospital) is a peripheral

hospital with 30 beds. All of these government hospitals are administered by the MOH.

3.5 Sampling

As observed by Denzin and Lincoln (2011), sampling is the process through which research participants are selected in a manner that ensures that they effectively represent the population from which they are selected. This representative group of research participants is known as a research sample. Similarly, Castillo (2009) described sampling as the process of selecting a representation of the total research population. Welman, Kruger and Mitchell (2005) pointed out that some researchers are usually biased in the process of selecting a research sample and therefore collect data that do not represent the views of the entire intended research population. As illustrated by Teddlie and Tashakkori (2009), different sampling techniques can be applied in the process of selecting research samples for mixed-methods research. This explorative, descriptive mixed-methods study sampled the local and expatriate nurses who were working in Hail regional hospitals, and the procedure included two phases.

3.5.1 Sample in Phase One (Quantitative)

This phase involved the distribution of 500 KASRP surveys (NKASRP) to the total estimated population of nurses in the above five hospitals. A survey return rate of 60 % (N = 303) was achieved. In this quantitative phase, a convenience sampling method was employed to sample local and expatriate nurses working in Hail region hospitals. Convenience sampling is probably the most commonly used of all sampling techniques. As defined by Creswell (2003), convenience sampling is a form of non-probability sampling where research participants are selected based on convenience in accessibility and proximity to the researcher. As such, this method promotes the selection of the most conveniently available individuals as study participants.

3.6 Research Instruments

3.6.1 Demographic Data

The first section of the research instrument sought demographic data from the participants, including: gender, age, nationality, educational achievements, religious affiliation, years of work experience, occupation/position, area of assignment/department, hospital where the nurse is working and the number of pain management courses undertaken by the nurse (Appendix B). The demographic data were obtained from the questionnaire that was distributed along with the Consent Form (Appendix C), Plain Language Statement (Appendix D) and Letter of Invitation to the Interview (Appendix E).

3.6.2 Knowledge and Attitudes Survey Regarding Pain (KASRP)

The KASRP questionnaire was developed by Betty Ferrell and Margo McCaffery in 1987. It consists of 22 true or false items, 13 multiple choice items and two case studies with two multiple choice items each. It has been widely used and designed to measure the knowledge and attitudes of healthcare professionals regarding pain. The content of the tool was extracted from the current standards of pain management formulated by the World Health Organization, the American Pain Society and the Agency for Health Care Policy and Research. A copy of the questionnaire, along with permission to use it, was obtained from the City of Hope Pain & Palliative Care Resource Center (Appendix F).

3.6.3 Tests of Validity and Reliability

Henson (2001) described reliability as the consistency of a measurement process or a measuring instrument. A reliable instrument should assign similar scores to objects or

elements with equal values. A reliable measuring instrument is known to maximise the true score component while simultaneously reducing the error component of the outcome or the results. In research procedures, obtaining reliable data means that if similar research instruments are applied to a different research sample from the same research population, the results obtained should be in close agreement with those obtained in the earlier measure. Content validity has been previously established by a review of pain experts (Ferrell & McCaffery, 2008). Zikmund (2003) considered validity as the extent to which a measuring instrument efficiently measures the variables that it is meant to measure. In measuring validity, the focus shifts from the scores or results obtained using the measuring instrument to the conclusions or inferences that are made from these scores or results. As such, a valid instrument leads a researcher to make the most appropriate or efficient inferences. Validity in this research was promoted by using the mixed-methods approach, which ensured that the obtained results were counterchecked before making any conclusions. The KASRP construct validity was established by the contrasted-groups method of comparing the scores of nurses of varying levels of expertise, such as students, new graduates, oncology nurses, graduate students and senior pain experts. The tool was identified as discriminating between levels of expertise. Test–retest reliability was established by repeat testing in a continuing education class of staff nurses ($r > 0.80$). Internal consistency reliability was established (alpha $r > 0.70$) with items reflecting both knowledge and attitude domains (Ferrell & McCaffery, 2008).

Although the instrument had already been validated by the original author and other pain experts, the researcher also subjected the instrument to certain validity and reliability testing. The Kuder–Richardson Formula was used to measure the internal consistency coefficient and aided by other measures of central tendency and variability based on the actual scores of the nurses in the pain management questionnaire.

As shown in Table 3.1, the reliability estimate of the questionnaire was not that far from the reliability estimate conducted by the previous researcher. The computed Kuder–Richardson internal consistency coefficient of 0.79 fell within the rule-of-thumb range of reliability estimates of 0.60–0.90. This meant that the instrument was reliable enough to measure the knowledge and attitudes regarding pain management among nurses at hospitals in the Hail region. Additionally, the mean score of the responses to the questionnaire was 16.70, with a standard deviation of 3.93 and a computed standard error of mean of 1.80. The mean success rate +/- standard error of 16.7 +/- 1.8 on a 40-item questionnaire suggests that the knowledge of participating nurses regarding pain management is low.

Table 3.1: Reliability Testing of the KASRP

Statistics	Values
Mean Score	16.70
Standard Deviations of Score	3.93
Standard Error of Mean	1.80
Reliability	0.79

3.7 Procedure of Survey Distribution

After ethics approval was obtained from the university (Appendix G) and permission was received from the general directors of the five hospitals (Appendix H), an invitation to participate in the study (Plain Language Statement) and the questionnaire were distributed to the staff via the Nursing Education Department. The researcher was available for contact in Saudi Arabia during the data collection phase to answer any questions from the participants concerning the study. The questionnaire was voluntarily completed by participants in their own time, and it took approximately 20 minutes to complete. An invitation letter accompanied the questionnaire to invite nurses to participate in the second phase of this study (semi-structured interviews). To make it convenient and easy for all respondents, and to increase the response rate, participants were asked to drop the questionnaire, after completion,

into a sealed box labelled 'Completed Questionnaire', that was placed in each ward. These boxes were collected after three weeks. The data collection period covered one month, from July 2011 to August 2011.

3.8 Phase One Data Analysis (Quantitative)

The quantitative data from the questionnaire were analysed using the Statistical Package for the Social Sciences (SPSS) Version 18 following the methods described by Field (2009). The dependent variable for the descriptive and statistical analyses consisted of the proportion (per cent) of correct answers.

To address the first research question, the proportion (per cent) of $N = 303$ participants who responded with correct answers (per cent) for each of the 40 questions was computed and ranked in order of magnitude from the highest to the lowest. The top 10 questions, which received the highest percentage of correct answers, and the bottom ten questions, which received the lowest percentage of correct answers, were identified and compared. Descriptive statistics (means and standard deviations) and inferential statistics (univariate analysis of variance (ANOVA) were used to address research question number three and determine whether the mean percentage of correct answers varied significantly with respect to the 10 independent variables. Each independent variable represented mutually exclusive groups of participants who were categorised according to their demographic/cultural characteristics—specifically, gender, age, nationality, qualifications, religion, experience, position, department, hospital and courses.

The following null hypotheses (H_0) were tested. Each null hypothesis proposed that there were no significant differences between the mean values of the dependent variable with respect to each of the independent variables:

- $H_0$1: The mean correct answers (per cent) did not differ significantly with respect to gender.

- $H_0$2: The mean correct answers (per cent) did not differ significantly with respect to age.

- $H_0$3: The mean correct answers (per cent) did not differ significantly with respect to nationality.

- $H_0$4: The mean correct answers (per cent) did not differ significantly with respect to qualifications.

- $H_0$5: The mean correct answers (per cent) did not differ significantly with respect to religion.

- $H_0$6: The mean correct answers (per cent) did not differ significantly with respect to experience.

- $H_0$7: The mean correct answers (per cent) did not differ significantly with respect to position.

- $H_0$8: The mean correct answers (per cent) did not differ significantly with respect to department.

- $H_0$9: The mean correct answers (per cent) did not differ significantly with respect to hospitals.

- $H_0$10: The mean correct answers (per cent) did not differ significantly with respect to pain courses.

3.8.1 *PostHoc* Multiple Comparison Tests

ANOVA was used to test H0—that there are no overall significant differences between two or more mean values across specified groups of participants. The alternative hypothesis (HA) is that at least one of the mean values is different to the others. SPSS computes the F statistic, which is the ratio of the variance for the between-subjects effects to that of the unexplained effects (error variance); however, the F statistic does not test the significance of difference between a given pair of means. SPSS carries out an array of 18 multiple comparison tests after ANOVA has been performed to compare specific pairs of mean values and to determine which mean values are significantly different from each other (Field, 2009). The Scheffé test, which is based on homogeneous subsets, was chosen for the purpose of this study because: (a) it does not, like other multiple comparison tests (e.g. Tukey's HSD), assume that the sample size is the same in each group of participants; and (b) Sheffé's test permits *posthoc* comparisons between all pairs of mean values, whereas other *posthoc* tests permit only a limited number of *posthoc* comparisons (Toothaker, 1991).

3.8.2 Homogeneity of Variance

ANOVA and the Scheffé test assume homogeneity of variance, meaning that the variance (the square of the standard deviation) of the dependent variable must be equal across each level of the independent variables (Rutherford, 2001). If the variances of the correct answers (per cent) were not equal across each group of participants, then the statistical inferences of ANOVA would be compromised and it would be difficult to make definitive conclusions. Therefore, homogeneity of variance was checked using Levene's F statistic, which is supported by SPSS as part of the ANOVA (General Linear Model) procedure (Field, 2009).

The null hypothesis was that the variances were equal. Rejection of H0 provided evidence to conclude that the variances were not homogeneous.

3.8.3 Statistical Significance

Statistical significance was evaluated by comparing the p-values of the F statistics and the Scheffé test statistics against a prescribed significance level ($\alpha = .05$). If the p-value of the F statistic was $\leq .05$, then the H0 was rejected (assumed to be false). Rejection of the null hypothesis at $\alpha = .05$ provided evidence to accept the HA and conclude that the mean value of the dependent variable differed significantly with respect to the independent variables. If the p-value of the F statistic was $> .05$, then the null hypothesis was not rejected (assumed not to be false) and it was concluded that the mean scores did not differ significantly across the groups of participants.

The value of α reflected the extent to which the inferential test may produce a Type I error (i.e. the false rejection of the null hypothesis by random chance, when in fact it should not be rejected). This limit is conventionally set to a small value—typically $\alpha = .05$—so that the probability of a Type I error is reduced. The prescription of $\alpha = .05$ implied a one-in-20 chance of making a Type I error, which is conventionally agreed to be an acceptable level; however, $\alpha = .05$ is not a gold standard. It is only one of many rules of thumb used in practice to interpret inferential test statistics (Baguley, 2004). One of the limitations of using $\alpha = .05$ as the level of significance is that when multiple null hypotheses are tested consecutively, the chance of making Type I errors is elevated. The probability of making a Type I error when testing 10 consecutive null hypotheses, as in this study, is $1 - (1-.05)10 = .40$ (Hair et al., 2010). This implies that four out of the 10 null hypotheses could be rejected by random

chance and not because there were any important or meaningful differences between the mean values.

The p-values for ANOVA statistics vary with respect to the sample size. When the sample size increases, the p-value decreases. When the sample size is small, the p-value is high, and there may be insufficient power to reject the H0 at $\alpha = .05$. When the sample size is too small, a Type II error could occur (i.e. the null hypothesis is falsely not rejected because the p-value is $< .05$ when in fact it should be rejected) (Zodpey, 2004). For this reason, there is little point in conducting ANOVA if the sample size is too small (Rutherford, 2001).

Attempts were made to ensure that the sample size in each group of participants in this study was above the minimum necessary to avoid Type II errors. Ideally, the group sizes should be equal to provide the highest power for ANOVA, but this was not possible due to a variety of reasons. The minimum sample size in each group recommended by Cohen (1992, p. 158, Table 2) for conducting ANOVA was applied as a guideline, assuming $\alpha = .05$, a power of .8 (i.e. 20 % chance of making a Type II error) and a medium effect size. Cohen recommended a minimum of $n = 32$ participants in each group if $g = 2$ groups, $n = 17$ if $g = 3$, $n = 11$ if $g = 4$ and $n = 8$ if $g = 5$. To test for the effects of age, nationality, qualification, experience, position and department, two or more similar categories had to be collapsed (i.e. combined) to ensure that there were enough participants in each group. Gender (male and female) and religion (Muslim, Christian or Hindu) could not be logically collapsed; therefore, the number of males ($n = 21$) and the number of Hindus ($n = 11$) were less than the minimum required to conduct ANOVA with two or three groups respectively, potentially limiting the validity of the statistical inferences. The results were also influenced by missing values. The sample sizes in all of the groups were reduced because some participants did not report their demographic/cultural characteristics.

3.8.4 Normality

ANOVA is a parametric inferential test, meaning that the dependent variable should theoretically be normally distributed (i.e. its frequency distribution should approximate a symmetrical bell-shaped curve). However, ANOVA is robust, meaning that years of practical use have revealed that Fstatistics are not necessarily biased by deviations of the data from normality. As long as the frequency distribution is approximately mound-shaped, with the mode (highest frequency) close to the centre, the distribution is not heavily skewed (with the mode at the extreme left- or right-hand side) and there are few outliers (i.e. extremely large or small values that are not contiguous with the frequency distribution), then the statistical inferences obtained using ANOVA are not severely compromised (Rutherford, 2001). Consequently, the shapes of the frequency distributions for the correct answers (per cent) of each participant were visually checked in this study using histograms.

3.8.5 Clinical Significance

The p-values computed using ANOVA only reflected statistical significance (i.e. whether or not the differences between the mean values were real and not caused by random chance), but they did not imply that the results were important or had any meaningful implications in reality. Statistical significance is not equivalent to clinical significance, referring to the magnitudes of the differences between mean values and the scientific importance of the results, including their meaningful implications, with respect to the context of the research. For this reason, many researchers favour the interpretation of effect sizes instead of p-values (Brown, 2008; Ferguson, 2009; Kotrlik & Williams, 2003; Hill & Thompson, 2004). The reporting of effect sizes in addition to p-values was recommended by the APA task force on statistical inference (Wilkinson, 1999). Effect sizes were therefore computed and interpreted

in this study because they reflected the clinical significance of the results, providing more useful information about the effects of demographic/cultural characteristics on the levels of knowledge of the participants than could be inferred from statistical significance alone. Another advantage of effect sizes is that, unlike p-values, they are not a function of the sample size and are not influenced by Type I or Type II errors. The effect size computed using the ANOVA (General Linear Model) procedure in SPSS was eta squared (η^2), representing the proportion of the variance in the dependent variable explained by the independent variables (Brown, 2008). Applying Ferguson's (2009) subjective criteria for the guidance of clinicians and researchers, $\eta^2 \leq .04$ indicated a minimal or negligible effect; $\eta^2 = .05$ to $.25$ indicated a relatively small effect; $\eta^2 = .25$ to $.64$ indicated a relatively moderate effect and $\eta^2 \geq .65$ indicated a relatively strong effect.

3.9 Phase Two (Qualitative)

3.9.1 Interviews

In the second phase of this research, the researcher utilised a purposive sampling approach to interview participants who had participated in the first phase. Twenty-eight nurses who had participated in Phase I have signed the consent form and contacted the researcher to be interviewed. They were interviewed individually in a meeting room in the hospital during their break and asked open-ended questions (Appendix I) regarding their experience of pain and pain management. The interview questions were in English and developed by the researcher to explore the barriers that face nurses during pain assessment and management, and to answer research question number two. The duration of each interview was about 30 minutes and no participants had any difficulties answering the questions. Interviews were audio-recorded in order to be transcribed for further analysis. The researcher did the transcription and each participant was allocated an alphabetical letter (A, B, C etc.) for

identification. As noted by Cohen, Manion and Morrison (2013), interviews are a way of collecting research data by talking and listening to the research participants as they air their experiences on the research topic. The interviewees usually provide the primary data on the subject being investigated. In this research, the use of interviews was relevant because it was a means of collecting data and gaining knowledge on the research topic from the participants. Kvale (1996) stated that interviews are 'an interchange of views between two or more people on a topic of mutual interest, sees the centrality of human interaction for knowledge production, and emphasizes the social situatedness of research data' (p. 14).

Equally, the use of interviews promotes the collection of research information from participants within their local settings and ensures the accuracy of the data collected. While conducting interviews, the researcher should always ask questions in a way that elicits valid responses from the interviewees. In this vein, Hoyle, Harris and Judd (2002) pointed out that the researcher has the 'dual goals of motivating the respondent to give full and precise replies while avoiding biases stemming from social desirability, conformity, or other constructs of disinterest' (p. 144).

By using interviews in this research, highly personalised data were gained from the perspectives of the interviewees. This gave the interviewer the opportunity to probe for further views from the interviewees and enabled the interviewees to further explain themselves. David and Sutton (2004) observed that semi-structured interviews are usually non-standardised and commonly used in qualitative analysis.

In semi-structured interviews, Gray (2004) affirmed that note-taking is essential. Moreover, this method of data collection gives the researcher the chance to probe for further views of the interviewee if he or she feels that the outcome is not satisfactory. David and Sutton (2004)

suggested that having 'key themes and sub-questions prepared in advance helps in giving the researcher a sense of order from which to draw questions from unplanned encounters' (p. 87). Thus, planning is essential before conducting semi-structured interviews. Nonetheless, probing enables a researcher to explore new research dimensions that had not been taken into consideration while planning the research study.

3.9.2 Transcribing Qualitative Data

Malterud (2001) commented that the increased use of qualitative research calls for efficient data collection techniques and documentation procedures. Similarly, the increased use of computer applications in qualitative data analysis requires more efficiency—especially in the process of transcribing the research data. Although computerised qualitative data analysis promotes efficiency in the management and processing of research data, researchers have continued to play a crucial role in the transcription, processing and management of qualitative research data. Qualitative data should be transcribed word by word because such transcription promotes the reflection of the respondent's knowledge in the transcribed data.

Long and Johnson (2000) observed that transcription guidelines are meant to guide researchers in the process of organising and analysing the data despite the analytical tools and techniques applied. Moreover, the guidelines ensure that the data transcripts are made efficiently, systematically and consistently. In the present research, the data were transcribed word by word to ensure that the respondents' views and meanings were not altered in the transcription process. Further, a categorisation scheme was used and guided in the process of organising, classifying and indexing the research data.

3.9.3 Phase Two Data Analysis (Qualitative)

Thematic analysis was used to analyse the qualitative data. The qualitative data were analysed by the researcher and checked by the supervisors. Tobin and Begley (2004) asserted that thematic analysis involves seeking important themes in the process of describing or explaining the research phenomenon. The important themes are identified by reading through the data carefully and then re-reading the data to confirm any omitted themes. These important themes usually form the basis for research analysis. In this research, thematic analysis was used to support the quantitative research results. The important themes were identified in each transcript. Qualitative data were assigned numerical codes to promote the classification of research themes based on the frequency of theme identification by the respondents in each research question. While conducting a thematic analysis of open-ended research questions, the themes in each question were identified and counted.

3.10 Ethical Issues (Confidentiality, Anonymity and Protection of Human Rights)

In this study, several methods were employed to ensure the protection of the participants' rights, confidentiality, anonymity, privacy and protection from discomfort. Participants were fully informed about the nature of the study before obtaining their written consent and involving them in the research procedures. Additionally, the aims of the research were explained to them to ensure that they understood what was required of them. Their consent was sought in addition to being assured that any information they provided would be used confidentially for research purposes only, without being divulged to any third parties. The respondents were also informed that their participation in the research process was voluntary and that they had the right to withdraw their participation if they felt that their confidentiality/anonymity or basic rights were being violated at any point.

The survey explored nurses' knowledge and attitudes regarding pain management. It was anticipated that the survey would not judge, offend or affect the cultural beliefs of the participants; rather, it sought to clarify these cultural beliefs in relation to pain management. Both the transcribed data and demographic questionnaires were coded, and the participants' names were removed. The Ethics Committee at the Royal Melbourne Institute of Technology (RMIT) approved the research proposal, and prior approval to perform the data collection was obtained from the MOH in Saudi Arabia.

As pointed out by Haverkamp (2005), ethics must also consider the effects of the research on the participants. Extreme precaution is required, particularly when the research involves direct human contact. On this note, the human rights of the participants were protected. Equally, their personal details, such as names and other information, were only used for research purposes and were highly safeguarded to ensure that their details would not end up in the wrong/unintended hands. In this study, data were stored on a computer, which was password-protected. Hard copies of the data were stored in a locked filing cabinet. The researchers are the only people who have access to the data. Signed consent forms and questionnaires were obtained in hard copy and sent back to Australia by registered post. The interviews were digitally recorded and saved on an external mini hard drive with encryption. Surveys were scanned and backed up on the external mini hard drive. This hard drive was transported as cabin baggage on return to Australia. This process enabled the researcher to transfer the data back to Australia while making it difficult for anyone else to access or use the information. Regarding the storage of data, the researcher will keep the data in secure storage for five yeas.

3.11 Chapter Summary

This chapter described the methodology used to conduct the present research. A mixed-methods approach was used to obtain answers to the research questions. In the process, both qualitative and quantitative analysis methods proved to be highly efficient in analysing the data to provide the required information. Equally, the application of mixed methods as a research design was appropriate for the validity and reliability of the research findings. Utilising a sequential explanatory mixed-methods design, the study began by gathering quantitative data and analysing them to provide numeric information. This was followed by gathering and analysing qualitative data to provide explanations for the numerical results that were obtained during the first phase of analysing the quantitative data. Both the quantitative and qualitative results were reviewed, and the university statistician guided the statistical analysis.

Confidentiality, anonymity and protection of human rights were considered during the research process, as recommended in the human research ethics guidelines. Convenient sampling formed the basis for the quantitative research samples, while purposive sampling proved efficient in selecting the qualitative research samples. Data collection was through semi-structured interviews, which gave the interviewer the chance to probe and explore the participants' stories. Thematic analysis generated the research themes that were central to describing the research phenomenon. The following chapter presents the results of the statistical analysis.

Chapter 4: Quantitative Results

4.1 Introduction

This chapter presents a descriptive analysis of the correct responses obtained for each question by all participants, followed by the results of the tests on the 10 null hypotheses concerning mutually exclusive groups of participants, using ANOVA. These 10 null hypotheses were developed from the aims of the research, which are to investigate the demographic and cultural factors that affect the delivery of effective pain management.

The KASRP items can be used to assess nurses' knowledge and attitudes regarding pain management. Therefore, the authors of the KASRP tool suggested that it is better to analyse the data as complete scores and also analyse each item individually rather than distinguishing between items that measure knowledge or attitudes. The data were analysed and evaluated as overall percentage scores obtained, as recommended by the authors of the tool (Ferrell & McCaffery, 2008).

4.2 Demographics of Participants

Demographic data collected in this study consisted of gender, age, nationality, education level, religion, work experience, position, department, hospital and whether participants had followed any pain management courses. As shown in Table 4.1, the majority of participants were female (n=281, 93 %). More than half of the participants (n=177, 59.8 %) were aged 21–30. Participants were from various countries, with those originating from India (n = 124, 41.2 %), the Philippines (n = 112, 37.2 %) and Saudi Arabia (n = 57, 18.9 %) constituting the majority. Over half of the participants held Bachelor's degrees (n = 159, 52.6 %), nearly half

had Diploma-level qualifications (n = 138, 45.7 %) and only five participants had a Master's

degree. On the basis of religion, the majority of participants were Christian (n = 193, 63.9 %),

followed by Muslim (n = 97, 32.1 %). Regarding the years of experience, the majority of

participants had worked for 1–5 years (n = 117, 38.6 %). Almost 90 % of participants were

staff nurses (n = 268), and the rest were head nurses, nursing managers and clinical

instructors. Twenty per cent of participants were working in the emergency department, and

20 % were working in medical departments. Those attached to hospital A comprised the

largest group (n = 116, 38.3 %) followed by hospital B (n = 66, 21.8 %). Three-quarters of

participants indicated that they had never attended any formal pain management courses (n =

228, 75 %), and 19 % had enrolled in a pain course (n = 57).

Table 4.1: Demographic Profile of Nurses

Socio-demographic Profile	Frequency	%
Gender		
Male	21	6.93
Female	281	92.74
Missing	1	0.33
Total	303	100.0
Age Group		
21–30	177	58.42
31–40	87	28.71
41–50	19	6.27
51–60	13	4.4
Missing	7	2.31
Total	303	100.0
Nationality		
Saudi	57	18.81
Filipino	112	36.96
Indian	124	40.93
Chinese	2	0.66
Indonesian	6	1.98
Missing	2	0.66
Total	303	100.0
Educational Attainment		
Diploma	138	45.54
Bachelor	159	52.48
Master	5	1.65
Missing	1	0.33
Total	303	100.0
Religious Affiliation		

Muslim	97	32.01
Christian	193	63.70
Hindu	11	3.63
None (Atheist)	1	0.33
Missing	1	0.33
Total	303	100.0
Work Experience		
6–12 months	7	2.31
1–5 years	117	38.61
5–10 years	96	31.68
10–15 years	41	13.53
15–20 years	14	4.62
20+ years	21	6.93
Missing	7	2.31
Total	303	100.0
Position		
Staff Nurse	268	88.45
Head Nurse	23	7.59
Nursing Manager	9	2.97
Clinical Instructor	2	0.66
Missing	1	0.33
Total	303	100.0
Department/Ward Assigned		
Surgical Department	23	7.59
Medical Department	59	19.47
Emergency Department	62	20.24
ICU	16	5.28
Burn Unit	7	2.31
Pedia Department	18	5.94
NICU (Neonatal Intensive Care Unit)	6	1.98
CCU (Coronary Care Unit)	8	2.64
PICU (Pediatric Intensive Care Unit)	22	7.26
AKU (Artificial Kidney Unit)	30	9.90
Nursery	8	2.64
Education Department	2	0.66
Operation Room	8	2.65
OB/GYN Department	2	0.66
Nursing Office	5	1.76
OPD	12	3.96
Delivery Room	10	3.30
Missing	5	1.76
Total	303	100.0
Hospital		
Hospital A	116	38.28
Hospital B	66	21.78
Hospital C	35	11.55
Hospital D	36	11.88
Hospital E	50	16.50
Total	303	100.0
Courses		
None	228	75.25

Once	57	18.81
Twice	13	4.29
Three Times	2	0.66
Four Times +	2	0.66
Missing	1	0.33
Total	303	100.0

4.3 Nurses' Knowledge and Attitudes Regarding Pain Management in Hail Region Hospitals

The KASRP tool covers many aspects of pain management, and it is widely used to assess nurses' knowledge and attitudes in relation to pain assessment, patient variables, addiction, knowledge in pharmacology and interventions to manage pain.

The frequency distribution of the correct answers (per cent) obtained by $n = 303$ participants was normal, indicated by the symmetrical bell-shaped histogram (Figure 4.1).
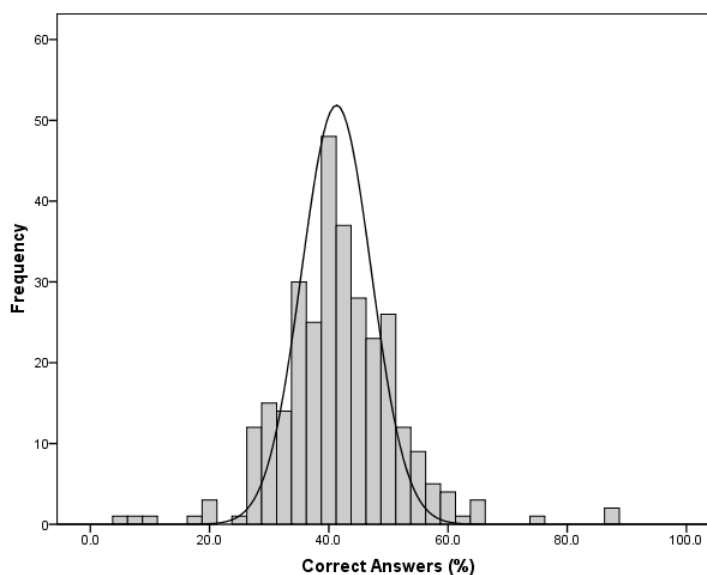
Figure 4.1: Frequency distribution of correct answers (per cent) by n = 303 participants

The scores obtained by each participant ranged from a minimum of 5.0 % to a maximum of 87.5 %, with a mean score of 41.76 % ($SD = 9.83$). One hundred and fifty-one nurses scored

above the mean and 152 below the mean, as would be expected from a normally distributed variable. The majority ($n = 227$, 75.0 %) scored between 35 % and 47.5 %. There were a few outliers, reflected by $n = 7$ (2.3 %) of the participants who scored ≤ 20 % and $n = 11$ (3.6 %) with scores ≥ 60 % and only two participants obtained a passing score of ≥ 80 %. Table 4.2 shows the distributions of scores for the Knowledge and Attitudes Questionnaire Regarding Pain.

Table 4.2: Distributions of Scores for the Knowledge and Attitudes Questionnaire Regarding Pain

% Correct	N (%)
70 +	3 (1%)
60–69	8 (2%)
50–59	52 (17%)
40–49	136 (44%)
30–39	84 (27%)
Below 30	20 (6%)

As shown in Table 4.2, which presents the distribution of correct answers, the majority (44 %) of participants scored in the range of 40–49 % correct answers, with only 1% receiving scores above 70 and 6 % below 30. It is also evident that only 67 % of participants were able to score 40 % or above, indicating that one in three nurses lacked adequate knowledge on the material included in the questionnaire.

To understand the specific areas of strengths and weaknesses in knowledge, the NKASRP questions were ranked based on the percentage of correct answers obtained, and the results are presented in Table 4.3.

Table 4.3: Ranking of NKASRP Answers from Most Correct to Least Correct

Question	Correct answers *n* (%)
16. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response: (T).	255 (84.2%)
22. Narcotic/opioid addiction is defined as a chronic neurobiological disease, characterised by behaviours that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm and craving: (T).	250 (82.5%)
34. The time to peak effect for morphine given intravenouslyis: (15 min.).	233 (76.9%)
15. Patients' spiritual beliefs may lead them to think pain and suffering are necessary: (T).	209 (69.0%)
24. The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is: (intravenous).	209 (69.0%)
25. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients: (morphine).	207 (68.3%)
7. Combining analgesics that work viadifferent mechanisms (e.g. combining an opioid with an NSAID) may result in better pain control with fewer side effects than using a single analgesic agent: (T).	196 (64.7%)
21. Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm: (T).	189 (62.4%)
27. Analgesics for postoperative pain should initially be given: (around the clock on a fixed schedule).	186 (61.4%)
12. Elderly patients cannot tolerate opioids for pain relief: (F).	181 (59.7%)
31. The most accurate judge of the intensity of the patient's pain is: (the patient).	181 (59.7%)
32. Which of the following describes the best approach for cultural considerations in caring for patients in pain: (Patients should be individually assessed to determine cultural influences).	169 (55.8%)
6. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months: (T).	175 (57.8%)
14. Children less than 11 years old cannot reliably report pain, so nurses should rely solely on the parent's assessment of the child's pain intensity: (F).	156 (51.5%)
29. The most likely reason a patient with pain would request increased doses of pain medication is: (The patient is experiencing increased pain).	155 (51.2%)
2. Astheir nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences: (F).	151 (49.8%)
20. Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose: (F).	150 (49.5%)
8. The usual duration of analgesia of 1–2 mg morphine IV is 4–5 hours: (F).	131 (43.2%)
35. The time to peak effect for morphine given orally is: (1–2 hours).	124 (40.9%)
18. Vicodin (hydrocodone 5 mg + acetaminophen 500 mg) PO is approximately equal to 5–10 mg of morphine PO: (T).	122 (40.3%)
9. Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics: (F).	113 (37.3%)
30. Which of the following is useful for treatment of cancer pain: (All of the above).	109 (36.0%)
3. Patients who can be distracted from pain usually do not have severe pain: (F).	108 (35.6%)
5. Aspirin and other non-steroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases:(F).	102 (33.7%)
1. Vital signs are always reliable indicators of the intensity of a patient's pain: (F).	99 (32.7%)
38 A. On the patient's record, you must mark his pain on the scale below. Circle the number that represents your assessment of Robert's pain: (8).	97 (32.0%)
13. Patients should be encouraged to endure as much pain as possible before using an opioid: (F).	94 (31.0%)
26. Which of the following IV doses of morphine administered over a four-hour period would be equivalent to 30 mg of oral morphine given q 4 hours: (Morphine 10 mg IV).	91 (30.0%)
33. How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem: (5–15 per cent).	86 (28.4%)

11. Morphine has a dose ceiling (i.e. a dose above which no greater pain relief can be obtained): (F).	85 (28.1%)
17. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real: (F).	71 (23.4%)
10. Opioids should not be used in patients with a history of substance abuse:(F).	66 (21.8%)
4. Patients may sleep despite severe pain: (T).	59 (19.5%)
28. A patient with persistent cancer pain has been receiving daily opioid analgesics for twomonths. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is: (less than 1 per cent).	56 (18.5%)
36. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following: (sweating, yawning, diarrhoea and agitation with patients when the opioid is abruptly discontinued).	55 (18.2%)
23. The recommended administration of opioid analgesics for patients with persistent cancer-related pain is: (oral).	44 (14.5%)
38 B. Check the action you will take at this time: (Administer morphine 3 mg IV now).	38 (12.5%)
37 A. On the patient's record, you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain: (8).	28 (9.2%)
19. If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain: (F).	22 (7.3%)
37 B. Check the action you will take at this time: (Administer morphine 3 mg IV now).	9 (3.0%)

T= True, F= False

Ten questions at the top of Table 4.3 were correctly answered by the majority of nurses ($n = 180$, 59.7 % to $n = 255$, 84.2 %). Nine of these 10 questions required factual knowledge about the use of analgesics (e.g. opioids, morphine, NSAID, Benzodiazepines), suggesting that nurses were quite knowledgeable in this area. Ten questions at the bottom of Table 4.3 were correctly answered by less than one-quarter of nurses (n = 9, 3.0 % to $n = 23.4$ %). These questions did not require as much factual knowledge about the use of analgesics as the top 10. This showed that the questions that the nurses found most difficult to answer were those that required them to: make decisions or personal value judgements, assess the value of a particular treatment, determine what action should be taken in a given situation, assess the outcome of a particular treatment, and evaluate the severity and source of pain. In general, 25 questions were answered incorrectly by more than 50 % of participants.

4.4 Effect of Demographic and Cultural Factors on the Delivery of Effective Pain Management

The next 10 sections sequentially address each of the null hypotheses ($H_0 1$ to $H_0 10$).

4.4.1 $H0_1$: Effect of Gender

As an overwhelming fraction of the total number of participants ($N = 303$) comprised females ($n = 281$, 92.7 %) (see Table 4.4), the results of this study may not necessarily be representative of the views with respect to male nurses. One participant did not disclose his or her gender (missing value). The percentage of correct scores stratified by gender were approximately normally distributed (Figure 4.2).

Table 4.4: Frequency Distribution of Participants by Gender

Gender	n	%
Male	21	6.9
Female	281	92.7
Missing	1	.3
Total	303	100.0
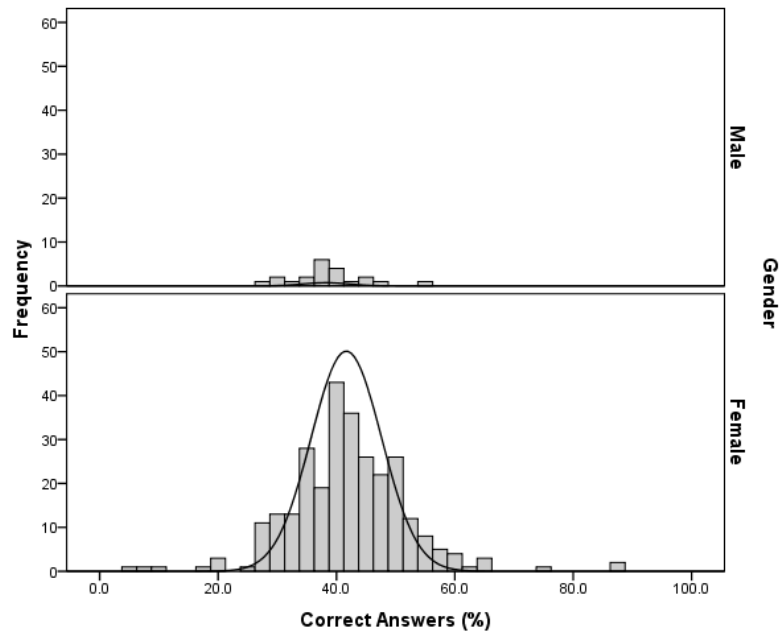
Figure 4.2: Frequency distributions of correct answers (%) by gender

The descriptive statistics and results of ANOVA and associated tests are presented in Tables 4.5–4.7. The mean score for $n = 21$ male participants ($M = 38.57$, $SD = 6.30$) was slightly lower than that of $n = 281$ females ($M = 42.00$, $SD = 10.03$). The variances were homogenous, indicated by $p > .05$ for Levene's test. ANOVA indicated that the null hypothesis should not be rejected ($F (1,300) = 2.380$, $p = .124$). The effect size ($\eta^2 = .008$) was negligible. Consequently, it is inferred that gender had no statistically or clinically significant effect on nurses' levels of knowledge regarding pain management. Clinical significance does not depend on numbers as statistically significant rather than it is a matter of judgment.

Table 4.5: Descriptive Statistics for Correct Answers (%) by Gender

Gender	*M*	*SD*	*n*
Male	38.57	6.30	21
Female	42.00	10.03	281
Total	41.76	9.85	302

Table 4.6: Levene's Test for Equality of Variances

F	df1	df2	*p*
3.063	1	300	.081

Table 4.7: ANOVA Test for Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	p	Effect Size η^2
Gender	229.93	1	229.93	2.380	.124	.008
Error	28987.39	300	96.62			
Total	555956.25	302				
Corrected Total	29217.32	301				

4.4.2 H$_0$2. Effect of Age

The reported ages of participants (Table 4.8) ranged from 21 to 60 years. Over half ($n = 177$, 58.4 %) were in the youngest age group (21–30 years). Seven participants did not disclose their ages (missing values). The percentage of correct scores stratified by age were approximately normally distributed (Figure 4.3). The curve showed a slight rightward shift in the 41–60-year age group. The descriptive statistics and results of ANOVA and associated tests are presented in Tables 4.9–4.12. The mean score ($M = 47.73$, $SD = 11.82$) for $n = 32$ older participants (aged 41–60) was higher than that for younger participants ($M = 40.25$, $SD = 8.36$ for $n = 177$ at age 21–30 to $M = 42.78$, $SD = 10.97$ for $n = 87$ at age 31–40).

Table 4.8: Frequency Distribution of Participants by Age

Age	n	%
21–30	177	58.4
31–40	87	28.7
41–50	19	6.3
51–60	13	4.3
Missing	7	2.3
Total	303	100.0
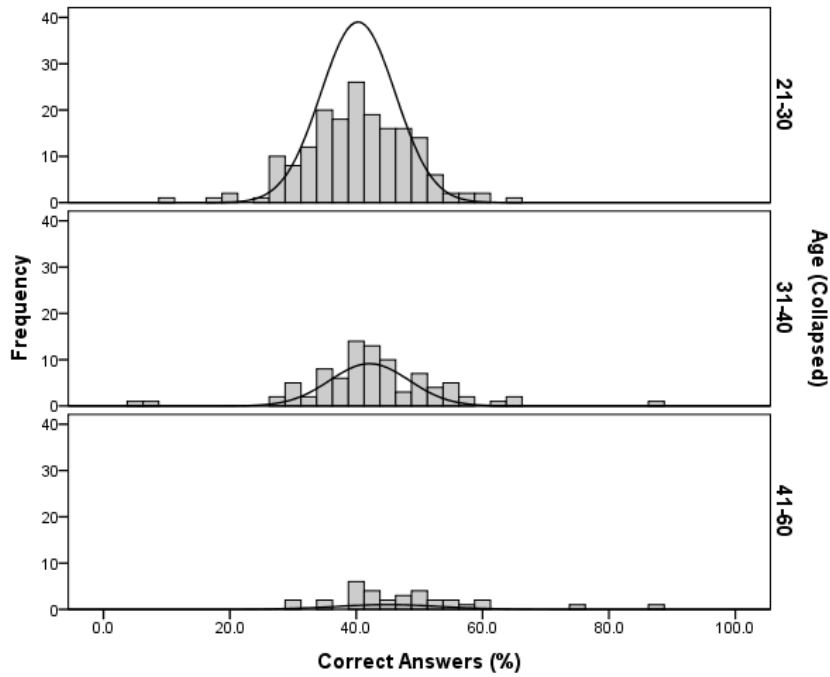
Figure 4.3: Frequency distributions of correct answers (%) by age

Table 4.9: Descriptive Statistics for Correct Answers (%) by Age

Age (Collapsed)	*M*	*SD*	*n*
21-30	40.25	8.36	177
31-40	42.78	10.97	87
41-60	47.73	11.82	32
Total	41.81	9.85	296

Table 4.10: Levene's Test for Equality of Variances

F	df1	df2	*p*
1.547	2	293	.215

Table 4.11: ANOVA Test for Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	*F*	*p*	Effect Size η^2
Age	1634.65	2	817.32	8.874	<.001*	.057
Error	26985.86	293	92.10			
Total	545987.50	296				
Corrected Total	28620.52	295				

Note: * Significant at α = .05

95

Table 4.12: Scheffé *PostHoc* Multiple Comparison Test

Age	*n*	Homogeneous Subsets	
		1	2
21–30	177	40.25	
31–40	87	42.78	
41–60	32		47.73

The variances were homogenous, indicated by p > .05 for Levene's test. ANOVA indicated that the null hypothesis should be rejected (F (2,293 = 8.874, p < .001). However, the effect size (η^2 = .057) was relatively small. The Scheffé test divided the mean scores into two homogeneous subsets. The mean score for the 41–60 age group was significantly higher than the mean scores for both the 31–40 and 21–30 age groups.

These results provide evidence that the age of participants had a statistically and clinically significant effect on the scores. Thus, the superiority in knowledge regarding pain management was directly correlated with the age of the nurse.

4.4.3 $H_0$3. Effect of Nationality

The self-reported nationalities of the participants (Table 4.13) included Saudi, Filipino, Indian, Chinese and Indonesian. Those of Indian (*n* = 124, 40.9 %) and Filipino (*n* = 112, 37.0 %) origin, taken together, represented more than three-quarters of participants. Two participants did not disclose their nationalities (missing values). The percentage of correct scores for each nationality were approximately normally distributed (Figure 4.4). The descriptive statistics and results of ANOVA and associated tests are presented in Tables 4.14–4.17.

Table 4.13: Frequency Distribution of Participants by Nationality

Nationality	*n*	*%*
Saudi	57	18.8
Filipino	112	37.0
Indian	124	40.9
Chinese	2	0.7
Indonesian	6	2.0
Missing	2	0.7
Total	303	100.0

The number of Chinese and Indonesian participants was too small to include them as separate groups for the purpose of conducting ANOVA. Consequently, they were pooled with the Indian nurses in a category called 'Other Asian'.
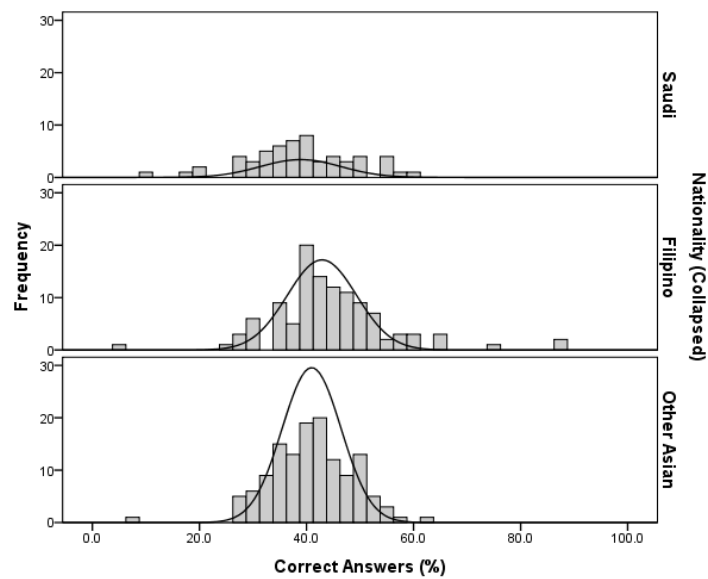
Figure 4.4: Frequency distributions of correct answers (%) by nationality

Table 4.14: Descriptive Statistics for Correct Answers (%) by Nationality

Nationality	*M*	*SD*	*n*
Saudi	38.77	10.19	57
Filipino	44.44	11.13	112
Other Asian	40.95	7.71	132
Total	41.84	9.79	301

Table 4.15: Levene's Test for Equality of Variances

F	df1	df2	p
2.748	2	298	.066

Table 4.16: ANOVA Test for Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	p	Effect Size η^2
Nationality	1400.07	2	700.04	7.630	.001*	.049
Error	27342.03	298	91.75			
Total	555556.25	301				
Corrected Total	28742.11	300				

Note: * Significant at α = .05

Table 4.17: Scheffé *PostHoc* Multiple Comparison Test

Nationality	N	Subset	
		1	2
Saudi	57	38.77	
Other Asian	132	40.95	
Filipino	112		44.44

The mean score ($M = 44.44$, $SD = 11.13$) for $n = 112$ Filipino participants was higher than

that for $n = 57$ Saudi participants ($M = 38.77$, $SD = 10.19$) and $n = 132$ other Asian

participants ($M = 40.95$, $SD = 7.71$). The variances were homogenous, indicated by $p > .05$ for

Levene's test. ANOVA indicated that the null hypothesis should be rejected (F (2, 298 =

7.630, $p < .001$). However, the effect size ($\eta^2 = .049$) was relatively small. The Scheffé test

divided the mean scores into two homogeneous subsets. The mean score for the Filipino

participants was significantly higher than the mean scores for the other two ethnic groups.

Consequently, evidence shows that ethnicity had a statistically and clinically significant effect

on the scores. Filipino nurses exhibited the highest levels of knowledge regarding pain

management.

4.4.4 $H_0 4$. Effect of Academic Qualification

The self-reported qualifications of the participants (Table 4.18) included Diplomas, Bachelor's and Master's degrees. The predominant group, representing 98 % of participants, had Bachelor's degrees ($n = 159$, 52.5 %), followed by Diploma holders ($n = 138$, 45.5 %). One participant did not disclose his or her educational qualification (missing value). The percentage of correct scores stratified by level of education were approximately normally distributed (Figure 4.5). The descriptive statistics and results of ANOVA and associated tests are presented in Tables 4.19–4.21.

Table 4.18: Frequency Distribution of Participants by Academic Qualification

Qualification	n	%
Diploma	138	45.5
Bachelor's Degree	159	52.5
Master's Degree	5	1.7
Missing	1	0.3
Total	303	100.0

The mean score ($M = 42.42$, $SD = 9.72$) for $n = 164$ participants with Bachelor's/Master's degrees was slightly higher than that for $n = 138$ participants with Diplomas ($M = 40.98$, $SD = 9.99$). The variances were homogenous, indicated by $p > .05$ for Levene's test.

Figure 4.5: Frequency distributions of correct answers (%) by academic qualification

Table 4.19: Descriptive Statistics for Correct Answers (%) by Academic Qualification

Degree	*M*	*SD*	*n*
Diploma	40.98	9.99	138
Bachelor/Master	42.42	9.72	164
Total	41.76	9.85	302

Table 4.20: Levene's Test for Equality of Variances

F	df1	df2	*p*
0.329	1	300	0.567

ANOVA indicated that the null hypothesis should not be rejected (F (1, 300 = 1.617, p = .205). The effect size (η^2 = .005) was negligible. Consequently, the results indicate that academic qualifications had no statistically or clinically significant effects on nurses' levels of knowledge regarding pain management.

Table 4.21: ANOVA Tests for Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	p	Effect Size η^2
Qualification	156.590	1	156.590	1.617	.205	.005
Error	29060.732	300	96.869			
Total	555956.250	302				
Corrected Total	29217.322	301				

4.4.5 H$_0$5. Effect of Religion

According to the self-reported religions of the participants (Table 4.22), they belonged to the Muslim (n = 97, 32.0 %), Christian (n = 193, 63.7 %) and Hindu (n = 11, 3.6 %) faiths. Two participants did not disclose their religion (missing values). The percentage of correct scores stratified by religion were approximately normally distributed (Figure 4.6). The descriptive statistics and results of ANOVA and associated tests are presented in Tables 4.23–4.26.

Table 4.22: Frequency Distribution of Participants by Religion

Religion	n	%
Christian	193	63.7
Muslim	97	32.0
Hindu	11	3.6
Atheist	1	0.3
Missing	1	0.3
Total	303	100.0
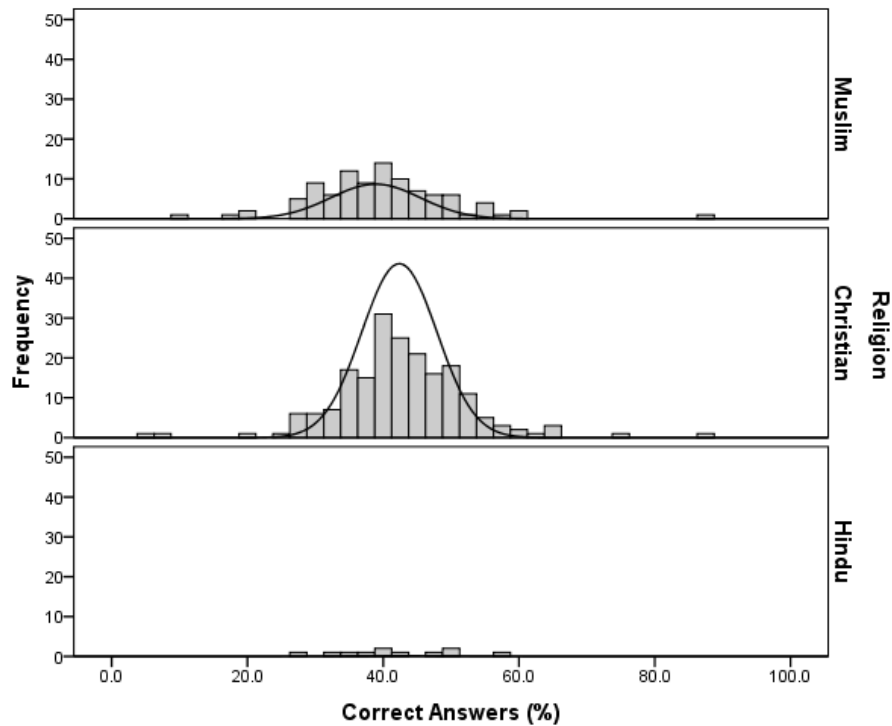
Figure 4.6: Frequency distributions of correct answers (%) by religion

Table 4.23: Descriptive Statistics for Correct Answers (%) by Religion

Religion	*M*	*SD*	*n*
Christian	42.80	9.59	193
Muslim	39.69	10.29	97
Hindu	41.82	8.81	11
Total	41.76	9.87	301

Table 4.24: Levene's Test for Equality of Variances

F	df1	df2	*p*
0.211	2	298	0.810

The mean score ($M = 42.80$, $SD = 9.59$) for $n = 193$ Christian participants was higher than

that for $n = 97$ Muslim participants ($M = 39.69$, $SD = 10.29$) and $n = 11$ Hindu participants (M

$= 41.82$, $SD = 8.81$). The variances were homogenous, indicated by $p > .05$ for Levene's test.

ANOVA indicated that the null hypothesis should be rejected ($F_{(2, 298)} = 3.240$, $p = .040$).

However, the effect size ($\eta^2 = .021$) was negligible. The Scheffé test divided the mean scores

into two homogeneous subsets. Consequently, it was concluded that religion had a

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statistically significant but not a clinically significant effect on the scores. Christian nurses exhibited the highest levels of knowledge regarding pain management; however, the mean score difference (less than 2 % between Christians, Muslims and Hindus) had limited importance in the context of this research. Further, the marginally higher score of the Christian group may reflect the country-of-origin effect, as the majority of Christians are also Filipino.

Table 4.25: ANOVA Test for Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	p	Effect Size η^2
Religion	623.30	2	311.65	3.248	.040*	.021
Error	28593.48	298	95.95			
Total	554150.00	301				
Corrected Total	29216.78	300				

 * Note: Significant at $\alpha = .05$

Table 4.26:Scheffé *PostHoc* Multiple Comparison Test

Religion	n	Homogeneous Subsets	
		1	2
Muslim	97	39.69	
Hindu	11	41.82	
Christian	193		42.80

4.4.6 H₀6. Effect of Experience

The self-reported experience (Table 4.27) ranged from 6–12 months to over 20 years. The majority, representing 70.3 % of participants, belonged to those with 1–5 years of experience ($n = 117$, 38.6 %) and 5–10 years experience ($n = 96$, 31.7 %). Seven participants did not disclose their work experience duration (missing values). The percentage of correct scores stratified by experience were approximately normally distributed (Figure 4.7). The descriptive statistics and results of ANOVA and associated tests are presented in Tables 4.28–4.31. The mean scores for nurses with the longest experience ($M = 45.24$, $SD = 7.45$ for $n = 21$ with 20+

years experience and $M = 46.78$, $SD = 10.98$ for $n = 14$ with 15–20 years experience) were the highest. Participants with the least experience had the lowest mean score ($M = 31.43$, $SD = 12.40$ for $n = 7$ with 6–12 months experience).

Table 4.27: Frequency Distribution of Experience

Experience	n	$\%$
6–12 months	7	2.3
1–5 years	117	38.6
5–10 years	96	31.7
10–15 years	41	13.5
15–20 years	14	4.6
20+ years	21	6.9
Missing	7	2.3
Total	303	100.0
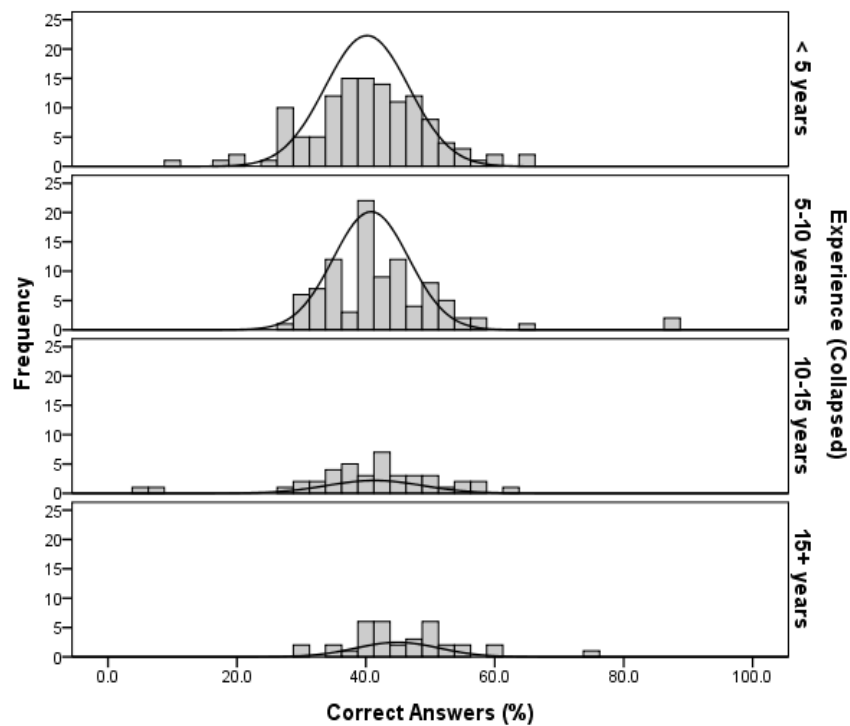
Figure 4.7: Frequency distributions of correct answers (%) by experience

The variances were homogenous, as indicated by $p > .05$ for Levene's test. ANOVA indicated that the null hypothesis should be rejected ($F(5, 290) = 3.286$, $p = .007$). However, the effect size ($\eta^2 = .054$) was relatively small. The Scheffé test divided the mean scores into two

homogeneous subsets. The two groups of nurses with the longest experience (15–20 years and 20+ years) collectively achieved higher mean scores than the other four groups classified by experience. Therefore, it is concluded that the number of years of work experience had a statistically and clinically significant effect, with nurses who had the longest experience performing the best in the knowledge test regarding pain management.

Table 4.28: Descriptive Statistics for Correct Answers (%) by Experience

Experience	*M*	*SD*	*n*
6–12 months	31.43	12.40	7
1–5 years	40.89	8.87	117
5–10 years	42.58	9.84	96
10–15 years	40.92	11.35	41
15–20 years	46.78	10.98	14
20+ years	45.24	7.45	21
Total	41.81	9.85	296

Table 4.29: Levene's Test for Equality of Variances

F	df1	df2	*p*
.739	5	290	.602

Table 4.30: ANOVA Test for Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	*F*	*p*	Effect Size η^2
Experience	1534.76	5	306.95	3.286	.007*	.054
Error	27085.76	290	93.39			
Total	545987.50	296				
Corrected Total	28620.52	295				

Note: * Significant at $\alpha = .05$

Table 4.31: Scheffé *PostHoc* Multiple Comparison Test

Experience	*n*	Homogeneous Subsets 1	2
6-12 months	7	31.429	
1-5 years	117	40.897	
10-15 years	41	40.915	
5-10 years	96	42.578	
20+ years	21		45.238
15-20 years	14		46.786

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4.4.7 $H_0$7. Effect of Position

According to the self-reported positions (Table 4.32), participants belonged to one of the following professional positions: staff nurse, head nurse, nursing manager or clinical instructor. The most common group consisted of staff nurses ($n = 268$, 88.4 %). One participant did not disclose his or her position (missing value). The percentage of correct scores stratified by experience were approximately normally distributed (Figure 4.8). The descriptive statistics and results of ANOVA and associated tests are presented in Tables 4.33–4.35. ANOVA indicated that the null hypothesis should not be rejected ($F (1,300 = 1.929, p = .166$). The effect size ($\eta^2 = .006$) was also negligible. Consequently, it is concluded that the position in the professional hierarchy of nurses had no statistically or clinically significant effect on their knowledge of pain management.

Table 4.32: Frequency Distribution of Participants by Position

Position	n	%
Staff Nurse	268	88.4
Head Nurse	23	7.6
Nursing Manager	9	3.0
Clinical Instructor	2	0.7
Missing	1	0.3
Total	303	100.0
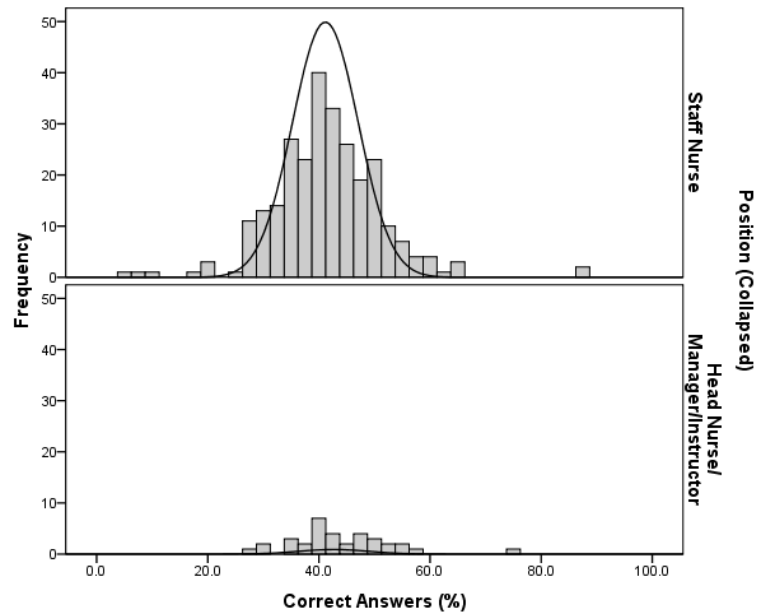
Figure 4.8: Frequency distributions of correct answers (%) by position

Table 4.33: Descriptive Statistics for Correct Answers (%) by Position

Position	*M*	*SD*	*n*
Staff Nurse	41.48	9.91	268
Head Nurse/Manager/Instructor	43.97	9.21	34
Total	41.76	9.85	302

Table 4.34: Levene's Test for Equality of Variances

F	df1	df2	*p*
.038	1	300	.845

Table 4.35: ANOVA Test for Between-Subjects Effects

Effect	Type III Sum of Squares	df	Mean Square	*F*	*p*	Effect Size η^2
Position	186.68	1	186.677	1.929	.166	.006
Error	29030.65	300	96.769			
Total	555956.25	302				
Corrected Total	29217.32	301				

4.4.8 H_08. Effect of the Department of Placement

On the basis of a one's principal workplace, participants reported that they worked in one of the 17 different hospital departments (Table 4.36). The most frequent groups ($n = 174$, 57.4 %) were in the emergency ($n = 63$, 20.5 %), medical ($n = 59$, 19.5 %), artificial kidney unit ($n = 30$, 9.9 %) and surgical ($n = 23$, 7.6 %) departments. Five participants did not disclose their departments (missing values). The percentage of correct scores stratified by department were approximately normally distributed (Figure 4.9). The descriptive statistics and results of ANOVA and associated tests are presented in Tables 4.37–4.40.

Table 4.36: Frequency Distribution of Participants by Departments

Department	*n*	%
Surgical Department	23	7.6
Medical Department	59	19.5
Emergency Department	62	20.5
ICU (Intensive Care Unit)	16	5.3
Burn Unit	7	2.3
Pediatric Department	18	5.9
NICU (Neonatal Intensive Care Unit)	6	2.0
CCU (Coronary Care Unit)	8	2.6
PICU (Pediatric Intensive Care Unit)	22	7.3
AKU (Artificial Kidney Unit)	30	9.9
Nursery	8	2.6
Education Department	2	0.7
Operation Room	8	2.6
OB/GYN Department	2	0.7
Nursing Office	5	1.7
OPD (Outpatients Department)	12	4.1
Delivery Room	10	3.3
Missing	5	1.7
Total	303	100.0

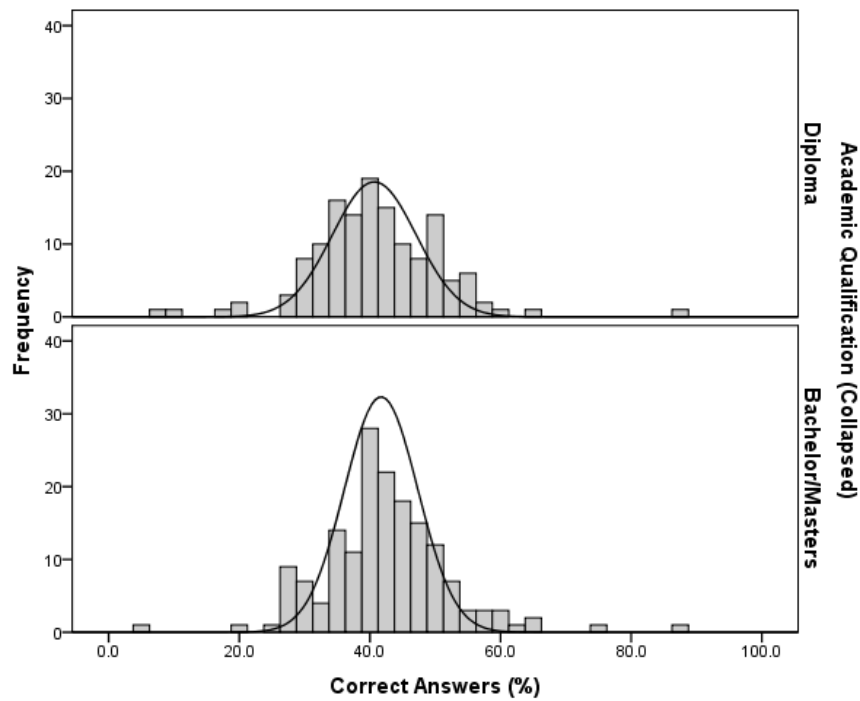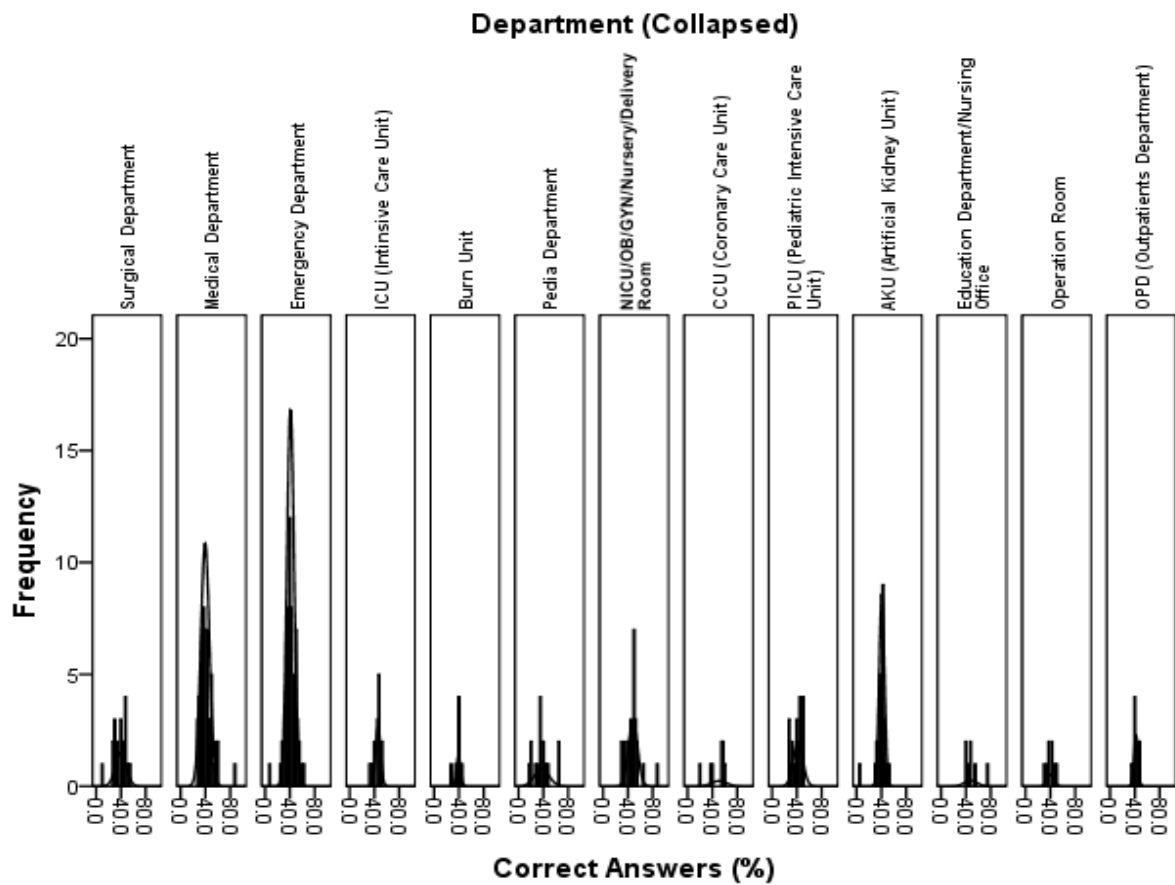*Figure 4.9: Frequency distributions of correct answers (%) by departments*

Table 4.37: Descriptive Statistics for Correct Answers (%) by Departments

Department	M	SD	n
Surgical Department	39.13	10.38	23
Medical Department	41.44	10.25	59
Emergency Department	41.05	8.95	62
ICU (Intensive Care Unit)	44.53	5.93	16
Burn Unit	38.21	5.54	7
Pediatric Department	37.50	13.06	18
NICU/OB/GYN/Nursery/Delivery Room	47.98	11.38	26
CCU (Coronary Care Unit)	47.81	14.04	8
PICU (Pediatric Intensive Care Unit)	40.57	7.94	22
AKU (Artificial Kidney Unit)	39.17	7.97	30
Education Department/Nursing Office	50.00	12.16	7
Operation Room	40.31	6.61	8
OPD (Outpatients Department)	41.88	3.86	12
Total	41.67	9.86	298

Table 4.38: Levene's Test for Equality of Variances

F	df1	df2	p
1.650	12	285	.078

Table 4.39: ANOVA Test for Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	p	Effect Size η^2
Department	2755.968	12	229.664	2.508	.004*	.096
Error	26094.724	285	91.560			
Total	546281.250	298				
Corrected Total	28850.692	297				

Note: * Significant at α = .05

The variances were homogenous, indicated by $p > .05$ for Levene's test. ANOVA indicated that the null hypothesis should be rejected (F (12, 285 = 2.508, p = .004). However, the effect size (η^2 = .096) was relatively small. The Scheffé test divided the mean scores into two homogeneous subsets. The nurses in the ICU (n = 16, M = 44.53, SD = 5.93), CCU (n = 8, M = 47.81, SD = 14.04), NICU/OB/GYN/nursery/delivery room (n = 26, M = 47.98, SD = 11.38) and education department/nursing office (n = 7, M = 50.00, SD = 12.16) achieved higher mean scores than any other departments. Evidence indicates that statistically and clinically significant differences existed between participants placed in different departments in the hospital system. Nurses associated with intensive care, coronary care, neonatal care, obstetrics/gynaecology, nursery care, education and the nursing office collectively exhibited significantly higher levels of knowledge regarding pain management compared with those associated with other departments.

Table 4.40: Scheffé *PostHoc* Multiple Comparison Test

Department	n	Homogenous Subsets	
		1	2
Pediatric Department	18	37.50	
Burn Unit	7	38.21	
Surgical Department	23	39.13	
AKU (Artificial Kidney Unit)	30	39.17	
Operation Room	8	40.31	
PICU (Pediatric Intensive Care Unit)	22	40.57	
Emergency Department	62	41.05	
Medical Department	59	41.44	
OPD (Outpatients Department)	12	41.88	
ICU (Intensive Care Unit)	16		44.53
CCU (Coronary Care Unit)	8		47.81
NICU/OB/GYN/Nursery/Delivery Room	26		47.98
Education Department/Nursing Office	7		50.00

4.4.9 $H_0$9. Effect of Hospitals

Participants reported that they worked in one of five different hospitals (Table 4.41). The most frequent groups ($n = 116$, 38.3 %) were Hospital A with $n = 66$, 21.8 %, in Hospital B. One of the other three hospitals was the workplace of 11.6–16.5 % of participating nurses. The percentage of correct scores stratified by hospital were approximately normally distributed (Figure 4.10).

Table 4.41: Frequency Distribution of Participants by Hospitals

Hospitals	n	%
Hospital A	116	38.3
Hospital B	66	21.8
Hospital C	35	11.6
Hospital D	36	11.9
Hospital E	50	16.5
Total	303	100.0
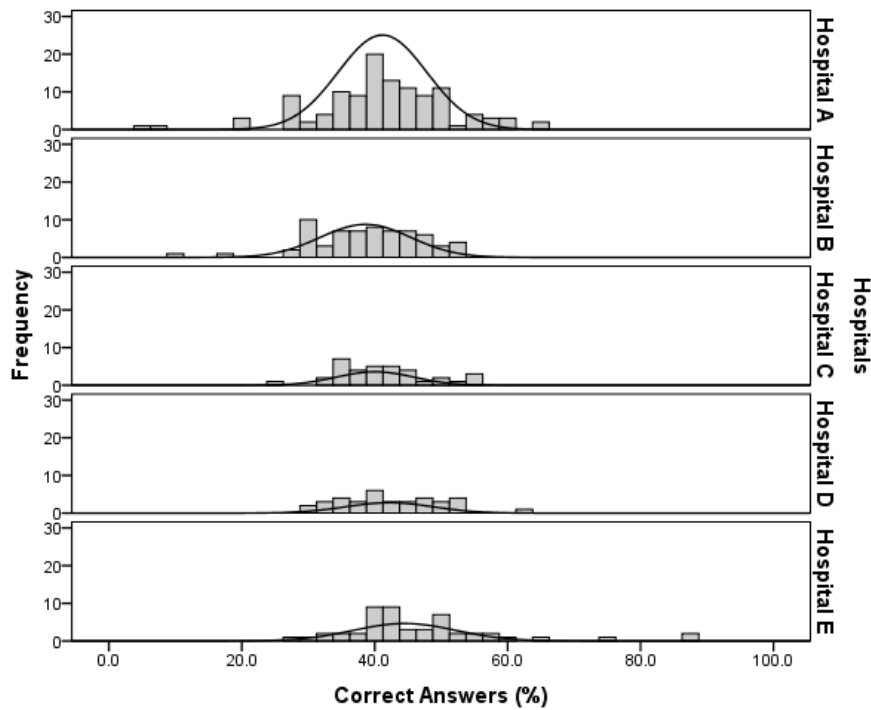
Figure 4.10: Frequency distributions of correct answers (%) by hospitals

The descriptive statistics and results of ANOVA and associated tests are presented in Tables 4.42–4.45. The variances were homogenous, indicated by $p > .05$ for Levene's test. ANOVA indicated that the null hypothesis should be rejected (F (4, 298 = 5.213, $p < .001$). However, the effect size ($\eta^2 = .065$) was relatively small. The Scheffé test divided the mean scores into two homogeneous subsets. The $n = 50$ nurses at Hospital E achieved higher mean scores ($M = 46.85$, $SD = 5.93$) than nurses in any other hospitals (from $M = 38.86$, $SD = 8.32$ for $n = 66$ at Hospital B to $M = 42.36$, $SD = 7.63$ for $n = 36$ at Hospital D).

These results conclude that there were statistically and clinically significant differences between nurses' knowledge depending on the hospital they worked at. Participants at Hospital E exhibited significantly higher levels of knowledge regarding pain management compared to those at Hospitals A, B, C and D. However, this result must be considered in the context of any potential confounding effects of other variables—for example, there being a relatively larger number of Filipino nurses (who scored highly) working at hospital E.

Table 4.42: Descriptive Statistics for Correct Answers (%) by Hospitals

Hospitals	*M*	*SD*	*n*
Hospital A	41.19	10.15	116
Hospital B	38.86	8.32	66
Hospital C	41.21	7.08	35
Hospital D	42.36	7.63	36
Hospital E	46.85	12.14	50
Total	41.76	9.84	303

Table 4.43: Levene's Test for Equality of Variances

F	df1	df2	*p*
1.517	4	298	.197

Table 4.44: ANOVA Test for Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	*F*	*p*	Effect Size η^2
Hospitals	1910.810	4	477.702	5.213	<.001*	.065
Error	27309.611	298	91.643			
Total	557556.250	303				
Corrected Total	29220.421	302				

Note: * Significant at $\alpha = .005$

Table 4.45: Scheffé *PostHoc* Multiple Comparison Test

Nationality	*n*	Homogenous Subsets	
		1	2
Hospital B	66	38.86	
Hospital A	116	41.18	
Hospital C	35	41.21	
Hospital D	36	42.36	
Hospital E	50		46.85

4.4.10 $H_0$10. Effect of Participation in Pain Courses

Participants reported that they attended at least one of up to 10 different formal instruction courses concerned with pain management (Table 4.46), with one missing value. Most (*n* = 228, 75.2 %) had not attended a course, while *n* = 57, 18.8 % had attended one course and *n* =

5, 1.6 % had attended more than two. The percentage of correct scores stratified by hospital were approximately normally distributed (Figure 4.11).

Table 4.46: Frequency Distribution of Participants by Courses

Courses	Frequency	%
None	228	75.2
Once	57	18.8
Twice	13	4.3
Three Times or more	4	1.3
Missing	1	0.3
Total	303	100.0
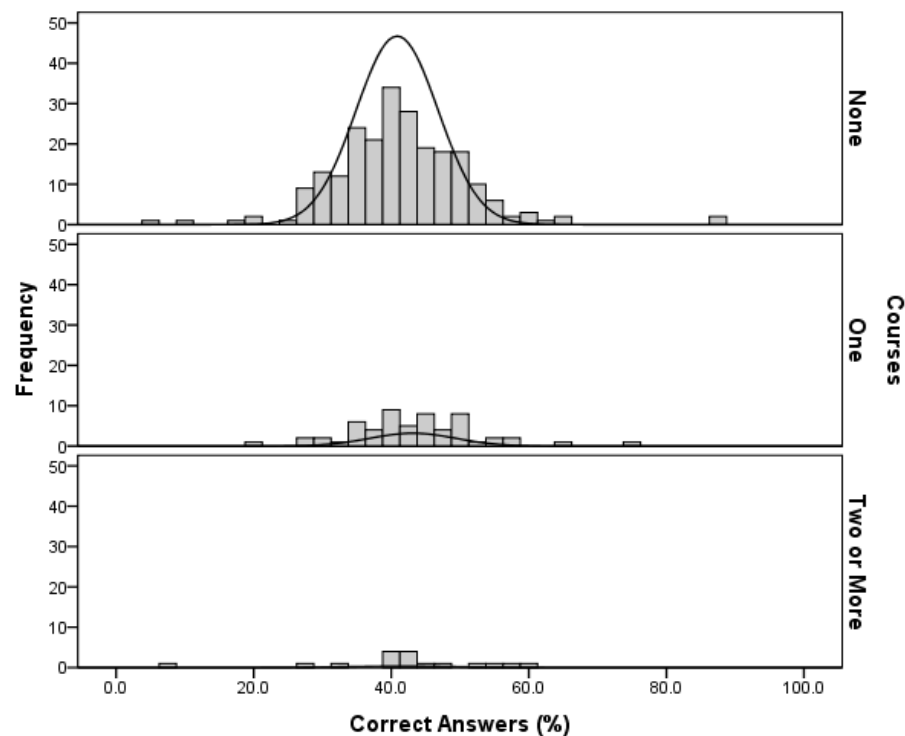
Figure 4.11: Frequency distributions of correct answers (%) by courses

The descriptive statistics and results of ANOVA and associated tests are presented in Tables 4.47–4.49. The mean score was lowest ($M = 41.36$, $SD = 9.80$) for $n = 228$ nurses who had not attended a course. The mean score was highest ($M = 43.29$, $SD = 9.31$) for $n = 57$ nurses who had attended one course. The variances were homogenous, indicated by $p > .05$ for Levene's test. ANOVA indicated that the null hypothesis should not be rejected (F (2, 299 =

.882, $p = .415$). The effect size ($\eta^2 = .006$) was negligible. These results show that attendance at courses had no statistically or clinically significant effects on nurses' levels of knowledge regarding pain management.

Table 4.47: Descriptive Statistics for % Correct Answers by Courses

Courses	M	SD	N
None	41.36	9.80	228
One	43.29	9.31	57
Two or More	42.06	12.22	17
Total	41.76	9.85	302

Table 4.48: Levene's Test for Equality of Variances

F	df1	df2	p
.119	2	299	.887

Table 4.49: ANOVA Test for Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	p	Effect Size η^2
Courses	171.398	2	85.699	.882	.415	.006
Error	29045.924	299	97.144			
Total	555956.250	302				
Corrected Total	29217.322	301				
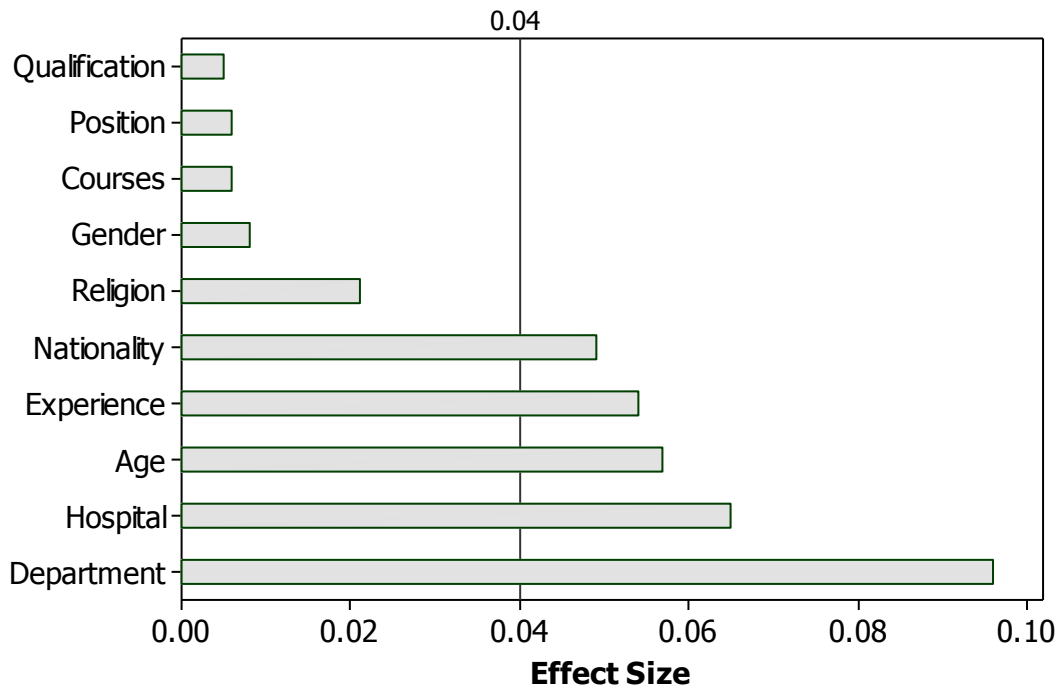
Figure 4.12: Comparison of effect sizes by demographic characteristics

Statistical inferences were obtained using multiple ANOVA tests; as a result, this could potentially be compromised by Type I and/or Type II errors. Clinical significance, rather than statistical significance at $\alpha = .05$, is used to address this question. The effects of the 10 demographic characteristics on nurses' levels of knowledge regarding pain management are compared visually using a barchart (Figure 4.12). A vertical line is drawn at $\eta^2 = .04$, below which the effects of qualification, position, courses, gender and religion are assumed to be minimal or negligible (Ferguson, 2009). The values of η^2 between .05 and .1 for the other five demographic characteristics reflected relatively small effect sizes; nevertheless, they were clinically significant results with practical implications for pain management.

Chapter 5: Qualitative Data Analysis

5.1 Introduction

Analysis was conducted on the qualitative data obtained from the responses of 28 participants to the open-ended, semi-structured interview questions. Statements made by the participants that were relevant to the research questions were considered reflective of their experiences and perceptions (Moustakas, 1994). A qualitative process of coding and thematising (Creswell, 2009; Merriam, 2009) was used to analyse the statements, from which several themes were identified with regard to knowledge, attitudes and factors affecting nurses' provision of pain management to patients.

The coding process was completed through the systematic identification and categorisation of participants' responses to the open-ended interview questions, and the codes were grouped according to content using a combination of inductive and deductive reasoning, allowing for the identification of similarities between responses (Merriam, 2009). The thematic categories (and subcategories) were then further reviewed and compared, yielding the overall themes that were representative of the different perceived elements central to the phenomenon for the group of participants.

In addition to the presentation of the thematic categories with response frequencies, verbatim textual responses of participants are included in the findings to highlight and clarify the key themes or concepts revealed, thereby providing an in-depth understanding of the themes and allowing for a more vivid portrayal of participants' experiences and perceptions (Creswell, 2009). NVivo 9® qualitative analysis software was used to assist in the coding and development of themes and patterns from the data by assisting in the classification, sorting

and arranging of information across the data. The concluding themes that were revealed

represent the perceptions of the group as a whole and are presented according to the relevant

associated research question. The qualitative analysis was conducted by the researcher and

then checked by the supervisors.

5.2 Overview of Participants

The interview sample consisted of 28 nurses from various departments within the facility.

They represented different age groups, nationalities, religious beliefs, years of experience and

career levels. The variety of demographic characteristics is presented in Table 5.1.

Table 5.1: Demographic Characteristics

Participant	Gender	Age	Nationality	Religion	Years Worked
A	F	27	Expatriate	Christian	2
B	F	29	Expatriate	Christian	7
C	F	38	Expatriate	Christian	17
D	F	25	Expatriate	Christian	4
E	F	28	Expatriate	Christian	7
F	F	26	Expatriate	Christian	7
G	F	39	Expatriate	Christian	8
H	F	58	Expatriate	Christian	10
I	F	40	Expatriate	Christian	15
J	F	39	Expatriate	Christian	19
K	F	27	Expatriate	Hindu	6
L	F	26	Expatriate	Christian	4
M	M	28	Expatriate	Muslim	7
N	F	60	Expatriate	Christian	30
O	F	55	Expatriate	Christian	30
P	F	25	Expatriate	Christian	3
Q	M	42	Expatriate	Muslim	14
R	M	40	Expatriate	Christian	19
S	M	34	Expatriate	Christian	10
T	F	33	Expatriate	Christian	9
V	F	46	Expatriate	Christian	22
W	F	33	Expatriate	Christian	8
X	F	50	Expatriate	Christian	25
Y	F	55	Expatriate	Christian	30
Z	M	32	Saudi	Muslim	10
A2	M	29	Saudi	Muslim	7
B2	M	29	Saudi	Muslim	7
C2	M	31	Saudi	Muslim	10

5.3 Findings

Through the process of data analysis, common relevant occurrences (responses, statements, or expressed perceptions or thoughts) of the interview participants were coded and documented. These occurrences were then categorised into five related thematic categories, which are presented individually:

1. Perceived knowledge level and familiarity with pain management and medications

2. Current pain management process and practice

3. Nursing pain assessment

4. Barriers and limitations to optimal pain management

5. Factors to improve pain management.

Table5.2 summarises the themes, subthemes and meaning units arising during the interview.

Table 5.2: Summary of Themes

Thematic categories	Subthemes	Meaning Unit
1. Perceived knowledge level and familiarity with pain management and medications	Perceptions and satisfaction with level of knowledge of pain management	-Satisfied - Knowledge of newcomers not good - Nurses are not knowledgeable or well trained
	Familiarity with, and knowledge of, pain medications used	- Brand name differs but the generic name is the same - Lack of using patient-controlled analgesia(PCAs)
	Interest in learning about pain management	-Interested to learn more - Kept up with learning in India because had monthly tests
2. Current pain management processes and practices	Alternative forms of management used (non-pharmaceutical)	-Some nurses are using non-pharmaceutical interventions - Some nurses do not effectively assess pain or try alternative pain management
	Level of satisfaction with current pain management practices and processes	- Satisfied - Not satisfied because nurses are not using assessment tools and alternative pain management methods

	Nursing responsibility in pain management	-Nurses have significant responsibility because they are with patients most of the time
3. Nursing pain assessment	Nurses' pain assessment in terms of the tools used	-Wong Baker and numerical scale for assessment -Do not use tools for assessment -No form for pain assessment
	Training for pain assessment	- No training had been given - Self-learning about the use of tools
	Perceived efficacy of the assessment process	- Effective
4. Barriers and limitations to optimal pain management	Language and communication barriers	-Language; communication barriers -Different accents
	Workload due to nurse staff shortages	-Shortage of nurses and/or workload
	Cultural, religious and other factors	-Cultural factors (shame on men to complain of pain) -Religious factors (rewards from god)
	Lack of education and nurses' updated knowledge regarding pain management	-No time to update knowledge as a result of high workload
5. Factors to improve pain management	Perceived education and development needs	-Cultural orientation courses - Pain management courses -Self-learning -Uniform protocol or policy -Improved assessment guidelines -Assessment form should be implemented to ensure documentation -Less workload; more nursing staff

5.3.1 Perceived Knowledge and Familiarity with Pain Management and Medications

The first thematic category revealed in the analysis was the perceived level of knowledge of nurses with regard to pain management and medications used. The following three subthemes were included under this category: perceptions and satisfaction with level of knowledge of pain management; familiarity with, and knowledge of, pain medications used; and interest in learning about pain management.

A majority of the nurses that were interviewed perceived that both their own and other nurses' knowledge levels with regards to pain management is satisfactory, and that they are familiar

with the medications used at this facility, as most are the same as those used in their home country (if other than Saudi Arabia). The assertion that most nurses are well equipped with knowledge of pain management persisted among all respondents. In addition, the majority of participants expressed interest in learning more about pain management and some of them mentioned that they kept up with learning because they had monthly tests in their country.

5.3.1.1 Perceptions and Satisfaction with Level of Knowledge of Pain Management.

As far as the level of satisfaction with their own and others' knowledge of pain management, most participants felt satisfied. Their responses confirmed that they believed they held basic knowledge concerning pain management. However, they acknowledged that there was a possibility of such basic knowledge being inadequate. The level of satisfaction in their knowledge was identified by other factors, as revealed in their responses. For example, participant F stated that 'Well, regarding my knowledge about pain and pain management, I think it's fairly good'. The statement presents the perception that the participant considered his or her level of knowledge was, to a reasonable degree, good or adequate.

Another nurse (participant E) described the same sentiment, as well as the desire to increase the level of personal knowledge with regard to pain management, stating that 'It's okay, but I want to improve also'.

Unlike participant F, who did not come out strongly on whether 'fairly good' meant he or she needed more training on pain management, participant E was more candid, acknowledging that while he or she had knowledge of pain management, it needed to be improved.

In an effort to reinforce that they had basic knowledge on pain management, some participants were more detailed and specific in their responses, as seen by the following response by participant L: 'I can't say that I have full knowledge, but according to experience of mine and also my study in my country also, I had knowledge how to control the pain, how to manage the pain, how to alleviate pain'.

The participant proceeded to detail aspects of the control, management and alleviation of pain to indicate the level of awareness in the field. The statement denotes confidence in the knowledge of pain management. However, it lacks in precision in the level of satisfaction.

While another participant C2 offered that his or her difference in knowledge level was directly tied to the level of education received (i.e. diploma versus Bachelor's degree). The indication is that diploma-level nurses are less informed concerning pain management than their counterparts who have a Bachelor's degree. Participant C2 stated:

> Before I had a diploma. So my knowledge for pain was really poor and I couldn't manage the pain, because I didn't have the information on how to manage the pain and how to use the pain scale…But now, when I got my Bachelor's degree in nursing I feel I am more satisfied with myself and the patients themselves also.

The satisfaction level regarding pain management was also inadequate. However, the level of satisfaction increased when the respondent received more training and obtained a Bachelor degree in nursing. Subsequently, the increased level of participant satisfaction was linked to a positive effect in career progression and thus improved the provision of services to patients.

Participant B2 stated that nurses' knowledge may vary depending on their education level. The participant also suggested that different training institutions have different effects on

nurses' knowledge levels. Some institutions produce nurses who have minimal skills and knowledge concerning pain management. Participant B2 suggested that:

> Some of them [nurses] have a really good knowledge. The rest of them, their knowledge is really low. Because they have graduated from different schools. Some of them have their bachelor's degree or their masters, but the majority only have diploma.

Some nurses have adequate knowledge regarding pain management. This is attributed to the notion that the majority of the nurses have attained a diploma, leaving a smaller population that has degrees and Master's-level training. Essentially, the perception of participants is that those who have Bachelor's or Master's Degrees comprise the segment with good knowledge on pain management.

In addition, many participants reported that the perceived level of knowledge of their nursing peers was also satisfactory, and depending on the unit, sometimes even better than satisfactory in their own specialities. Participant K alluded to diverse strategies of managing pain to show that most of the nurses were informed of the available pain management strategies: 'Almost all of us, as nurses, we know how to manage pain. I think my colleagues also they have idea about how to manage pain with medicines, with diverse therapies, and with psychological support'.

Some respondents were of the opinion that the level of knowledge of pain management among nurses was dependent on the unit where one was stationed. Evidently, some units were accustomed to dealing with cases of pain management more regularly than others; hence, they had more exposure in the field. This is highlighted by respondent H:

So with regard to pain management, I've been working here in the burn unit for three years, with my sisters and the group. I think they have good knowledge about pain management because we are dealing with burn patients. We meet [each] case as different cases of burn patients, with different levels of pain. With the degree of their burns, we know how much they are suffering, especially if more extensive burns on the parts of the body. They really experience too much pain. So more of my sisters know how to manage this pain, in accordance with the doctor's orders, and also in accordance with their experience, while they are treating these burn patients

Participant H selectively stated that nurses in units such as the burn unit have to be highly knowledgeable on pain management, as their responsibilities in such a unit demands knowledge on how to aid patients experiencing different levels of pain. Participant H also pointed out that doctors' prescriptions and nurses' experiences are contributing factors to knowledge in pain management.

The same thinking was exhibited by participant J from the surgery unit, who insisted that knowledge concerning pain management was dependent on the unit the nurses were working in: 'It depends on which area, more specifically if you're in surgery they are more knowledgeable when it comes to pain. [Generally satisfied?] Satisfied'.

In contrast, some participants stated that nurses have poor knowledge of pain. This was exemplified by participant A2, who concisely stated that: 'Nurses have a poor knowledge in the area of pain assessment and pain management'.

Others, such as participant N, were of the opinion that their inadequacies in pain management were due to a lack of training. This was evident when the respondent stated that he or she did

not have good knowledge of pain management: 'we are not yet well oriented about pain management, because before we don't have any idea about pain management. We are working as simple as basic' (participant N).

Participant N seems to indicate that no training on pain management was given to him or her, and that the little knowledge he or she has of pain management was gained while working in hospitals. Participant N places the blame on a lack of training prior to being attached to hospitals. In addition, some participants were of the opinion that nurses who were already operating in the hospital had adequate knowledge of pain management. However, this was not exhibited by new nurses who arrived at the hospital, implying that hospitals probably conduct in-service training for nurses. Experience was a determinant of knowledge in pain management as mentioned by participant D, who stated that:

> Staff nurses' knowledge is good, but that newcomers do not have a full understanding of pain management, so they look to senior staff for support: 'All staff has good idea about how to manage the pain. But the newcomers, they don't have, once their patients complain of pain, they will ask us; sister, what will we do?

Other participants also shared the same point of view about newly appointed nurses. This kind of prejudice was evident when a participant stated: 'When it comes to pain management they [newcomers] are not really knowledgeable or well trained' (participant B). This respondent's perception of newcomers is negative and portrays an element of dissatisfaction in the level of his or her knowledge of pain management as mentioned by participant D.

5.3.1.2 Familiarity with, and Knowledge of Pain Medications Used.

The majority of participants cited being familiar with the medications typically used or ordered by the doctors at their facility. In the case of expatriate nurses, they found the medications to be mostly the same as those used in their respective home countries. However, some participants noted them to be different from the medications used in their home countries. For example, participant F stated: 'some are just the same also in our country but there are also some medications that are, yeah, different'. Participant C noted: 'Regarding the medications, the brand differs but the generic is just the same'.

Participants' responses on brand differences and the use of generic medicines in pain management is evidence that the nurses are familiar with some of the medications used in pain management.

Finally, familiarity with medications used to manage pain was discussed in detail by participant E, who noted a lack of use of the pain control and analgesics (PCA) pump. It was noted that there were differences in how different hospitals dealt with cases of pain management. This was exemplified by participant E:

> It is same, but in previous hospital, I use PCA pump also, but I didn't use here PCA pump—pain control and analgesics pump. If patient has pain, they will press like that, then automatically the morphine will come. [So you have it in your country?] Yeah, [but] we don't have it here.

5.3.1.3 Interest in Learning about Pain Management.

Despite the perceived adequacy or satisfaction with their level of knowledge, the majority of participants, if asked, expressed an interest to learn about pain, pain management and pain medications. Indeed, four participants reported spending time in self-learning and reading about pain relief medications. The motivation to learn was prompted by the need to face exams and respond to doctors' enquiries on patients' progress, and for the purpose of career advancement. For example, participant K described nurses' desire to learn about pain management as being linked to the need to be self-fulfilled in their careers:

> I am also a nurse with six years' experience but I tell you know, I have moderate experience and moderate knowledge about pain and pain management, so of course as a nurse, I have to improve my knowledge. So I would like to learn more.

The participant's motivation to learn is evident, demonstrating a positive attitude towards enhancing pain management skills among nurses through training. The aspect of self-learning was also advanced by other participants. However, their motivation was inclined towards developing the ability to respond to doctors' questions while monitoring and evaluating their patients' progress. This was best expressed by participant C, who noted both the desire to learn and self-learning through reading:

> When I was in ICU, because every day, you know, our chief, the chief in ICU, during his rounds…he will ask all about this patient, then you are assigned to this patient—who is the nurse here? So, what are the medications this patient is receiving? So we should learn, what is that medicine for, like that. So I used to read, I had my drug handbook in my room…I am willing to learn. Every day there is more learning also, that's nice.

Participant C's motivation is geared towards self-actualisation in his or her career in nursing and maintaining self-esteem in the eyes of the unit's chief. It is evident that the ability to adequately respond to the chief's questions on the medications being administered to patients is essential while working in the ICU. This calls for self-learning and consequently improving the participant's knowledge of the medications used to manage pain.

In contrast, participant D showed no interest in learning more because there were no monthly knowledge tests:

> In my country in my previous hospital they were conducting monthly test. They have to assess the improvement of nurses. Upon that they will increase the salary. So that time, we will read everything to pass the test. But here, we don't have any test and they are giving us the salary and the increment. So, after coming here, I did not worry more about it.

The participant's view is that nurses will consider self-learning only if tests are administered and linked to pay increments. Otherwise the participant seems content with his or her knowledge of pain management, at least while practicing at that particular hospital.

5.3.2 Current Pain Management Processes and Practices

The second thematic category revealed from the analysis relates to the pain management process as described by nurses from the time of complaint to resolution. This thematic category was formed from four subthemes: current pain management practices, alternative forms of management used (non-pharmaceutical), level of satisfaction with current pain management practices and processes, and nursing responsibility in pain management. Common responses indicate key themes related to the process of assessing, using alternative

methods and checking the chart for PRN or referring to a doctor for pharmaceutical management (14 participants). Concern was expressed by some participants about the tendency of some nurses to neglect providing a quality assessment and/or depending only on pharmaceutical options, thereby neglecting alternative methods of nursing pain management. This was also evident in some responses that follow from the assessment directly to doctor or pharmaceutical options.

5.3.2.1 Alternative Forms of Management Used (Non-pharmaceutical).

Although the importance of pain assessment is recognised, some nurses directly mentioned going to doctor-prescribed medication. Pharmaceutical interventions were deemed more popular among nurses. For example: 'When the nurse assess properly then the nurse can immediately go to the doctor, then the doctor will decide what should be the right medication to give to relieve the pain the same way' (participant A). Participant A noted that nurses never consider the use of non-pharmaceutical interventions during addressing the patient's pain.

When a patient has a PRN medication ordered, the nurse is able to give that medication when needed, according to the orders. However, some participants expressed a belief that the reliance on medication is too quick and that some nurses do not effectively assess the pain or try alternative pain management before using the prescribed medications. It is possible that nurses fail to assess the pain properly because their approach is based on the premise of prescribing a painkiller rather than considering other available options. This was described in-depth by one participant:

> Personally, I have to tell you that they [some nurses] are not that competent in assessing pain. So if the patient would tell that he is experiencing pain, they will just have to look into the file, not to the patient. If the doctor has ordered pain relief, they

will just implement…Otherwise, you will just have to inform the doctor that the

patient is experiencing pain. If there is no order, they would not even mind to act

independent and do non-pharmacological technique. Even deep breathing, they would

not do that, or positioning of the patient, that would, in effect, reduce the level of pain

of the patient. Or assessment, also they fail to assess (participant S).

The respondent believed that some nurses are not efficient in assessing pain and, as such, they

often rely on patients' files. The noted inexperience with procedures of pain assessment is

attributed as the cause of nurses' lack of independence. Therefore, the option of administering

pharmaceutical drugs is preferred over other intervention measures, as nurses do not

understand the cause of the pain.

The alternative forms of pain management offered by participant H included psychological

support and communication, attempting to divert the patient from the pain, deep breathing,

positioning, using a heat compress, music therapy, and rest and relaxation.

We can do another method non-pharmacological. We can talk to them. We can divert

their attention to something. While conversation, the pain is relieved. Or sometimes,

with children, we can provide some music or playing activities to relieve their pain. So

they will forget the pain with the use of music, with conversation or with some

activities. So this can be used. Non-pharmacological.

Participant H identified communication as an alternative method of relieving pain, where

distraction is used to divert the patient's attention. In the case of young children, music and

playing activities are identified as alternatives to pharmaceutical drugs. The perception drawn

is that participant H is well informed on alternative methods of managing pain and, as such,

possesses a positive attitude towards these alternative methods.

Some nurses also drew attention to the possibility of some patients' pain being just a call for attention rather than a need for medication. In such cases, nurses should be able to identify the patients' needs and respond to them appropriately by offering to listen to their fears and thoughts rather than rush for pharmaceutical drugs. This was best explained by participant J: 'Sometimes they just call for pain [management] because they need somebody to be with them…Reassurance, communication, yeah, sometimes really pain is only for crying for help. Sometimes from the start they are afraid because they're in pain'.

Nurses should be able to distinguish when patients are in need of moral support to ease their pain rather than pharmaceutical drugs. However, patients who call for attention through pain are also annoying to some nurses, hence their negative attitude towards alternative methods of managing pain. A good example was provided by participant N: 'There are people who are—who will tell you that they are in pain, but actually they are just malingering. They are not in severe pain, they are just attracting attention'.

Another nurse agreed on the difficulty to assess pain when patients are perceived as 'non cooperative':

> When the patient is cooperative and he tell honestly, so we can assess the patients' pain. But the barrier is when the patient is just malingering or making some drama, like that, so how could we implement good medicine if actually he is not in pain but he's just making drama (Participant C).

5.3.2.2 Level of Satisfaction with Current Pain Management Practices and Processes.

Eight participants were generally satisfied with the current pain management and seven participants described the misuse or non-use of assessment tools. The rest of participants did not wish to comment. Other problems that were noted included not properly documenting pain management, dependency on pharmaceutical management while failing to use alternative methods, and needing more communication with patients. For example, participant F linked his or her satisfaction to positive outcomes on the part of patients who have received services to manage pain: 'Yes, [I am satisfied] so far. Yeah, because most of the times, when we give interventions, the patients are relieved from their pain' (participant F).

Some participants were critical of how the process of assessing pain was carried out by nurses and subsequently how effective the procedure was:

> Assessment of pain, there is a guideline in that form, what are the things they need to assess for pain, but they are not documenting properly, so that's a problem. So if you will look on the chart there's no documentation how long, where is the pain location. They will write the pain location but not the duration and aggravating factors like that, they will write the intervention but there is no reassessment after that intervention.

The participant was concerned about the proper documentation of pain cases where aspects such as pain location, duration of pain and aggravating factors of the pain were not duly documented, hence insufficient. Similarly, the participant also noted laxity in the reassessment of patients after the implementation of the intervention measures. Dissatisfaction was expressed about the current knowledge of pain management among nurses, especially with the documentation procedures, which are crucial because doctors refer to the patients' files.

Concomitantly, participant B2 also noted other deficiencies in the practice, such as the lack of utilising pain management tools:

> I will be honest with you, I'm not satisfied. Because they are not using the tools for pain management, like the numerical scale, which is 0–10, zero being nothing and 10 being the highest. I think the staff use their experience with the pain management, from the appearance of the patient, observation of the patient.

Participant B2 believed that dependence on the conventional methods of pain management was inappropriate in the context of current medical practice.

As noted previously, some nurses expressed that other methods of pain management—non-pharmacological methods—are not being used. Participant Q stated: 'Usually here the problem is when the patients complain of pain they don't give first the alternative ways. They would more provide pharmacological methods rather than other method'.

This is another example where a participant expressed disappointment with nurses' overreliance on pharmacological interventions.

The health facilities provide a pain management form to aid nurses in the assessment of patients' pain. This was revealed by some participants, who described the use of the pain management form: 'Yeah, [we use the] pain management form. In that form, initially they would assess where the location, intensity, how long, then others also, what patient management they will implement independent and dependent management' (Participant B). Others did not use the pain management form.

Other assessment procedures were also mentioned by participant F, who discussed using facial expressions, pain scales and communication procedures:

Here first if a patient complains of pain we first assess the pain. You can use the facial expression or most of the time we use the pain scale that one to 10 then we ask the patient to rate his pain scale. Then based on that we first try to divert their attention or anything like that. We inform first the doctor or the medical resident on duty.

Participant D provided an insight into the assessment process and the problems with nurses assessing the level of pain rather than patients assessing their own pain:

Pain should be subjective and assessed by the patient…but here, we are the one assessing the pain and we are asking the patient; how is the pain? Yes I have pain here, here, here? So then we will think, maybe four to six is his pain…we will decide, not the patient.

Participant D was of the opinion that nurses should listen to the patient's assessment of the pain he or she is experiencing in order to be in a position to adequately respond to it. This is contrary to the current practice, where nurses usually assess the pain on behalf of the patient.

5.3.2.3 Nursing Responsibility in Pain Management.

Nurses were perceived to play a critical role in the pain management process because they have the greatest extent of contact with the patient. The shortage of doctors aggravates the problem, giving the nurses a more important role in caring for patients over 24 hours.

Nurses have really a big responsibility in pain management because they are the first contact with the patient and for eight hours they are with the patient, unlike the doctors only a few minutes…they are the eyes, the ears of whatever their patients are feeling or telling to them. So they have the big responsibility (participant C).

Nurses also discussed their responsibility to communicate with doctors in discussing a patient's level of pain and pain relief medications, and offering their knowledge of the patient's condition. For example: 'Most of the time, we can discuss with the doctors. For example, if they want to give this medicine, we can tell the doctor—doctor, maybe we should try first to give this medicine' (participant F).

Participant S described the ethical necessity of speaking up if the nurse feels there is an error, but also noted that many nurses do not discuss errors with doctors or pharmacists:

> No, they [nurses] didn't [discuss with physicians]—just carried out what the doctor has ordered. We have the right to question the doctor. Then if this does harm to the patient, why don't we ask the doctor that the order is not good, it's not valid? It may do harm to the patient…so anything that will do harm to the patient, we must protect. We must protect our patient (participant S).

The participant believed that nurses should be bold enough to voice any concerns they have about doctors' prescriptions. Ideally, as nurses know their patients better, they are in a better position to caution doctors on any prescriptions that might be harmful. The participant's interest here was purely to ensure professional efficiency rather than fuel professional rivalry. Participant S highlighted the role of the nurse as an advocate for the benefit of the patient.

5.3.3 Nursing Pain Assessment

The use of either or both number and face pain scales were reported by most participants, while only a few reported not using the tools for assessment. Other assessment techniques included communication with patients and vital signs/physical examinations.

5.3.3.1 Nurses' Pain Assessment in Terms of the Tools Used.

The health facility provides guidelines on how nurses should proceed with the assessment of pain for both conscious and unconscious patients:

> In the assessment of pain, we are given this guide paper and we are using the Wong–Baker and the numeric scale. So for the conscious patients we're using the numeric scale most of the time, but in between for these unconscious, it depends, sometimes we are using that Wong–Baker because there is a feature, of the faces scale, it's the same scale with a picture.

Participant C identified two tools used in his or her facility and explained the difference between the Wong–Baker face scale, which is used for unconscious patients, and the numeric scale, which is used for conscious patients. However, participant B noted that some nurses are still not using the scale, or they are not familiar with using it or other techniques to assess patients' pain levels. The point of concern here is to identify the reason/s why some nurses do not utilise the scale. It will be valuable to find out whether it is due to ignorance or a lack of knowledge on how to use the scale to deliver services to patients. Participant B noted that the scale is effective, but is not often complied with:

Actually for me, it's just the compliance of the staff nurses to use that, because they

are not used in telling the patient how would you rate your pain. It's not a practice

here in Saudi Arabia…but we are encouraging the staff nurses to use it.

The respondent was supportive of using the scale as a pain assessment tool and was of the

opinion that the reason for not using it in Saudi Arabia is that nurses are not inclined to ask

patients to rate their pain. However, the respondent strongly agreed with the view that the tool

should be encouraged and utilised more.

Participant O stated that there is no form for pain assessment. This is in contrast to the health

facility's claims to have custom-based procedures for assessing pain in patients. However, in

reality, the pain assessment tools in the hospital guidelines are not made available to the

nurses as they should be. Participant Q stated:

We don't have written tools to assess the pain of the patient. I just read in the book,

but it's not being implemented because we don't have that assessment form wherein

we can initially assess the patient. We don't have that assessment form.

The implication of such an observation is that deficiencies in pain management cannot be

wholly directed to nurses; they should also be directed to the administrators of the health

facility, who do not meet the required standards of pain assessment. The pain assessment form

is one such tool that aids in assessing patients' pain, recording and provides a follow-up

procedure to address the patients' severity of pain.

Other participants confirmed that the majority of nurses are not familiar with pain scales.

Essentially, although the pain assessment tools are, in some instances, made available to

nurses, the challenge is the lack of knowledge and skills among the nurses to utilise the tools.

This factor was also highlighted by participants: 'I see most of them don't have that knowledge of how to scale the pain and get it accurately' (participant C2).

The respondent C2 refers to the lack of skills among some nurses in the utilisation of pain assessment tools such as the scale. Such deficiencies could result in inaccurate and insufficient assessments, which are detrimental to diagnosis and treatment. Adequate knowledge and skills in pain assessment is a prerequisite for adequate pain treatment. Hence, there should be greater emphasis on the need for nurses to be accurate and efficient in using pain assessment tools. The deficit in knowledge of pain assessment to the absence of the relevant content in nurse training curricula.

5.3.3.2 Training for Pain Assessment.

Some nurses have received no training in using the tools, so they had to teach themselves or gain on-the-job training. The knowledge and skills deficit is recorded in many studies and was also revealed in this study, as seen by the following response of participant H: 'We don't have actually formal training but with our experience in handling these patients, we are able to do and practice our tools'.

Participant B described doing his or her own research in learning to use the tools: 'I just read and then research, but not that intensive training for those tools'. Participant B exuded motivation and a desire to know and understand the effective use of pain assessment tools.

Another difficulty in using the tool is the language barrier, which limits effective communication with patients. Multicultural settings imply diversity in languages and therefore the necessity of a strategy to adequately communicate with patients from various

backgrounds, especially in the context of a health facility. The problem was exemplified by participant D, who had a clear understanding of the use of the instrument, but also had difficulties when trying to explain its use to patients using different languages:

> We have Wong–Baker face scale and numerical pain scale…So after an operation, the patient are coming to ICU. So once the patient will awake, they were complaining of pain…So we will ask the patient what is your pain level? So the patient will tell what is the score…But here, the main problem is language problem—Sudanese, Pakistani…different. Because in Saudi Arabia, we cannot explain in Arabic…we don't know how to explain in Arabic.

The participant suggested that the lack of fluency in Arabic is a challenge to effective pain assessment, and this can be a cause of frustration due to nurses' inability to respond to patients in their native language. It is clear that nurses working in diverse settings face considerable challenges in assessing the pain of patients from different cultural backgrounds. Thus, professional nurses should be in a position to utilise credible and reliable cultural assessment procedures to enable the negotiation of a culturally congruent strategy for culturally diverse patients.

5.3.3.3 Perceived Efficacy of Pain Assessment Tools.

Pain assessment tools are undoubtedly essential in pain management, and their efficiency was highlighted by the majority of participants. Participant Z stated: 'I think the tools are very effective and important because it's a standard part to evaluate the pain'.

This participant had a positive attitude towards pain assessment tools, believing that utilising these tools is a key component to the standard evaluation of pain in patients. In contrast, some

respondents were critical of the sole dependence on pain assessment tools, arguing that their use needed to be combined with other data about the patient, such as background information and the social–cultural context of the patient:

> Yes, it is effective but it's not only checking the face of the picture and the patient's face, because you need to have that background of the pain and how it started and what's affecting the pain. The location of the pain will affect the facial expression or anything else. Also, we need to know—that some patients cannot express their pain…because of their religious beliefs or cultural beliefs (participant C2).

Participant C2 portrayed a positive attitude towards the utilisation and efficiency of pain assessment tools, but was also quick to note that the pain assessment procedure should not rely only on these tools; other factors, such as patients' background information and religion, are also essential in aiding nurses to actively and efficiently manage patients' pain.

Pain assessment tools are even more essential when assessing children, as children are not in a position to verbally explain the location, duration and level of pain. This was best explained by participant G: 'In paediatrics, I think it's applicable because you cannot ask the baby how much is the pain? How far the pain goes? But you can assess through this Wong–Baker, I think, as far as I can understand'.

This respondent acknowledged that tools such as Wong-Baker are essential when assessing pain in children and therefore showed a positive attitude towards the tool. The assessment criteria of children should also be multidisciplinary in nature to ensure the best diagnosis in children experiencing pain.

5.3.4 Barriers and Limitations to Optimal Pain Management

The key elements within this thematic category include language and communication barriers, workload due to staff shortages, cultural and religious factors, and a lack of education and nurses' updated knowledge regarding pain management. Cultural, religious, gender and age (elderly and paediatric patients) factors were common occurrences among participants' responses, with greater in-depth perceptions of these elements.

5.4.4.1 Language and Communication Barriers.

The language barrier was the most commonly reported barrier to providing effective pain management. This was particularly true for foreign nurses; however, at times, it was even true for Saudi nurses, given the existing variations in accents and dialects of patients. Nurses who cannot directly communicate with patients have difficulty identifying the root cause of a problem and, as such, intervention may not occur in a timely fashion when compared to a situation where both the patient and nurse are able to communicate effectively. In cases of different Arabic dialects, the nurse may only obtain partial information about the patient's problem, hence limiting the effectiveness of pain management:

> Honestly if they are trying to express their pain to nurses which don't have that much knowledge regarding Arabic language, that is really a barrier because if a nurse cannot easily understand the patient regarding their pain, cannot even understand what is pain all about (participant A).

Participant A recognised the language barrier as an inhibitory factor in effective pain management. Consequently, patients tend to suffer while trying to communicate their pain.

Participant A believed that nurses are responsible for learning the languages of the patients that they deal with in order to effectively deliver good pain management.

Participant F stated: 'For me, my one big barrier is I don't know much of Arabic, so most of the time I ask my seniors to help me to translate'. The participant recognised his or her lack of ability to speak Arabic as a major challenge in fulfilling his or her duties as a nurse, and the need to constantly seek help from seniors who have a better grasp of the language. The genesis of the problem is the inability of nurses to obtain first-hand information from patients on how they are feeling, as well as the severity of the pain and its duration. This was best expounded by participant G, who noted difficulties with communication: 'The most important in the factors affecting pain really for me is communication, at least more of communication, how to deal with the patient, especially if you're going to ask, if we don't understand each other'.

The participant viewed the communication barrier as a significant factor because it generally affects the process of either being or not being in a position to help the patient. This was also discussed by participant H, who described the problem as not limited to the Arabic language alone, but also to accents within the language. The Arabic language is further compounded by the complexities of having varied accents, sometimes with conflicting meanings, hence leading to misinformation. This is challenging to nurses because misinterpreting a patient who speaks with an unfamiliar accent may lead to the wrong diagnosis, resulting in ineffective pain management:

> Sometimes we cannot understand how much pain they are suffering because we
> cannot actually get what they want. For example, they are complaining of pain and we
> cannot understand. Sometimes they have a different accent. Those people from the

village they have [different accent]…we cannot understand what they want (participant H).

Participant C2 mentioned the language barrier and the related cultural barriers of working in a different country and the multinational nature of the area:

I think we have true multi-cultural hospitals here. We have so many nurses from different countries and I think that culture is included, because the international nurses cannot understand the local patients here. So maybe culture will be one of the other factors for that—especially for the international nurses. Yeah. Actually, I see most of them don't have that knowledge of how to scale the pain accurately. Because again and again they come from a different culture and also the language is a big barrier for them. Especially when they are newly employed here in Saudi Arabia. They cannot understand the patient in the correct way. So, they cannot manage their pain because they cannot understand what they are asking for (participant C2).

Participant C2 raised the concern of foreign nurses' ability to provide effective pain management to patients in the facility. The concern is based on a lack of coherence between the nurses' and patients' cultures (Leininger, 2002). This participant was also pessimistic regarding foreign nurses' levels of knowledge on pain management, mainly due to the perception that they do not know how to use the pain scale effectively. Further, language barriers are also deemed a challenge to them because they cannot comprehend how patients express pain. Participant A2 demonstrated the connection between language and culture and the effect on communication: 'Communication—especially with international [nurses]—they don't know the culture of Saudi here. The language also. Yeah, the language, the culture, how people express their pain. Yeah, how to ask them, when to ask them'.

The participant expressed dissatisfaction with foreign nurses' capability of assessing Saudi patients, especially due to their lack of comprehension of the language and the culture of patients. It is also important to note that some cultures believe it is wrong to speak to outsiders about pain; rather, they tend to assume that healthcare practitioners will ask the relevant questions, and questioning the judgment of professionals is rude.

5.4.4.2 Workload Due to Nursing Staff Shortages.

A shortage of nursing staff was also perceived as a barrier to providing efficient pain management. Nurses' workloads are overwhelming when the number of patients requiring services on a daily basis exceeds the number of nurses available to provide these services at a given time. This was revealed by Participant B:

> Since we have a shortage of staff, if patient will complain of pain every 30 minutes nurses cannot attend those patients. It's not reasonable but if you will see the actual situation it's really difficult to manage, for example, 30 patients with four nurses in the ward.

Participant B considered that nurses are not able to cater for more demanding patients due to the sub-minimal nurse-to-patient ratio. The participant drew attention to the fact that the shortage is alarmingly high when four nurses are in charge of 30 patients. One of the strategies adopted by Saudi Arabia is to attract international nurses by offering better pay and working conditions, and by prohibiting the migration of Saudi nurses to other countries.

Participant D asserted that the situation not only leads to suboptimal pain management, but also patient neglect:

Twelve patient means at the time there is 12 demands and that the nurse is only one. How can she manage the 12? But, we are adjusting our time and we are just managing it, but of course some patient will get neglected.

This respondent expressed frustration about the shortage of nurses, which compromises the quality of care given to patients and affects the efficiency and effectiveness of nursing care.

Shortage of nurses will increase workload of available nurses. This was best explained by participant C:

All I can say is that it's not so satisfactory [pain management], it's not enough, and maybe because of the workload in the setting, because the patient ratio is not ideal, patient–nurse ratio is one is to 10, or to 15, like that, so really it's difficult.

The workload was also tied, by some, to an inability to achieve further education due to a lack of time and overwork, even if opportunities are available:

Also, the shortage and the lack of nurses. That will increase the workload on them. Yeah, that will increase or decrease the time that they spend in education. To summarise, education in general [is a barrier]. Also individually, nurses need to educate themselves individually and unfortunately, they are not. We can't blame them because of the workload (participant A2).

Increased workload means that the available nurses do not have time to advance their knowledge through further education. Essentially, participant A2 argued that the shortage leads to nurses not advancing in their education, as they have to give priority to delivering services to patients. Thus, a shortage of nurses has other ramifications that affect both patients' satisfaction and nurses' career advancement. The argument is logical, as pain

management is affected by both the level of education of nurses and the nurse-to-patient ratio. The dissatisfaction among nurses due to limitations to career advancement and higher nurse-to-patient ratios are the key contributors to increased workloads, exhaustion and nurse burnout.

5.4.4.3 Cultural, Religious and Other Factors

Cultural and religious factors were considered important barriers to achieving optimal pain management by many participants. When operating in multicultural settings, the likelihood of having different religious groupings is very high. As such, nurses have to be aware of the beliefs and practices of various religious groupings and their perceptions of pain in order to adequately deliver pain management. 'Beliefs and religion as a Muslim—if someone is really in pain and he tolerates the pain, he will receive a reward from Allah. That's what we believe and that is why some people tolerate their pain' (participant B2).

The participant explained how Muslim religious beliefs affect pain management because of the view that tolerance of pain is rewarded with blessings from the creator Allah.

> But spiritual aspect, I would say that it matters also because once you have faith in God whatever your religion is, so the pain will be easy, you can carry the pain even though it's very severe if your faith in God is strong. So it's just okay, you can deal with it, just like me in my own experience, so at times that I was in pain, this labour when I deliver, so I just pray (participant C).

Participant L believed that religion could be an obstacle to effective pain management because some religious beliefs and practices do not allow the use of certain procedures and drugs of modern medicine.

> But it [religion] really affects the pain management. So it limits the management you can do for that patient, because there is some culture you also have to follow. You will not ignore this. Because they have their beliefs. You cannot fight with their beliefs (participant L).

Nurses are at a crossroad in such situations, as they are faced with the dilemma of respecting patients' beliefs while also offering the best medical advice despite the patients' religious bias. Participant L also believed that nurses should not ultimately cross boundaries in trying to convince patients to agree to the prescribed pain management strategy if it contrasts with their religious beliefs.

Cultural aspects also play a role, particularly in the expression of pain, and particularly among men. Pain management interventions adopted by nurses should also consider gender perceptions of pain as moulded by the cultural upbringing of the patient. Different cultures have different perspectives on how men and women should respond to painful experiences:

> I really agree that culture affects us. In our culture men have to tolerate their pain sometimes and they will describe the man who didn't tolerate the pain negatively, it's like a shame on him to complain of pain, unless that pain is untreatable (participant B2).

This participant was convinced that culture directly affects how patients perceive pain. The example given was related to their culture, where men are brought up to endure pain silently because expressing it publicly is deemed shameful:

Of course, this is very important because we, as a Saudi nurse; we understand the culture, our culture, so we don't expect the patient will complain. We have to ask the patient frequently about their pain. But for the international staff they might be waiting for the patient to establish their pain. That's why I always tell my staff—the new international staff about the Saudi culture. They must ask the patient, it's like shyness to say I am in pain, because you think you are strong, you are a man. It's not the right way to complain…they tolerate, even the severe pain, unless you try to figure out (participant Z).

Participant Z expressed the opinion that Saudi nurses are better in catering for patients in the facility because they understand the Saudi societal construction of gender and how the different genders should respond to pain. The participant believed that international nurses should be taught the Saudi culture in order to adequately deliver good pain management. Among the cultural aspects they should be taught is how to educate patients about their pain rather than expecting an automatic description of the condition by the patients themselves. In the case of Saudi men, nurses must be aware that men are socialised to endure pain in silence. Hence, it is the nurse's duty to probe the cause, severity and duration of pain.

The results also indicated differences in pain tolerance and effective pain management related to demographic characteristics such as gender, age and nationality (Wandner, L, Scipio, C., Hirsh, A., Torres, C., & Robinson, M., 2012). Some gender issues were noted in the cultural differences, and some gender differences are related to cultural effects. Thus, there is a degree of overlap with these two subthemes. These demographic differences are not limited to gender, as previously described. There are also differences between nationalities and ages. In general, children were described as not able to tolerate pain and were therefore medicated

quickly to alleviate their pain. Pain management in children is complex because children are not in a position to aid in effective pain assessment strategies. For example: 'In children we cannot [offer alternative pain management methods]—it's a different factor affecting children, so I think it is more of—for children it is more of giving right away the right medication' (participant G).

This participant believed that when caring for children, nurses cannot be dependent on alternative measures because children cannot vocalise their pain. The participant was of the opinion that children's pain should be dealt with as quickly as possible, as the effect of pain is greater on children than on adults. Nurses should utilise pain assessment tools that have face ratings when dealing with children as young as three years. It is also important to appreciate that children are less likely to react to pain emotively because they cannot verbalise it to gauge the level of the pain.

Gender differences were also noted in pain tolerance. As previously described, males' ability to endure pain is generally tied to cultural reasons, whereas female tolerance was often described in relation to childbirth or other types of general pain tolerance. Saudi females were also described by some nurses as 'over-expressing' pain, with nurses noting that females were generally more expressive than males in terms of pain, which may be related more to cultural differences than gender differences. The gender differentiation of pain is due to the societal construction of how males and females should perceive pain according to the cultural expectations of their ancestors. Nurses' knowledge of such facets is essential in the diagnosis and treatment of pain when caring for Saudi patients, as part of their responsibility is to respect the culture of their patients. For example: 'The Saudi—I believe—the Saudi females are—over-expressive in their pain, and their pain threshold is very low. Just—sore throat or what do you call this—tooth ache—they will ask for more pain reliever' (participant O).

This participant believed that Saudi women are more expressive of their pain than men. In essence, the participant believed that dealing with Saudi women calls for patience and understanding, as their behaviour is directly linked to their cultural upbringing. Some nurses described perceived differences according to nationality: 'In my experience, regarding the pain it's also different with nationality. I know when it comes to people here from Saudi Arabia, they're not much, but with regards to other patient—Egyptian—they cannot tolerate it' (participant Q).

This participant believed that Saudi people are more tolerant of pain compared to other nationalities, such as Egyptians. The respondent said that cultural considerations should be taken into account when dealing with pain expression.

Others asserted that pain tolerance and management depends on the person rather than gender, nationality or age. Participant D expressed this notion, but also noted that the education level of the person with regard to the ailment can make a difference, as someone with no knowledge about the ailment is likely to be more afraid. Individuality is also an essential consideration in pain management. In every society, stereotyping often results in conflicts with individuals who do not conform to society's cultural beliefs and values.

> Actually, the thing is that I am doing a male surgical ward so I have only experience with the men. In men also, I don't have any experience with women and children. So in my experience, in between men also, there is pain threshold level is increasing and decreasing. Some male patients, they are tolerating very well…and some patients for a small pinch…Pain is painful for all human beings…If some professional male or

female, if they know the situation, they may try to tolerate. It depends upon the patient and his knowledge, his family level, his status, his education (participant D).

This participant disagreed with the notion that all men in Saudi Arabia are capable of tolerating pain equally, arguing that each individual is different. The participant believed that nurses should not rely on stereotyping in pain management; they should instead focus on each patient as an individual, as differences in perceptions of pain are significant in pain management. The respondent thought that an individual's perception of pain is also influenced by their level of knowledge, their status in their family and their professional qualifications.

5.3.5 Factors to Improve Pain Management

The factors that the participants perceived to improve pain management were discussed, along with the need for professional development to provide continuous learning (education) and updating of nurses' knowledge. This education includes coursework, cultural training or orientation, self-learning and professional development opportunities such as seminars and lectures. The intervention measures for the correction of deficiencies in pain management were mostly hinged in education. However, the time for nurses to advance in their education is limited due to an overload of work. The solution put forward was for hospitals to assume responsibility by providing in-service training for nurses at their workplaces.

> First thing is education. When the education department in any hospital is active and they will go into the hospital and find what area that nurses need. They know that the nurses have a poor knowledge in the area of pain assessment and pain management. They have the ability to offer those courses to us as nurses, but unfortunately they are not. Yeah, education, that will help us, which is not there.

Education was identified as the key solution. Participant A2 suggested that health facilities should take up the initiative once it is identified that their nurses are not efficient in pain management. The participant portrayed a willingness to learn and be active in such programmes, but was disappointed that health facilities are reluctant to address their staff needs to upgrade their knowledge.

One nurse recalled that during their college years, pain management was sparsely covered, hence the need to advance in the topic despite the experience they have gained:

> I remember now my college days; this pain management is not a vast topic. We are getting little knowledge already, but with experience we will get more knowledge. But I think any classes or lectures about pain management and assessment of pain—that will improve all staff knowledge about pain (participant K).

Another nurse felt that inadequacies in the delivery of pain management could be solved through nurses advancing their level of education: 'The university…must upgrade their degree to bachelor. The nursing office must provide courses about pain management, continuing nursing education. All those factors would help' (participant Z).

Participant Z proposed that universities must upgrade the qualification they offer from a diploma in nursing to a Bachelor's degree. The respondent also highlighted the role of pain management courses, which help to improve nurses' knowledge regarding pain and its management. Continuing education among practicing nurses was also identified as a solution to poor pain management in the health facility. Continuing education is essential because it not only keeps the nurses up-to-date with new methodologies of pain assessment, but it also

provides a forum where nurses can share their experiences with the subject and how some situations can be improved.

> This is also good thing. This continuing education. I think—I don't know if they give more important about pain management, but in my previous hospital this is one of the continuous education that we're taking—this pain management (participant Q).

This respondent had confidence in continuing education as an effective solution to the associated knowledge deficiencies that may hinder effective pain management. In addition of cultural competence courses, coursework was suggested on pain management. This was particularly true for non-Saudi or foreign nursing staff, who need training during orientation and upon entry to the workforce to enhance their awareness of Saudi culture. The concern posed by foreign nurses regarding cultural education may be attributed to the frustration and challenges they deal with on a daily basis because they cannot effectively communicate with patients:

> It really helps if you go deep especially how to deal with these individuals you don't really know, you don't understand what they're—his beliefs, his cultures, his knowledge…Because me in my country, I know my culture so I know how to deal with the patient. I know how to deal with the patients but here, [but] it's a new culture, so very different. You don't know how to give the right words, you don't know how to say this, or he might be offended or something. You might say something to him that is not really applicable with his beliefs so I think they must give that. In my own opinion, I'm not really well-versed about these cultures of the Saudis, so when I come here, I really have these difficulties, really. Because of—how will you say this properly—because they have different perspective, different religion, different from my culture. It's a very big difference. So when I come here I really have those problems with me, how to adjust. So it's very hard.

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Participant G was frustrated at not being able to deliver services to patients in Saudi Arabia due to an inability to communicate with the patients and a lack of understanding of their religion, level of education and cultural upbringing. Participant G perceived these challenges as limiting his or her responsibility and roles as a nurse, hence suggesting mandatory cultural induction and education for foreign nurses.

This was noted by participant M, who discussed the multicultural nature of the area and stated that cultural diversity training or orientation would be helpful:

> They should have a preview of what they are going to have during their stay in the country. Because we already live in a multi-cultural community. It's not just like, oh we are in our country, so we have only people from my nationality or we are in Saudi Arabia oh we have Saudis, no. We are all, [our] nationalities are all mixed.

5.4 Conclusion

Participants' responses were based on their level of education, individual experience and practice at their current health facility and in other workplaces. Concerning their knowledge and familiarity with pain management and medications, there was a general consensus that they were satisfied in these aspects. However, it was also evident that they appreciated the value of further training to improve their efficiency and effectiveness regarding pain management in their health facility. Furthermore, views were expressed that the level of knowledge of pain management was directly linked to the level of education attained by nurses. The implication is that the higher the level of education of a nurse, the higher the level of his or her efficiency and effectiveness in the field of pain assessment and management. In addition, some of the respondents believed that the level of knowledge of pain management

was also dependent on the institution of learning that one attended, as some nursing schools were deemed to be more prestigious and to produce better skilled nurses in the field. The unit or department assigned to nurses was also considered a contributing factor to the level of knowledge and satisfaction regarding pain management among nurses. Conversely, those who expressed dissatisfaction with their own and other nurses' knowledge concerning pain management, attributed poor knowledge to poor training and deficiencies in their healthcare facilities.

On the issue of identifying familiarity with knowledge of pain management medicines, the respondents recognised differences and similarities in the types of drugs used in different countries. Respondents also noted a shortage of drugs, such as PCA pumps, in the facility, hence limiting effective pain management.

The desire and willingness to learn was noted by most respondents, apart from a few who stated that they would only consider further learning in the field if it would lead to increased wages. The strategies proposed to encourage further training included self-training and continuing education programs for practicing nurses. The desire to learn was linked to motivation factors such as career fulfilment and self-actualisation.

The respondents were concerned about the neglect of non-pharmaceutical measures and the subsequent overdependence on pharmaceutical drugs to deal with pain. Some respondents blamed this overdependence on nurses' inadequate knowledge and skills regarding pain assessment. Non-pharmaceutical interventions that were identified included music therapy, psychological support, deep breathing, rest and relaxation. It was also noted that a challenge faced by nurses during pain assessment was patients lying about their condition as a way of seeking attention and recognition. Moreover, most respondents held the opinion that the

current practices and processes in pain management were satisfactory. However, some problems were also noted, such as insufficient documentation, lack of utilisation of pain assessment tools, over dependency on pharmaceutical drugs and a lack of subjectivity while assessing patients. Respondents agreed on the responsibility of nurses regarding pain management. This was further supported by the notion that nurses act as a link between patients and doctors in relation to diagnosis and treatment procedures.

The identified assessment tools used by nurses include the numeric scale and facial expressions. Wong–Baker was considered essential in the pain management of children and unconscious patients. Emphasis was laid on using pain assessment tools, as they help to increase quality care in pain management. However, some nurses had no knowledge or skills in using such pain assessment tools, thereby compromising on quality care. Nurses believed in integrating pain assessment tools with information such as patient background, religion, culture and their medical file in order to provide effective pain assessments and management.

One barrier that was identified was the language barrier, which frustrates both patients and nurses due to an inability to understand each other. In Addition, another barrier was cultural, where foreign nurses experienced cultural gaps in pain management. The shortage of nurses in Saudi Arabia was classified as a barrier to optimal pain management because it leads to increased workloads for available nurses. This becomes more complex, as the patient–nurse ratio becomes too high, leading to the neglect of some patients. The shortage may also lead to nurse burnout and a lack of time for nurses to advance in their level of education. Other barriers highlighted in regard to effective pain management were cultural and religious barriers, which may limit nurses in implementing pain interventions due to patients' beliefs.

The last theme identified some of the interventions proposed in dealing with poor pain management, including:

- Health facilities to offer in-service pain management training to their nurses

- Collaboration between practicing nurses and nursing institutions to devise an adequate pain management curriculum

- Foreign nurses to be offered an induction course to orient them with the Saudi culture

- Training nurses to deal with diverse cultures in the context of pain management.

Chapter 6: Discussion Chapter

6.1 Introduction

This chapter discusses the results of the data analysis in the context of the existing literature. The chapter discusses the findings in relation to the study's research questions (see Chapter 1), which are answered by both the quantitative and qualitative components of the data collection. Pain management is a complicated topic because it involves, and is affected by, several factors, including patients, healthcare providers and the systems or policies of relevant organisations. However, the principal focus areas of this study are nurses' knowledge and attitudes regarding pain, the role of nurses in pain management and the barriers to providing effective pain relief in the Saudi Arabian context. Attention has been drawn to the effect of patients' cultural backgrounds and that of the healthcare providers in pain assessment and management, including Islamic societies such as Saudi Arabia where Islam is the dominant religion and might not be shared among all health workers. Nonetheless, the main finding of this study concerns the deficiencies of nurses' knowledge on matters relating to efficient pain management.

6.2 Discussion

This discussion includes the results and findings of the survey utilised in the quantitative phase, as well as those from the interviews in the qualitative phase. The findings were analysed and interpreted in relation to the existing literature, and the facts related to their clinical significance were included with some expected outcomes concerning pain management. Each research question is addressed separately in the following sections, and the results are discussed in the context of the relevant literature.

6.2.1 Nurses' Knowledge and Attitudes Regarding Pain Management

The KASRP items were designed to measure participants' knowledge and assess their attitudes regarding pain management. In this study, based on the correct answers provided by each participant for the 40 questions, the overall scores ranged from a minimum of 5.0 % to a maximum of 87.5 %, with a mean score across the 303 participants of 41.76 % (SD = 9.83). The majority of the participants scored 35–47.5 %. There were a few outliers, for example, seven participants scored ≤ 20 % and 11 scored ≥ 60 %. Only two participants obtained a passing score of ≥ 80 %. The average correct response rate in this study (41.76 %) was very low and deviated significantly from the acceptable score of 80 % (McCaffery & Robinson, 2002; Brown, Bowman& Eason, 1999). The low pass rate (two out of 303, or 0.6 %) indicated that nurses in Hail region hospitals have deficits in their knowledge and attitudes regarding pain. Although such an inference is made based on the stipulated standard that a score below 80 % is considered a lack of competence to satisfy patients' needs in pain management, the average percentile result in the present study lies within the wide range observed in other similar studies (Bernardi, Catania & Tridello, 2007;Lewthwaite et al., 2011; Lui, So & Fong, 2008; Matthews & Malcolm, 2007; Plaisance & Logan, 2006; Rahimi-Madiseh, Tavakol& Dennick, 2010; Wang & Tsai, 2010; Yildirim et al., 2008;). For example, Matthews and Malcolm (2007) reported an average correct response rate of 73.8 % for their participants. However, a similar study conducted by Yildirim et al. (2008) to measure the knowledge and attitudes among Turkish nurses using the KASRP tool showed an average correct response rate of 35.4 %, which was lower than that of the current study.

6.2.1.1 Nurses' Pain Assessments

Many studies (Ballantyne, 2006; McCaffery & Ferrell, 1997; Arbour & Gelinas, 2010) provide evidence to suggest that patients' self-reports are the most reliable indicator of pain intensity and are thus considered the reliable standard for pain assessment. While the majority (59.7 %) in the present study agreed with this, a number of nurses (40.3 %) did not always follow this simple rule. Kaki (2009) found that nurses were more likely to accept patients' reports of pain. They take cues from grimacing patients and may disregard smiling patients. In Kaki's (2009) survey, 300 questionnaires were distributed in various healthcare settings at King Khalid National Guard Hospital in Jeddah, Saudi Arabia. Kaki's study found that nearly 23 % of nurses ignored the self-reports of patients for different reasons and failed to see a difference between eight out of 10 and zero out of 10 on the numerical scale of pain assessment. In this case, nurses were ignoring patients' self-reports, which are crucial in assessing patients' pain and consequently could negatively affect its management.

One segment of the KASRP survey is related to two case studies regarding pain assessment. The relevant questions aim to identify the attitudes of nurses regarding pain, and they require participants to determine whether a patient is in pain judging from their smiling or grimacing facial expressions. The percentages of correct answers obtained with regard to smiling or grimacing patients were 9 % and 32 % respectively. The percentage of participants who accurately rated the pain scores of both was lower than that of other research studies conducted internationally. These results show a major deficiency in nurses' knowledge, as well as inappropriateness in their attitudes regarding pain and its management. This is an adverse outcome when compared with the results of Matthews and Malcolm's (2007) study, in which 51.3 % and 77 % of nurse attendants were able to correctly judge the pain of smiling and grimacing patients.

Al-Moriarty (2011), Mathews and Malcolm (2007) and Wilson (2007) advised that pain assessment measures should be used by nurses on a regular basis to select the best intervention measures. Further, other factors such as cultural beliefs and past patient experiences should be taken into account (Finley et al., 2009). Some participants in the interviews showed confidence in the ability to assess pain, and subsequently the procedures that would help him or her to adequately address the problem. However, participants relied on the judgement of doctors in pain relief, showing a lack of confidence in their own ability to help the patient.

6.2.1.2 Nurses' Attitudes

A substantial proportion (32.7 %) of participants in the current study incorrectly believed that changes in vital signs are an accurate indication of the existence of pain. This is a misconception with regard to the pain assessment process, but it is not limited to the present sample of nurses. A study by Coulling (2005) also found that 32 % of participants believed that vital signs represented a primary indicator of the intensity of pain. Other misconceptions that could be linked with nurses' beliefs regarding physiological changes in vital signs have been observed by other researchers (Huth, Gregg, & Lin, 2010; Yildirim et al., 2008; Bernardi, Catania, & Tridello, 2007).

Similar misconceptions were prevalent among nurses in relation to patients' pain-related behaviours, coupled with associated knowledge deficits. The neuromatrix theory of pain suggests that pain is significantly influenced by psychological factors, which are vital components in the perception of pain (Mandeville, 2010). Consequently, the role of non-pharmacological therapies, such as information provision, distraction, relaxation techniques

and cognitive behavioural interventions, have gained value in managing pain (Macintyre et al., 2010). Helmrich et al. (2001) conducted an Australian study to ascertain the attitudes of nurses and the application of non-pharmacological methods for pain management. They found that (89.3 %) of the nurses ($N = 37$) claimed that they used non-pharmacological methods to help in the management of patients' pain. In contrast, several other studies ascertained that the use of such integrated (pharmacological and non-pharmacological) treatments were negligible to non-existent (Eid & Bucknall, 2008; Manias, 2003).

It is well known that many aspects of normal activities are altered in patients suffering from pain. Studies have provided evidence to support the notion that nurses should assess pain depending on non-verbal cues and behavioural manifestations and they may include physiological changes in vital signs. According to some participants, patients in pain are unable to sleep. Nonetheless, participants demonstrated knowledge deficits in this area too, as indicated by a substantial proportion (35.6%) falsely believing that patients who can be distracted easily from pain usually do not have pain of any considerable severity. The belief among nurses that patients whose sleeping habits are unchanged do not have severe pain is also a common observation in other studies (Bernardi, Catania, & Tridello, 2007; Coulling, 2005; Lai et al., 2003; Lui, So, & Fong, 2008; Tsai et al., 2007; Wang & Tsai, 2010; Yildirim et al., 2008). Distraction and relaxation are strategies that help in diverting attention away from pain (Macintyre et al., 2010; Mandeville, 2010; Tse & Chan, 2004). Coulling (2005) explained that these techniques help patients to feel less pain. Further, patients utilise their own coping strategies, such as distraction techniques and sleeping, to divert their attention away from pain. Misconceptions regarding pain assessment should be sorted out to help patients manage pain and to avoid neglecting their pain.

Individuals are influenced by cultural factors, including socioeconomic, geographic, religious and ethnic factors (Curry, 2010). Therefore, patients' individual attitudes and the cultural aspects of their presentation must be considered in pain management. The majority of participants (55.8 %) agreed that patients should be treated individually with due regard to their cultural uniqueness or diverse ways that may influence their perceptions of, and responses to, their pain experience. Many reported studies discuss this matter (Wang & Tsai, 2010; Reiman & Gordon, 2007; Tsai et al., 2007; Lai et al., 2003; Van Niekerk & Martin, 2001). It is also noteworthy that people differ in their beliefs about pain. In this study, 69% of participants thought that a patient's spiritual beliefs could influence his or her perception of pain. Van Niekerk and Martin (2001) stated that 81 % of participants in their study correctly acknowledged that certain religious beliefs may lead patients to consider pain a necessary feature in the fulfilment of life. Curry (2010) believed that nurses should be aware of individuals' distinctive cultural perspectives that may influence the pain management process and its outcomes.

These findings collectively indicate that the majority of participants possessed a fair knowledge base and positive personal beliefs with regard to patient variables of pain perception and the various influences and concepts that may alter pain interpretation and expression. Additionally, the influence of religion as an important consideration in pain management has been discussed, with more than 90 % of participants in survey-based research indicating that religion and associated belief systems influence pain perception (Bernardi, Catania, & Tridello, 2007; Erkes et al., 2001; Plaisance & Logan, 2006; Van Niekerk & Martin, 2001).

6.2.1.3 Nurses' Knowledge of Pharmacology

Pharmacology-based items are vital in pain management and have therefore been given substantial significance in KASRP survey result reporting. It is necessary for health professionals to have knowledge of the pharmacological approaches to managing pain. However, this proved to be another knowledge-deficit area among participants. In the current study, participants showed poor performance on pharmacology-based questions, which is in accordance with the observations made in many other international studies. Knowledge deficits and a lack of ability have been highlighted in many research studies that tested basic pharmacological knowledge, including choice of medication, drug action, routes of administration, untoward effects of opioid analgesics, equi-analgesic dosing (doses of a drug for different routes of administration that would provide equivalent analgesic effects) and selection of drug dosages (Lewthwaite et al., 2011; Wang & Tsai, 2010; Yildirim et al., 2008; Lui, So& Fong, 2008; Tsai et al., 2007; Matthews & Malcolm, 2007). Many studies have indicated that nurses are particularly deficient in knowledge about the drug *Promethazine*, or *Phenergan* (used to treat allergies and control pain), and its actions. Overall, the percentage of correct scores for *Promethazine*-related questions was 10–30 % (Yildirim et al., 2008; Bernardi, Catania& Tridello, 2007; Reiman & Gordon, 2007; Plaisance & Logan, 2006; Erkes et al., 2001; Brown, Bowman & Eason, 1999). In the current study, the percentage of correct scores for Promethazine-related questions was 37 %, which indicated that the majority of participants incorrectly believed that Promethazine potentiates the analgesic effects of opioids. Indeed, it is known that the sedative effects, respiratory depression and hypotension effects of opioids are increased by Promethazine (McCaffery & Ferrell, 1995). The question on the effectiveness of aspirin and NSAIDs on bone pain was answered incorrectly by the majority (66.3 %) of participants in the current study. This result also reflects the results of similar studies (Lewthwaite et al., 2011; Lui, So& Fong, 2008; Tsai et al., 2007).

Another area where nurses seem to have many misconceptions relates to the basic pharmacology of analgesics—especially opioids. More than two-thirds of participants in the current study (68.3 %) correctly answered that morphine is the best choice in treating cancer-related pain, but only 14.5 % knew the proper route of analgesic administration for cancer pain. Regarding the question on the peak effect following oral morphine, only 40.9 % of participants gave the correct answer (1–2 hours). Similar findings have been reported in earlier studies (Wang & Tsai, 2010; Yildirim et al., 2008; Reiman & Gordon, 2007; Plaisance & Logan, 2006; Brown, Bowman& Eason, 1999). However, concerning the knowledge of the peak effect following intravenous morphine administration, 76.9 % of participants understood that it takes 15 minutes to reach its peak analgesic effectiveness. Therefore, nurses' knowledge of the pharmacokinetics of oral morphine is a particular concern.

Pain management practice requires a clear knowledge of equi-analgesic dosing. The utilisation of an equi-analgesics chart assists healthcare professionals in considering equivalency between pain-relief medication dosages (Brown, Bowman& Eason, 1999). Healthcare professionals must be conversant about the pharmacology of opioid analgesic preparations and be skilled enough to compute equi-analgesic dosages when managing pain. In view of the vital role of nurses in managing pain, they must be experts in these mathematical calculations to ensure maximum positive outcomes. Nurses must select the analgesic route and dosage of analgesia for as-needed (PRN) medications. The administration of the equi-analgesic dose requires significant care and responsibility to ensure that the transition from one opioid preparation to another does not produce adverse effects, such as an increase in pain (Gordon et al., 1999). Only one-third of participants (30 %) in the current study provided the correct equi-analgesic dosage when changing from intravenous (IV) to oral administration of morphine. A similar knowledge deficit was also reported by Tsai et al. (2007), who established that less than half (45.4 %) of emergency department nurses had the

required knowledge to work out the correct equi-analgesic dose of morphine. This has been a frequent observation across many studies, showing that participating nurses had only a meagre knowledge of equi-analgesic calculations (Lui, So & Fong, 2008; Reiman & Gordon, 2007; Brown, Bowman& Eason, 1999). The knowledge deficits regarding equi-analgesic doses may lead to many problems in the pain management process and could result in major errors in patients' pain management. Different routes are recommended for the administration of analgesics depending on different disease conditions and considering factors such as rapidity of action, maximum effect and patients' comfort. For example, for cancer-related pain, the oral route is the most effective option. It is an internationally accepted fact that the oral route for analgesia administration for cancer patients is the least expensive and most effective medication regime (McCaffery & Ferrell, 1995; Agency for Health Care Policy and Research, 1992). In a study by Matthews and Malcom (2007), only 39.8 % of nurses knew that the oral route is the preferred route of opioid administration to patients with cancer.

The present study also found vast knowledge deficits of, and unfavourable attitudes towards, opioid addiction and opioid-caused respiratory depression. The study highlighted many misconceptions about the effects of opioid analgesics. Interestingly, 82.5 % of participants could correctly identify the definition of addiction, but the majority could not distinguish between terms such as addiction, tolerance and physical dependence. The risk of addiction to opioid analgesics varies between different patient populations and treatment regimens. However, it is least likely to happen when opioids are used for acute pain management. In particular, opioid addiction is a very rare treatment complication in acute surgical pain relief (Ballantyne, 2003).

Deficiencies in the professional knowledge of nurses regarding pain management especially the use of opioids seems to be widespread. Kaki (2009) reported on the results of a survey

aimed at exploring nurses' ($N = 325$) opinions concerning patient satisfaction regarding pain

relief, usage of opioids, follow-up dosing after initial usage, nurses' attitudes regarding

addiction to opioids and physical dependence. Only 38.1 % of nurses considered morphine

addiction a possibility with PRN (as-needed) treatment. Most nurses had not considered the

addiction problem—particularly in situations where patient assessment was based on smiles

and grimaces. As tolerance and physical dependence also decide pain relief and management

interventions, few nurses (less than 30 %) had considered the issues of tolerance and physical

dependence.

It appears that the information nurses receive about acute pain during their educational

preparation may be of a superficial nature and without in-depth coverage of all relevant

topics. Consequently, nurses are poorly prepared with the required knowledge and skills when

confronted with patients in different situations. They are compelled in such instances to

depend on doctors for guidance, which may result in patients suffering until the doctor

arrives. According to Abdalrahim et al. (2011), another factor in this context is the attitude

that comprises unconscious motivations for actions, as well as responses and reactions. The

attitudes of nurses regarding their practice—in this instance, pain management—will be

formed as per their education, training and on-the-job experience. As their knowledge is not

sufficient to develop an appropriate attitude, nurses are being influenced by an incomplete

personal belief system. As a result, several misconceptions arise about the understanding of

pain, which hinders nurses' effectiveness in pain management practices.

In the current survey, the participant' education levels ranged from diploma to master's

qualifications in nursing; however, a large number responded incorrectly to questions

regarding pain assessment. For instance, a question was asked about administering sterile

water (placebos) to patients and assessing their responses in order to determine whether some

patients were lying about pain. In reality, there is no such tool or practice, but most nurses responded with an incorrect answer, indicating their lack of knowledge on pain management and assessment.

Abdalrahim et al. (2011), whose study had a particular focus on post-surgical pain management, noted another misconception held by nurses, namely that they have the decision-making authority on whether a patient is in pain and therefore may not need to consider the patient's viewpoint. Thus, Abdalrahim et al. (2011) expressed the necessity of educating nurses about pain assessment and management in connection with postoperative pain.

In their survey, Abdalrahim et al. (2011) found that participants' responses indicated the prevalence of many misconceptions about the nature of pain. Abdalrahim et al. (2011) stated that an institution's pain management systems should be constantly monitored to ensure adherence to its pain management guidelines. Purpose-designed forms are useful in overcoming communication issues; however, Saudi hospitals generally do not seem to adopt this practice, as all hospital routines are regulated by the health authorities. Further, continuing training ensures that nurses are aware of current pain management practices (Davidhizar & Giger, 2004). This is important in the context of Saudi Arabia due to the high turnover of staff.

Abdalrahim et al. (2011) also presented the results of several studies on the introduction of nurses' education programs to enhance pain management techniques, practices and routines. In this context, they cited the example of Jordanian establishments of service training programs that focus on educating health team professionals—mainly nurses. The training focuses on the assessment, management and documentation of patients' pain and tries to

develop new practices and routines for nurses to assess and manage pain. The data were collected pre- and post-intervention by nurses, and comprehensive nursing documentation was considered part of the survey. They found that the mean score of 2.16 (on a scale of 0–5) for patient satisfaction regarding pain management increased to 3.26 after the recommended documentation of patients' responses was maintained. Thus, the participants recognised the importance of documenting the responses and reactions of patients. Abdalrahim et al. (2011) found that when implementing a post-surgical pain management program, the nurses' performance improved, with correct answers to the questions increasing to 16/21 (75 %) from a pre-implementation correctness of 9/21 (42.8 %). Hence, it is clear that nurses lack knowledge regarding pain management and that they can benefit from further education and training. Healthcare settings also have to provide protocols in order for nurses to provide quality care in pain management.

In the present study, the KASRP questions that the nurses found most difficult to answer were those that required them to make decisions or personal value judgments. The nurses reported satisfaction in their knowledge of pain management, whilst willing to learn new techniques to enhance their pain management skills.

Some studies have indicated that patients have reservations regarding nurses' knowledge levels and are not entirely satisfied with their pain management (Abdalrahim, 2009; Innis et al. 2004). Some of the reviewed studies have revealed that the introduction of comprehensive pain management practices with due importance assigned to patients' self-reporting is capable of delivering better results and improved patient satisfaction. The nurses in these studies also acknowledged their deficiencies in knowledge and the findings revealed the necessity for nurses to learn more about pain management during their initial training, as well as the need

for hospitals to offer enough further training as per the practical requirements (Al–Khawaldeh et al., 2013).

It was evident from both the reviewed studies and the current research that nurses want to learn and improve, and it is up to the educational organisations such as universities to introduce syllabuses on pain management into their curricula. Another level of responsibility can be assigned to the managements of hospitals to provide training for nurses regarding practical issues and problems they will encounter during their practice. The readiness of nurses to enhance their knowledge is evident through their expressed interest during their interviews to learn about pain management, as well as their description of self-learning through reading and research. In their interviews, they focused on the need for additional coursework and professional development. Their perceptions revealed their interest in focusing on additional coursework and training for professional development to enhance their practices of pain management and to develop communication skills in order to solve any cultural and linguistic problems during their practice.

Results from the interviews showed that the majority of nurses—regardless of whether they have enough knowledge or lack the necessary knowledge—are willing to learn from other nurses with more experience, such as their seniors or doctors. Some participants understood that knowledge is enhanced not only through experience, but also through better education. They stated that their knowledge of pain management increased when they achieved higher academic qualifications in nursing. Nurses expressed the opinion that diploma holders have comparatively poor knowledge of pain management, while those with bachelor and master degrees have better knowledge of pain management and the medicines used. In contrast, others claimed that newcomers do not have knowledge of the practices and medicines frequently used in a health setting. However, when testing participants' knowledge in relation

to various demographics, their academic qualifications had no statistically or clinically significant effect on their levels of knowledge regarding pain management. Some participants despite not having higher educational qualifications, demonstrated good knowledge of pain and were aware of possible alternative methods to medicines, such as diversion therapies. Clearly, the hospital structure and its systems, as well as the nurses' departments, play a crucial role in pain management practices and may enhance nurses' pain management skills. In service courses on the assessment and management of pain, as well as current pharmacological drugs, the pharmacokinetics and pharmacodynamics of these drugs have good prospects for updating nurses' knowledge regarding pain management and may prove to be useful when monitoring practices with the annual use of knowledge assessments via tools such as the KASRP.

The procedures for assessment and management of pain were fairly consistent among interview participants, although management options were employed. Some focused solely on providing pharmacological relief, while others described thoroughly assessing and providing non-pharmaceutical nursing support. Most maintained the focus on assessment, regardless. This dichotomy in responses, with a greater preference by some for alternative methods of pain management, was possibly a reflection of the nurses' education and training. Nurses with more experience, education and training in pain management were able to discern the effectiveness of alternative methods.

The participants in this study generally accepted that they have a high level of responsibility for the pain management of their patients. They claimed that this stems from the fact that nurses maintain frequent contact, and spent significant time, with patients and are therefore suited to more accurately assess their level of pain. To complete this assessment, the participants primarily described the use of numeric and facial pain assessment tools in

addition to the patients' visual and physical cues. A lack of training regarding the use of these tools suggests a need for orientation and training in pain assessment.

6.2.2 Barriers to Achieving Optimal Pain Management as Perceived by Nurses

Interview participants cited common barriers to providing optimal pain management as language and communication barriers, cultural and religious barriers, and staff shortages. Language and communication difficulties were common given the multinational nursing staff. Some of these communication difficulties were also related to cultural differences or a lack of cultural knowledge. These cultural differences related to nationality, ethnicity, religion and gender roles. Participants described their own lack of language and cultural knowledge as the cause of the barrier, implying that further education and training would be effective at addressing these barriers. Having knowledge of various cultural and gender tendencies with regard to tolerating pain or expressing pain was felt to be helpful for nurses to more accurately assess the extent of patients' pain.

Pain may be under-reported, under-rated or under-treated if the person responsible for the pain assessment is not culturally receptive. For instance, when a number of Spanish-speaking children with cancer ($N = 44$) were examined regarding pain, 41 % suffered from pain before their visit to the clinic, and the most frequently noticeable locations on the body outline diagram was the abdomen (53.8%), lower back (46.2%) and upper chest (30.8%). Only 15 % of those who accounted for moderate to relentless pain received medication (Jacob, Sambuco, McCarthy & Hockenberry, 2008). The vocabulary used to describe pain and the body language employed by patients to explain their suffering may not reveal the severity of the pain when translated into English (Narayan, 2010). This may result in under-rated pain, which in turn can remain untreated. This is a clear example of a situation where the language and

cultural barriers hinder patients from correctly relaying the quality and quantity of pain to their caregivers (Jacob et al., 2008). According to the participants, there are instances when even those with adequate knowledge of pain management could not put such knowledge to practice due to a language barrier. Nurses must use their knowledge and expertise to understand the extent and nature of the pain. Their assessment starts with the location of the pain and then assesses its extent.

Of all of the possible limitations, language barriers are the most significant, particularly in the context of countries such as Saudi Arabia, where English-speaking expatriates constitute a major proportion of the nursing staff (Almalki, FitzGerald, & Clark, 2012). In this situation, the language barrier may exist in two contexts: Saudi nurses working with non-Saudi patients and expatriate nurses working with Saudi patients. The problem exists when the nurse does not know Arabic or the patient does not know English. Most expatriate nurses know English better than Arabic, and Saudi patients use Arabic as their primary language and thus know it much better than English. Thus, a language barrier exists when nurses try to communicate with patients to assess their pain. According to Narayan (2010), the language barrier and interpretation problems make it difficult for healthcare providers to adequately assess a patient's pain, leading to suboptimal pain treatment outcomes. Divi et al. (2007) noted that problems may occur if an interpreter is less proficient at translation. Davidhizar and Giger (2004) pointed out that words and meanings may be interpreted differently due to different dialects, and this occurs between nurse and patient or doctor and patient resulting in errors in assessments and incomplete pain management. Ineffective communication between the nurse and the patient results in inadequate pain assessment and eventually the adoption of substandard pain management interventions (Narayan, 2010). Communication issues arise between nurse and patient or doctor and patient that may result in errors in assessments and incomplete pain management.

The language barrier may include lapses in nurse–patient or doctor–patient communication, which may result in errors in assessments and incomplete pain management, despite the presence of qualified and knowledgeable healthcare staff. Hence, it depends on the hospital settings and systems that enable expatriate nurses to face language barriers effectively. Even if expatriate nurses have a degree of fluency in Arabic, the different dialects—where a single word or phrase could be interpreted in a variety of ways—can be puzzling and may result in misconceptions. A barrier also occur when there is a necessity to change interventions or medications as a result of an increase or decrease in the pain being experienced by the patient. It is clear that most patients are not able to convey their pain levels and the nature of their pain and nurses are not able to understand them when the situation is critical. The language barrier occurs when patients or nurses do not speak the same language. If both the patient and nurse can converse in English, there remains an issue with understanding accents and dialects. The language barrier can be mitigated to an extent by using documentation such as purpose-designed forms. However, hospitals generally do not seem to adopt this practice. Matters such as the introduction of specific forms are the responsibility of the policy makers of the hospital system. In the course of academic nursing studies, nurses do not receive any special training regarding such administrative matters and may experiene difficulty in interpreting the results.

A shortage of nursing staff was cited as another factor in pain management. Mitchell (2009) argued that nurse shortages were caused by limited career opportunities, inadequate education, or lack of resources. Nurses may be expected to work long hours, causing stress and reduced performance. Saudi Arabia is expanding services in healthcare infrastructure and human resources to address the shortage of nurses (Mitchell, 2009). With the addition of differences in language and cultural barriers the workload is further increased, as the time taken by nurses to assess each patient increases due to a lack of understanding and problems

with communication between the nurse and patient. Combined, this leads to a heavy workload, which can create further stress for nurses and may translate to a lack of concentration and an increased incidence of drug errors in the ward. According to participant D, the resultant lack of quality pain management may also be due to patient neglect, which arises when patients make more demands on the few available nurses. These observations highlight the necessity for educational institutions to develop effective pain management courses. Hospitals should focus on language and culture training, and increasing nurse numbers. As suggested by many reports, adequate pain assessment and management is obstructed by time constraints. Increased workloads, a shortage of nurses, interruptions and non-nursing responsibilities have negative effects on nurses' time to concentrate on patients' pain requests, as reported by nurses in worldwide studies (Rejeh et al., 2009; Manias et al., 2005; Schafheutle et al., 2001).

The problem of nursing shortages in hospitals and the resulting increased workloads was stressed by most of the interview participants in this study. In some cases, nurses were required to care for 10–15 patients, which limited their ability not only to respond to patients when called, but also to have adequate time to assess patients' pain and provide alternative pain management if needed. This factor, in conjunction with language and cultural barriers, could lengthen the time needed to achieve communication between nurses and patients, and have serious implications for the efficiency of pain management practices.

6.2.3 Demographic and Cultural Determinants Affecting the Delivery of Effective Pain Management

The third research question related to the demographic and cultural determinants that affect the delivery of effective pain management. The results from the quantitative phase of the study showed that demographic factors influenced nurses' knowledge of pain management were (a) work location, (b) hospital type, (c) age, (d) years of experience and (e), nationality. Nurses with the highest levels of knowledge regarding pain management: (a) worked in the ICU (b) were located at Hospital E; (c) were 41–60 years old; (d) had 15 or more years of experience; and (e) were Filipino. The effect of nurses' qualifications, positions, number of pain courses attended, gender and religion were not significant.

The cultural factors that affect the delivery of effective pain management were clarified by many participants in the interviews conducted during the second phase of the study. As revealed during the semi-structured interviews, patients' cultural factors could affect the delivery of effective pain assessment and management. As observed by participants, some patients do not overtly express their pain; rather, they attempt to tolerate it for religious and cultural reasons. Indeed, pain is a subjective experience with attached physical, emotional, religious, spiritual and cultural dimensions. Patients' cultural backgrounds are often a consideration when nurses and doctors examine patients and make judgments.

To effectively relieve pain, nurses should be aware of cultural and religious practices, especially when providing end of life care. These include rituals in the presence of family. Muslims view illness as the atonement of sins; hence, even as they seek medical attention, the treatment adopted also integrates the spiritual aspect by constantly praying and reading the holy Qur'an (Mughees, 2006). Similarly, in the case of Christians, many Hispanics and

Latinos, who are basically Catholics, believe that cancer pain is a kind of punishment that must be endured for one to enter heaven (Juarex, 1997). Al-shahri (2002) pointed out that in Muslim societies, spiritual healing is often chosen when faced with terminal illnesses. Further, during the month of Ramadan, some Muslim patients prefer to engage in fasting despite their illness.

Culture has a great influence on beliefs, morals, religion, family roles and descriptions of illnesses, as well as on how individuals feel and express pain (Narayan, 2010; Shepherd et al., 2010). The influence of culture was illustrated in one report, which suggested that in cases of long bone fractures, Caucasian patients were more prone to suffer from pain than patients from other cultural groupings (Todd, Tew & Macdonald, 2000). Such considerations may result in hospital employees not paying much attention to patients' accounts of the severity of their pain (Rupp & Delaney, 2004). Chinese patients may not express their pain because they view pain as a distortion in their body, which must be endured (Chen, Miaskowski, Dodd& Pantilat, 2008). Likewise, they consider that pain should be tolerated impassively. Thus, it may prevent them from sharing their pain like many Hispanic patients do (Anderson et al., 2002; Campbell et al., 2009). Vietnamese and Filipino patients are dependent on the older male member of the family to make medical decisions for them (Hooke, 2007). Nurses should remain professional, suspending their own religious and cultural beliefs and responses, and carrying out their duties and responsibilities towards their patients (Davidhizar & Giger, 2004).

Of significance, participants stated that male patients often attempt to conceal their pain in the belief they should be stoic and endure pain. Alternatively, Almutairi and McCarthy (2012) referred to Saudi women's shyness and inability to express their pain to an 'outsider'. This reticence could mislead nurses when assessing patients' pain, thus interfering with appropriate

nursing care. For example, the use of a face pain scale would not be reliable in these circumstances.

For pain assessment and management, nurses require knowledge and expertise (Leininger & McFarland, 2002). Further, before deciding on the treatment, differences in communication modes and family set-ups should be kept in mind (Thibodeaux & Deatrick, 2007). Nurses must find out how individual patients feel and what they perceive regarding the pain experience in order to tend to them according to their culture (Narayan, 2010). Nurses depend on the responses of patients to conduct their pain assessment. Thus, the language barrier has been clearly identified by the majority of participants as hampering their ability to apply effective pain assessment and management.

Kaki (2009) found that nurses are not aware of cultural perceptions of pain and its management. In this regard, Lovering (2006) conducted a useful study regarding the multicultural healthcare setting and pain management. The researcher assumed that patients and healthcare professionals bring their own cultural attitudes to the communication and interpretation of patients' pain experiences. She particularly mentioned the Saudi Arabian multicultural healthcare settings, which challenge nurses' opinions about cultural beliefs and attitudes to pain. As a result, the study found that it is necessary to understand cultural perceptions and their effect on pain management and assessment. She cited the findings of Ramer et al. (1999) regarding the influence of culture on the perceptions of pain and its expression. Taking a cue from Ramer et al.'s (1999) study, she found that ethnicity influences the expression of pain and patients' responses to it. Hence, pain management practices must consider culture, health behaviour and pain. However, nurses may not have enough knowledge of coordinating culture, health behaviour and pain, as pain management was not a

focus during their studies, nor were they given any training concerning the cultural aspects of assessment.

Similarly, the findings of Lovering (2006) revealed that the experience of pain was different across cultures. Lovering found that Asians, Filipinos, Saudis and Irish like to verbalise pain, while Africans are stoic. However, some Saudi patients are an exception and do not express pain. The findings conclude that pain has personal and cultural meanings.

6.2.4 Pain Management, Culture and Care

Pain management can be described as an act of compassion that relates to the concept of care embodied in the CCDU theory proposed by Leininger. In view of the large volume of literature referring to the importance of the cultural background of both patients and carers in their approaches to pain management, this study assigned a special focus on culture as a factor, along with others such as language and religion. Culture influences how patients respond and express their pain, bearing in mind that pain has social, physical, spiritual and psychological dimensions. In view of this, issues of communication and culture affects non-Saudi nurses' efficiency in delivering appropriate pain management services to patients (Leininger, 2002).

The participants in this study were found to be in a dichotomy regarding the use or non-use of alternative pain management methods. Although a few use them, they generally do not seek to use alternative methods before trying medication. This practice not only makes nursing practice mechanical in nature, but it also neglects patients' pain. For example, nurses do not seem to consider talking to patients in an effort to reduce their pain because they have not been trained that way. Similarly, if the pain persists following the initial interventions, nurses

depend on doctors' instructions, as most of them are not familiar with offering combined pharmacological interventions.

Regarding nurses' responsibility for pain management and use of tools and methods, the results showed that participants used numeric and facial pain assessment tools, skills learned on the job rather than through training. If hospitals offer training in pain management and assessment tools, the survey participants felt capable of showing greater responsibility during pain management and assessment. The nurses are ready to receive the necessary training and would appreciate this to consider care at the bedside because they believe that frequent contact with patients helps them to assess their pain much better.

Hospitals need to establish a system of feedback from patients and nurses in order to understand the practical consequences of present practices. Depending on the feedback, management must continuously develop training programs for newly recruited nurses so they can deal with communication problems such as culture, religion and language.

However, the language barrier cannot be completely overcome by training, as nurses cannot be trained in all languages (and dialects) of the patients who take treatment in a healthcare setting in a country like Saudi Arabia. Hence, in addition to training arrangements, it would be better to arrange translators with nursing backgrounds for nursing teams so they can help nurses overcome language barriers when communicating with patients. The training programs can address cultural differences in a nation and those that occur across nations in patients belonging to different nationalities and religions. For example, some cultural aspects are common to Asians, but patients still differ substantially regarding culture, religion and language. Hence, continuous training or workshops would help nurses regarding ethnicity, religion and gender roles in managing and assessing pain.

This solution is linked to participants' accounts of their lack of knowledge, education and training in considering culture, language, religion and ethnicity during assessments and with subsequent pain management interventions. The participants were aware of their lack of overall knowledge regarding pain management, and they indicated that further training would be beneficial to their practice. Hospitals should provide training regarding culture, as multicultural healthcare settings differ in culture due to their geographical location. For example, the multicultural healthcare setting in the Hail region in Saudi Arabia may differ from a multicultural hospital setting in London in the United Kingdom. The former setting may comprise mostly Asians and few Westerners, while the latter may have mostly Westerners and Latin Americans as well as Asians. Hence, the training regarding culture and religion for nurses depends on the nature of the problems being faced by the healthcare setting so that nurses can overcome communication barriers.

Alongside increased staff numbers, adopting comprehensive pain management would help, as nurses are ready to follow new guidelines that offer better routines for auditing the interventions and self-reporting of patients. This means that the hospital must prompt nurses to use non-pharmacological interventions alongside medications, and it must provide guidelines for the compulsory usage of non-pharmacological interventions. If regular medication is prescribed, alternative interventions should also be considered as an integral part of the planned care. Clear guidelines for medical and alternative therapies should be available. This means that health systems should introduce a comprehensive pain management system in a multicultural healthcare setting.

However, optimal pain management cannot be solely achieved by guidelines, new routines and methods or techniques. Effective role-modelling from senior staff, as well as appropriate

pain assessment procedures, would increase nurses' expertise. In addition, healthcare settings must develop culturally appropriate guidelines and should not blindly depend on Western methods, as the cultural orientation of patients in Western healthcare settings is different from that of patients in the Saudi healthcare setting.

6.3 Conclusion

This chapter discussed the knowledge of pain assessment and management among a sample of nursing staff from five hospitals in the Hail region of Saudi Arabia, and explored the barriers they faced in providing effective pain management. The results of this study revealed that the nurse participants, irrespective of being local or expatriate, are not equipped with adequate knowledge regarding pain assessment and management, particularly in pharmacological and non-pharmacological interventions. Further, their professionalism was not evident in assisting patients experiencing pain. The nurses reported many barriers to achieving optimal pain management, such as language and communication barriers, cultural and religious barriers, staff shortages and heavy workloads, and the inadequacy of training received in the area of pain assessment. Regarding the demographic and cultural factors that affect the delivery of effective pain management, the results showed that nurses' nationality, years of experience, age, hospital and department have a substantial effect on their overall ability to assess and manage pain.

Despite nurses spending more time with patients who suffer from pain, patients remain under-diagnosed and their pain is not well manage, due to nurses' ongoing lack of knowledge. Nurses are aware of the effect of opioids in relieving pain, but they do not have enough knowledge about their side effects and are concerned about addiction. They are not in a

position to assess pain in order to change the dosage or medicines through communication or from client reactions after administering an opioid.

Much has been written concerning nurses' insufficient knowledge of the pharmacology of analgesics. Nurses are routinely called upon to administer pain-relieving medications and therefore should know the interpretations of dosages, routes, actions and potential side effects of these medications. One of the major problems indicated in the literature is the lack of understanding in relation to the proper administration of analgesia to patients with cancer pain.

The cause of pain in patients can be varied, such as trauma, burns, postoperative injuries and cancer-related pain. The different origins of patients with pain demand different types of knowledge in order to assess and manage their pain. Equally important is the cultural and linguistic needs of patients in order to enable nurses to assess and manage their pain. It is necessary to understand the different reasons for pain alongside the patients' cultural and linguistic needs.

Nurses must use non-pharmacological interventions alongside medications. With the exception of those who practise some form of intervention, the majority of nurses in this study do not try to use non-pharmacological interventions for pain management. Further, academic studies may enable nurses to use non-pharmacological interventions in practice, as they are trained in knowing causes and effects. Nurses' expertise in non-pharmacological tools encourages them to use the pain assessment tools, as the extent of the pain may decide the usage of non-pharmacological interventions.

Regarding culture, it is necessary for expatriate nurses to understand the cultural perceptions of Saudi patients and how to ask them about pain. Even if they are proficient in the language,

the ways and means may vary for different cultures and patients may be offended or may not want to answer nurses' questions concerning their personal experience of pain. Hence, both culture and language are individual and combined barriers. Similar results were found among both expatriate and local nurses in this Saudi Arabian cohort.

From this study, it is evident that nurses have experience with patients experiencing pain, and that this experience is derived from clinical practice. However, they reported that they did not have enough academic support to formalise their pain management education. The finding that nurses lack knowledge regarding pain, its management and other relevant issues have been discussed in relation to the published results of many similar studies. The review, discussion and findings of the survey emphasised the need to enhance nurses' knowledge regarding pain and its assessment and management. The study also found the necessity to place greater emphasis on instructions regarding pain management during initial nurse training. Any training or formal education needs to be assessed as part of ongoing competencies that need to be achieved in the clinical area.

Chapter 7: Conclusion

7.1 Introduction

This chapter considers the thesis as a whole, as well as final considerations and reflections on the study design and its strengths and limitations. Recommendations are made regarding policy, practice, education and training, and for possible future research directions. This chapter then summarises the thesis with a reflection on the methods is included.

7.2 Reflection on the Study and its Design

The majority of similar studies that have explored nurses' knowledge have focused on quantitative analysis only and not followed up statistical results with a discussion with nurses about clinical practice outcomes. The recommendations based on the present studies highlight the need to explore the barriers that nurses face while managing pain. Thus, this study aimed to explore nurses' knowledge regarding pain and went further to investigate the barriers to providing adequate pain management as perceived by nurses working in Saudi Arabia hospitals. Demographic and cultural factors that affect the delivery of effective pain management have been explored, which was appropriate given the multicultural workforce that was studied. The first phase of this study was based on a survey of knowledge (KASRP) testing views and opinions regarding pain management expressed by a sample of both expatriate and local Saudi nurses who were working in hospitals in the Hail region of Saudi Arabia. The questions in the survey were about the perceived knowledge of nurses regarding pain assessment and management, and the familiarity they have with the medications they administer and the interventions they utilise to manage patients' pain in different

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circumstances and in a variety of clinical settings. A total of 303 questionnaires were collected, and the responses were analysed.

The purpose of the second phase of the study (qualitative data) was to obtain an understanding of the clinical practice issues that were considered important by the respondents for the management of pain experienced by Saudi patients. The second phase involved semi-structured interviews with 28 participants to further explore their perceived facilitators and barriers to proper pain management. The purpose of the interviews was to elicit information on how cultural differences among Saudi national and expatriate nurses might affect the assessment and interpretation of patients' pain and what clinical actions are taken following the assessment of pain. The questions posed to the participants were deliberately kept open-ended, in the format of a semi-structured interview. The participants were considered to have an in-depth understanding of the important issues they experienced when assessing and providing pain management as part of their nursing practice. A workforce that has sound practice in pain management is important, as good role-modelling is essential to novice nurses and new recruits to the Saudi Arabian healthcare system.

The sample of participants chosen for the qualitative analysis comprised nurses from various countries other than Saudi Arabia, and with different cultural and religious backgrounds compared to Saudi Arabians. The inclusion of nurses from different nationalities ensured enough diversity so that the differences in opinions based on nationalities might be considered a valid result of the study despite the discrepancy in the respective numbers—the majority of nurses were from the Philippines, a few from India and only four from Saudi Arabia. The participants were of several professional rankings

It was found that although a significant proportion of the participating nurses possessed some knowledge of pharmacological interventions, their knowledge was incomplete. It was also evident that the nurses, by and large, were aware of such knowledge deficiencies and were keen to update their knowledge as part of their commitment to proper patient care. It was identified that health services could make a change to pain management practice by simply promoting interventions and methods that encourage pain assessment and by implementing steps to improve nurse–patient communication. A particular area of neglect is the possible use of non-pharmacological interventions to reduce pain. The main reason for these issues, from the managements' perspective, is a shortage of staff. The nurses agreed that staffing inadequacy was a major reason for insufficient nurse–patient communication.

7.3 Strengths of the Study

The fact that this research study was conducted in a clinical setting and therefore is practice-based adds to the importance of the findings. Thus, the implications to practice are readily applicable to practice and can be implemented. The questions were framed in a manner that enabled the assessment of nurses' knowledge unambiguously. The nurses used the opportunity to assess their knowledge, and the high return rate of the survey may indicate that nurses found the topic of inquiry important for nursing practice. The study also revealed the gaps in their knowledge regarding pain management and the problems they faced as a result. Thus, the study was able to provide real insights into current practice and to determine the strengths and weaknesses of the nurses' pain assessment skills so that appropriate corrective measures could be recommended. The survey was also able to identify positive aspects, such as the attitudes of nurses, in that they expressed great willingness to learn and implement new methods, techniques, interventions and routines to enhance their effectiveness.

The study employed mixed methods of qualitative and quantitative analysis. The quantitative analysis was used to determine the knowledge of participants regarding pain management, and the qualitative analysis was used to explain the findings and barriers as perceived by participants. Due to its multi-dimensional nature, the combination of quantitative and qualitative research allows one to explore range of different aspects within a single study. Moreover, both quantitative and qualitative methods have individual strengths and weaknesses. Thus, using a combination of the two can overcome such limitations and generate a significant amount of information when compared with single-method research (Daymon & Holloway, 2010). The questions in the qualitative phase focused on understanding the problems faced by nurses without exhorting them to mention them directly.

This study has extended the use of the KASRP by considering the problems faced by nurses due to differences in culture, religion, language and perceptions. The strength was to include both local and expatriate nurses working in Saudi Arabia. Indeed, this makes it a truly representative sample, as the nursing workforce in Saudi Arabia largely comprises expatriates, and a focus on nationals alone would not have provided the comparative results between the populations. The reason for including local and expatriate nurses is due to the understanding that both categories of nurses have faced similar problems but in different circumstances. For example, local and expatriate nurses were constrained by issues related to culture, religion and language. Language and cultural barriers were faced by local nurses in Saudi Arabia with expatriate patients, and expatriate nurses faced the same issues with local patients. Whether local or expatriate, nurses faced problems regarding communication with patients.

The sample of respondents chosen for the qualitative analysis comprised nurses whose origins could be traced to several countries. The inclusion of nurses from different nationalities

provided sufficient diversity so that the differences in opinions based on nationalities might be considered interesting despite the discrepancy in the respective numbers.

The nurses may have benefitted from participating in the survey and responding to a questionnaire of this nature. It will help them to assess their own knowledge level and enable them to judge their own attitudes towards pain and implementing best practice care for patients suffering from pain. Most importantly, this study adds to the body of literature in regard to nurses' knowledge and attitudes regarding pain management within the context of an Islamic society. With multifaceted approach to data collection and triangulation methods, this study makes a claim for unique and new knowledge concerning pain management and cultural factors encountered in an Islamic country. This information can be built upon, but it has current applicability and also considers future directions within the recommendations that are made.

7.4 Limitations of the Study

The most important one relates to compromising the generalisability of the research findings. As a result of restricting the current study to the hospitals in a single region of Saudi Arabia, as well as the fact that the survey assessed the situation at a single point of time (time and place restriction), its validity for application to the entire Saudi Arabian healthcare system may be limited. In fact, health services may have addressed these problems and be able to offer best practice solutions. This was not the case in the Hail region.

Despite having a sufficiently large sample size to represent the relevant nursing population, when they were divided on the basis of gender and religion, it was found that the number of male participants and those of Hindu religion—21 and 11 respectively—were comparatively

small, which may result in Type II errors. This survey result should also be considered when deciding on the validity of the statistical analyses of the data provided by the male and Hindu participants. Moreover, data were gathered using convenience sampling, which has the inherent disadvantage of not being representative of the total population with regard to all demographics.

Although it was expected that the questionnaires would be answered individually and privately, and instructions to that effect were given, it cannot be ruled out that at least some participants may have discussed the questions and sought assistance from each other in answering them. However, if this occurred, it did not have a significant effect on the overall scores, with the majority being well below the required 80 %.

Another limitation was the closed questions in the survey, which included true and false matching, and multi-choice questions. Participants may have answered these questions by guesswork rather than using their actual knowledge.

7.5 Recommendations Arising from the Study

7.5.1 Recommendations for practice.

At the practice level, steps should be taken to ensure that nurses assess a patient's pain at regular intervals and record the findings, along with actions taken, on a purpose-designed 'pain assessment form'. Standards for pain assessment by the Joint Commission Nursing staff should utilise valid and reliable tools to assess for pain and use systematic ways of recording results and handing these over to other staff. A standardised recording system may overcome the problems arising from verbal communication lapses.

Another important recommendation in this regard is the need for a greater emphasis on using non-pharmacological interventions such as musical therapy, distraction, relaxation, positioning, exercise, hot–cold packs and other methods. The survey showed that the majority of nurses were unaware of non-pharmacological interventions.

The need for further pain assessment after the administration of medication was not fully understood by the participants. This is of particular concern in multicultural and multi-linguistic healthcare settings such as that of Saudi Arabia. Thus, further training in pain control and cultural competency could improve their knowledge regarding these concerns.

Due to communication difficulties, most nurses rely on facial expressions instead of assessing pain using self-reporting by patients. This conflict between what the patient wants to say and what the nurse sees may have a negative implication to practice, contravening the expectations of the theory of pain management, which place a premium on the patients' interests and individual experiences. Thus, it is recommended to have an interpreter during the assessment of patients' pain. Alternatively, nurses should be given language courses (Arabic) in order to enhance their ability to communicate with the predominantly Arabic-speaking patients.

The survey indicated that nurses recognise their lack of knowledge of the language and agree that they are not able to communicate with patients at the desired level. They also agreed that they do not think about non-pharmacological interventions as part of pain management. Nurses must update their knowledge regarding pharmacological and non-pharmacological interventions. When non-pharmacological interventions are included in routine nursing practice, the implications could be a decrease of the required dosage of medications. However, due to a lack of knowledge of alternative methods of pain management that do not

involve medications, nurses rely more on medications rather than non-pharmacological and communicative tactics.

Nursing practice could improve if nurses develop knowledge of non-pharmacological interventions alongside advanced communication skills that reduce pain. Policy needs to be developed to orientate new staff and assess their skills on a regular basis. The hospital administration must analyse the reasons underlying shortage of staff and remedy it by a comprehensive recruitment and retention strategy to alleviate nursing shortages and workloads.

7.5.2 Recommendations for training and education.

There is an urgent need for extra education concerning pain assessment and management. A focus on changing the culture of care towards implementing evidence-based nursing pain management practice would result in greater clinical accountability for pain management.

It is recommended that training takes place at various levels of nurse training, with sufficient coverage of the subject in the curriculum of nursing colleges and on-the-job training, supplemented with mandatory attendance of regular training courses and a practical clinical assessment within the healthcare working environment. Training methods need to be introduced by the management of healthcare settings as policy for annual competency achievements. Nurses should enter the workforce with skills in pain management that can be built upon and enhanced, and the educational preparation of nurses must be achieved by educational organisations such as universities.

An additional requirement—especially in multicultural and multi-linguistic hospital settings—is the development of the cultural competence of nurses. Moreover, cultural orientation for nurses should be implemented, and the program should include aspects of local population healthcare beliefs and practices, as well as the principles of transcultural nursing, in order to provide culturally congruent care. The language course should also be provided to nurses, as people use language to express their pain, which is embedded in culture. These courses could help to develop nurses' communication skills to communicate with patients of an Arabic-speaking background.

7.5.3 Recommendations for policy.

Hospital policies, which include the systems installed in healthcare settings and the stipulated procedures to be followed by nurses, require greater attention to implement better and more effective pain management practice. Changes to clinical practice require leadership and clear policy to support best practice. The hospital policy must aim to adopt best practice and also regularly update policies and guidelines relating to pain management. Policy makers must establish and monitor the standards for pain assessment and management as recommended by JCAHO. Moreover, the health service administrators and the policy makers of the Saudi health services must revise the nurses' recruitment and retention strategy. This will result in a more comprehensive recruitment and retention strategy

7.5.4 Recommendations for future research.

The present findings, while contributing to the knowledge base on the subject in general, have particular significance for hospital systems in Saudi Arabia. However, as outlined above,

there are certain limitations to the study, and future research on the subject should take these limitations into account. A study along the same lines as the present study, but with the inclusion of patients' self-reporting of their experiences of pain management, will give added value to the findings. This methodology of gathering data from both sources provides an opportunity to cross-check the responses of patients and nurses so that any anomalies can be corrected.

Similarly, supplementary information obtained from other relevant personnel, such as the management of healthcare settings and the teaching staff of nurse education facilities, will be equally useful.

The replication of this study involving hospitals in other regions of Saudi Arabia is strongly recommended in order to explore other healthcare settings and determine the validity or otherwise of the applicability of the present findings to the entire country. Similar studies should also be conducted to evaluate nursing students' knowledge and attitudes regarding pain management.

Another useful opportunity for research would be to carry out similar studies in different locations and in varying healthcare settings involving nurses who have successfully completed an intensive pain education program prior to the study. Such a study has the potential to definitively delineate the effect of knowledge deficiencies from any other limiting factors in pain assessment and management.

Further, research that includes the involvement of the management of healthcare settings or higher officials and faculty of nurse education institutions such as universities would provide a great opportunity to consider best practice guidelines. In view of the roles played by both of

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these groups in the education and management of nurses, it would be prudent to seek their viewpoints as part of future research into pain management policy implementation and practice reviews.

7.6 Study Conclusion

The goal of pain management is to address all dimensions of pain in order to provide maximum relief with minimal side effects. Regarding the management of pain in patients, a review of the research literature, anecdotal reports and the general opinions of both healthcare personnel and patients suggest that the majority of hospital patients do not receive adequate pain care. This has been attributed to many factors, including nurses' lack of required knowledge and skills, attitude issues, myths, fears and cultural issues.

The insights gained from this study into the knowledge and attitudes of nurses involved in pain care at five major hospitals in Saudi Arabia will be very valuable to healthcare providers, the public and other authorities concerned with the healthcare system in Hail, Saudi Arabia. The findings conclude that nurses at these hospitals display an extensive knowledge deficit, resulting in attitudes that are not conducive to good pain management practice. The knowledge deficiency is particularly a problem in certain aspects, such as basic pharmacology in general and the use of opioid analgesics in particular. In addition, the apparent total lack of knowledge of the potential use of non-pharmacological approaches in pain management is concerning. There is ample literature on the effectiveness of alternate methods such as music therapy, distraction, relaxation, meditation, exercise and hot–cold packs in managing pain. The knowledge deficiency is compounded by issues arising from nurses' attitudes and idiosyncratic beliefs, such as unwillingness to consider patients' self-reporting of pain and

opting to place greater trust in their behavioural manifestations, erroneous perceptions regarding opioid addiction, and exaggerated fears about serious side effects of opioids.

The nurses who participated in this study were different from those in several other reported studies in that they accurately perceived that they were not endowed with the knowledge required for handling the important clinical role of pain management. They attributed problems with overall pain management knowledge to deficiencies in their primary nurse training curriculum, as well as a lack of opportunities for subsequent training. On a positive note, these nurses were eager to update their knowledge, as was evident by their attempts to enhance their knowledge through self-study.

Another major problem area—perhaps a rare situation applicable only to countries such as Saudi Arabia—relates to the nurse–patient communication barrier. This is due to the fact that a very high proportion of foreign nationals constitute the nursing workforce. These nurses, who are not proficient in speaking Arabic, are required to care for Saudi nationals who, by and large, speak only Arabic. The result is a major breakdown in communication, and effective communication is a fundamental requirement in the provision of proper healthcare. Indeed, some of the points referred to earlier, such as nurses not willing to consider patients' self-reports, are a manifestation of the language barrier. It also diminishes opportunities for the health education of patients by nurses. Coupled with the language barrier is the cultural barrier.

Although the nurses in this study showed an interest in learning about pain management and medications, the findings indicated that nurses in Hail region hospitals—irrespective of being local or expatriate—have a major deficiency in their knowledge regarding pain assessment and management. They also have problematic attitudes towards pain assessment and face

problems in communicating with patients while assessing and managing their pain. They offer interventions with minimum communication and with few non-pharmacological interventions. The main barriers identified by these nurses were language and communication, increased workloads due to staff shortages, cultural and religious factors, a lack of education, and a lack of knowledge regarding pain management.

Organisational changes to healthcare settings are capable of promoting the understanding of the cultural orientation of pain management by nurses. The study recommends changes to the educational system so nurses leave educational institutions with more knowledge about pain management, which is crucial for the quality care of patients. It has been found that problems regarding communication, which arise from differences in culture, religion and language, are equal to the lack of knowledge of pharmacological and non-pharmacological interventions. This lack of knowledge is further complicated by a lack of cultural competency regarding culture, language and religion, as well as perceptions of patients not being able to self-report their pain experiences and will be remedied by cultural orientation competency courses.

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Appendices

Appendix A: Studies that Utilised the KASRP Tool

Researchers	Year	Location	Methodology	Sample	Major Findings
Yava, Çicek, Tosun, Özcan, Yildiz & Dizer	2013	Turkey	KASRP tool	246 nurses from different departments	• Mean score: 39.65% • Items relating to medications and dosages received the lowest scores
Lewthwaite	2011	Canada	KASRP tool	324 nurses from different departments	• Mean score: 79% • Almost half of the sample scored 80% or greater • Items relating to medications and dosages received the lowest scores
Wang & Tsai	2010	Taiwan	KASRP tool	370 nurses from intensive care units	• Mean score: 53.4% • Deficits in nurses' knowledge regarding pharmacology
Rahimi-Madiseh, Travakol & Dennick	2010	Iran	KASRP tool	146 student nurses	• Mean score: 37% • Case studies regarding analgesia dosage received the lowest scores
Huth, Gregg & Lin	2010	Mexico	Pediatric KASRP tool	106 pediatric nurses	• Mean score pre-educational initiative: 46.6% • Mean score post-educational initiative: 55.6%
Yildirim, Cicek & Uyar	2008	Turkey	KASRP tool	68 oncology nurses	• Mean score: 35.4% • Case studies regarding analgesia dosage received the lowest scores • Deficits in nurses' knowledge regarding pharmacology
Lui, So & Fong	2008	China	KASRP tool	143 nurses	• Mean score: 47.7% • Deficits in nurses' knowledge regarding pharmacology and non-pharmacology interventions
Tsai, Tsai, Chien & Lin	2007	Taiwan	KASRP tool	249 emergency department nurses	• Mean score: 49.2% • Case studies regarding analgesia dosage received the lowest scores • Overconcern about possibilities of developing respiratory depression and addiction • Deficits in nurses' knowledge regarding pharmacology
Rieman & Gordon	2007	USA	Pediatric KASRP tool	295 pediatric nurses	• Mean score: 74% • Deficits in nurses' knowledge regarding pharmacology and side effects of narcotics
Bernardi, Catania & Tridello	2007	Italy	KASRP tool	66 hospice nurses	• Mean score: 62.7% • Case studies regarding analgesia dosage received the lowest scores • Deficits in nurses' knowledge regarding self-evaluation and opioids
Matthews & Malcolm	2007	Northern Ireland	KASRP tool	113 nurses	• Mean score: 73.8% • Overconcern about possibilities of developing respiratory depression • Underestimation of pain
Plaisance &	2006	USA	KASRP tool	313 student	• Mean score: 64.0%

Logan				nurses	• Overconcern about possibilities of addiction. • Case studies regarding analgesia dosage received the lowest scores
Coulling	2005	UK	KASRP tool	49 nurses 33 doctors (one hospital)	• Mean score: 71% • Deficits in nurses' knowledge regarding opioid administration • 47% believed nurses' lack of knowledge was a barrier to pain management • Overconcern about possibilities of developing respiratory depression and addiction
Tapp & Kropp	2005	USA	KASRP tool	23 surgical nurses	• Mean score: 69.4% • Overconcern about possibilities of developing respiratory depression and addiction • Deficits in nurses' knowledge regarding pharmacology
Tse & Chan	2004	China	KASRP tool	601 nurses (three hospitals)	• Mean score: 44.0% • Deficits in nurses' knowledge regarding pharmacology and non-pharmacology • Exaggerated fears of respiratory depression
Vincent & Denyes	2004	USA	KASRP tool	67 pediatric nurses	• Mean score: 77% • Unbelieving and underestimating patients' self-reports of pain • Overconcern about possibilities of developing respiratory depression for patients
Lai, Chen, Tsai, Lo, Wei, Hong, Hsiu, Hsiao-Sheen, Chen, Kao, Huang, Chang, Chen & Guo	2003	Taiwan	KASRP tool	1,797 nurses from different departments	• Mean score: 50.5% • Case studies regarding analgesia dosage received the lowest scores • Deficits in nurses' knowledge regarding analgesics and patients' self-reports of pain
Van-Niekerk & Martin	2001	Australia	KASRP tool	1,015 nurses from different departments	• Mean score: 71% • Deficits in nurses' knowledge regarding pharmacology
Erkes, Carr & Mayo	2001	USA	KASRP tool	30 intensive care nurses	• Pre-education mean score: 72.9% • Post-education mean score: 86.2%
Howell, Butler, Vincent, Watt-Watson & Stearns	2000	Canada	KASRP tool	53 oncology nurses	• Deficits in nurses' knowledge regarding assessment and management of pain • Underestimatingpatients' self-reports of pain • Deficits in nurses' knowledge regarding analgesic side effects

Please respond to the questions below by ticking (√) one appropriate answer:

1. What is your gender?
◯ Male
◯ Female

2. How old are you?
.... Years

3. What is your nationality?
◯ Saudi
◯ Non-Saudi   Specify:- ....

4. What is your highest nursing education?
◯ Diploma
◯ Bachelors
◯ Master
◯ Doctorate

5. What is your religious belief?
◯ Muslim
◯ Christian—Please indicate what faith ....
◯ Buddhist
◯ Hindu
◯ None (Atheist)
◯ Other specify...............

6. How many years have you worked as a nurse?
.... Years and .... months

7. What is your current position?
◯ Staff nurse
◯ Head nurse
◯ Nursing manager (Supervisor, Director)
◯ Other, please indicate.........................

8. In which department are you working now?
    ....

9. Did you ever attend or take any course about pain assessment or management?
◯ Yes—Please indicate how many.............
◯ No

Appendix C: Consent Form for Participants

RMIT UNIVERSITY

School of Health Sciences,
Nursing and Midwifery

GPO Box 71
Bundoora VIC 3083
Australia
Ph: +61 3 9925 7447
Fax: +61 3 9467 5286

Prescribed Consent Form for Persons Participating in Research Projects Involving Interviews, Questionnaires or Disclosure of Personal Information

Portfolio	**Science, Engineering and Health Sciences**
School of	**Health Sciences**
Name of participant:	
Project Title:	Pain Management in Hail Region Hospitals
Name(s) of investigators: (1)	Mr Hamdan Albaqawi (PhD Candidate)
(2)	Prof Phil Maude Phone: +61 3 99257447
(3)	Prof Lina Shahwan-Akl Phone: +61 3 99257443

1.   I have received a statement explaining the interview/questionnaire involved in this project.

2.   I consent to participate in the above project, the particulars of which - including details of the interviews or questionnaires - have been explained to me.

3.   I authorise the investigator or his or her assistant to interview me or administer a questionnaire.

4.   I acknowledge that:
   (a)   Having read the Plain Language Statement, I agree to the general purpose, methods and demands of the study.
   (b)   I have been informed that I am free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied.
   (c)   The project is for the purpose of research and/or teaching. It may not be of direct benefit to me.
   (d)   The privacy of the personal information I provide will be safeguarded and only disclosed where I have consented to the disclosure or as required by law.
   (e)   The security of the research data is assured during and after completion of the study. The data collected during the study may be published, and a report of the project outcomes will be provided to the Saudi Ministry of Health. Any information that will identify me will not be used.

Participant's Consent

Participant: _____   Date: _____
                          (Signature)

Witness: _____   Date: _____
                          (Signature)

Participants should be given a photocopy of this consent form after it has been signed.

Any complaints about your participation in this project may be directed to the Executive Officer, RMIT Human Research Ethics Committee, Research & Innovation, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 2251.
Details of the complaints procedure are available from the above address.

Appendix D: Plain Language Statement

RMIT UNIVERSITY

School of Health Sciences, Nursing and Midwifery

GPO Box 71
Bundoora VIC 3083
Australia
Ph: +61 3 9925 7447
Fax: +61 3 9467 5286

Project Title:

Pain Management in Hail Region Hospitals.

Investigator:

Hamdan Albaqawi (PhD Candidate- Nursing and Midwifery, School of Health Sciences, RMIT University, S3259986@student.rmit.edu.au)

Supervisors:

- Associate Professor Phillip Maude, PhD, School of Health Sciences, RMIT University, Phillip.Maude@rmit.edu.au Phone: 99257447
- Associate Professor Lina Shahwan-Akl PhD, School of Health Sciences, RMIT University, lina.shahwan-akl @rmit.edu.au Phone: 99257443

DearProspective participant,

You are invited to participate in a research project being conducted at RMIT University. This information sheet describes the project in straightforward language, or 'plain English'. Please read it carefully and be confident that you understand its contents before deciding whether to participate. If you have any questions about the project, please ask the investigator.

Who is involved in this research project? Why is it being conducted?
This research is being conducted by Hamdan Albaqawi as a requirement for the award of a PhD in the Discipline of Nursing and Midwifery, RMIT University, Australia, under the supervision ofAssoc. Prof. Phillip Maude and Assoc. Prof. Lina Shahwan-Akl. The research has the approval of the Saudi Arabia Ministry of Health and the RMIT University Ethics committee.

Why have you been approached?
As nurses working in the Hail Region Hospital, you have been approached to participate in this study.

What is the project about? What are the questions being addressed?
You have been invited to respond to a survey in order to determine nurses' knowledge and attitudes regarding pain management and to identify possible barriers to achieving optimal pain management in Hail Region Hospitals. You may also respond to a request to participate in a face-to-face interview by personally contacting the researcher through email. Your participation in both the survey and the face-to-face interview is completely voluntary and would be greatly appreciated.

If I agree to participate, what will I be required to do?
You will find a questionnaire attached to this Plain Language Statement,which has been distributed by the Nursing Education Department. After reviewing and understanding this Plain Language Statement, you will be required to complete demographic questions and the survey, which will take 15–20 minutes. The survey will include true/false statements and multiple choice questions. This survey will be anonymous, and participants have the right to withdraw from the study at any time. Questionnaires must be completed in your own time, and you will be required to submit the completed questionnaire in a sealed box located on your ward.

If you wish to participate in the face-to-face interview,which will be voice recorded, you will be required to sign a consent form. The face-to-face interview will take around 30–45 minutes. Participants in the face-to-face interview will be asked about the result from the survey and what they think about pain management in Hail Region Hospitals and whether there are any barriers or enhancing factors to providing effective pain management. Interview data will be confidential, and audiorecordings will be transcribed by the researcher using a code and not your name or any identifiable data.

What are the risks or disadvantages associated with participation?
There are no risks associated with your participation in this research project. All responses will remain confidential, be reported as group data and will have no influence on your employment.

What are the benefits associated with participation? It is hoped that this project will help to identify barriers to achieving optimal pain management in Hail Region Hospitals and how nurses from different cultures could affect the delivery of effective pain management. The project will explore and describe pain management practices and has the potential to improve the quality of nursing care of patients in these hospitals. This study will add to the existing body of knowledge regarding pain management.

What will happen to the information I provide?
All information gathered as part of this research will be securely stored for a period of five years in the School of Health Sciences, RMIT University. The data can only be accessed by the researcher and supervisors. After five years, the data will be destroyed. The data collected will be analysed, and the results may be published in academic journals or conferences without including any personal information that has the potential to identify either you or your health agency.

What are my rights as a participant?
Your participation in this research is voluntary. As a participant, you have the right to: withdraw your participation at any time; have any unprocessed data withdrawn and destroyed, provided it can be reliably identified, and provided that so doing does not increase your risk; and have any questions answered at any time.

Due to the nature of this data collection process, I am not obtaining written informed consent unless you elect to be interviewed.

Whom should I contact if I have any questions?
If you have any questions regarding this research, please contact the researcher S3259986@student.rmit.edu.au or his supervisors at the following addresses Phillip.Maude@rmit,edu.au and Lina.Shahwan-Akl @rmit,edu.au

You may also contact the following person in Saudi Arabia should you have any concerns about this research:

General Directorate of Nursing, Ministry of Health Saudi Arabia
Muneera Bint Hamdan Al-Osaimy (General Director)

Yours Sincerely

Hamdan Albaqawi   Associate Professor Phillip Maude   Associate Professor Lina Shahwan-Akl

Any complaints about your participation in this project may be directed to the Executive Officer, RMIT Human Research Ethics Committee, Research & Innovation, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 2251. Details of the complaints procedure will also be available from this address.

Appendix E: Letter to Participate in Interview

Dear Participant,

If you wish to participate in the face-to-face interview, please register your name and contact details at the Education Department in your hospital. The researcher will arrange a suitable time to conduct the face-to-face interview with you. This interview will be voice recorded, and you will be required to sign a consent form prior to the commencement of the interview.

The face-to-face interview will take around 30–45 minutes to obtain an in-depth knowledge of theenhancing factors and barriers to appropriate pain management by nurses in Hail hospitals. Interview data will be confidential, and audiorecordings will be transcribed by the researcher using a code and not your name or any identifiable data.

Sincerely yours,

Hamdan Albaqawi (PhD Candidate)

RMIT University

School of Health Sciences

Appendix F: Knowledge and Attitudes Survey Regarding Pain

City of Hope

April 2008

Dear Colleague:

The "Knowledge and Attitudes Survey Regarding Pain" tool can be used to assess nurses and other professionals in your setting and as a pre and post test evaluation measure for educational programs. The tool was developed in 1987 and has been used extensively from 1987 - present. The tool was revised and is now being tested in pain education courses to conduct psychometric analysis on this updated version. There have been minor edits in April 2008.

Regarding issues of reliability and validity: This tool has been developed over several years. Content validity has been established by review of pain experts. The content of the tool is derived from current standards of pain management such as the American Pain Society, the World Health Organization, and the Agency for Health Care Policy and Research. Construct validity has been established by comparing scores of nurses at various levels of expertise such as students, new graduates, oncology nurses, graduate students, and senior pain experts. The tool was identified as discriminating between levels of expertise. Test-retest reliability was established (r>.80) by repeat testing in a continuing education class of staff nurses (N=60). Internal consistency reliability was established (alpha r>.70) with items reflecting both knowledge and attitude domains.

Regarding analysis of data: We have found that it is most helpful to avoid distinguishing items as measuring either knowledge or attitudes. Many items such as one measuring the incidence of addiction really measures both knowledge and attitude about addiction. Therefore, we have found the most benefit to be gained from analyzing the data in terms of the percentage of complete scores as well as in analyzing individual items. For example, we have found it very helpful to isolate those items with the least number of correct responses and those items with the best scores.

Enclosed for your use is a copy of our instrument and an answer key. You may use and duplicate the tool for any purpose you desire in whole or in part. References to some of our studies which have included this tool or similar versions are included below.

We also acknowledge the assistance of several of our pain colleagues including Pam Kedziera, Judy Paice, Deb Gordon, June Dahl, Hob Osterlund, Chris Pasero, Pat Coyne and Nessa Coyle in the current revisions. If using or publishing the tool results please cite the reference as **"Knowledge and Attitudes Survey Regarding Pain" developed by Betty Ferrell, RN, PhD, FAAN and Margo McCaffery, RN, MS, FAAN, (http://prc.coh.org), revised 2008.**

We hope that our tool will be a useful aid in your efforts to improve pain management in your setting.

Sincerely,

Betty R. Ferrell, RN, PhD, FAAN   Margo McCaffery, RN, MS, FAAN
Research Scientist   Lecturer and Consultant

References:

1. McCaffery M, Ferrell BR (1994). "Understanding opioids & addiction." Nursing 94, 24(8): 56-59.

2. Ferrell BR, McCaffery M, Rhiner M. (1992). "Pain and addiction: An urgent need for changing nursing education." Journal of Pain and Symptom Management, 7(2): 117-124.

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Knowledge and Attitudes Survey Regarding Pain

True/False – Circle the correct answer.

T F 1. Vital signs are always reliable indicators of the intensity of a patient's pain.

T F 2. Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences.

T F 3. Patients who can be distracted from pain usually do not have severe pain.

T F 4. Patients may sleep in spite of severe pain.

T F 5. Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.

T F 6. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.

T F 7. Combining analgesics that work by different mechanisms (e.g., combining an opioid with an NSAID) may result in better pain control with fewer side effects than using a single analgesic agent.

T F 8. The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours.

T F 9. Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics.

T F 10. Opioids should not be used in patients with a history of substance abuse.

T F 11. Morphine has a dose ceiling (i.e., a dose above which no greater pain relief can be obtained).

T F 12. Elderly patients cannot tolerate opioids for pain relief.

T F 13. Patients should be encouraged to endure as much pain as possible before using an opioid.

T F 14. Children less than 11 years old cannot reliably report pain so nurses should rely solely on the parent's assessment of the child's pain intensity.

T F 15. Patients' spiritual beliefs may lead them to think pain and suffering are necessary.

T F 16. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response.

T F 17. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.

T F 18. Vicodin (hydrocodone 5 mg + acetaminophen 500 mg) PO is approximately equal to 5-10 mg of morphine PO.

T F 19. If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain.

T F 20. Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.

T F 21. Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm.

T F 22. Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.

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Multiple Choice – Place a check by the correct answer.

23. The recommended route of administration of opioid analgesics for patients with <u>persistent cancer-related pain</u> is
_____ a. intravenous
_____ b. intramuscular
_____ c. subcutaneous
_____ d. oral
_____ e. rectal

24. The recommended route administration of opioid analgesics for patients with brief, <u>severe pain of sudden onset</u> such as trauma or postoperative pain is
_____ a. intravenous
_____ b. intramuscular
_____ c. subcutaneous
_____ d. oral
_____ e. rectal

25. Which of the following analgesic medications is considered the drug of choice for the treatment of <u>prolonged moderate to severe pain</u> for cancer patients?
_____ a. codeine
_____ b. morphine
_____ c. meperidine
_____ d. tramadol

26. Which of the following IV doses of morphine administered over a 4 hour period would be equivalent to 30 mg of oral morphine given q 4 hours?
_____ a. Morphine 5 mg IV
_____ b. Morphine 10 mg IV
_____ c. Morphine 30 mg IV
_____ d. Morphine 60 mg IV

27. Analgesics for post-operative pain should initially be given
_____ a. around the clock on a fixed schedule
_____ b. only when the patient asks for the medication
_____ c. only when the nurse determines that the patient has moderate or greater discomfort

28. A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is
_____ a. less than 1%
_____ b. 1-10%
_____ c. 11-20%
_____ d. 21-40%
_____ e. > 41%

29. The <u>most likely</u> reason a patient with pain would request increased doses of pain medication is
_____ a. The patient is experiencing increased pain.
_____ b. The patient is experiencing increased anxiety or depression.
_____ c. The patient is requesting more staff attention.
_____ d. The patient's requests are related to addiction.

30. Which of the following is useful for treatment of cancer pain?
_____ a. Ibuprofen (Motrin)
_____ b. Hydromorphone (Dilaudid)
_____ c. Gabapentin (Neurontin)
_____ d. All of the above

31. The most accurate judge of the intensity of the patient's pain is
    _____ a. the treating physician
    _____ b. the patient's primary nurse
    _____ c. the patient
    _____ d. the pharmacist
    _____ e. the patient's spouse or family

32. Which of the following describes the best approach for cultural considerations in caring for patients in pain:
    _____ a. There are no longer cultural influences in the U.S. due to the diversity of the population.
    _____ b. Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic, Italians are expressive, etc).
    _____ c. Patients should be individually assessed to determine cultural influences.
    _____ d. Cultural influences can be determined by an individual's socioeconomic status (e.g., blue collar workers report more pain than white collar workers).

33. How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem?

    < 1%   5 – 15%   25 - 50%   75 - 100%

34. The time to peak effect for morphine given IV is
    _____ a. 15 min.
    _____ b. 45 min.
    _____ c. 1 hour
    _____ d. 2 hours

35. The time to peak effect for morphine given orally is
    _____ a. 5 min.
    _____ b. 30 min.
    _____ c. 1 – 2 hours
    _____ d. 3 hours

36. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:
    _____ a. sweating, yawning, diarrhea and agitation with patients when the opioid is abruptly discontinued
    _____ b. Impaired control over drug use, compulsive use, and craving
    _____ c. The need for higher doses to achieve the same effect.
    _____ d. a and b

Case Studies

Two patient case studies are presented. For each patient you are asked to make decisions about pain and medication.

Directions: Please select one answer for each question.

37 Patient A: Andrew is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain.

0   1   2   3   4   5   6   7   8   9   10

No pain/discomfort   Worst
                                                      Pain/discomfort

B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time.

    _____ 1. Administer no morphine at this time.
    _____ 2. Administer morphine 1 mg IV now.
    _____ 3. Administer morphine 2 mg IV now.
    _____ 4. Administer morphine 3 mg IV now.

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38. <u>Patient B</u>: Robert is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

   A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert's pain:

   0   1   2   3   4   5   6   7   8   9   10

   No pain/discomfort   Worst
                                                           Pain/discomfort

   B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time:

   _____ 1. Administer no morphine at this time.
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   _____ 4. Administer morphine 3 mg IV now.

Answer Key

<u>Knowledge and Attitudes Survey Regarding Pain</u>

True/False – Circle the correct answer.

F   1. Vital signs are always reliable indicators of the intensity of a patient's pain.

F   2. Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences.

F   3. Patients who can be distracted from pain usually do not have severe pain.

T   4. Patients may sleep in spite of severe pain.

F   5. Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.

T   6. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.

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Knowledge and Attitudes Survey Regarding Pain

Multiple Choice – Place a check by the correct answer.

23. The recommended route of administration of opioid analgesics for patients with <u>persistent cancer-related pain</u> is
    _____ a. intravenous
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    __X__ a. The patient is experiencing increased pain.
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31. The most accurate judge of the intensity of the patient's pain is
   _____ a. the treating physician
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   _____ a. There are no longer cultural influences in the U.S. due to the diversity of population.
   _____ b. Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic, Italians are expressive, etc).
   __X__ c. Patients should be individually assessed to determine cultural influences.
   _____ d. Cultural influences can be determined by an individual's socioeconomic status (e.g., blue collar workers report more pain than white collar workers).

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   __X__ a. 15 min.
   _____ b. 45 min.
   _____ c. 1 hour
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35. The time to peak effect for morphine given orally is
   _____ a. 5 min.
   _____ b. 30 min
   __X__ c. 1 – 2 hours
   _____ d. 3 hours

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   __X__ a. sweating, yawning, diarrhea and agitation with patients when the opioid is abruptly discontinued
   _____ b. Impaired control over drug use, compulsive use, and craving
   _____ c. The need for higher doses to achieve the same effect.
   _____ d. a and b

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A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain.

0   1   2   3   4   5   6   7   **8**   9   10

No pain/discomfort   Worst
                                                      Pain/discomfort

B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time.

   _____ 1. Administer no morphine at this time.
   _____ 2. Administer morphine 1 mg IV now.
   _____ 3. Administer morphine 2 mg IV now.
   __X__ 4. Administer morphine 3 mg IV now.

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38. Patient B: Robert is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.

A. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert's pain:

0   1   2   3   4   5   6   7   **8**   9   10

No pain/discomfort   Worst
                                                        Pain/discomfort

B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time:

_____ 1. Administer no morphine at this time.
_____ 2. Administer morphine 1 mg IV now.
_____ 3. Administer morphine 2 mg IV now.
__X__ 4. Administer morphine 3 mg IV now.

Appendix G: Ethics Approval from RMIT University

RMIT UNIVERSITY

RMIT University

Science Engineering
and Health

College Human Ethics
Advisory Network
(CHEAN)

Plenty Road
Bundoora VIC 3083

PO Box 71
Bundoora VIC 3083
Australia

Tel. +61 3 9925 7096
Fax +61 3 9925 6506
• www.rmit.edu.au

30th March 2011

Hamdan Albaqawi

Dear Hamdan

ASEHAPP 04 – 11 <u>ALBAQAWI</u> Pain Management in Hail Region Hospitals

Thank you for submitting your amended application for review.

I am pleased to inform you that the CHEAN has approved your application for a period of **33 Months** to **December 2013** and your research may now proceed.

The CHEAN would like to remind you that:

All data should be stored on University Network systems. These systems provide high levels of manageable security and data integrity, can provide secure remote access, are backed up on a regular basis and can provide Disaster Recover processes should a large scale incident occur. The use of portable devices such as CDs and memory sticks is valid for archiving; data transport where necessary and for some works in progress. The authoritative copy of all current data should reside on appropriate network systems; and the Principal Investigator is responsible for the retention and storage of the original data pertaining to the project for a minimum period of five years.

Annual reports are due during December for all research projects that have been approved by the College Human Ethics Advisory Network (CHEAN).

The necessary form can be found at: http://www.rmit.edu.au/governance/committees/hrec

Yours faithfully,

Linda Jones
Acting Chair, Science Engineering & Health
College Human Ethics Advisory Network 'A'

Cc   Supervisor/s: Phillip Maude School of Health Sciences
                    Lina Shawan-Akl School of Health Sciences

Appendix H: Permission from Hospitals

Dear Mr. Hamdan Mohammad Albaqawi   15 December 2010

It is my pleasure to inform you that we approved your study titled: Pain Management in Hail Region Hospitals of Saudi Arabia.

Please be informed that in conducting this study, you as Principle Investigator is required to abide by the rules and regulations of the Government of Saudi Arabia and Ministry of Health. The approval of this proposal will automatically be suspended 2 March 2012 pending the replication to renew the approval.

Please observe the following:

1. Personal indentifying data should only be collected when necessary for research;
2. The data collected should only be used for this proposal;
3. Data should be stored securely so that only a few authorised users are permitted access to the database;
4. Secondary discloser of personal indentified data is not allowed

An ethical approval from human ethics committee in RMIT Australia is required to begin collecting your data at Hail region hospitals. General Director of Health Affairs in Hail Region support this research project and look forward to receiving a copy of the final result and dissertation.

Should you have any inquires or concerns in relation to this approval do not hesitate to contact Mr. Talal Majed on
We wish you every success in your research endeavor.

Sincerely,

Dr. Nawaf Al Harthy
General Director of Health Affairs
Hail, KSA

Appendix I: Questions for Semi-structured Interview

Knowledge about Pain and Pain Management

- What is your experience of working with other nurses and their overall level of knowledge about pain and pain management? What do you think about your knowledge? Are you familiar with the medications given here? Do you spend time reading about medications? Are the medications used in Saudi Arabia are similar to the medications in your country? Would you like to learn more about pain and medications?

Assessment of pain

- Explain how pain is managed in your hospital. Are you satisfied? What about the assessment of pain? Which tools are you using to assess pain, and are these tools effective or not? Do you have training in how to use these tools?

Service and environmental barriers to pain

- What factors assist your hospital to improve pain management, and what are the limitations? Do you need intensive courses about pain? What about these factors (too busy, shortage, large number of patients, lack of educational preparation for nurses, no courses given about pain, limited communication or language barriers, patients opioid addiction), and do you think these are reasonable excuses? Tell me about your department and how many staff you have in the shift. What you will do if a patient is in pain? What about your decision-making regarding this patient? What you will do if you do not have narcotics in your department? What about the other methods for relieving pain?

Patient factors of pain

- Do you think that patients should tolerate pain? If yes, why do you think so? Do you tolerate pain? Do you think that some patients are scared to ask for pain relief? Which of these do you think can tolerate much more pain: men, women or children?

Culture and pain

- What about cultural factors? Do you think cultural factors could influence your attitude towards pain management? Do you think it could influence patients' attitudes towards expressing their pain? What about religious beliefs? What is your understanding about Muslim beliefs about pain (i.e. tolerating pain)?

Pain management

- Do nurses discuss medications with doctors and pharmacists? How much responsibility do you think a nurse has for pain management? Would a nurse initiate pain management by seeking a prescription? How do you think nurses manage PRN medication? Can you give me examples of patients who have had effective PRN pain management and ones that have not?

Validation of data

- The survey I conducted recently revealed that nurses have a low level of overall knowledge regarding pain. Do you think this finding is correct for most of the nurses you work with? Can you think of any reasons why nurses would have problems understanding pain and pain management?

NURSES' KNOWLEDGE REGARDING PAIN MANAGEMENT IN HAIL REGION HOSPITALS, SAUDI ARABIA.

Hamdan Albaqawi

Bcs, RN, MSN, PhD candidate (School of Health Sciences), RMIT University, Australia

Abstract: *Pain is a human experience that affects overall quality of life and one of the most common reasons for people seeking health care. Effective pain management requires precise knowledge, attitude and competent assessment skills. The aims of this study are to determine nurses' knowledge and attitude regarding pain management and seek to identify possible barriers to achieve optimal pain management in Hail Region Hospitals in Saudi Arabia (SA). This explorative descriptive mixed methods study sampled local and expatriate nurses who are working in Hail Region Hospitals. This study include two phases, the first phase involved administration of a questionnaire to nurses (N = 303) which sought to identify the nurses' knowledge and attitudes regarding pain management using the "Knowledge and Attitudes Survey Regarding Pain" (NKASRP). The second phase involved semi-structured interviews (N=28) to further explore their perceived facilitators and barriers to proper pain management. The interviews illicit information on how cultural differences of Saudi national and expatriate nurses might have an impact on the assessment and interpretation of patients' pain and how it will affect the delivery of effective pain management, as well as identifying the barriers to achieve optimal pain management in Hail Region Hospitals. Data were analyzed by using descriptive statistics, Measures of Variability and Inferential Statistics. The average of correct response rate was only 41.75%, with rates ranging from 5% to 87%. The qualitative data analysed using thematic analysis. The finding indicates inadequate knowledge regarding pain, pain assessment, pain management and pain medications. It's also highlighted some barratries that affecting nurses to provide an effective pain management and determined the demographic and cultural factors that impact on the delivery of effective pain management.*